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Technology Information and Trade Portal

tech2transfer.com

Project Completion Report

Submitted to:

ICAMT

Confederation of Indian Industry
Plot No-249-F, Sector 18, Udyog Vihar, Phase IV, Gurgaon-122015
www.ciionline.org

Contents

Introduction

The rapid changes in the scientific and technological fields are making it almost impossible for industries, more so in the developing countries, to cope with the pace of the change. Moreover, the paucity of the public institutions / universities making available commercialisable technologies and lack of technology facilitation support systems, make the task difficult. The adoption and marketing of innovative technologies is quite important for the companies to maintain their market positions and sustain competitiveness.

Over the years, CII has developed a large network with various national and international institutions in the area of technological research and has an access to large number of technologies, which could be utilized by the industry. Similarly UNIDO-ICAMT, being an international organization, has access to a large number of technologies which can be made available to the industries in the emerging economies.

The objective of tech2transfer.com is to act as a single point source for making large number of technologies available to the industry.

These technologies shall be backed-up by industry-experts, who can do a techno-commercial feasibility analysis of the technologies, as also support companies in implementing these.

Portal design and structure

Site Map for tech2transfer.com

- Home
  - Tech News
  - Tech2 Objective
  - Tecch2 Promotions
  - Tech2 Articles
  - Tech2 Offers
  - Tech2 Search
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- About us
  - About Tech2transfer
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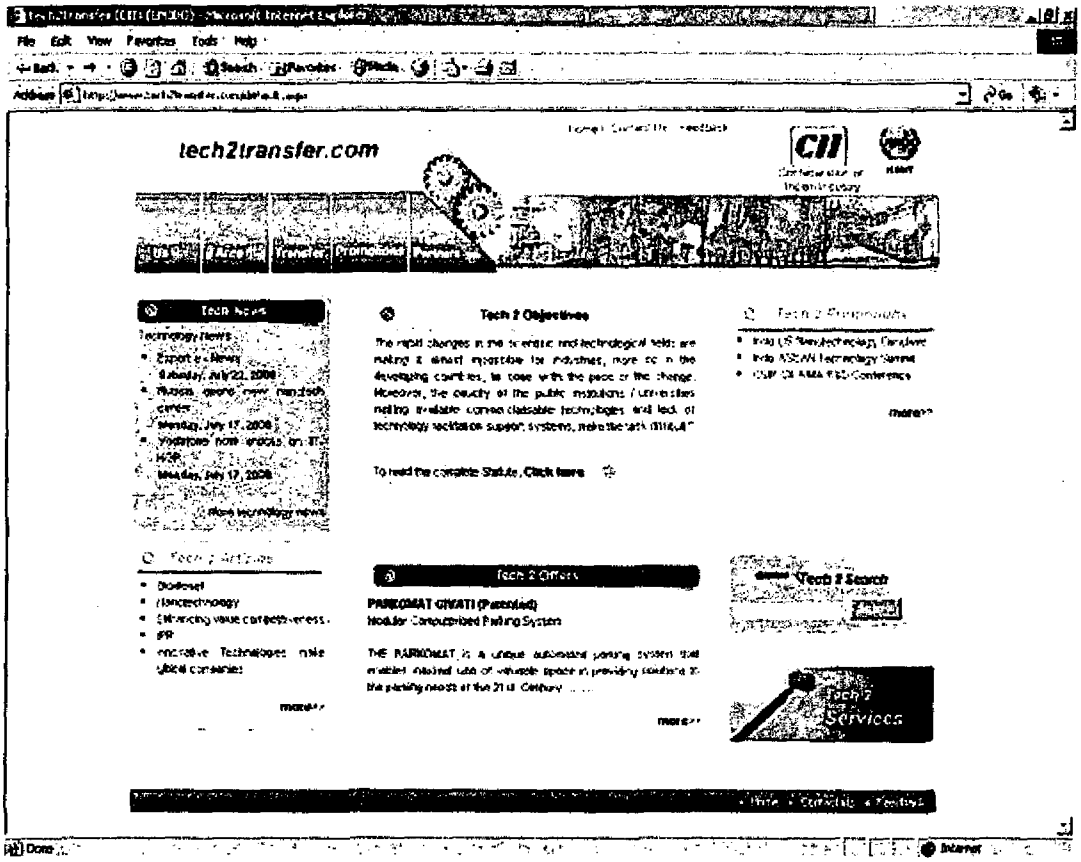
  - About ICAMT
- Focus Area
- Tech2 Transfer
  - List of Categories
    - Number of technologies related to that particular category
      - Brief details of that particular technology
- Tech Promotions
- Tech2 Partners
- Contact us
- Feedback

(I.) Tech2transfer.com HOME Page

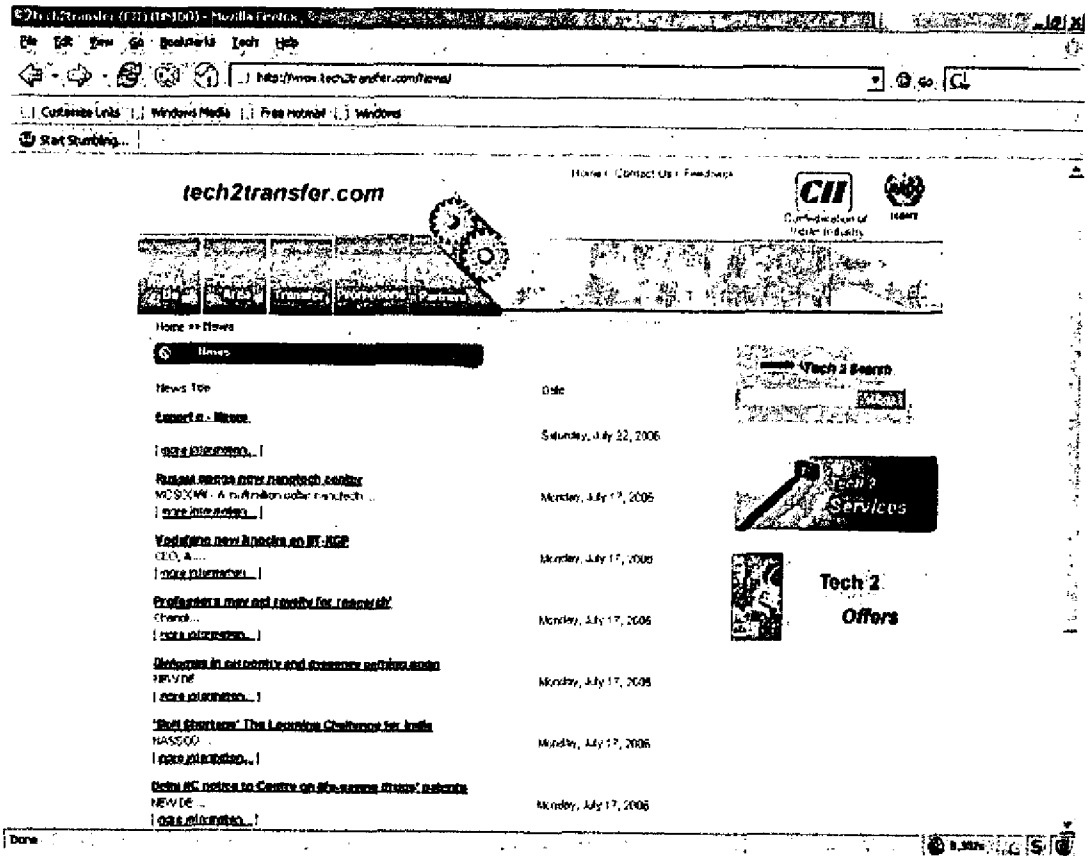


This is a main page of tech2transfer.com website. On home page user can access the entire link related to tech2transfer.com website.

Sub sections displayed in the HOME page are:

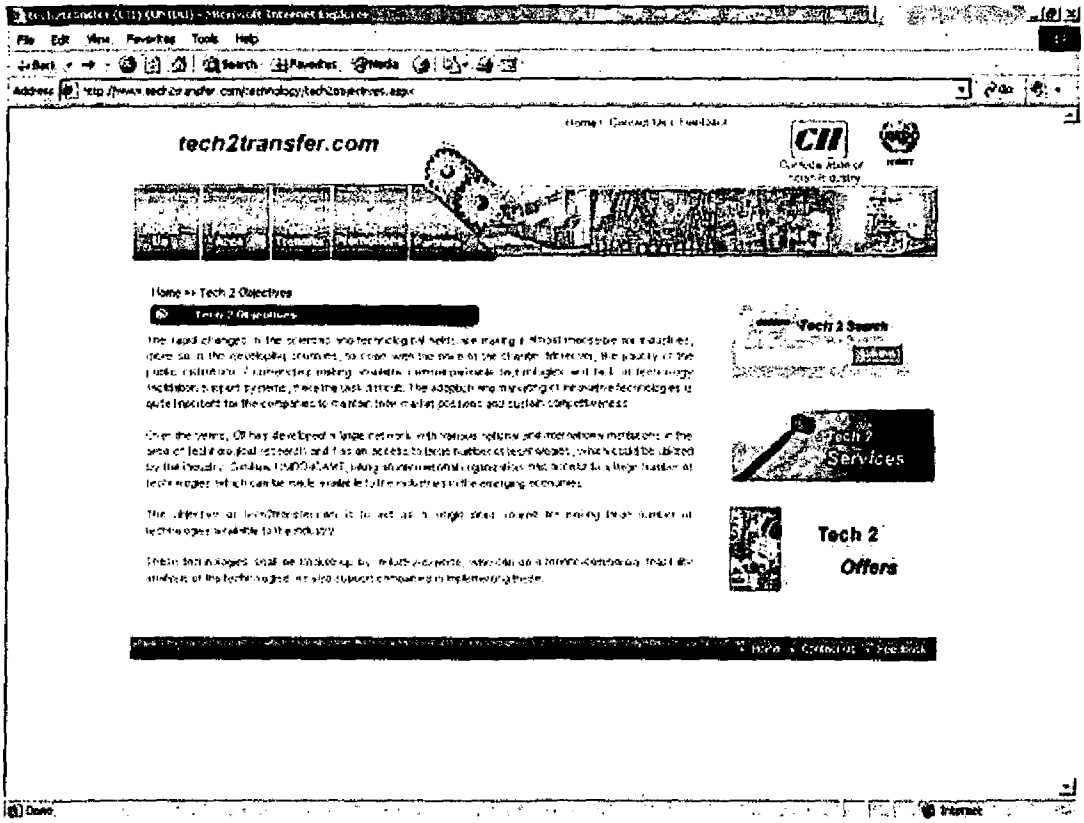
1) Tech News:

This section is showing technology news which is posted on techbizindia .com web site.



2) Tech2 Objective:

Objective of tech2transfer.com web site.

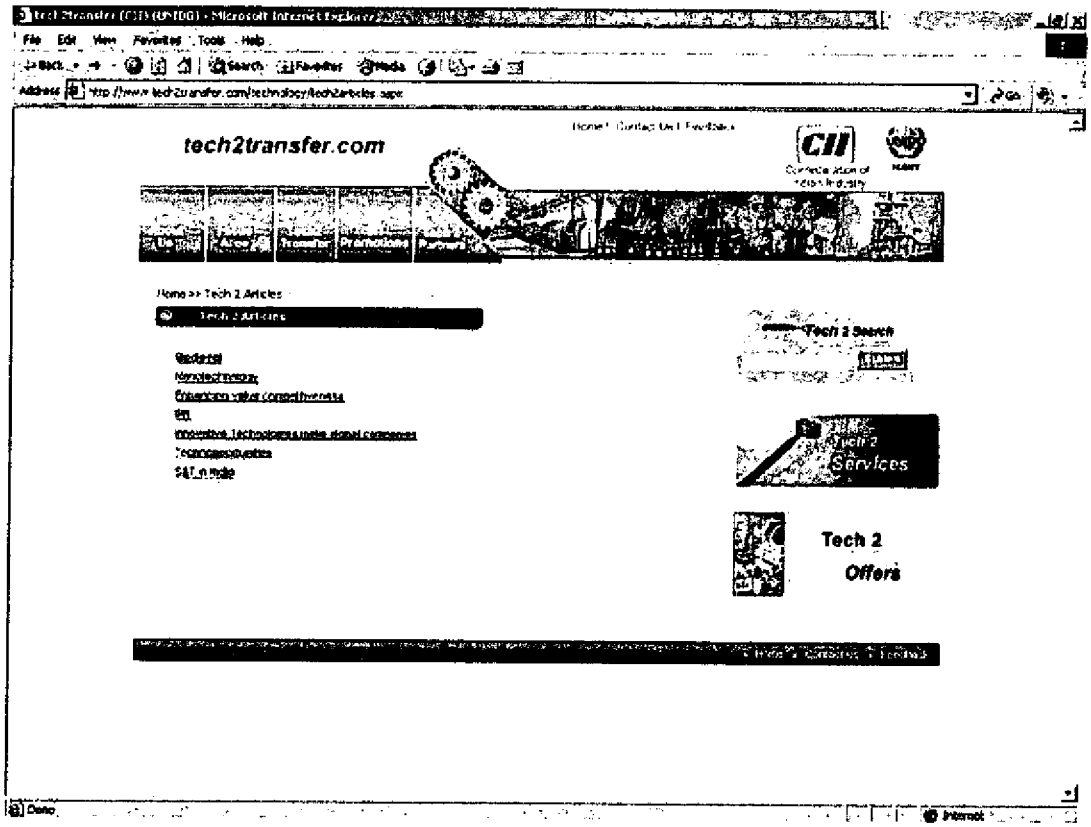


3) Tech2 Promotions:

Information about the website's promotional services.

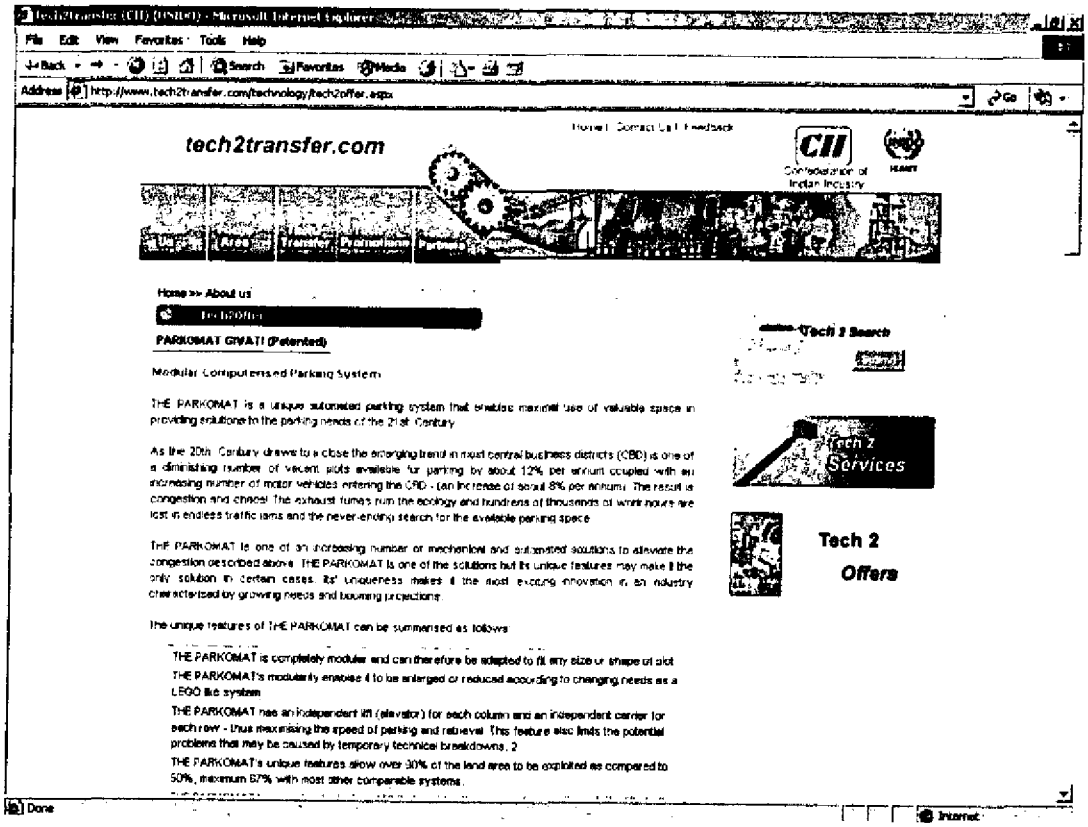
4) Tech2 Articles:

Information about the technology related articles posted or written by members.



5) Tech2 Offers:

This section has information about the latest technology.

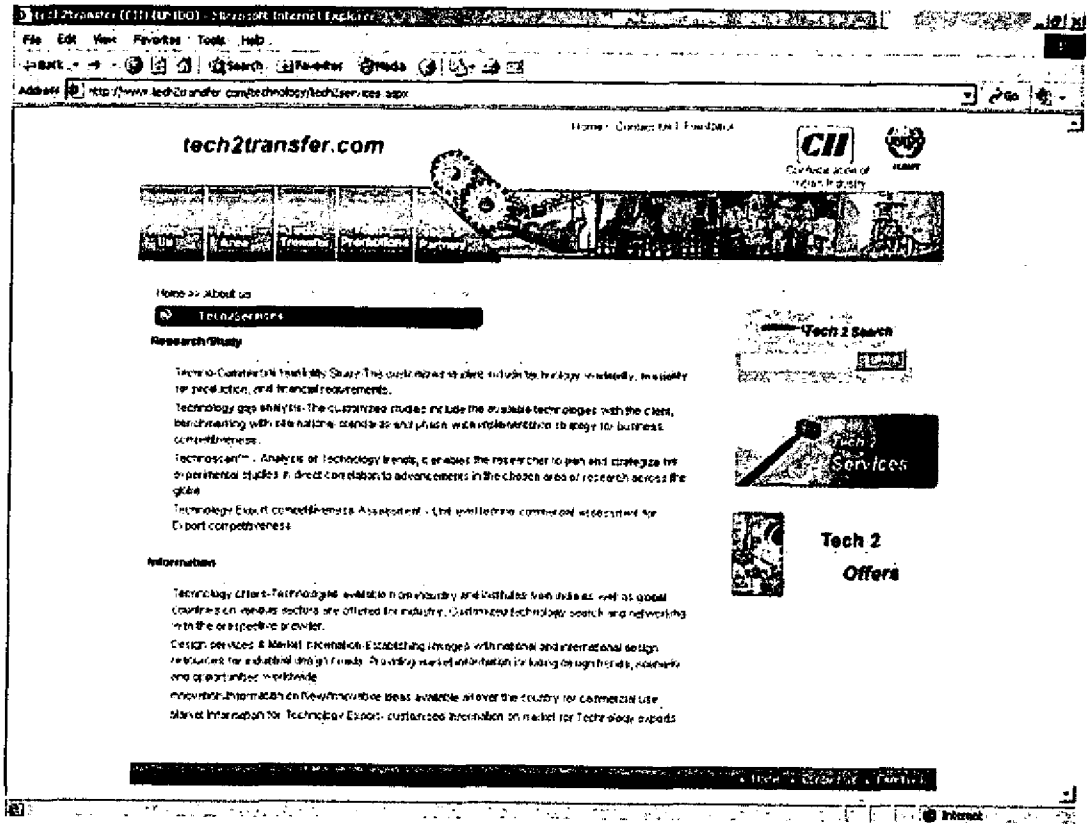


6) Tech2 Search:

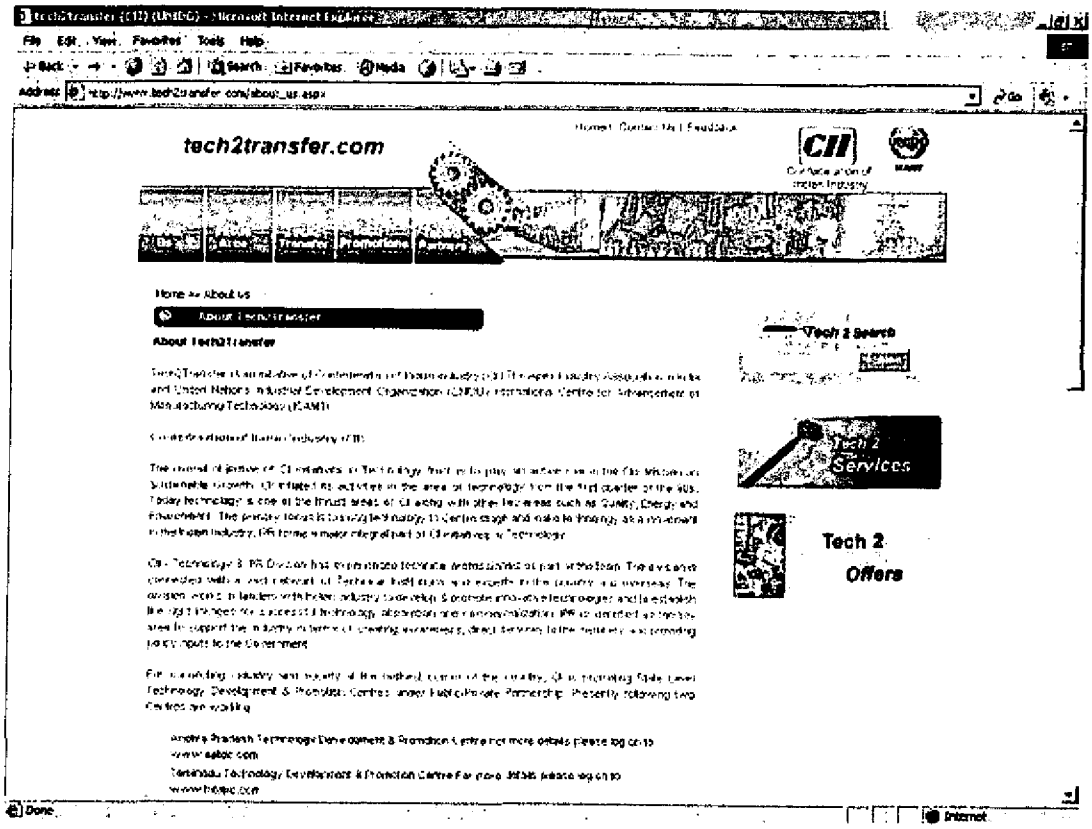
Through this search user can search technology as well as all the information related to this web site.

7) Tech2 Service:

This section has brief detail of services provided by the tech2transfer website.

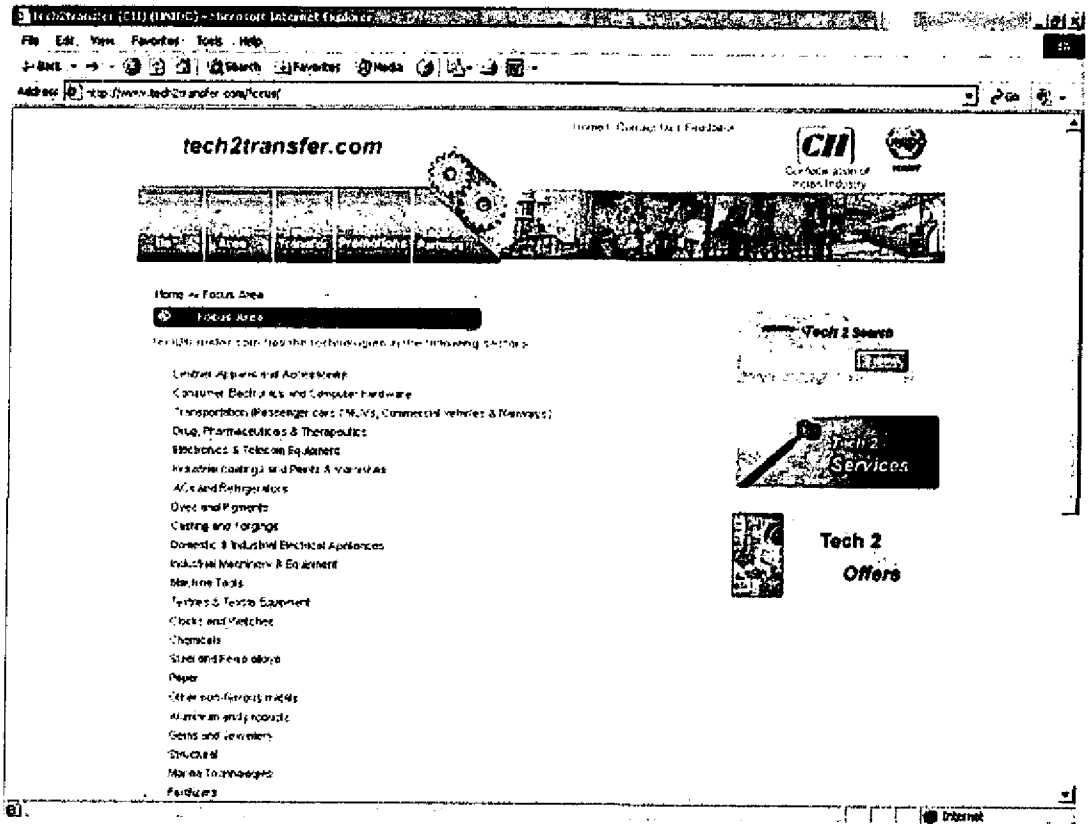


(II.) About us



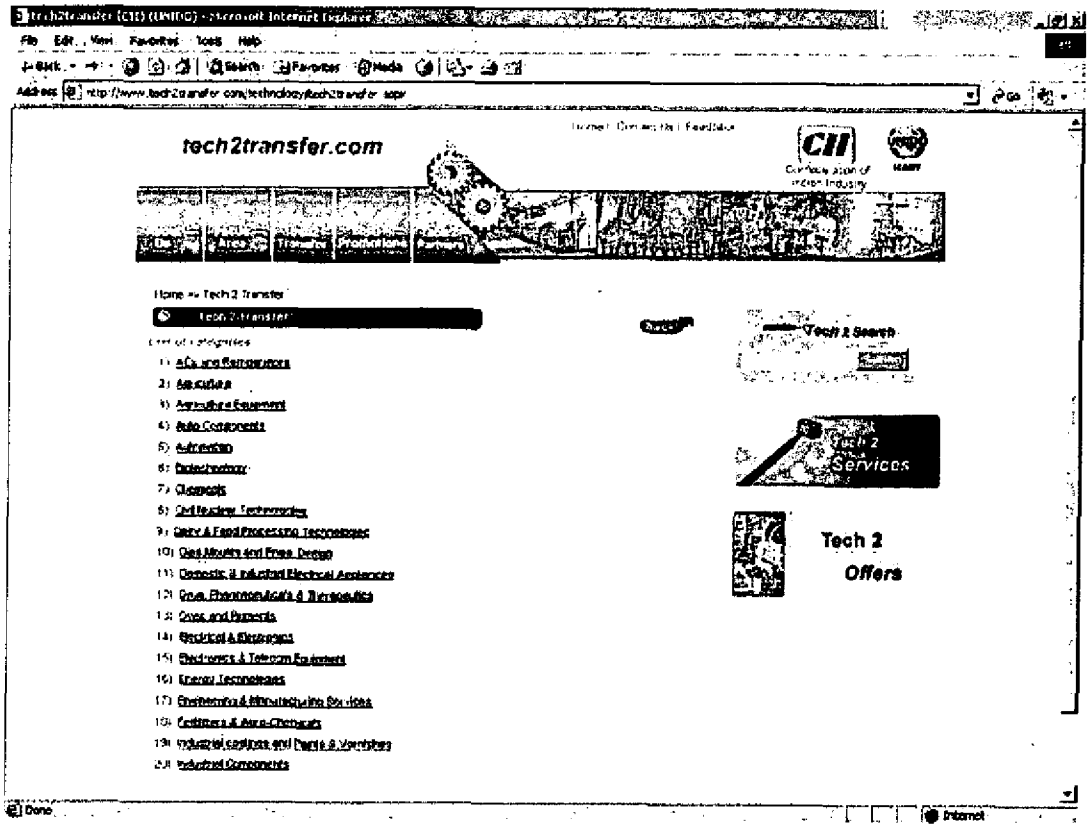
This section has brief information about the tech2transfer, about Confederation of Indian Industry (CII), about the International Centre for Advanced Manufacturing (ICAMT).

(III.) FOCUS AREA



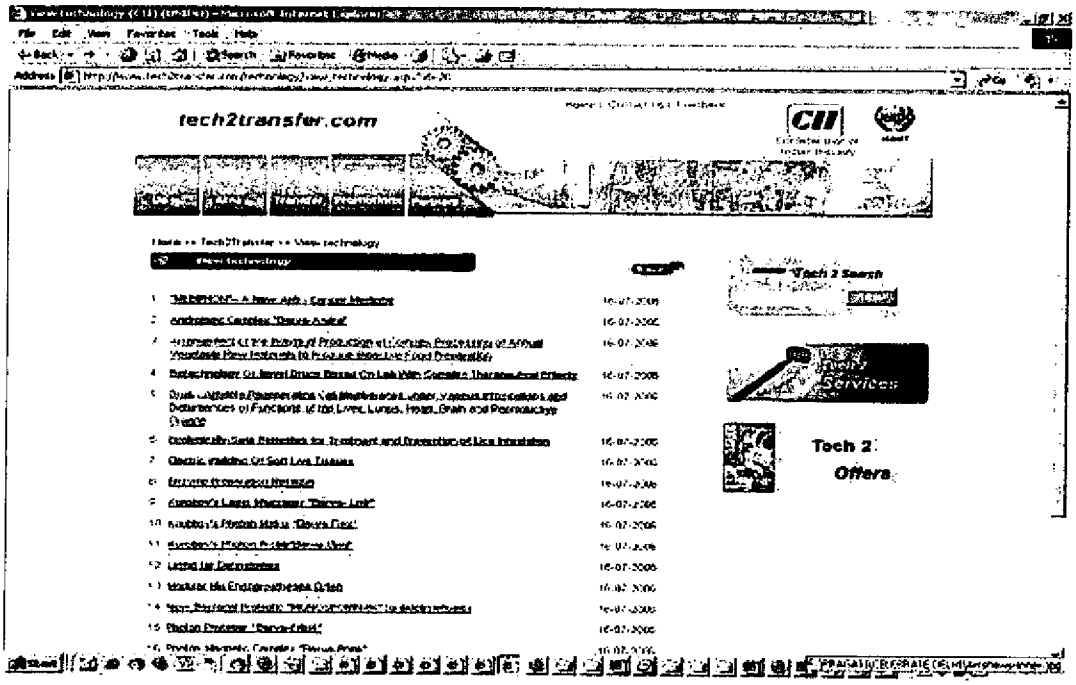
This section is focusing on technologies.

(IV) TECH2 TRANSFER

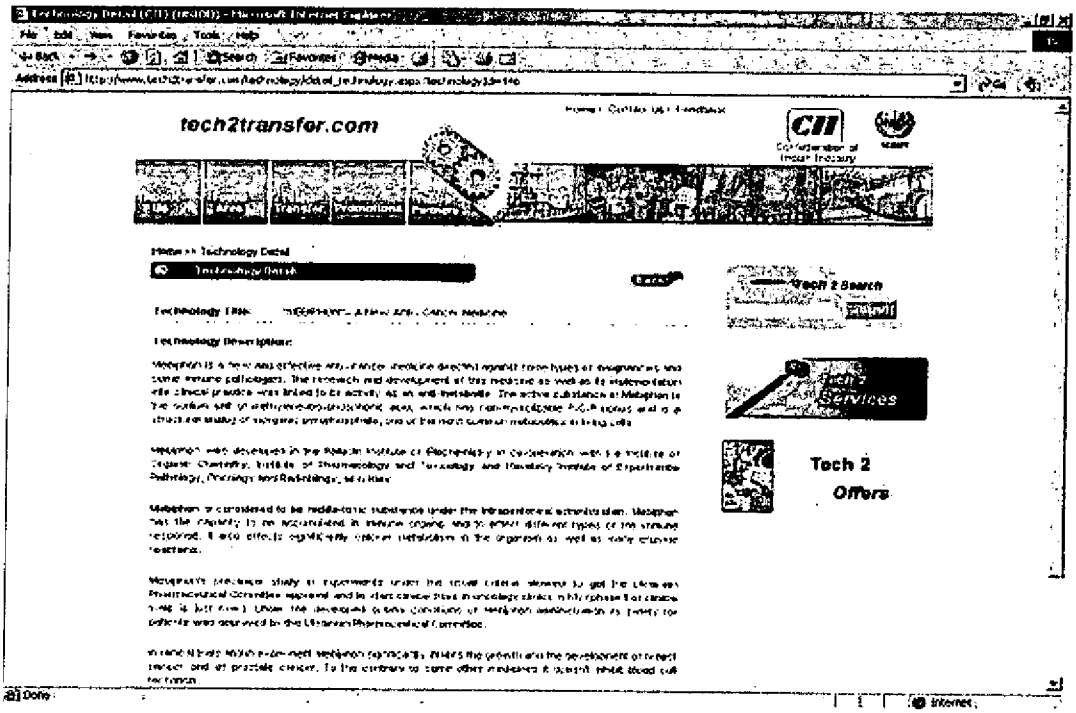


This section has a list of the categories provided by the tech2transfer.com website. It also has details of the number of the technologies related to that particular category mentioned on list of categories and it also has brief description of that particular technology.

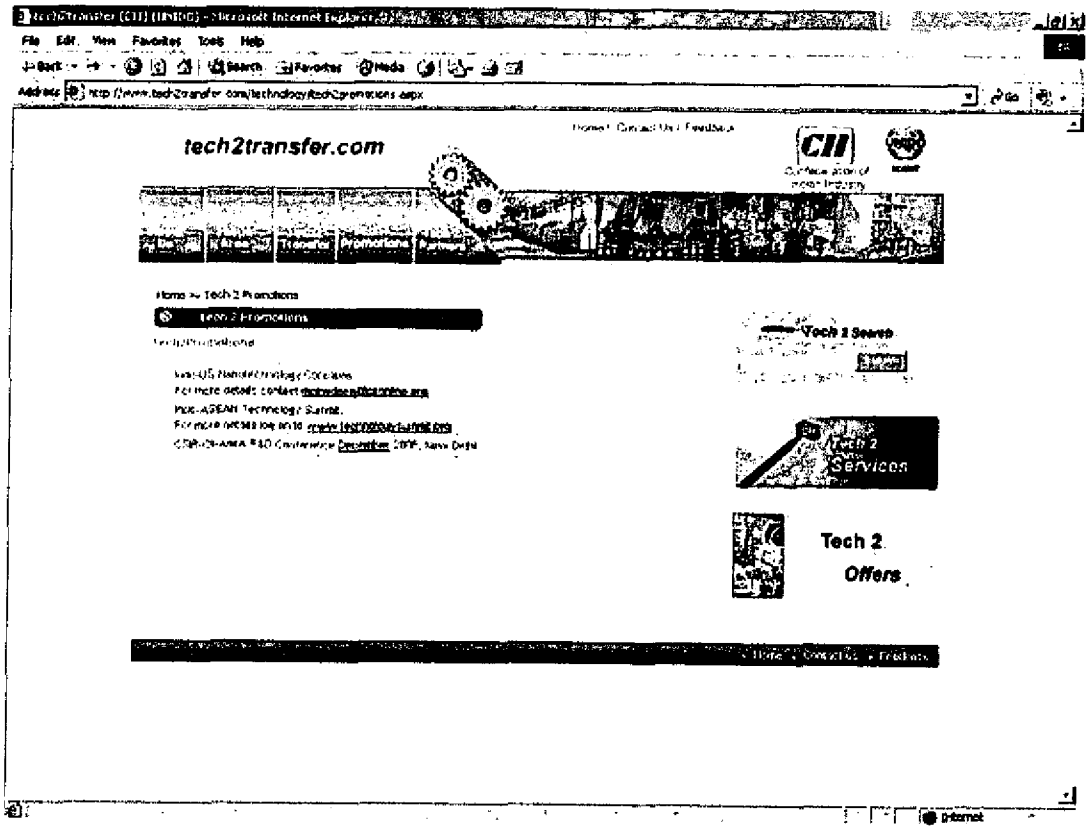
(IV-a.) View Technology



(IV-b.) Technology Details

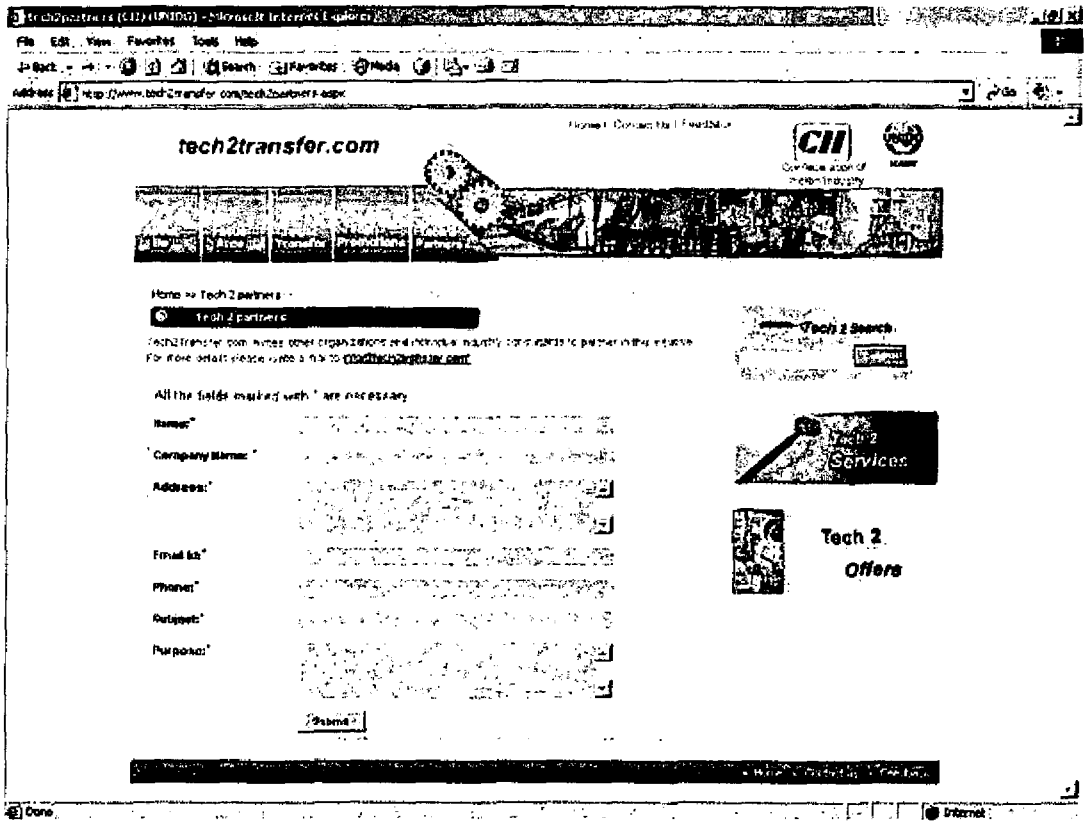


(V) TECH2 PROMOTION



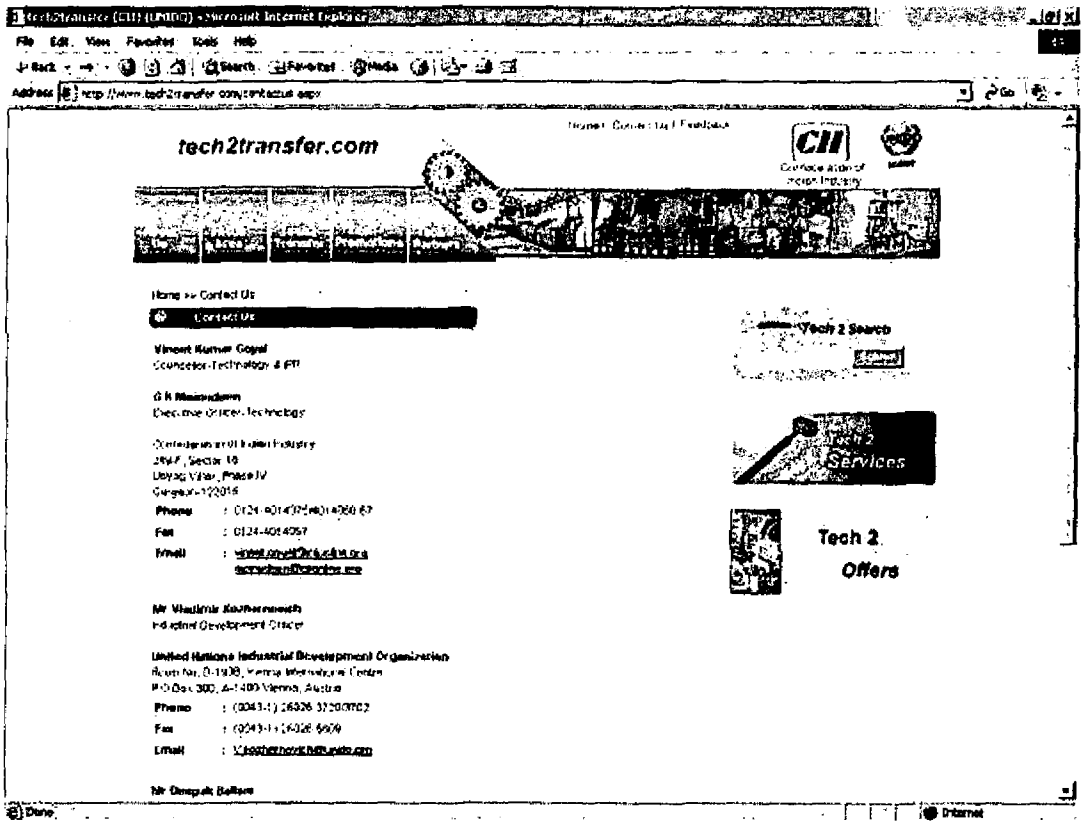
Details of Technology promotion.

(VI) TECH2 PARTNERS



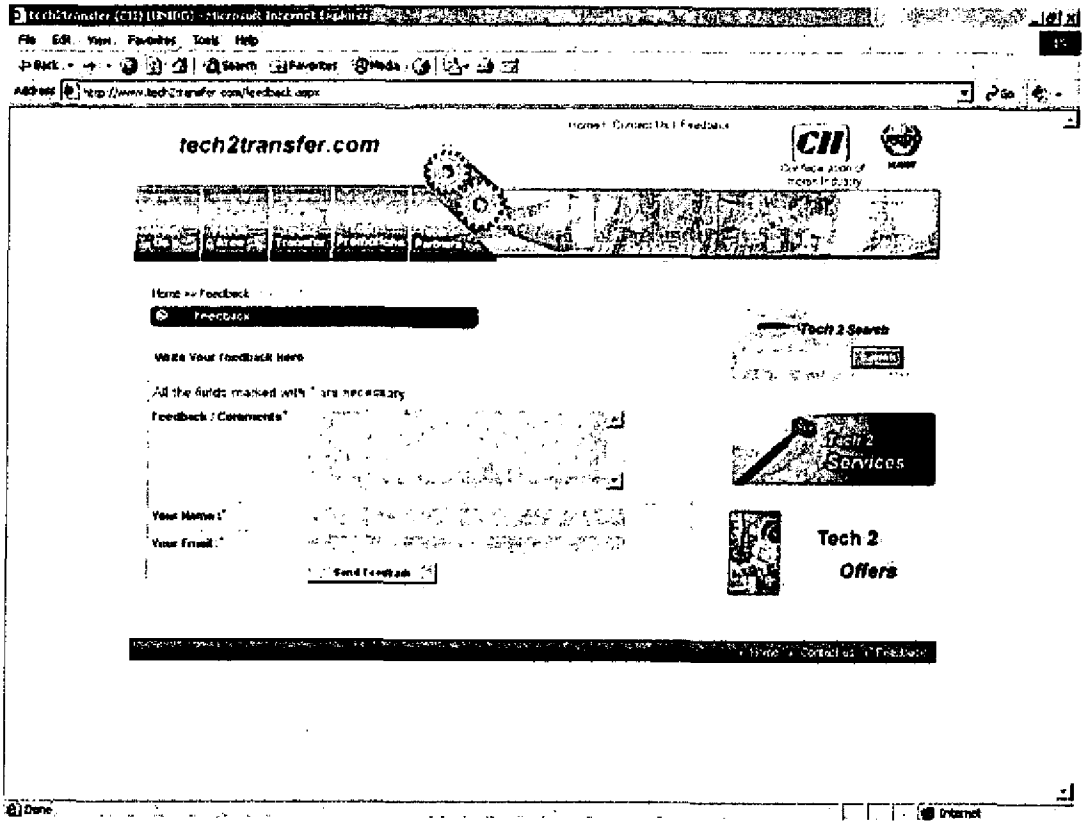
This section is offering the user for participation on tech2transfer by submitting the details online.

(VII) CONTACT US



This section gives the contact details to the user.

(VIII) FEEDBACK



This section gives the facility to post your feedback or comment on line by submitting the form.

List of existing technologies

The technologies presented in the website are given in Annexure I.

Promotional activities organized

The portal is promoted in the following events organized by CII.

1. **First TEDO-IIFT Lecture Series on The Right Exports Strategy for Young Technology Companies.**

   12th July 2006: 1600-1740 Hrs: IIFT Qutab Institutional Area, New Delhi

   The lecture series provides a platform to the successful export entrepreneurs for sharing their success stories with the participants. The interaction following the lecture presents an opportunity to the participants for introspection, fine-tuning their strategies and identification of newer markets.

   The issues addressed are as follows:

   1. How to grow from scratch to a multi million dollar company?
   2. How to overcome technology and marketing hurdles?
   3. How to build confidence and retain clients?
   4. What are the challenges facing the industry, presently?
   5. Strategies to counter the challenges facing the industry?
   6. Strategies for expanding operations overseas.

2. **First workshop on Technology Up gradation and Export enhancement Programme in Bangalore**

   The selected companies within the TEDO Project - Technology Up-gradation & Export Enhancement Programme, would be assisted to upgrade to the required technologies, equipment & Quality certification to meet stringent needs of the International customers. Appropriate guidance will be provided to set up an effective Exports organization, support structure as well as evolve a comprehensive Export Strategy & implement the same effectively.

   DSIR, CII & UNIDO – apart from their own participation, guidance & support – have also engaged well-known Industry Experts to spearhead this prestigious programme.

   First workshop on Technology Up gradation and Export Enhancement Programme organized in Bangalore in Confederation of Indian Industry ON 4th February 2006.

   15 Tooling Industries from Bangalore and Chennai belt attended the workshop. Workshop started with TEDO Presentation, Mr. Vineet Kumar Goyal

made presentation on TEDO project. He focused on TEDO services to Small and Medium companies to promote their services in global market. And also he focused on TEDO Services to Young inventors.

Mr. Pradip Nadkarni made presentation on two modules one is Technology Up gradation and another one is Export Enhancement where TEDO is going to focus on.

In Technology up gradation Module he focused on Objective, Proposed Schedule, Questionnaire, Reconnaissance Visits, Data collection, Analysis, Perspective Plan and Proposed Strategy. In Export Enhancement Strategy Module he focused on Sourcing Trends, Indian Market Status, Export Strategies, Organizational Development Strategy Product Strategy Customer Strategy, Market strategy Service/Infrastructure Support Strategy, Pricing Strategy, Manufacturing /Engineering strategy and Gearing up for globalization.

Members appreciated TEDO initiative for technology up gradation and Export Enhancement Strategy to build export competitiveness in manufacturing and business operation in small and medium companies in tooling industry.

Out of 15 members participation 5 members are already TEDO members, Rest 10 members expressed their interest to become TEDO members and their participation in Technology up gradation and Export Enhancement programme.

Recommendations

- The technologies have to be promoted in a larger scale through events, fliers, brochures and link through other websites.
- The need of the industry has to be understood through various means and the technologies have to be networked accordingly.
- The networking range has to be expanded to further to more areas and countries.
- An initial round of validation of technology with respect to usefulness and usability is required.
- A handholding mechanism has to be formulated to help SMEs to absorb the technologies into their production systems.

Follow up activities

- The website will be promoted in the technology events of CII through brochures and fliers to attract industry and institutes.
- The networking range will be expanded to further accumulate technologies through the international cooperations of CII.
- A sample of technologies will be selected and validated by experts. This would be then made into profiles and promoted among industry.
- A survey will be organized through the events of CII to understand the technology needs of the industry.

Technology Information and Trade Portal

tech2transfer.com

Project Completion Report

Annexure-I

Submitted to:

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CONTENTS

1. KARPENKO PHYSICO-MECHANICAL INSTITUTE

1.1. EQUIPMENT AND TECHNOLOGY OF SEARCHING CORROSIVE DAMAGES. INFORMATION MEASURING SYSTEM FOR OBSERVATION OF UNDERGROUND PIPELINES

Apparatus set BIT-KVP, generators of signals GS and portable devices: ORT+V, VO%,VP-2.

Looking up of a place and depth of an occurrence of buried pipe lines, cables. Operative testing of insulating covers and electrochemical protection, discovery of pipeline corrosion places without their uncover for damages prevention.

Method of electromagnetic non-contact currents measuring with rational use of contact electric measurements for definition of corrosion protection parameters of buried pipe lines.

Areas of **Application**: Pipelines for oil & gaz transportation – offer for main pipelines of India on route: Digboy-I lavakhaly Darjiling-Barauny-Allakhabad-Kanpur; Mitkhapur-Akhmadabad testing of corrosion protection.

1.2. ULTRASONIC COPUTERIZED TOMOGRAPH SYSTEM FOR MATERIAL CHARACTERISATION UST-2000

Intended for determination by nondestructive testing (NDT) methods of the spatial distribution of the material acoustic characteristics: spread velocities and attenuation of the longitudinal, transverse and surface ultrasonic waves and for determination on this base of the spatial distribution of the material mechanical properties: elastic (elasticity modulus), strength (strength modulus), technological (hardness), structural (grain size, intercrystaline corrosion) characteristics of material and parameters of the material stress-deformed state (stresses tenzor, tenzor invariants) in thick-walled sheet products. Also, may be used for reconstruction of the spatial distribution of the weak contrast defects in product volume and determination of it's form, size and orientation.

Technical characteristics: NDT method: ultrasonic (US). Multi-frequency sounding by longitudinal (L), transverse (T) and surface (S) US waves. Shadow-and echo-methods of data collection. Measured parameters of US waves: spread time (relative measuring error less than 10^{-4}%) and amplitude. Signal processing 2D- and 3D- computerized tomography at beam scheme of data collection. Reconstructed images: orthographic (averaged on thickness); tomographic (sections of asbitrary orientations.)

Developed facilities and algorithms permit to reconstruct the spatial distributions of weak contrast inhomogeneties caused by structure and stress changes.

Possible applications: fundamental material researches; material NDT of atomic energetic facilities, products of rocket space technique, shipbuilding, chemical plant, oil-and gas-main lines; coatings adhesive strength NDT.

1.3. THE METHODS, AUTOMATIZED COMPUTER SYSTEM AND MICROPROCESSOR DEVICES FOR RADIOWAVE DIAGNOSTICS OF MULTILAYERS MATERIALS

A microwave electromagnetic method at UHF waves diapason is one of the effective methods of composite multi-layer dielectric materials non-destructive testing. It allows to carry out both contact and non-contact testing: possess high resolution ability and variation and the stratification: has an one-sided control possibility; provides apparatus compactness and ecological safety.

On the base of theoretical and experimental researches, carried out at PhMI NASU, the devices has been developed, which allows to accomplish the following non-destructive testing problems:

- detection of ply-separation and glue-peeling of multi-layer composite materials;
- monitoring of protective dielectric covers adhesion to conducting and dielectric bases;
- the diagnostics of corrosive defects under the protective coatings;
- the thickness measuring and structure detection of multi-layer dielectries.

The developed apparatus and methods may be applied in different industries: non-destructive testing of composite materials and constructions for aerospace industry (radar domes), engineering, shipbuilding, chemical, building industries; the monitoring of protective films adhesion and corrosion under optically opaque covers is actual for oil and gas pipe lines, terminals, port buildings.

1.4. EDDY-CURRENT CONTROL DEVICE

The developed device can be used in different industry applications: the control of metal wares and constructions for aircraft, rocket and machine-building industry.

The Advantages of the developed device over the existing ones are: *Simultaneous* measuring of several parameters of the controlled object (CO); *The application of a software* for the ECT's outgoing signal processing provides a possibility to realize in the same device the modes of defect detection and CO's parameters measuring and, as a consequence, reduces the quantity of devices necessary for a CO's complex control (defect detection, control of the surface and sub-surface-cracks, pores-defects and measuring of CO's electromagnetic and geometrical parameters) and, as a consequence, decreases the economical expenses on complementing the inventory of the necessary devices for the eddy-current control

1.5. INFORMATION TECHNOLOGIES OF SPECKLE METROLOGY AND OPTICAL-DIGITAL IMAGE/SIGNAL PROCESSING

The optical-digital device for identification of credit cards containing optical marks s transformed phase masks for optical protection of valuable papers and documents from counterfeiting.

The optical-digital spectrophotometer for express-analysis of biologically active substances in spectral bandwidth 340....800nm.

The methods and systems of digital and optical speckle correlation for investigation of material stains and stresses including study of constructive material fracture dynamics.

1.6. COATINGS AND EXPENDITURE MATERIALS FOR PROTECTION AND RESTORING OF THE MACHINE UNITS AND THEIR TERMS OF EZPLOITATION PROLONGING

The new technology, equipment, and expenditure materials for the electric are sprayed coatings obtaining for the mechanisms and structures resource prolonging are presented here. Protecting coatings are intended for the structures protection from the wet and external corrosion and gas abrasive worn out. The expenditure materials are: the original powder wire and aluminum and zinc wires. The terms of protection are about 25 years. The restored coatings are intended for the couples of friction worn out restoring (necks of he smooth shafts and crank shafts, rods and plungers) and restoring of bearings and other units sets. The restored units resource are like a new one.

1.7. TECHNOLOGY OF SURFACE HARDENING OF TITANIUM ALLOYS IN CONTROLLED NITROGEN-CONTAINING MEDIA

assignment. The technology is intended for tribological properties improvement of pairs of friction from titanium alloys, which work with contact load up to 10MPa, including in conditions of corrosion media activity.

Essence of technology: It is based on diffusion saturation of surface layers of metal by nitrogen from controllable gas medium. It allows to form the necessary structural and phase state in near surface layers due to the change of intensity of physico-chemical processes on the gas-metal boundary.

It provides the high durability and corrosion resistance due to the formation of complex hardening zones by depth 100.....200 micron with superficial hardness 7-14 GPa.

Advantages before existing methods: in comparison with existing methods of thermo diffusion saturation the offered technology: Provides intensification of thermodiffusional processes at all stages of a work cycle, that allows to lower temperature of saturation; Provides the safety of structure and strength characteristics, plasticity, high quality of wares surface; Allows to process details of any configuration including with apertures; of Technological operation can be used as finishing; Is simple in realization; Ecological pure.

The realization of technology requires (demands): The vacuum thermal equipment ($T \leq 1000\ ^0C$, $P \leq 1.10^{-3}$ Pa); Nitrogen of high cleanness ($P_{O?} \leq 1.10^{-2}$ Pa); Devices for dosage and control of technological environment; For application in industrial conditions the adaptation to particular equipment is required.

The technology is protected by 3 copyright certificates.

1.8. TECHNOLOGY OF MECHANICAL-PULSE TREATMENT OF METAL PRODUCT

The technology uses the energy of high-speed friction. In the friction contact zone of the treated element and a special hardening instrument, the surface layers of the element are intensively heated with rates from 10^5 to 10^6 K/sec accompanied by simultaneous plastic deformation and rapid cooling. Such conditions allow saturating the near surface layers with different alloying elements. Thickness of the hardened layer is from 100 to 800 nm, micro-hardeners- from 8 to 14 GPa, hardened surface roughness R_a=0.4....1.6 um.

2. SCIENTIFIC & TECHNOLOGICAL CORPORATION" INSTITUTE FOR SINGLE CRYSTALS", NAS OF UKRAINE

2.1. MODEL OF "OFCT-I" GAMMA-CHAMBER

Emission computer tomographs are meant for carly-stage diagnostics of oncological, cardio-vascular and other diseases as well as of functional disturbances in vital activity of human interior organs and physiological systems.

2.2. OPTICAL SAPPHIRE WINDOWS AND SUBSTRATES

Used in modern devices meant for operation under extreme conditions as output windows o technological laser, insulating substrates etc.

2.3. PLASTIC SCINTILLATOR BASED ON POLYSTYRENE

Used for registration of ionizing radiation:
in high-energy physics;
for prevention of acts nuclear terrorism;
for radiation monitoring of environment;
radiation control of food, water etc.

2.4. LUMINESCENT MATERIALS, DYES AND FILM (SAMPLES ON STAND)

Meant for painting artificial fabrics and for household use.

2.5. OXIDE SCINTILLATION CRYSTAL AND THEIR APPLICATION

OXIDE SCINTILLATION CRYSTALS, THEIR PARAMETERS; SCINTILLATION DETECTORS AND RADIATION CONTROL APPARATUSES BASED ON THEM.

3. PHYSICAL AND CHEMICAL INSTITUTE OF THE ENVIRONMENT AND HUMAN'S PROTECTION

3.1.- 3.2.-3.3. RESPIRATOR NAME:

DUST-PROTECTIVE, guarding respiratory organs from acrodispersed particles of different origin (dust, fume, and mist) including radioactive ones;

1. "Snezhok P"
   (TU 40 USSR 2071094-1-19).
2. "Acacia PM"
   (TU U 400-01530125.006-2001)
3. "Klen P"
   (TU U 33.1-01530125.007-2002).

3.4.-3.5 RESPIRATOR NAME

GAS-PROTECTIVE, guarding respiratory organs from toxic gases (HF, SiF_4, SO_2, NO_xNH_3, H_2S, PH_3, P_2O_5, and O_3), and organic compounds vapors.

1. "Klen G-A"
   (TU U 33.1-01530125.007-2002).
2. "Odysseus"

3.6.-3.7.-3.8.-3.9. RESPIRATOR NAME

Dust-and –gas protective, guarding respiratory organs from acrodispersed particles of different origin, from toxic gases, and from organic-compound and acids vapors.

1. "Snezhok GP-A"
   (TU 40 USSR 2071094-1-1-90)
2. "Senezhok FGP-V"
   (TU 40 U Kraine 01530126-003-93)
3. "Acacia GP-A"
   (TU U 40-01530125.06-2001)
4. "Klen G-A"
   (TU U 33.1-01530125.007-2002)

4. NATIONAL SCIENCE CENTER "KHARKOV INSTITUTE OF PHYSICS AND TECHNOLOGY"

4.1. GLOW-DISCHARGE OZONE GENERATORS

The glow discharge is an innovative advance in plasma physics and chemistry.

The ozone generator makes use of a high-efficiency atmospheric-pressure glow discharge plasma-chemical reactor with a high-rate gas-flow motion. The glow-discharge ozone generator offer the best way to ozonizers, because they are economical, inexpensive, have a low gas-dynamic resistance, are electric breakdown-resistant, and are simple in the manufacture.

Main fields of application of OZON-10 ozonizer:

Disinfection of:

- air in living quarters, hospitals, prophylactic centres, production areas;
- clothes, plates and dishes, articles of personal use;
- seed grain and sowing seeds against phytopathogenic microflora;
- agricultural produce against pests of stocks;
- animal carcasses, fish produce, fruits and vegetables; disinfections of grain produce against mould, eggs against salmonellosis.

Sterilization of:

- medical equipment and instruments;
- air in operating-rooms.

Deodorization and purification:

- to eliminate unpleasant smells;
- to purify the air for those suffering from allergy;
- to purify the air in textile-manufacture and chemical-production areas;

Growth stimulation:

- the ozonized feed leads to a higher increment of young animals;
- ozonizing of eggs increases the birth-rate and viability of chickens;
- ozonizing of seeds enhances their germinating power.

Characteristics of OZON-10 ozone generator:

weight, kg		6
overall dimensions, mm		170x260x430
productivity, g O_3 per hour	upto	10
power supply		220 V, 50 Hz
consumption of energy, wt up to		120

4.2 NUCLEAR RADIATION DETECTORS BASED ON CADMIUM TELLURIDE (CDTE), CADMIUM-ZINC TELLURIDE (CDZNTE) SEMICONDUCTORS

Detector advantages:
High efficiency in detection of X-rays and gamma radiation
No need for liquid nitrogen cooling
High energy resolution
High radiation resistance
Low operating voltage
Fields of application:
Nuclear power
dosimetry and monitoring of NPP territory;
analysis of isotopic composition of fuel elements;
control of vacuum tightness of fuel elements.
Ecology
environmental monitoring;
aerospace reconnaissance.
Medicine
computerized tomography;
bone density measurements;
cardioangiography.
Industry
determination of liquid level;
determination of coating thickness;
non-destructive control of structural defects.
Geology
Scientific research.

The detectors are intended for direct transformation of nuclear radiation energy into the electric signal. They are used in various small-sized devices for dosimetry of gamma-alpha- and beta-radiations, and also for gamma-ray/alpha-particle spectrometry.

The detectors are characterized by a high efficiency in detection of X-rays and gamma radiation (2mm thick CdTe compares with 10mm thick Ge in absorption), by a low bias field strength (10 to 100 V/mm).

The detectors have the following features: hermetical sealing; the possibility to install the beryllium window; a high counting rate; the possibility to detect charged particles; the possibility of usage at temperature oscillations, impacts, vibrations and in magnetic fields.

The CdTe (CdZnTe) detectors of type TX201 AP are manufactured to fit specifications U 22651643.001-99, registered by Gosstandart of Ukraine. The detectors are certified.

The detectors are the base for: threshold dose indicators, emergency gamma relays, radionuclide-analyzing spectrometers, small-sized radiometers-dosimeters, linear matrices to scan objects in gamma-tomography, quick counters for position tomography, technological devices to determine the pulp density. The devices and instruments devised are noted for their small size, light weight and a low power consumption.

The devices are developed and manufactured to fit the customer's specifications.

4.3. MICRO HYDROPOWER PLANT

Synopsis: Micro hydropower plant is an autonomous energetic installation for transformation of potential energy of water to electric power. An application in the design of Micro HPP some of high technology elaborations of NSC KIPT and utilization the hydro turbine high-coercive magnets, makes it possible to decrease unit's weight by several times and increase the specific power.

Micro HPP can be used in any place where there are the sufficient pressure and quantity of water (small mountain river, waterfall and so on). Farms and small enterprises can use this Micro HPP if it will be economically profitable comparing with common electrical networks.

Micro HPP is easily settled on working place without utilization of complicated engineering constructions.

Kit of Micro HPP consists from: 1. Main block (turbine combined with the generator), tube of water transport and drain diffuser; 2) Power regulator.

Advantages: The designed installation has the weight – 60 kg and following measures – 360x350x450 mm. Estimation of self repayment is 15-16 months.

Areas of Application: *Electrical Energetics.*

Development status: Working Micro HPP is constructed. The 3 months test was fulfilled, Micro HPP was installed on Pecheneg reservoir (Kharkiv region, Ukraine). Design documentation is available.

Technology Transfer Form Offered: Improving up to industrial sample level and organization of production in series.

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Advantages: The designed installation has the weight – 60 kg and following measures – 360x350x450 mm. Estimation of self repayment is 15-16 months.

Areas of Application: *Electrical Energetics.*

Development status: Working Micro HPP is constructed. The 3 month test was fulfilled; Micro HPP was installed on pecheneg reservoir (Kharkiv region, Ukraine). Design documentation is available.

Technology Transfer Form Offered: Improving up to industrial sample level and organization of production in series.

5. NEKRASOV IRON & STEEL INSTITUTE

5.1. ROLLING BAR PRODUCTION BASED ON MORE COMPLETE USING OF THE ROLL PULLS FRICTION FORCES RESERVE

1. The effective technology of steel bar continuous rolling using non-driven working stands.

The technology stipulated additional deformation of metal rolled with non – driven working rolls placed between the driven stands. Metal deformation with non-driven rolls carried out owing to more full use of the friction forces reserve in the deformation zone of driven stands.

Application of non-driven stands in the line of continuous light-section rolling mill ensure the following:

- Diminution on 3...8% of the operation expenses due to increasing efficiency of rolling process;
- Possibility of expansion the production assortment and increase of technological flexibility of the rolling mill due to increasing on 20...30% its possibility of the metal being rolled elongation;

Lowering the on 5...10% of the capital expenses on reconstruction or creation of the new rolling mills due to reduction of driven working stands number and shortening the dimensions of working line of the mill, so as simplification of stand mine drive circuit.

2. Technology of dual rolling with longitudinal dividing the rolled product in line of the mill.

The new technical decisions will ensure the following:

- Expansion of size assortment of the mill rolled stock and increase on 3...5% of mill productivity by reduction of idle times;
- Increase on 10...15% of stability of grooves of the rolls, appropriate reductions of both the rolls charge and quantity of rolls change;
- Guaranteed resistance of dividing devices up to 3000 tons of rolled steel (maximal – 6000 tons), that is 2... 5 times higher than resistance of known analogues (i.e., dividing cartridges of firm ASHLOW);
- Increase of accuracy of longitudinal dividing and improvement the quality of cut.

5.2 TECHNOLOGY AND EQUIPMENT FOR MOLTEN PIG-IRON DESULPHURIZATION IN LADLE BY INJECTION OF GRANULAR MAGNESIUM

The process consists of molten metal treatment in ladles with pure granulated magnesium which is injected into metal through an immersed lance in a stream of a carrier gas.

Realization of technology for treatment of iron before converter ensure minimum expense for desulphurization and let to obtain of any low percentage of sulfur in iron (right down to 0,001...0,002%).

Cost price of iron treatment with I&SI technology in comparison with used in USA and Germany technologies is lower by US $ 1,0...1,5 per ton of steel.

5.3. THE TECHNOGEN WASTES BRIQUETTING (barbecuing)

The purpose of process is agglomeration of waste materials for recycling

Materials to be used in briquetting: sintering slims, iron-making slims, arerolling-mill scale, slag's slims, BF top dust, fine coke, manganese-containing tailings and slims, coal slurry and coal dust, pig iron or steel shavings (chips), refractory materials, farming and food production wastes, etc.

Final product: water-resistant briquettes 10cm^3 up to 60 cm^3 volume, sizes range: (mm) 35x30x18, 40x35x20, 46x40x22. Weight and strength characteristics – are variable in dependence upon material used and client's requirements.

Technology features: preparation of raw material and blinding additives for briquetting process, proportioning, mixing, pressing in briquettes, screening and heat treatment the briquettes.

5.4. TECHNOLOGY OF METAL MELTING WITH USE THE LOW-VOLTAGE LOW-POWER ELECTRIC POTENTIAL

Essence of the technology consist in using of electric field as an initiator (catalyst) of bath inside processes that proceeds during a blowing. The ion structure of both liquid metal and slag and them high electric conduction let purposeful to control of exchange, thermal, and hydrodynamic processes with increase their efficiency, depth of permeation, promote of material and power resources economy.

The energy effect reveal itself in the bath enthalpy increase, which leads to the increase metal temperature at the outlet (by 30 to 90 degrees centigrade in laboratory converters and by 15 to 30 degrees in industrial ones). The achieved increase of the bath temperature is 6 to 8 times higher as it could be in the case of 100% transformation of the electric power applied into heat.

The resource saved effect is revealed in the liquid steel output growth, increase of the residual concentration of manganese and decrease of the consumption of oxygen.

The environmental effect shows itself in the decrease of the dust component in the exhaust gases by 1, 5 to 3 times and in sharp decrease of the exhaust from converter.

The technological effect is observed in the increase of the rate of iron desulphurization, dephosphorization and denitration, in the declaration of filling up with metal of the blowing trunk of the tuyere and the expansion of the intervals between its substitutions for this reason (at least by 1, 5 to 2 times while processing low manganese pig iron), and also in a generally calmer melting process.

5.5 THE COMPLEX "KNOW-HOW" OF THE MANUFACTURING THE HIGH-ACCURACY PROFILE STEEL FOR PRODUCTION STEEL PISTON RINGS FOR INTERNAL COMBUSTION ENGINES

The technologies of forming, heat treatment and machining of precision steel profiles ensuring a complex of mechanical properties of a shaped rolled steel intended for manufacture of piston rings of internal combustion engines are developed in view of application in conditions of the Odessa piston rings factory (OPRF).

The chemical composition of steel are protected by the patent of Ukraine.

The technology of production of precision shaped sections (ribbon) with use of a rolling-drawing process (drawing in rotary dies) is developed like a "know-how".

The complex of the used engineering and technological decisions allows to deliver of steel piston rings with service characteristics not an inferior then characteristics of rings produced by world-famed brands and cost on 15-20% cheaper.

The piston rings delivered with new technology on OPRF are certificate by Gosstandart of Ukraine and are marked by the Diploma of the International Open Rating of Popularity both Quality of the Goods and Services "Gold fortune".

5.6. SCIENTIFIC-TECHNICAL SERVICES FOR BLAST-FURNACE PRODUCTION

Complex investigation of the burden distribution in the Blast-Furnace top, which is reconstructed with installation the cone-free charging system, by charging and before blowing-in.

Calculation, selection of parameters and regimes of the equipment operation.

Expertee and expert estimation.

Consulting services on blowing-in and running the furnace

Chose the charging system equipment regimes.

5.7. KNOW-HOW FOR HIGH-STRENGTH RAILWAY WHEELS

Developed new chemical composition of steel for wheels, microalloyed with the small additives of vanadium. After special hardened thermotreatment metal of these wheels rim posses with the high hardness indexes in combine with high figures of viscous characteristics. Such high properties enlarged wheels resource on 30% and enlarged run between regrinding and allows use them in condition of extremal low temperature. The method of the rolled railway wheels thermal hardening is protected with patent of Ukraine.

Know-how of railway wheels producing is acclimatize on Nizhnedneprovsky Tube Rolling Plant. Road testing, which confirmed the favorable combination of metal and increased resource, was carried out on route Rokovataya-Uzhgorod-Koshize (Ukraine-Slovakia).

6. VINNYTSIA NATIONAL TECHNICAL UNIVERSITY

6.1 OPTOELECTRONIC COMPLEX FOR PULSEDIAGNOSIS

1. Main characteristics, the problem to be solved

Main function are based on the photometrical transformation of the biomedical information about the state of vertebral vessels with using of the optoelectronic sensor which works in the infra – red range. This sensor fixates the rate of the microcircular and hemodynamic violation in the affected vessels by the comparing the received signals.

The complex contain optical sensor, converter for comparative analyzing and display of transformed biomedical signals. It is possibility of connection sensor by computer. Functional possibilities are widen: save of biomedical signals in files, processing (scale, filtration, comparative and correlation analysis, draw up graphics and diagrams on the screen and printer)

The complex on essential new hardware-software means permits:

- arbitrary artery pulse wave recording which makes possible diagnostics of different cardiovascular diseases;
- hemodynamics and arterial blood speed measurement whish makes possible exact diagnostics of cardiovascular disease;
- pulse frequency measurement;
- pulse arrhythmia measurement.

To estimate local microcirculation of vessels by indexes of photopletismographical signals, the optoelectronic complex for the analysis of cordial-vascular system condition is developed and reduced to clinic practice. As a result of registration of the pulse wave by optic method there has been received the photopletismograms, which are characterized by amplitude and temporal characteristics.

The optical method of microcirculation appraisal in jaw-facial region is opened. The optoelectronic complex is submitted which works in infrared area of a spectrum and registers a degree of microcirculation in jaw-facial region. The recommendations for use of the given method by the doctor given.

6.2. LASER THERAPEUTIC DEVICE "QUANTRON-LASER"

"QUANTRON-Laser"- small-sized digital two-channel therapeutic device of new generation which is used for:

- Treatment of number of diseases by means of low-intensive laser radiation of semi-conductor lasers influencing the appropriate zones (tissue, organs, nerve endings);
- The scientific-research works in the laser medicine sphere.

The fields of application and main characteristics:

- Dermatology (dermatoses, erosive-ulcerous lesions of the skin, neurodermites, herpes, etc.)
- Optorhinolaryngology (an external otitis, and inflammation of the middle car, a chronic tonsillitis, a chronic pharyngitis, a maxillary sinusitis)
- Stomatology (mucous membrane of the mouth cavity and parodontium diseases, stomatitises, alvcolitises, maxillofacial fracture)
- Neurology (lumbago, plexitises, trifacial neuralgias)
- Gynecology (a salpingitis, a bartholinitis, a cervical erosion and pseudoerosion, colitis's cervicitises and a vulva pruritus, nipple cracks, etc.)
- Urology (an acute and chronic prostatitis, an acute epididymitis, an acute and chronic pycloncphritis)
- Proctology (a hemorrhoids, anal fissures)
- Cardiovascular diseases (an ischemic disease of the heart, a hypertonic discase)
- Locomotor system diseases (an osteochondrosis deformans, epicondylitises, bursitis's tendovaginitises, a nonspecific polyarthritis, calcaneal spurs)
- General physiotherapy and reflex therapy

The device enables to do intravenous and percutaneous irradiation of blood.

6.3. TRAFFIC LIGHTS OF NEW GENERATION, DEVELOPED ON THE BASIS OF HIGH INTENSE LIGHT-EMITTING DIODE MATRRIX OF DOMESTIC MANUFACTURING

The light-emitting diode traffic lights are novelty goods, protected by more than 30 patents of Ukraine and Russia. Ukrainian scientists and specialists develop the represented traffic lights, namely:

The scientists and the specialists of the department for laser and optoclectronic equipment of Vinnytsia National Technical Univerrsity (VNTU) the head of the department is Volodymyr P. Kozhemiako, D.Sc. Engineering Professor; the enterprise "Tesis-Mikroprylad" director general, Volodymyr 1. Osinskyy, D.Sc. Engineering.

The Light-emitting diode traffic lights are designed to control the vehicular and pedestrian traffic on the crossroads as well as to control the rail transport.

Economic efficiency when applied in Vinnytsia will make up to 70000 Euro per year.

The Light-emitting diode traffic lights of new generation have such performance characteristics:

- long-term operational life – 10 years (100 000 hours)
- high efficiency, consumption capacity (10-15 watt) is one degree lower in comparison with the bulb traffic light.
- Powerful light emitting luminous intensity (540 – 700 kilojoule)
- High reliability within the wide range of temperature (from – 60 to + 60)

Following the operating conditions, the traffic lights belong to non- supervised equipment.

6.4. MICRROELECTRONIC MULTICHANNEL DEVICE FOR MEASUREMENT OF TEMPERATURE, MAGNETIC FIELD, OPTICAL RADIATION, PRESSURE, CONCENTRATION OF A GASEOUS FLUID, HUMIDITY

The microelectronic multichannel device for measurement of temperature, magnetic field, optical radiation, pressure, concentration of a gaseous fluid, humidity with a frequency output represents the new class of a <<intellectual>> measuring means the principle of which operation bases on usage of dependence of reactive properties of transistor structures with negative resistance from action of external physical quantities. The usage of this principle has allowed to receive the device on integrated technology, to boost noise immunity and speed, accuracy and sensitivity, to expand a range of measurands, to improve reliability, to get the opportunity of immediate information communication on major distances.

- The device can be used in space of engineering, chemical industry, aircraft construction, automobile and railway transportation, agriculture, medicine, monitoring of an environment.
- In comparison with existing, the device has a wide spectrum of measurement of physical quantities on the basis of one instrument, has sensitivity twice above for existing. It is produced on integrated technology and much cheaper existing.

The physical quantities such as temperature, induction of magnetic field, optical radiation, pressure, concentration of gas, humidity will be converted to a frequency signal in the auto generating device, the frequency signal is farther arrives in the microprocessor device, where is processed and transmitted to the indicator instrument as the metered value or frequency. There is also the possibility of connection to a PC through port RS232. Usage of frequency as information parameter allows to avoid application of intensifying devices and A/D converters at an information handling, that reduces the cost price of systems of wireless supervision and wireless handle.

The device is precision due to elimination of influence of the noninformation factors such as temperature and oscillation of a voltage supply. The physical quantities such as temperature, induction of magnetic field, optical radiation, pressure, concentration of gas, humidity due to a frequency principle of operation are metered with an error 40,1%.

6.5. THE SOURCES OF ELECTRONS OF HIGH-VOLTAGE GLOW DISCHARGE (SEL HVGD)

Assigning: (SEL HVGD) are used for welding, smelting, evaporation, thermochemical modification of surfaces and for putting pellicles on different materials on low pressure in the environment of inert and active gases. They can also be used as generators of active plasma in plasma-chemical reactors.

Recommended field of application. SEL HVGD can be used in fine-filmed and paraphrase technologies to get different decorative and functional covers as well as to work up the surfaces of constructional materials thermally.

Advantages: SEL HVGD have a broad range of current values, accelerating voltage values and values of working pressures of various gases, comparatively simple construction of water-cooling electrodes and gas-dynamic system. The low temperature of cathode allows to use a broad class of cheap materials (aluminum, steel, etc.), provides a long period of cathode service; stability and reliability of their work on self – cleaning allows to construct cathodes of various shapes and sizes, that corresponds to necessary power and geometrical parameters of electron pencils.

Technical-economical effect: Increase of longevity and reliability, expansion of functional potentialities, simplification of construction of the technological system and reduction of prices of the equipment comparing to sources of electrons with thermocathodes.

7. PALLADIN INSTITUTE OF BIOCHEMISTRY

7.1. "MEBIPHON" – A NEW ANTI-CANCER MEDICINE

Mebiphon is a new and effective anti –cancer medicine directed against some types of malignancies and some immune pathologies. The research and development of this medicine as well as its implementation into clinical practice was linked to its activity as an anti-metabolite. The active substance of Mebiphon is the sodium salt of methylene-bis-phosphonic acid, which has non-hydrolizable P-C-P bonds and is a structural analog of inorganic pyrophosphate, one of the most common metabolites in living cells.

Mebiphon was developed in the Palladin Institute of Biochemistry in co-operation with the Institute of Organic Chemistry, Institute of Pharmacology and Toxicology and Kavetzky Institute of Experimental Pathology, Oncology and Radiobilogy, all in Kiev.

Mebiphon is considered to be middle-toxic substance under the intraperitoneal administration. Mebiphon has the capacity to be accumulated in immune organs and to effect different types of the immune response. It also effects significantly calcium metabolism in the organism as well as many enzyme reactions.

Mebiphon's preclinical study in experiments under the usual criteria allowed to get the Ukrainian Pharmaceutical Committee approval and to start clinical trials in oncology clinics in Kiv (phase II of clinical trials is just over). Under the developed optimal conditions of Mebiphon administration its safety for patients was approved by the Ukrainian Pharmaceutical Committee.

In clinical trials and in experiment Mebiphon significantly inhibits the growth and the development of breast cancer and of prostate cancer. To the contrary to some other medicines it doesn't inhibit blood cell formation.

Mebiphon has also anti-swelling, apyrogenic and analgesic effect. Mebiphon's synthesis and usage are patented and it is a Registered Trade Name.

7.2. ADVANCED METHOD OF DIAGNOSIS OF HUMAN HOMEOSTASIS SYSTEM DISTURBANCES

Development of the quick and precise test for determining fibrinogen level in the blood plasm of people with various diseases accompanied by the lowering or rise of this protein concentration in the blood channel. Fibrinogen is the acute phase protein and its concentration sharply rises under inflammatory processes in human organism. High level of fibrinogen also prove high danger of intravascular thrombogenesis. On the other hand, under some pathologic states, e.g. DVS-syndrome one can observe considerable decrease of fibrinogen concentration in the human blood plasm to test fibrinogen level. The method sensitivity allows detecting fibrinogen in concentration range corresponding to fibrinogen level in norm and at various pathologies in humans.

Fibrin is the basic component of blood clots and thrombs. During fibrinolysis fibrin is splitted into a number of soluble fragments. Fibriin formation and its degradation in the organism proceed practically simultaneously, and D-dimer which forms under fibrin splitting by plasmin the former being stabilized by the factor XIII^a, is the most important molecular marker of these two parallel processes. Quantitative determination of D-dimer in the blood plam is very important in diagnosis of myocardial infarction, lung embolism, DVS-syndrome, oncologic diseases and other numerous diseases. We have obtained several monoclonal antibodies to D-dimer of the human fibrin and used them in creation of the test-system intended for quantitative determination of D-dimer in the blood plasm. One of them possesses unique specificity and high affinity for D-dimer without the cross reaction with fibrinogen (K_D-1.4 10^{-10}M). The method we have developed in the concentration range of 0.3-10 g/ml which is sufficient for diagnostic determination of D-dimer in the blood plasm at various human diseases.

7.3. DRUG-ANTIDOTE REGENERATING CELL MEMBERANES UNDER VARIOUS INTOXICATIONS AND DISTURBANCES OF FUNCTIONS OF THE LIVER, LUNGS, HEART, BRAIN AND REPRODUCTIVE ORGANS

The drug is obtained from tissues of marine organisms according to the development authors' technology. The natural substance base – phospholipids (75-80%), which structure includes about 40% of biologically active $_{(l)}$-3 fatty acids – eicosapentaene and doeosahexaene acids.

The proposed drug has a double therapeutic effect owing to the properties of phospholipids and $_{(l)}$-3 polynonsaturated fatty acids and may be used for the therapy of various diseases, that is: disturbances of the antioxidant system and immunological status of the organism, cardiovascular diseases, treatment of disturbances of the organism reproductive system and its renewal after irradiation, lowering of cholesterol and triglycerides level in the blood under aterosclerosis, treatment of toxical diseases of the liver, lungs and under disturbances of the surfactant system and insufficiency of hyaline membranes of the lungs.

A food concentrate, allowed for usage, has been created on the basis of "Filomek" substance for prophylactic purposes.

7.4 TECHNOLOGY OF INDUSTRIAL PRODUCTION OF VIRUS-SAFE PRROTEIN DRUGS FROM HUMAN BLOOD PLASM (COAGULATION FACTORS VIII AND IX, INTRAVASCULAR SPECIFIC AND NONSPECIFIC IMMUNOLOBULINS, THROMBIN, CERULLO-PLASMIN, ETC.)

Industrial processes of chromatographic purification of protein drugs from human blood plasm, which are mainly obtained today by alcohol fractionation and by the Conu method, have been created in the Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine. Chromatographic methods permit obtaining a new drug – coagulation factor IX, as well as a practically new drug – coagulation factor VIII from "cryoprecipitate", which is the basic home antihemophylic drug today.

Creation of the current chromatographic line will provide for a possibility of introduction of current technologies for production of the above target products and elaboration of technologies for other physiologically active protein contained in the human blood plasm.

The use of the mixed plasm fractionation technology (available alcohol fractionation according to Conu method, and current chromatographic one) will allow the personnel of the state blood-transfusion stations to pass to the current methods of production and control of drugs quality without cutting down of the staff, to decrease expenditures under stage modernization of production of virus-safe protein drugs from the human blood plasm.

8. INTERDEPARTMENTAL SCIENTIFIC AND TECHNOLOGICAL CENTER "AGROBIOTECH"

8.1 PLANT GROWTH REGULATOR EMISTIMC

High-performance plant growth regulator of a broad action spectrum-product of biotechnological cultivation of fungi-epiphytes from a root of herbs. Transparent colourless aqueous-alcoholic solution. Contains a balanced complex of phytohormones of auxin, cytokinin nature, amino acids, carbohydrates, fatty acids, trace substances. Emistim C augments a germinating energy and field germinating seed capacity, plant immunity to illnesses (brown mildew, root rots etc.) increases a crop on 10-25% and improves quality of vegetative production. Is applied on cereals, leguminous, technical, fodder, vegetable, melons, berry crops, decorative and forest trees, bushes and flowers.

Directions presentation of scientific elaboration: modern resource – saving technologies, biotechnology, high technological development of agriculture and processing industry.

8.2 PLANT GROWTH REGULATOR AGROSTIMULIN

A complex of natural growth regulators and synthetic clones of phytohormones. Transparent colourless aqueous-alcoholic solution. Increases a crop 15-20%, improves quality of production, augments plant immunity to a lodging, illnesses, stressful factors. It is recommended for application on cereals, leguminous plants, perennial legumes grasses.

8.3. PLANT GROWTH REGULATOR BETASTIMULIN

Growth regulator of sugar-beet of a world level-composition of growth regulators of a natural origin and synthetic clones of phytohormones. Transparent colourless aqueous-alcoholic solution. Improves immunity of plants to pests and illnesses. Augments a crop of root on 30-75 cwt/ha, sugariness by 0,3-1,2 %. Increases seed production of sugar-beet. Improves technological qualities of raw.

8.4. PLANT GRWOTH REGULATORS ZEASTIMULIN

Balanced composition of growth regulators of a natural origin and synthetic clones of phytohormones for the application on corn. Transparent colourless aqueous-alcoholic solution. The preparation promotes increase of a grain yield of corn on 7-10 cwt/ha, green weight on 50-70 cwt/ha, augments the contents of fats and proteins in a grain.

8.5. PLANT GROWTH REGULATOR IVIN

Trasparent colourless aqueous solution. Clone of natural phytohormones, effective growth regulator of vegetables: cucumbers, tomatoes, pepper sweet, cabbage, carrots, eggplants and industrial crops-tobacco, cotton plant, aromatic sorts of roses. Preparation decreases illnesses level of plants and foctus, promotes acceleration of ripening terms, increase a crop on 15-25%, improves quality of production, reduces content of nitrates, ions of hard metal and radionuclides.

8.6. PLANT GROWTH REGULATOR LIUTSIS

A white crystalline powder, composition of synthetic clones of phytohormones and ammonium paramolibdate. Is applied to increase of seed production and crop of green mass of an alfalfa and clover, promotes tripping of alfalfa flowers.

8.7. PLANT GRWOTH REGULATOR POTEITIN

The most effective growth regulator of a potato. Transparent colourless aqueous solution. Boosts growth and development of plants, improves immunity to diseases, promotes coarsening of leaves and stalks, reduces affectiong by the Colorado beetle and phytophthora, increases a crop, improves quality of a potatos. Preparation reduces quantity of radionuclides in production.

8.8. PLANT GRWOTH REGULATOR TREPTOLEM

The newest composition of growth regulators of a natural origin and synthetic clones phytohormones for cultivation of sunflower and rape. Transparent colorless aqueous-alcoholic solution. Augments a seed crop, contents of oil, reduces a morbidity of plants by rots, improves immunity of plants to the stressful factors.

8.9. PLANT GROWTH REGULATOR CHARKOR

A high-performance stimulator of root forming. Composition of growth regulators of a natural origin and synthetic clones of phytohormones. Transparent straw aqueous-alcoholic solution. It is recommended for acceleration of processes root forming for green and stiff sticks, and also root age of young plants of fruit, decorative trees, bushes and flowers, herbs.

9. NATIONAL ACADEMY OF SCIENCES OF UKRAINE
THE GAS INSTITUTE

9.1. TECHNOLOGY OF HIGH QUALITY IRON-BASED POWDERS PRODUCTION

There is world wide tendency of decreasing raw materials deposition and their quality. In field of steel production there may been noted very significant decreasing deposition of coal which can be source to production of coke. As result it is observed global deficit of coke. As result it is observed global deficit of coke. There is also a trend of falling quality of iron ore etc. To decide such global problems is to develop high quality cokeless metallurgy. Iron-based powder production is one among them. Republic of India has significant deposition of very pure hematite iron ore. Using fine concentrates on the basis of such ore Gas Institute of NAS of Ukraine has developed technologies of iron-based powder production especially for Indian conditions. Technology of iron powder production by reduction methods has been implemented in pilot scale in collaboration with Advanced Research Centre for Powder Metallurgy and New Materials. Corresponding non-standard equipment (reduction/annealing furnace) have been developed especially for the process and the technology is ready to be transferred into industry. Several iron-based powder grades have been produced, namely: to produce parts of low and average density, parts which are fabricated by powder rolling technique, partially alloyed powders for parts of heavy load, carbonless powder to soft magnetic application. The technologies are protected with Ukraine patents. Several Indian patents are in process of expertise.

9.2. SUBMERGED COMBUSTORS

The submerged combustors or submerged heaters are intended for preheating or vaporization of liquids, first of all-of water or various solutions containing the aggressive or scale forming substances. These apparatuses may be used in the systems of central and local hot-water preparation, in the processes of cleaning and regeneration of the industrial liquid effluents, in the washing, electroplating and pickling baths, for heating of the greenhouses and dressing of the agricultural plants. Submerged combustors application for water preparation in the swimming pools makes an appropriate utility area taking into account that preliminary permission from sanitary inspection was gotten for such purposes.

Submerged combustors represent the most effective units for low temperature heating of the liquids. Contact heat transfer process between combustion products and liquid to be treated is realized with power efficiency higher than 100% (in relation to low heat combustion value) in this apparatuses when preheated liquid temperature is less than dew point. Combustor under consideration combines at the single apparatus the functions of the thermal energy generator, of airlift pump and of liquid mixer-homogenizer. The liquid bath to be treated by combustion products performs as bubbler.

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9.3. AUTOMATIC ELECTRICAL EQUIPMENT FOR OBTAINING OF ADSORBENT FROM A NATURAL VEGETABLE FIBRE

The equipment has been designed for special thermal chemical treatment of fabric from artificial and natural fibers for the purpose to provide them with adsorption activities. The equipment includes automatic electrical furnace for activation, vapour generator, winding and uncoiling units (if necessary) gas preparation device and power supply system. A special reactive gas for activation and cooling gas are given into furnace. As raw material can be used jute fabric or other fabric. The temperature in activation workpiece range is 700-900 Celsius degrees. The produced adsorbents are fabrics of twill or knitted weaves. The capacity of the equipment is 3000 – 6000 sq. m per year. It is possible to produce tablets or other forms of the absorbent.

9.4. UNIVERSAL HUMIDITY ANALYZERS TOROS

Using the TOROS series of dew-point thermometric hygrometers is the best solution for reliable and precise measurement of moisture concentration in gases.

Combining 30 years of experience in dew-point hygrometers production and exploitation with the achievements in microcoolers production (low temperature plus high efficiency) enables to develop the **TOROS** series of high precision and reliable hygrometers. The results of 5-year operation and the State Testing of **TOROS** hygrometers have confirmed their reliability and high operating characteristics. The proprietary design and using the special measuring and cooling elements allowed to make the autonomous mobile hygrometer. Because of the explosion-proof design the hygrometer can be recommended for using in all branches of industry-from oil- and gas-refining to standard gas mixtures production.

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9.5 CONDENSATION HYGROMETER TOROS

10. ORION RESEARCH INSTITUTE

10.1. MM AND SUBBMM COMPONENTS BASED ON SILICON TECHNOLOGIES

Microwave and Millimeter wave components (oscillators, amplifiers and control devices) for development new (and upgrading current) advanced systems as portable short-range radars with high distance resolution; millimeter wave communication systems; wireless access systems; automotive radars and remote sensing equipment; contactless volume level sensors, etc.

10.2. MM AND SUBMM COMPONENTS BASED ON GAAAS TECHNOLOGIES

Microwave and Millimeterwave components (oscillators, amplifiers and control devices) for development new (and upgrading current) advanced systems as portable short-range radars with high distance resolution; millimeter wave communication systems; wireless access systems; automotive radars and remote sensing eguipment; contactless volume level sensors, etc.

10.3 HETERODYNE INTERFEROMETER, 280 GHZ

The heterodyne interferometer is intended for measurement of plasma concentration from the phase shift of the electromagnetic wave that has passed through the plasma. Operating frequency 280GHz.

11. NATIONAL AVIATION UNIVERSITY

11.1. TRAFFIC CONTROL SYSTEM

The problem of traffic control is very important for cities all over the world. Our propositions include the design of hardware and software components: center traffic control post, electronic schematic city map, computer-aided design of traffic controller's programs, different modifications of traffic controllers, detectors of motor vehicle, wireless control equipment, traffic modules, lamp switches channels extension package for traffic controller.

The given traffic control system supplies the uniform ideology, expandability of functional and hardware possibilities, advanced information technologies, the original software, author's support software, flexible control, diagnostics, modern element base (Intel, Motorola etc.)

11.2. AUTOMATED SYSTEM FOR PASSENGERS INFORMING

Speech announcements for passengers in transportation systems are being performed by announcers in accordance with quite fixed (in most cases officially approved) forms. In civil aviation, for instance, time of the flight, its number and boarding area are the only changing elements in a usual announcement for passengers. Place of destination and airline's name are naturally connected with the flight number. There are some standardized announcements describing general rules in an airport, order of registration and baggage check-in, customs regulations, services of the given airport etc. which are used for extended period of time without changing.

Implementation of abovementioned Automated Workplace (AW) in a transportation system does not disturb customary set of services provided to passengers.

It is basic amount of announced messages that is being automated.

There are several modes of system operation automatic, semi-automatic and manual.

In automatic mode, operator carries out functions of general control and can ban messages from being announced.

In semi-automatic mode, a message is composed of elements in the database and can be release for broadcast by operator.

In manual mode, messages are chosen/composed solely by operator. The number and contents of speech elements in the database determine admissible list of announcements in this mode.

Finally composed and produced by the AW announcement has naturally high sound quality.

AW was designed to provide quick, complete and quality broadcast of speech announcements in several languages in traffic information systems of airports, railway or marine terminals etc.

Modifications of this system are currently used by International Airports of Kiev (Borispol, Zhulyany), Ukraine and Tashkent, Uzbekistan, Kiev Central Railway Terminal.

11.3. ALTIMETER OF SMALL HEIGHT

The device is intended for measurement of small values of geometrical flight altitude of aircraft in a range up to 50...100 m. The principle of action of the device is based on a capacitor method of measurement of altitude. Dependence of change of electric capacity between the metal plates, which located on case aircraft, at approach them to earth surface, is used.

Essential features of the device:

With reduction of distance up to a earth surface the size of information capacity increases, the error of measurement decreases;

The static characteristic altimeter nonlinear, with reduction of altitude sensitivity increases;

Character of a spreading surface practically does not influence accuracy of measurements;

Capacitor method of measurement of altitude states an integrated estimation of altitude that allows receiving information about changes of a relief.

11.4 DIFFERENTIAL MANOMETER

The device is intended to work in a complex of the flow meter and represents meter of difference of pressures.

Essential features of the device:

Sensitive element (SE) is diaphraged unit, which manufactured all-metal with the case, that allows to exclude errors and operational complexities connected with fastening of membranes, and also to improve temperature stability of the device;

The working deflection SE is provided no more than 0,1 mm, that allows to receive good linearity;

In the device the elector capacitor differential converter with unilateral receiving of the useful information is applied, that allows to avoid constructive complexities of maintenance of contact with a mobile part of the gauge;

The measurement of capacity is carried out with the help of the transformer bridge of an alternating current with a discrete equilibration, that allows to receive the information as a binary code, the application of the transformer bridge has allowed sharply to lower errors of measurement;

The ranges of differences of pressure – from 20kPs up to 1 mPs (are specified the top limits), that is practically all line standarded of limits;

The given error of measurements – from 0,1 up to 0,5%;

Temperature of an environment - -40... +60^{0}C

Dimensions of a mechanical part – 200 x 100 x 100mm.;

Dimensions of the electronic block – 100 x 120 x 80mm;

Power consumption from a network 220 V, 50Hz – no more than 60W;

Weight of a complete set no more than 2 kg.

11.5. METER OF LINEAR MICROMOVING

The device is intended for measurement of micromovings of a control point at hot deformation of a metal sheet during electro welding.

Range of movings, which are measure - ±1.2 mm;

Error of measurements is no more than 0.003 mm.

The sensitive element of the device represents the differential capacitor converter with an open field. The measurement of movings is carried out on two coordinates alternately. The measuring circuit is constructed on the basis is established on a two-coordinate mobile platform with exact readout (±0,005 mm) displacement. In addition it allows carrying out a manual equilibration of the measuring bridge for performance of exact measurements in wider range more.

11.6. METTER OF ANGLE MOVING

The gauge is intended for measurement of angular movings of mobile details of various devices and designs, in which the high accuracy of measurement and minimal force loading on a mobile details is required.

The characteristics of the device:

range of angular moving - ± 5...90^0;

error of measuremtns – 0,3 ... 0,5%;

voltage for the measuring circuit - +2B, 10B 18,75 kHz;

dimensions of the gauge – 6 mm, diameter 25;

dimensions of the electronic block – 30x40x60 mm.

The sensitive element of the device represents the differents the differential condenser of variable capacity, the change of which size is carried out by partial overlapping of an electrical field of the condenser by a mobile plate. This plate is grounded.

The transformer bridge of an alternating current with a digital equilibration carries out the measurement of capacity, which is proportional to angular moving. The target signal is given out as a binary code.

11.7. AUTOMIZED SYSTEM OF SPECTRAL DATA PROCESSING

The new automized system of spectral data processing is proposed. A priori unknown deflections of real signals from ideal harmonic model bring to considerable falling of detecting characteristics. The proposed system is remarkable for its stability to these deflections. Using of this system show the sizeable effectiveness for processing real signals recording. Middle gain in signal-to-noise ratio is 2 dB for power (or 1,6 times).

This system may be used for detecting low-sized targets against a sea background, prevention ships collision, investigation clouds to hailing danger, disclosure carthquakes and avalanche victims, measuring speed of blood stream (in medicine), etc.

11.8 THE METHODS AND FACILITIES FOR PROVIDING FLIGHTS SAFETY AT VISUAL PILOTING STAGE

The airfield lighting system is the only source of visual information for the pilot during the take-off, approach, landing and taxiing in bed weather conditions.

The airfield lighting system consists of more than thousand lights that are situated almost on the whole airfield territory. No doubt that the flight safety level at the visual piloting stage at the adverse weather conditions strongly depends on the technical state of airfield lighting system.

To define the quality and efficiency airfield lighting system it is also necessary to have the information about the airfield lighting system reliability measures influence flight safety level in adverse weather conditions.

We would like to suggest you two scientific methodiees.

The first one – "Methodic of definition of airfield lighting systems reliability measures" makes possible to calculate the reliability measures of airfield lighting system and its subsystems of I, II and III ICAO categories.

The second methodic – "Methodic of definition of airfield lighting systems reliability measures influence flight safety level during visual piloting in adverse weather conditions" gives the possibility to asses the airfield lighting system quality and efficiency form the point of providing the requiring flight safety level.

The application of these two methodies will help you to make the right decision if you need:

- to choose the airfield lighting system for your airport with its individual peculiarities;
- to certificate the new airfield lighting system or that one which is in exploitation in your airport;
- to design the new airfield lighting system with definite reliability measures;
- to asses airfield lighting system technical stage influence flight safety level in any weather conditions;
- to compare several airfield lighting systems of different producers from the point of ratio "price – quality" in accordance to individual features of your airport.

The Device "Alpha-01" for airfield lights automatic monitoring

The Device "Alpha-01" is designed for automatic remote control of lamps in acrodrome lights in all regimes of controlled cable line.

The device "Alpha-01" is based on principle of measuring the nonelectrical quantities by means of electrical methods. The device fixed automatically the changing of several electrical parameters of cable line, connected with lamps failures, obtains this information and presents it on the display in digital form as the number of failed lamps. In the case of cable line earth connections in two or more places, the device provides also the alarm signal.

The device "OSA-3.4." is designed for forming the alarm signal in case of breaking the secondary winding of insulating transformer, which provides power supply for the light, in all cases connected with stealing the light optical system, light source, cable or their willful or non-willful destruction.

The device automatically defines the cable line, which electrical parameters are changed by the reason of destroyed cable or lights and provides alarm light and sound signal right at this moment. The device provides alarm light and sound signal in case of cable line break under the condition that cable line is open circuited.

11.9. DEVELOPMENT OF TECHNIQUE AND DEVICE FOR INCREASING RELIABILITY, EFFICIENCY AND DECREASE OF TOXITY IN EMISSIONS OF INTERNAL COMBUSTION ENGINES BY IMPROVEMENT OPERATIONAL PROPERTIES IN FUEL AND OILS

Operational reliability, the economic and ecological parameters of all types of transport depend in many respects on the fuel-lubricant materials which are used. It is known, that up to 30% of refusals and malfunctions of engines occur because of unsatisfactory operational properties of both fuel and oils.

On the basis of theretical and experimental researches the way of resonant electromagnetic influence (EMI) on a petroleum products promoting "the power store" increase of hydrocarbon liquids is developed.

Estimation of operational properties of petroleum products wascarried out by qualifying methods, testing established, that the resonant electromagnetic influence on the hydrocarbon liquids promotes improvement of anti-wearing properties in fuel on 30-50%; as well as friction coefficient on 12-16%; and reduction of a carbon formation on the head of the piston in 2-3 times and a coking capacity of motor oil on 10-15%.

The test bed of diesel cangines SMD-14A, KamAZ-740 and diesel engine of firm "Mersedes-Benz" have shown increasing in economic and ecological parameters. The reduction of a fuel consumption per hour at running idle on 4-6% and specific on 3-5% is established. Fuming reduction and contents of nitrogen oxides on 20-25% is marked.

Petrol has been influenced the contents of carbon in the fulfilled gases decreased from 0,6-0,7% up to 0,1-0,2%.

The test with dump truck BelZA-7519 110 tons capacity and bus "Icarus" 280 have shown reduction of the specific fuel on consumption 6% average. The installation of EMI is included in the engine fuel system and simultaneously clears fuel from sulphide and asphalt-resinous connections, as well as iron corrosion products etc.

Thus, the results received prove, that the application of EMI on hydrocarbon liquids provides increasing of operational parameters in the internal combusition engine used for all types of transport.

However, further research of this effect, increase of efficiency of influence, realization of the extended operational tests and development of the instrumentation of quality of a petroleum products the financial support of the subject matter is required.

The given way of EMI on liquid systems, at further development, it is possible to apply in petrochemical industry, biology and medicine.

11.10. VERY FINE PEELINGS FILTER OF THE HYDROCARBON LIQUIDS ON MOLECULAR LEVEL

The Serviceability, economic and ecological factors all type transport hang from quality applicable combustible-lubricants. It is know that before 30% refusal and trouble of the engines occurs because of unsatisfactory working characteristic fuels and oils, one of which is a purity of the hydrocarbon liquids.

On the grounds of theretical and experimental studies is designed very fine peelings filter of the hydrocarbon liquids on molecular level, which simultaneously abetting increasing "energy spare" fuels and oils.

The Spectroscopic studies show that given filtering device cleans the hydrocarbon fuel from sulphur asphalt-resin mixture, as well as from products of the ferric corrosions etc.

Tests show that using given filtering device comprised of fuel system of the engine promotes the improvement of wear-out fuel characteristic on 30-50%; the reduction of the factor of friction on 12-16%; the reduction snuff formation on a piston head in 2-3 times and coke ability of motor oil on 10-15%.

11.11. PORTABLE MEASURING INSTRUMENT OF HUMIDITY OF AIR

The measuring instrument of humidity of air represents the complete set from the gauge of humidity of air, which target parameter is the electric capacity (for example, the gauge such as HF-1100 manufactures of firm "Philips"). The device consists from the measuring converter of capacity in a digital code and a connecting cable.

The given measuring instrument is intended for the operative control of humidity of air over inhabited and industrial premises. At observance of restrictions on conditions of operation of the gauge, the measuring instrument can be used also for the control of humidity over technological equipment.

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11.13. DEVICE FOR QUICK TEST OF LIGHT OIL DISTILLATION INITIAL AND FINAL TEMPERATURES HKH-9

Device is designed fo rth equick test of distillation initial and final temperatures of a gasoline, diesel oil, jet engine fuel and other light oil in laboratories, places of combustive-lubricating materials consumption to accomplish the quality monitoring of delivered oil.

The main device assemblies located in the device case are: distillation unit, differentiation circuit and executive unit. The device operation is based on the measurement of temperature of distilled liquid vapour at the instants of the distillation beginning and end.

The advantage of this device in comparison with the similar ones, e.g. the apparatus according to GOST 2177-82 or ASTMD-86, is the essentially smaller analysis time and the measurement process automation.

Application of device HKH-9 in the places of light oil consumption will give a possibility to raise the labour productivity, while monitoring the quality of delivered combustive-lubricating materials due to decreasing the analysis duration and the measurement process automation.

It is the most efficiently to use this device on filling stations for inspection of a gasoline quality, and in the airports, for the jet engine quality monitoring, where the main cause of the fuel quality loss is its mixing with other oil types.

11.14. FRICTION WEAR TEST SYSTEM

The Friction Wear Test System is necessary for carrying out of test and researches of all elements of tribosystems (the greasing environment, surfaces of friction, secondary structures) on antiwear and antifrictional properties. The system realizes friction of unilateral sliding on linear contact in conditions of boundary greasing under the established program of axial loading with controlled both continuously recorded speeds of sliding and loading.

The Friction Wear Test System as a result of short-term laboratory researches allows:

- To determine comparative efficiency of lubricants;
- To determine tribocharacterystics of the lubricants and additives to them in view of operational conditions of their work;
- To develop new highly effective lubricants by optimization of concentration of additives of special purpose;
- To identify commodity lubricant oils on their to the basic consumer properties-antiwear and antifrictional;
- To carry out a choice of the most effective constructional materials of the tribosystem;
- To establish requirements to quality of surfaces of the tribosystem.

Such system can serve certified for definition tribological properties of lubricant and constructional materials at creation new tribosystems and identification of existing lubricant compositions on the basic properties of tribosystems-antiwear and antifrictional.

11.15. THE STAND OF PULSE AGNETIC-TURBULENT CLEARING OF BALL-BEARINGS

Unique technology of removing ferromagnetic micro-and submicroparticles, and also other pollution from working surfaces of ball bearings without disassembly, surfaces of sliding of separators, and also from other non-working surfaces. This technology allows to carry out highly effective preoperational preparation as new ball bearings before installation, and during repair. The method allows to improve essentially operational characteristics of ball bearings, namely to reduce intensity of deterioration, force of friction of rolling, noise, vibration (on 5-15 decibel depending on a standard size and a condition of surfaces). Using of such method will lead to increase a resource, serviceability and reliability of roling tribosystems. Except for direct economic benefits it is possible to expect and social-ecological effect due to decrease {reduction} in noise, vibrations and other parasitic characteristics at operation of bearings.

11.16. LASER SCANNING PROFILOGRAPH-PROFILOMETER

Advantages of used laser scanning profilograph-profilometr in comparison with existing:

- Laser scanning profilograph-profilometr, as against widely used now, is contactless, that allows to avoid destructive influence on a researched surface;
- At measurement on traditionally used devices we receive a structure of section which cannot reflect a volumetric condition of a relief of a surface that is why for reception of the full volumetric characteristic of a surface some measurements are necessary to execute, and the mre them will be made, the the characteristic of a surface In device LSPP we at once more precisely will be received a full picture of microgenometry of a surface, and if necessary we can analyze up to 512 profiles;
- On traditionally used devices average is necessary to measure, find the structures received on an electrocontact paper their arithmetic and etc., and in developed laser scanning profilograp-profilometr all operations on processing are carried out with a computer;
- On laser scanning profilograph-profilometr LSPP there is an opportunity to see a measured surface in three-dimensional, colorcode images and to process the information in a convenient kind while on old devices it is possible to imagine approximately only a relief of a surface though the main parameter of its quality – a volumetric configuration of surfaces of friction;
- Operation of scanning proceeds from 10 till 30 seconds (at modes of the maximal approximation and polinomization surfaces), that is defined by necessity of researches. The further processing proceeds seconds and, as well as operation of scanning depends on speed of a computer. On measuring mechanical devices used now time of measurement and processing-tens minutes, hours;
- Laser scanning profilographi-profilometr writes down the primary image of a surface and will wear out in a databank right after scannings which allows to carry out quickly measurement of a plenty of samples, and the further processing of results is possible at any time, using a databank.

Profilograph-profilometr is capable to provide measurement of parameters of surfaces in three-dimensional (3D) the image of their condition to within $1_{НМ}$ on height of a relief. This device allows to receive qualitatively new information which, in turn, will lead to development and creation of the newest technologies in mechanical engineering, engine manufactures and other branches of a national economy.

11.17. NEW KIND OF RADIOBEAM SECURITY SYSTEMS ELECTROMAGNETIC FENCES

Radiobeam security systems are one of the basic means of the warning of penetration of infringers around of the big protected objects. Their distinctive feature is work under any weather conditions, maintenance of security functions in conditions of day and night, at anyone mercoyenobrex and during cataclysms.

The principle of action of radiobeam security systems is based on formation between transmitting and reception blocks, their aerials of an electromagnetic field which represents the sensitive environment recording occurrence of object inside her.

Such radiobeam security gauges can be both volumetric, and extended, recording passages of the infringer through the given extended electromagnetic field. Therefore in such gauges aspire to generate an electromagnetic field between transmitting and reception blocks, their aerials as it is possible is more thin as an electromagnetic fence. The given kind of radiobeam extended gauges (radiobeam security systems), having thin enough electromagnetic environment are named us EM with fences. At crossing by the infringer of space between transmitting and reception acrials, occurs arehchnc radiowaves in reception ahtehom the block and then to operation of signaling devices change. Range of action such EM fences makes from units up to hundreds meters.

In the radiobeam security system submitted by us, such as EMH-200 a parameter of thickness EM fields in some times better, than in known analogues. They have also others essentially the best parameters in comparison with known domestic and foreign analogues. In NAU, in his research-and-production centre "AEPO3AXNCT" ("Aerosecurrity") works on the further perfection and development new are conducted EM fences and volumetric radiobeam security systems, their manufacture and training of using by them is organized EM fences are patented.

11.18. AUTOMATIC SYSTEM FOR NAVIGATION SATELLITES AVAILABILITY PREDICTION ON THE ROUTE

System is intended for availability estimation of satellites GPS, GLONASS in any point of the rout.

Design: GNSS antenna, navigation receiver GPS+GLONASS, original software, hardware equipment, routs data base.

1-2 hours before airplane departure system receives and input to the data base almanac of navigation GPS and GLONASS satellites and rout points coordinates via satellite receiver. Software application calculates Geometric Dilution of Precision and predicts precision of airplanes coordinates determination for each point of the rout. This information is criterion for navigation satellites availability determination. It is possible to simulate accidental fault of several satellites and calculate precision of coordinates determination in this case.

Output data of the system are text report that contains coordinates of critical rout points and recommendation to provide safety conditions for aircraft operation.

The system has convenience interface that represent information about navigationsatellite availability and rout availability in automatic and manual mode, has functions of indications satellite parameters and sorts satellites availability by time and airplanes coordinates. The system represents graph of GDOP, PDOP, HDOP, VDOP, azimuth and elevation angles of navigation satellites.

There is an option for cooperation with Internet for rout data base update. This system can operate even without navigation receiver connection using almanac that were received in alternative way.

This system is recommended for implementation as additional facilities increasing flight safety level.

11.19 AUTOMATED INTELLIGENCE DECISION MAKING SYSTEM FOR VESSEL TRAFFIC CONTROL SYSTEM

The Automated Intelligence Decision-Making System (AIDMS) has been designed for Vessel Traffic Service (VTS) systems.

The AIDMS is intended for automated scheduling of VTS sailing plans without conflicts with the intelligence support of the solutions on the optimization of ship flow at the guaranteed level of safety as ell as for procedural and trajectory (radar, satellite etc.) control of the current state of ship traffic.

The AIDMS is built on module principle on the basis of local computer networks and it functions in real time scale.

The system consists of the following subsystems

- Predictor
- Information-Planning Subsystem
- Rouctor (Optimiser)
- Intellgence Support Subsystem

The predictor is the main part of the system and together with the other subsystems perform the following main functions reception of application for ship traffic service, ship navigation planning, matching of the combined isometric depiction of the traffic plans in the graphic form and scheme of ship movement with the display of current position of the ships, representation of sailing plans in table form, representation of navigational meteorological and other auxiliary information, representation of cartographical information, plan checking vessel traffic prediction; analysis of potential conflict situations, correction of navigation plans; radar data processing, procedural and trajectory control of ship position; correlation of planned and radar information; ship traffic simulation according to the plan, data base management; preparation and printing of navigation plan in the approved format; delivery of the plan and meteorological information to customers.

The Information-Planning Subsystem processes and displays planned and supplemental information in table form.

The Router together with the Predictor and intelligence Subsystem provides safe and economically grounded ship flow. The system is based on artificial intelligence methodology.

The Intelligence Support Subsystem checks the navigation plans with taking into account regional navigation regulations. This subsystem checks the navigation plans with taking into account regional navigation regulations. This subsystem checks the prohibited and limited zones for navigation, analyses dangerous situations. It gives recommendations for decision making if prohibitions and limitations should be removed, issues message precautions, and recommendations.

12. SEVASTOPOL NATIONAL TECHNICAL UNIVERSITY

12.1. HIP JOINT PROSTHESES AND AN INTERVERTEBRAL DISK IMPLANTS

The purpose of work is research and development of theoretical bases and practical offers on introduction advanced achievements in sphere of high technologies in designing and production of artifical joints of th person and elements of stablization systems of a spine. The urgency of a probelm confirms that fact, that the UNESCO has proclaimed ten year period with 2001 for 2010 decade of osseous surgery and treatment of joints. For today joint replacement is the most effective way of treatment of large joints and a spine with complete recovery of their functions, working capacities and improvement of quality of life Statistical researchs of the primary and remote results of a joint replacement allow drawing a conclusion on necessity of augmentation of longevity of elements of products and augmenations of their over-all service life.

13. UKRAINIAN STATE CHEMICAL TECHNOLOGY UNIVERSITY

13.1 LITHIUM HIGH ENERGY POWER SOURCES

Production technology of lithium power sources is flexible and provides production possibility both of the primary power sources and accumulators of different sizes and configurations. Power source with non-aqucous electrolyte and lithium anode which specific characteristics are by 4-8 times higher as compared with the traditional chemical power sources has a long-term (upto 10 years) storage time without capacity changing and the wide working temperature range (-50...+70° C).

13.2 APPARATUS OF IMMERSION COMBUSTION FOR HIGHLY EFFICIENT HEATING OF POWER AND TECHNICAL LIQUIDS

Highly efficient independent heating system for the decentralied heat supply of industrial enterprises, buildings, structures, dwelling and agriculture complexes excluding use of boiler installations have been developed on the basis of the apparatus of immersion combustion by the researchers of University. High economical efficiency is the advantages Cost of building and construction heating decreases by 25-2.8 times as compared with the traditional method.

13.3 ELECTRIC AEROSOL SPRAYING TECHNOLOGY AND EQUIPMENT IN AGRICULTURAL

It is necessary a high voltage to manufacture a high dispersion saw with the increased liquid activity which is used for plants foliage treatment. This decreases considerably pesticide consumption and liquidates contamination of earth by pesticides. However, electric aerosol sprayers, have a tendency to become blocked up when a liquid and/or air contains hard parts of dirt sand or dust. Furthermore, traditional bulky sprayers require high voltage cables. This makes them unsuitable for small plots of land, unreliable and expensive. It is necessary to have more reliable, compact and safe and not so expensive sprayers and spraying methods. The project aim is the development of aerosol spraying technology, which provides such improvement. Instead of liquid aerosol it is possible to use a liquid-gas mixture. In this case sand, dust and dirt are not accumulated in sprayer. The used high voltage device consist of automatic control block and high voltage converter, increasing safety and a low cost.

13.4 ADVANCED TECHNIQUE OF NANOCOMPOSITE MATERIALS PRODUCTION USING GASEOUS/VAPOROUS FLOW WITHOUT SUBMICROMETER PARTICLES

This work is devoted to improving (nano) composite material production technique by impregnation of capillay-porous material (CPM) with liquid solutions by treatment of gaseous/vaporous without sub micrometer particles. Capillary-porous materials can include paper, cardboard, wood, fabric, porous metal matrixes, battery electrode plates, porous catalysts, electrolytic capacitors, windings of starters and rotors, and many other materials. Liquid solutions may include solvents, metal melts or water solutions containing dissolved or suspended substances which must be delivered inside capillaries and of material pores being impregnated.

13.5 INNOVATIVE WATE PURIFICATION METHOD AND DEVICES

In many countries of the world the natural water resources are polluted by urban and industrial chemicals. Water treatment plants reduce the concentration of hazard contaminants in water to a safe level. But water quality deteriorates again through distribution networks. The innovative bubble-film purified method has been shown to purify water by 10-100 times more economically than by filtering through charcoal. Quality of bubble-film purified water satisfies WHO requirements.

13.6 UTILIZATION AND REGENERATION OF SULFUR-NITROGEN-AND HALOGEN-COMPRISING PESTICIDES USELESS FOR APPLICATION

At Ukrainian State Chemical Technology University the concept of toxic waste processing has been developed. It consists in deceasing the negative influence of toxic substance on the environment by their concentration, processing and resuse as well as providing ecological purity of the secondary waste.

Using a standard chemical equipment and the most simple technological operations the utilisation technology of the pesticides and regeneration of pesticides has been developed.

13.7 DEVELOPMENT OF TECHNOLOGY AND EQUIPMENT FOR FINE MILLING THE VEGETABLE WEST OF AGRICULTURE PRODUCTION

At Ukrainian State Chemical Technology University the technology and equipment used for fine milling such vegetable waste as a straw and hull of sunflower and rice have been developed Technology and equipment for milling the vegetable waste of agriculture production will provide with the substances which can be used for producing plastic materials, welding electrodes, high quality protein fodder for animals and birds and also as a raw material used production of high quality organic mineral fertilisers.

13.8 PROCESSING THE WASTE OF RICE PRODUCTION INTO SILICON CARBIDE

Scientists of the university have developed the method of rise waste processing (hull and rice straw) into silicon carbide. The proposed method is rather simple and efficient utilisation method of a large number of such waste. Silica has good rectifysing, electro-luminescence, photoluminesence and photoelectrical properties. It is high strength chemically and thermal resistance, has low heat and electrical conduction.

13.9 PRODUCTION TECHNOLOGY OF LECITHIN FROM THE PHOSPHATIDE CONCENTRATES OF SUNFLOWER OIL

Together with the specialists of the State Design Office "Uzhnoye" the production technology of lecithin from the phosphatide concentrates of sundlor oil and industrial unit have been developed. Lecithin is a surfactant enabling stabilization of emulsions and suspensions. Due to their multifunctional properties it is used as an emulsifier, anti-sprayer, dispersant, viscosity modifier and as a food additive.

13.10 ARRANGEMENT OF THE INDUSTRIAL PRODUCTION OF COMPLEX PROCESSING OF ANNUAL VEGETABLE RAW MATERIALS TO PRODUCE BIOACTIVE FOOD PREPARATION

The production technology of sunflower hull processing by the method of vermicultivating enables solving the utilisation problem of heavy-tonnage waste of vegetable oil industry and producing highly efficient bioactive preparation. The technology can be used in a pharmacology at the production of medicinal preparation based on a worm biomass, in agriculture for production of the environmental friendly fertiliser biohumus.

14. STATE SCIENTIFIC RESEARCH AND PROJECT INSTITUTE OF TITANIUM

14.1 "DEVELOPMENT AND IMPLEMENTATION OF THE PROCESS OF HOT METAL DESULPHURIZATION WITH DISPERSED MAGNESIUM INJECTION"

Description of the process flow chart of the system of hot metal out-of-furnace desulphurization and deslagging is provided. The basic process indices of commercial operation of the systems awt a number of steel-making plants with annual capacity from 1 up to 3 mtpy and sulphur content decrease of hot metal from 0.02-0.16% upto 0.002-0.010% is shown. The given diagrams characterise a level of reagent assimilation and indices of desulphurization.

15. ZAPOROZHYE NATIONAL TECHNICAL UNIVERSITY

15.1 ELECTRIC FILTERS

Zaporozhye National Technical University together with joint-stock company "Uzhtsvetmetgasochistka" is engaged in modernisation and increasing of an overall electric filter performance. Application of electrofilter concussion systems in design, materials with low dumping properties developed by ZNTU employees, provides the most full removal of the dust caught on electrodes. In complex with constructive decisions the developed materials provide increase of an overall performance and electrofilter service life.

Activity

Inspection and estimation of an overall performance gas-and-dust catching.

devices and development of offers in increasing of their work efficiency;

- Development of the device working documentation, the design documentation of clarification systems of industrial gases from dust, foggy and gaseous impurity.
- Manufacturing, complete set and delivery of gas-dust catching systems in complete set with building metal constructions.
- Manufacturing, and delivery of spare parts to operated gas-dust catching to the equipment.
- Development of the assembly documentation, manufacturing and delivery of assembly equipment

15.2 THE ANVILS FOR RECEIVING AND CORONA-FORMING ELECTRODES OF THE ELECTRIC FILTERS

The electric filters are one of the main types of gas cleaners for enterprises, cement industry, of the ferrous and non-ferrous metallurgy, and thermal power stations.

The anvil is intended for transferring of impact impulse to the receiving and corona-forming electrodes with the aim of their cleaning of accumulating dust particles.

The improvement of work effectiveness of the electric filters is reached by forming special properties and structure of the anvil material.

The structure of the anvil material that insures low losses of energy at translating of the impact impulse is formed by the direct solidification in the process of electric-slag smelting.

The elaborated material of anvils for receiving and corona-forming electrodes of electric filters is notable for its heightened acoustic quality. It is cause by the increase of physical density of the material as compared to that of the rolled steel and also by the raise of the material strength of anvils at the account of the refining effect, dispersion of non-metal dissemination, its globalization and forming of the optimum crystal structure.

15. 3 METHOD OF ELECTROIMPLUSE TREATMENT OF METALS AND METHOD FO DETERMINATION MECHANICAL CHARACTERISTICS OF SURFACE LAYER

At Zaporizhzhya national technical university the technology of electro impulse processing of titanium alloys and the technique of Young's modulus measurement, creep limit, activated volume of the surface layer after hardening process has been developed.

It is shown, that electro impulse processing of titanium alloys results in increase of durability approximately by 20% and to fringing up of the operating time level of samples with different surface hardening. Application of the developed method allows to reduce time of hardening process by 20 times. After processing by impulse current the state of the surface layer of metals, defective crystal structure surface layer of metals becomes more homogenous.

Electro impulse treatment was proved to increase the fatigue resistance fo the titanium based alloy by 25-50 percent. Macroscopic residual stresses drop while microscopic stresses grow. The increase of electric resistance of specimens is the evidence of relaxation process. The best release was observed at crystal lattice defects. The electric impulse application may be considered as promising method for alloy treatment.

The method of kinetic indentation has been developed on the basis of measurement of contact electric resistance. The method allows to determine the following physic-mechanical characteristics of metal surface layer. Young's modulus, creep limit, activated volume. Application of the method results in increase of measurement accuracy, reduction of influence on design data system of loading at indentation and necessity to exact measurement of depth or the contact area from the indenter. The developed method also simplifies the process of measurement due to this automation.

The results of this work may be used in mechanical engineering in the process of manufacturing of aviation engines. The technology of hardening of metals may also be based on this method.

15.4 TUBELESS PLASMA SPRAYING WITH CATHODE SPUTTERING OF SUPERFICIAL OXIDES

The technological process of tubeless plasma spraying with cathode sputtering of superficial oxides for the restoration of the worn out surface of metal details has been developed. One of advantages of this process is absence of shot-blast or abrasive-blast processing of a surface before plating, which allows to exclude the technological process of preparation of a surface, which is connected with the use of bulky expensive equipment the compressor, the chamber of processing), as well as negative influence of this process on the environment (metal or abrasive dust, source of the increased noise).

The second advantage of the process is the increase of strength and adherence of coating with the surface of a detail (adhesive strength) which surpasses strength of the covering itself (cohesion), which eliminates the probability of detachment of covering during the process of work. The achieved level of cohesion for steel covering exceeds 50 MPa, which exceeds twice adhesive strength of covering, obtained without cathode sputtering of superficial oxides.

16. NATIONAL METALLURGICAL ACADEMY OF UKRAINE

16.1-16.2-16.3 EQUIPMENT, TECHNOLOGIES AND INSTRUMENTS FOR THE COLD ROLLING OF PIPES

The rolling technologies, instruments and equipment for the cold rolling mills of pipes by felling (KHPT) and cold rolling of pipes by roller (KHPTR) is used for production of high-quality pipes from the wide variety of steels and alloys, including low-plastic materials. About 700 figures KHPT and KHPTR in 30 countries of world are the prime examples of wide application of this method.

17. STATE RESEARCH INSTITUTE OF BUILDING STRUCTURES

17.1 NISK

The common data are presented on stand; the main activity directions", structure, addresses at etc.

17.2 TECHNOLOGY FOR DE-TITLING OF BUILDING AND STRUCTURES BY GROUND DRILLING OUT

Method consists in a building's lowering by drilling out the holes under the foundation fotting and removing the soil in volume required.

17.3 TECHNOLOGY FOR DE-TILTING OF BUILDING BY MEANS OF JACK SYSTEM

Method consists in the structure graduate jacking with use of flat jacks placed into the pre-made openings and automated electro-hydraulic system. When atravel of jack meets its limit, the building is temporary supported on sefety backplates and jacks are reset. With every jack, the building is jacked up to the height that corresponds to differential settlement at the point of deformation. Vertical position is fixed then by grouting the gap that is formed between foundations and walls.

17.4 DRILLING-MIXING TECHNOLOGY FOR GROUND STRENGTHING

Technology consists in destruction of nature ground structure alone it depth without carryout on surface and mixing it with grout. Ground-reinforcing element with high durability, rigidity and watertight is forming at stratum after hardening of ground-reinforcing mixture.

17.5 TECHNOLOGY FOR BASES PREPARING OF HYDRAULIC *EXPLOSION*

TECHNOLOGY CONSISTS IN PRELIMINARY WATERING OF SETTLING GROUND MASSIF AND TRANSFER TO IT HYDRAULIC INFLUENCES FROM DEPTH EXPLOSIONS. THESE EXPLOSIONS DESTROY A WEAKEN BY WATER BONDS IN GROUND AND SUCH WAY STIMULATE TO INTENSIVE COMPACTING UNDER ITS WEIGHT.

18. LVIV STATE RESEARCH INSTITUTE EPIDEMIOLOGY & HYGIENE

18.1 METHODS OF TREATMENT OF SPECIFIC AND NON SPECIFIC LUNG DISEASES THAT ARE COMPLICATED BY EXPRESSED RASPIRATORY FAILURE

Patient with chronic specific and non specific lung diseases followed by increase of infringement respiration, gas exchange and intensifying of hypertension in small circle of blood circulation, formation of decompensation phase of lung heart become very different for treatment. Respiratory failure is the factor that leads to the fast physical inability and high lethality of patients. During last three years the tethality of these patients changes from 32% to 100%

Application of such medications as bronchodilators leads in most cases to hyperventilation oi not vascularized areas of lung texture and vasodilators - to increase of shunting of blood from left to right that deepens the hypaxia level in organism, and also leads to decrease of crythrocytes resistance, increase morphometric changes, rising of aggregating qualities and development of latently proceeded DIC - set of symptoms that develops on the microcircular structure level.

Aiming the erasion of expressed displays of lung failure and decompensation of lung heat we developed and suggested new treatment technology using different methods that includes :

1. Intravascular laser irradiation of blood with the rays of He-NE and He-Cd lasers with use of frequent modulations (HIB with FM) is carried out 4-5 times as preparation to such procedure as extracorporate little stream-oriented oxygenation of blood (ELSOB). It improves the oxygen-transporting function of blood, decreases aggregation of erythrocytes, their functions, changes membrane clasticity, opens peripheric network and already on this level it accompanies decrease of hypoxia and hypercapnia and blood shunting.
2. ELSOB combined with ultrafiltration (we used capillary dialyzers by "Frizenius") enable to reduce sharply the level of DIC - set of symptoms, to influence powerfully the oxygen-transporting blood system and texture respiration. Ultrafiltration that is carried out using insignificant negative pressure (we used the Bobrov's device) enables to remove from 8 to 10 litres of ultrafiltrate with significant content of circulated immune complexes for one operation. Removal of intercellular liquid improved texture respiration. Operation was repeated two or three times depending on disease difficulty. Then we carried out 4-5 more sessions of ILIB that potentivity to pharmacological preparations restored, ventilating parameters increased to 25-30% oxygen saturation of blood, level of CO_2, in bllod decreased to normal. We observed the positive changes of parameters of cell and humoral immunity, high-grade update of cell content of red and white blood, protein of plasma, significant increase of energetic cell potential and other.

18.2 METHOD SANATION OF CARRIERS PATHOGENE OF MICROFLORA

Among children of preschool age living in ecological disadvantageous conditions watched broad and stable nasopharyngeal carrying of pathogene and conditionally pathogene of microorganisms being leading on etiological factors of such diseases, as a tracheitis, laryngitis, pharyngitis, pneumonia, otitis, meningitis, sepsis. Quantity of the detected carriers makes for Staphylococcus aurcus-58%. Stretococcus pyogenes-36.8%. Haemophilus influenzae-43.0%, Streptococcus pneumoniae-42.0%, Moraxella-18.0%, frequently watched associations from two - three kinds of microorganisms. The mircoecological disorder for the majority of children saved a rather long time-from 7 to 12 months.

For sanation of carrier conditionally - pathogene and pathogene of microflora the drug from lactate bacterias who are included in a structure of microflora of a mucosa of the upper respiratory tracts and being one from essential of the factors of natural protection of an organism is offered to use lactobacterinum-

In process sanation of nasopharynx lactobacterinum the condition of normal microlfora does not change (y-hemolytic streptococci), and on occassion and improve (a hemolytic streptococci, neisseria), about what the increase of quantity of colonies of micro-organisms testifies. The normal microflora plays a considerable role in antimicrobial protection of a macroorganism, therefore increase it quantitative indexes is the important factor okf positive action lactobacterinum.

The intensity microbial seeding at a carriage Staphylococcus aurens, Streptococcus pyogenes, Hacmophilus influenzae, Streptococcus pneumoniae is descended, at what the termination of a carriage is watched for 45.0 - 96.0% depending on a kind of a microorganism. The optimal scheme of sanation - irrigation of a mucosa stomatopharynx (with the help of a pulveriser) solution of lactobacterium at the rate of 0.2 doses on one irrigation 2 times per day during 10 days.

18.3 NEW PLANT INTERFERON INDUCERS EFFECTIVE AT INFECTIONS DISEASES

During the many years in search of new natural means of ugrent non-specific prophylaxis and treatment of infections diseases, about 200 extracts and particular compounds, obtained from medical plants collected in Western Ukraine, were received and examined for interferon inducing activity.

As a result of the accomplished work, a range of new interform inducers were discovered. Among such inducers special attention deserve phytocompounds TN, its analogues of SK series, extracts BS and RS-9.

It is established, that prepatations TN, SK and BS stimulate formation of interferon in the bood of mise with concentration 1280-5160-un/ml, which in some cases has exceeded the levels of activity of well-known commercial preparation ridostin. Lower induction of interferon is exposed in phytoextract RS-9 at the level of activity of a medical agent prototype amixin (320-640 un/ml).

The study of protective properties of indicated phytocompounds showed that at an experimental tick-borne encephalitis preparation TN protects from death 40% of mise, while ridostin in similar terms of expeiment protects 35% animals. Analogues of TN-SK-I & SK-13 samples lower lethality of mise and from herpetic infection on 55-60% while amixin-on 45%.

The expressed antiviral efficiency also shows phytocompound BS: it strengthen the survival of mise infected by tick-borne encephalitis and West Nile viruses, respectively on 27-42% and 29-40%.

In comparison with ridostin, considerably enhances TN and resistance of mise to the chlamydial infection: the indexes of efficiency for them respectively make 3.0-4.0 and 2.1-2.4.

Phytocompound TN leads to the braking of development of infectious process also at the experimental fever Q. It shows more expressed than in ridostin by the reliable decline of splenomegaly indexes and dissemination spleens by Rickettsia on mises.

Antibody-stimulating activity is expose in preparation TN and BS.

Simplicity of technology, availability of plant raw material presence of cheap organic solvents and ordinary lyophilic drying equipment make th eproduction establishment quite simple. The above stated descriptions of new plant interferon inducers and real possibilities of production allow to consider these phytocompounds perspective and clinically potential for an urgent prophylaxis and treatment of variuous infections, especially for diseases of unstated etiology.

18.4 RATING OF MIXTURE OF HEAVY METALS WITH COMPOUNDS OF SULPHUR IN SOH

In the course of development of industry, transport, agriculture and whole urbanisation, that is directed for the extension of the material values, the outcomes of the scientific research which prove the impact of the chemical load, in particular, of mixtures of heavy metals with the compounds of sulphur on the environment objects and the human being are often ignored. It is known, that the emission with the industrial waste in the brosphere of harmful substances including the compounds of sulphur and heavy metals is estimated to be more than 300 kg for each human being.

Taking into consideration our long-term experience and the work of the world known scientists, which testify, that in nature there exists only the isolated impact of the chemical substances on biotas of ecosystems. The theoretical approaches to the estimation of risk of mixtures of chemical substances should be confirmed by the research of the simple cases. The benefit of a method of definition and estimation of risk of mixtures of chemical compounds for the health of the population and biotas as a whole in a large degree depends on a context, the rescarcher encounts with during the course of study of a complex mixture, and also the known information on the chemical and toxicological aspects of a mixture. The approach to a complex mixture, in our case-molybdenum copper-compounds of sulpher-the components of which are substantially known, but its (mixture's) essential danger remains unknown: whether there in soil the aggrevating or the potentiation of the toxic effects wil take place. That is why our research includes the detection of the main conceptions of the combined action of the researched mixtures. The detections of perils and estimation of risk for biotas is carried out with the help of the conception of toxicity of the combination of molybdenum-copper-compounds of sulphur on the general sanitary condition of soil and the study of a toxicological index of a hazard.

The interest of the world association of scientists towards the issues of the protection of environment part of which is - the revision of already existing maximum permissible concentrations of chemical substances and the scientific substanitation of the new standards for-mixtures of exogenous chemical substances in particular, in soil, is ever growing.

Obtained results on the study of impact of the three-compound mixture-molybdenum-copper-compounds of sulphur on such indices of a harmfullness as phyto-accumulation, general sanitary and toxicological proved the identical toxic effect in relation as to biotic so abiotic forms of soil and mammal. The threshold and operational concentration of a three-component mixture are determined, on the basis of which the aimu permissible conentration of this mixture in soil is defined.

18.5 ECOLOGICALLY-SAFE REMENDIES FOR TREATMENT AND PREVENTION OF LICE INFESTATION

People lice are vectors of some very danger infections-rickertsiosis (epidemic louse-borne typhus) and bartonelosis (trench or wohlynica fever).

Accounting for widespread modern occurence of pediculosis (infestation of body and heat lice) and the resistance of lice natural populations to insecticides, which have broad usage in medical practice (malathion, lindan, permethrin, pirethroidies etc.) it is relevant to make and study alternative ways of strife with pediculosis. One of this perspective branch of the investigation is to make up remedies for the prevention and the treatment of body and head lice on the basis of herbal (medical) plants. Herbal treatments against lice infestation include ethanol extract from some medical plants of Ukraine such as Padus racemosa. Tanacetum vulgare, Euphorbia cyparissias, Scabiosa arvensis. Viola tricolor, Caronaria flos-cuculi. We have done the know-how of manufacturing of new prescriptions of lotion-remedies. We have study the effect of some pediculicides means in the form of lotion on lice of a laboratory population Pediculus humanus. Rate of dead lice of laboratory population consists 100%. Now the series of the lotions against lice with medical plants which are used in folk scentific medicine is perform.

19. DONETSK NATIONAL UNIVERRSITY

19.1 AUTOMATED SYSTEM OF FINANCIAL MANAGEMENT OF HIGHER SCHOOLS AND ACADEMIES

21. KHARKOV NATIONAL UNIVERSITY

21.1 HOLOGRAPHIC INTERFERENCE MICROSCOPE

Holographic interference microscopic (HIM) is intended for investigation of transparent micro-objects, obtaining of 31) images of cells and measuring of their parameters. The HIM allows to investigate changing of cells shape under the influence of different natural and artificial factors.

The principle of work of the microscopie is based on holographic methods interferometry and digital processing of information. The microscope allows to obtain interferograms of micro-objects with resolution (about 1 mkm) using industrial He-Ne laser with wavelength 0.63 mkm. Images and interferograms of micro-objects are passed to a computer where 3D images of the micro-objects are reconstructed. Under processing of experimental results there appears the possibilities of using modern technologies not only for interpreting measurements results but also for diagnostics purposes based on complex information processing systematization of measurement results.

The main advantages HIM application in comparison with known analogs (the measuring holographic microscope MHM-I developed in Scientific Research Institute of Optical Measurements, Moscow, Russia; the holographic microscope, developed in Central Optics Laboratory, Poland) are the possibility of reconstructing 3 Dimages of native cells of biological objects in dynamic; its compactness and universality that allow to use the microscope both for scientific investigations and in medical practice.

With the aid of the microscope, a number of experiments on investigation of human and animal blood erythrocyte shapes changes unde unfluence of different factors were carried out. Influence of these damaging factors results in changing of properties and structures of cell membranes and this results in changing of cells shapes.

The investigation carried out with the aid of HIM have proved that erythracyte morphology is an important parameter reflecting the general state; of a living organisation and the level of its response to different damaging natural and artificial factors. So, the HIM can be used in conjunction with oother know methods for effective medical diagnostics.

22. PRIAZOVSKIY STATE TECHNICAL UNIVERSITY OF MESU

22.1 ECONOMICAL METASTABLE ALLOYS AS HIGHLY EFFICIENT MATERIALS OF NEW GENERATION

Application of new generation alloys solves not only the problem of saving expensive and deficit alloying components (Ni, Mo, V, Nb, W and others) but also increases operational resistance of industrial equipment machine parts. The alloys with metastable structure possess self-organising capability when loaded during operqtion. programmable devolving of strain phase transformations (SFT) in the alloys under the influence of operational conditions allows to achieve a unique combination of abnormally high mechanical and operational properties, resulting in efficient alloying and even complete exclusion of expensive components from their composition. New alloys are represented by high resistant, structural, corrosion-heat-and their composition. New alloys are presented are highly competitive (if no exceed) with those of expensive complex alloy materials. They are strengthened using latest technologies, i.e thermal, thermal-deformation, chemical and thermal treatment, application of laser and electronic rays, jets of plasma, revamping of the worn parts by metastable surfacing. These technologies allow to form metastable conditions of austenite not only in the developed alloys but in a wide range of standard, widely used steels and irons.

New economical highly efficient materials and technologies can be applied in manufacturing of valve plates for compressors (high resistance steels); components of pumping units (corrosion-resistant steels), bearing parts of thermal and heating furnaces (heat-resistant steels), protective plates; metallurgical equipment of iron making and sinter plants; fast wearing parts of shotblasting and sandblasting machines (wear-resistant irons)

New alloys are 350-500 $/t less expensive than chrome-nicked steels, save 70-100 kg of nickel per ton of steel and possess a 30%-50% enhanced complex of mechanical properties. Saving as a result of application of new materials reducing metal consumption, maintenance and operational costs together with the increase in equipment productivity, exceeds $1 mln.

22.2 BEEL-TYPE CHARGING DEVICE OF BLAST FURNACE PROVIDING SUPPLY OF THE PORTION OF COKE INTO THE CENTRE OF THE BLAST FURNACE TOP

A new belt-type charging device of blast furnace has been developed. It provides supply of the portion of coke without application of additional trays, rational distribution of burden and gas along the radius and uniformal distribution along the circumstance of the blast furnace. Now modifications expand technical possibilities of control of radial and circumference distribution of burden and gases. When filling the space between the big bell and the pot, the coke falls down from the last supply skip into the centerling technological opensing. It is dropped diectly into the furnace top center thus providing improve gas permeability in centerline zone. Fine coke and sinter particles are sifted and directed into the intermediate zone. Afterr the big bell has got down, the main porition of the burden in charged into the furnace top. Such charging forms distributed centerling gas flow in blast furnace. This enhances operation of hearth preventing if from dusting, forms efficient A-type softening zone and allows to use the potential of the blast furnace gas along the whole radius of the furnace.

The charging device provides decreasing of energy costs of ironmaking and increasing of blast furnace producitivty. This is achieved by efficient distribution of burden materials and gases. Additional capital and operational costs are minimal. With the use of this device specific coke consumption per ton of iron reduces by 20-30 kg. Productivity of the blast furnace increases by 1-2%. The service life of the charging device at blast furnaces with increased pressure in the top is 3-3.5 years. It is 3 times more than a period between repairs of a two-bell device. The order of charging the burden into the blast furnace and control of the same does not differ much from the typical two-bell charging device. By its parameters it approaches a well-known tray bell-less charging devices of Paul. Wurt design Gas distribution in the proposed device is much more efficient than at the well-known conventional devices. But the new charging device is much less expensive than Paul Wurt type. Its cost of $600-700 thousand while the cost of the tray charging devices amounts to $6-8 mln. In comparison with Paul Wurt device a new charging device does not require a complete re-equipment of the bell, construction of the nitrogen station, continuous cooling of the components by nitrogen during operation, or extended computer network of charge control. Among various design of new charging devices the proposed device has the shortest return on investment period (8-12 months), whereas for the tray charging devices for the blast furnaces it is 5-8 years. Now charging devices have been installed and are successfully operated at the blast furnaces of ZAPOROZHSTAL Iron and Steel Works (Ukraine). The average coke consumption was reduced by 20-25 kg/t of iron.

22.3 NEW REPAIR TECHNOLOGIES APPLYING METAL POLYMERIC MATERIALS

Reconditioning technologies for equipment using metal polymeric materials find their application in :

- Repairs involving air tightening of body components (cylinder units, reducers, etc.)
- Reconditioning of worked surfaces of various parts (coupling shafts, bearing scats, supporting surfaces of rolling mill frames, etc.);
- Resurfacing of the sliding pairs (lathe glides, plan bearings, working surfaces, hydro-cylinders, etc.).
- Resurfacing and protection of machine parts against corrosion, erosion, abrasive and cavitational wear.

New reconditioning technologies using metal polymeric materials allow to all least 1.8-2.0 times extend the life of the machine parts and units operating, under dynamic load as compared with a conventional surfacing technology. this is achieved by ensuring the maximum contact qarea of the parts with metal polymeric laye thus decreasing specific load. Besides, metal polymeric layer protects parts and units against contact corrosion and wear which is ultimately important for the operation of rolling mills when the roll cooling water gets on the supporting surfaces of sand frames. During reconditioning of contact surfaces working under dynamic load, impact loads are damped by metal polymeric layer and damage of contact surfaces of metallurgical machines is prevented.

Implementation of the developed technologies proved that labour costs involved in applying metal polymeric layer are very low whereas the effect exceeds all expectations resistance and service life of machine parts and units considerably increases.

Thus, reconditioning of the worn supporting surfaces of the frame is performed avoiding disassembling the stand and without machining of the frame. Such repair takes less time as compared with the conventional technologies applied in similar cases.

The reconditioning cost of one sheet rolling mill stand amounts to $225 thousand (conventional technology) and to $66 thousand when the proposed technology is used. The guarantee period is 2 years.

The mill stands reconditioned with the proposed technology operate at AZOVSTAL, Iron and Steel Works, ILYICH Iron & Steel Works, Nikopol South Pipe Plant and other mills.

Many years of experience in reconditioning of the rolling mill stand frames and other heavy-duty components allow to guarantee the service life of the reconditioned components for as long as 1 to 10 years.

22.4 REINFORCED CONCRETE PLATE BASE FOR RAILWAY SWITCH

To replace slipping the service life of which predetermines the costs on deficit and expensive merchantable wood In addition by technical and economic parameters it is much more efficient by 2.5-3 times in service life, by 4.5-5 times in costs allocated per year of operation, by 2-.25 times in labour and maintenance costs. The advantages of reinforced concrete plate bases (in all operation al conditions) are even more with the increase in cargo density and axial loads. The profit from each set amounts to $5 thousand. The advantages also include the possibility of laying the railway switches in R-II and L-II direction, using block assembly of construction cranes, replacement without lifting reinforced concrete plates, insulation of trackway, ensuring reliable operation of crossing pieces.

Industrial test of the pilot sample of railway switch on the plate base was conducted at hot-metal ladle track of AZOVSTAL from & steel Works (Mariupol) intended for the cars with the wheel pressure equal to 526kH. During the test, operational observation was carried out together with acoustic and tens metric measurements. For less than a year about 8.0 mln 1 gross weight of cargo was transported through the railway switch. beginning with 1999 AZOVSTAL. Works has been successfully operating 3 set of R65 Grade 1/7 railway switches.

22.5 A COMPLEX OF SAFETY AND DAMPING DEVICES

A complex of safety and damping devices developed on the basis of latest materials (clastometers) can be used as:

- Safety devices for rolling stands;
- Safety spindles and couplings of heavy-duty machine drives;
- Universal elastic hinges.
- Elastic shafts for heavy-duty ahines;
- Buffers, absorbing units, shock absorbers and safety devices for rolling stock.;

These devices allow to protect against breakage parts and units of heavy-duty machine metallurgical forging and stamping, haulage and transportation machines. They also allow to significantly increase their reliability and service life due to reducing and limiting the existing parasitic loads. The devices are able to reduce parasitic loads or limit them invalue within safety requirements. By operational principle these are shock absorbers, i.e. buffer devices, compensators and dampers as well as clastic couplings and energy accumulators. The devices for metallurgical, transport and haulage machines described above have been for metallurgical transport and haulage machines described above have been developed by the professors and research workers of the Department of Strength of Materials of PSTU.

The damping devices contain clastic components made of cast structural polyurethane. Among them are buffer devices of brdige cranes, absorbing units of locomotive and railway cars, shock absorbers of frame rolls of cogging mills, cushion bars rolling mill stands. Most of these devices were fabricated and commercially tested. These device operate successfully, at Ukrainian mills. Their effectiveness is enhanced with indepth theoretical studies including study of type and parameters of parasitic loads.

For the majority of heavy-duty machines, metallurgical machines among them, the problem of parastic loads, i.e. those not directly connected with technological operations, is quite acute. These loads are caused by accelerating up and braking of individual machine parts, impact of energy or deformation that may occur in collision of individual machine parts, as well as to heating wear or due to inaccuracies during fabrication and minor errors in assemblign instatically indefinable systems.

The most efficient method of prevention of parasitic loads is application of damping devices (buffers, compensators, dampers). Energy consumption, the major property of these devices, has been thoroughly studied. The principle of maximal specific energy consumption served as a base for selecting materials for clastic elements, while design features of these devices ensure maximum energy consumption as a whole.

For elastic elements made of polyurethane energy consumption is 3.5 times more than that of steel springs, their shock absorbing capacity is also higher.

23. ZHYTOMYR STATE TECHNOLOGICAL UNIVERSITY

23.1 THE HARDWARE-SOFTWARE COMPLEX FOR QUALITY CONTROL OF SURFACE OF PRODUCTION FROM NATURAL FACING STONE.

Complex for quality control of surface of production from natural facing stone is developed. This complex provides measurement of the quantitative characteristics of color and geometrical characteristics of structural elements of surface of facing stone. The measurements are fulfilled on basis of informational technologies of creation and processing of the digital videoimages of surface of facing stone.

The different color schemes for definition and compara of quantitative characteristics of color of surface are considered. the color schemes HSV or LAB is the best variant for usage in the complex. The comparative analysis of different methods for definition of the quantitative charactertistics fo texture of surface of facing stone is fulfilled. It is offered to use the geometrical characteristics of separats structural elements of surface; size, square, corner of orientation, distance between elements. These methods are matched with metrics of quality of facing stone in mining and building branches of industry.

The developed complex and the results, received with his help, can be used for the decision of various tasks from area of building, mining and processing of natural facing stone.

23.2 FIREWARE COMPLEX FOR STUDY OF KINETICS OF FUEL CONSUMPTION

Fireware complex allows greatly to reduce a defect of similar instruments measurements are executed inthe automatic mode, results appear in the suitable type and written on modern carriers. Accuracy of measurements better, because inaccuracy of different expenses fuels with different physical charactertistics automatically taken into account.

Composition of complex: flowmeter, personal computer, cord interface, software (on two diskettes).

23.3 BISTABLE SENSOR OF REMOTE CONTROL OF UNAUTHORISED ACCESS

Today at the market the broad range of sensors for unauthorised access protection are presented. Most of them have large prime cost and insufficient sensitivity. They also require uninterrupted output signal control. Offered bistable sensor of remote control of unauthorised mentiones imperfections.

The sensor consists of two inflexible dielectric substrates, between them the sensing element is set. The sensing element with the help of local-out to connecting leads of metering circuit is connected. The sensing element of sensor presents bicomponent percolation-fractal mixture of quasinon-interacting microparticles of the "conductor - diclectric" type Concentration of conducting component of the mixture is more then the critical value *l'*. The most senstive are sensors with infill probability of electroconducting component *l* close to *P.*

The offered sensor under load, perpendicular to the surface of the sensor vary a resistance immediately from initial stable value R to the remanent stable value $R_{1.}$. In turn remanent value $R_{1.}$ however for a long time keeps the memory about active loading and of the form of the contact spot after the load is removed. Structural parameters of the percolation-fractal system change under load and make a transition into a new stable state. The ratio R_0/R_1 is about 5 through 10 for the given sensor.

The offered sensors may be produced of any sizes and may be cove a big area. Monitoring circuit doesn't need uninterrupted sensor supervision. The sensors inquiry happens by turns using specific algorithm, with any inquiry frequency and with the help of only one computer. In any moment the control of resistance the sensor shows was there (R_1) or was not (R_0) an unauthorised access.

Given sensors may be used for terrorism prevention, in guard systems, in aviation and space exploration (for the boundary parameters control), in mechanical engineering for the development of frontiers, etc.

24. ODESSA NATIONAL UNIVERSITY NAMED AFTER I.I.MECHNIKOV OF MESU

24.1 INDICATING ADSORBENTS

Purpose adsorption of the chemical priority air pollutants - ammonia, amines, hydrogen sulfide, mercaptans, chlorine, iodine, sulfur and nitrogen oxides, hydrogen chloride and hydrogen fluoride under their separate or combined presence with visual color changes indication of the adsorbent working-out extend and to select between definite gases and groups of gases.

Application area - respiratory cartridges gas-mask filter boxes and physiocochemical filters utilised in preparing gas mixtures for their analysis, as well as in diffusion type indicating tubes serving for determination of toxic substances concentrations in the atmosphere. Besides, these adsorbents can be applied for dynamic gas and gas mixtures drying.

24.2 OPTIC-ELECTRONIC SMOKE DETECTOR

Event alert finds out presence of smoke aerosols a remote method.

The principle of work even alert for edifice is based on measurement of the reflected signal from smoke aerosols with the help optoelectronic couple. The optical system which forms circular volume in space is developed. Hit of a smoke in controllable volume results in operation event alert. The radius of action depends on capacity oscillator, and sensitivity of the photoreception device.

Event alert works in near infra-red area of a spectrum, safe for the user. The information on presence of a smoke is informed by the light and sound signal system.

Characteristics:

In a breadboard model it is used optoelectronic couple light-emitting diode AL115 and photodiode FD256.

Radius of detection of a smoke	-	2 meters
Power consumption event alert	-	10 mW.
Supply voltage	-	9-15 V

Advantages :

Event alter difers fromissued by the industry high speed (10 mes), a circular field of vision and small power consumption.

24.3 HIGH-SPEED OPTICAL ELECTRONIC RANGE OF SMALL DISTANCES (OERF)

OERF short distances solves a problem of the remote control of a spatial zone for high speed measuring systems.

In OERF methods of recognition of objection of a locationon set of attributes and processings of the information with elements of intellectualisation and decision-making in a mode of time restrictions, and also the software of processing of the swift-flowing information in OERF are used.

Characteristics:

accuracy + 1% a range of distances - 0.1...5.0m, a range of speeds - 1.30 m/s; a corner of a field of vision 15; working area near infrared. Voltage of a feed - 15 V, poweer consumption - 1.5 W, dimensions - 150 x 75 x 45mm, cost - 300 gm. (UA).

Advantages :- reliably of work in conditions of constant background and pulse optical handicapes.

- ability to function in a dynamic mode that ensures the functioning into information measuring systems in high-speed conditions of application (up to 30 m/s).

Economic appeal of development is determined by needs for hi-tech and exact converters for vehicles (from space up to automobile), systems of geodetic and technological measurements.

24.4 NEW TECHNOLOGY COMMUTATION PLATE PRODUCTION

The offered nonpolluting technology is based on an original method of vacuum metalisation and provides high-quality deposition copper layer on a surface and walls of mounting apertures commutation plates and can be used in production of printed-circuit boards and hybrid microschemas for metalisation.

- Mounting and transitive apertures bilateral, multilayer and multilevel plates.
- Plates with relief manufacturing commutation.
- Plates on the floppy bases; hybrid thick - thin-film circuits.

Basic technology advantage

- High density of mounting.
- Full decision quality problem mounting and transitive apertures metalisation.
- Ecological cleanliness owing to excluding from technological process, some chemical operations;
- Excluding jewelry metal application.
- Economy of copper and other materials.
- Reduction plates with solutions contact time.

The method allows to apply copper dry etching.

24.5 MICROELECTRONIC GAS SENSORS

The sensors are intended for monitoring composition of gas medium (carbon compounds, hydrogen, nitrogen, moisture and other gases of different kinds of industry and monitoring of an environment.

The sensors allow to register gas concentration in emissive gases with a large degree of selectivity, stability and with a small response time (3-6 s), have a high sensitivity (for example to CO - 10 ppm, restoration period - no more than 6 s). Are easily ganged to a computer.

24.6 SENSOR OF OPTICAL AND X-RAY IMAGES WITH AN INTERNAL AMPLIFICATION

Sensor of optical and X-ray images with an internal amplification is based on the semi conducting barrier structures with use of materials with essential violation of the distance order. For the considered sensor circuit scanning of a converter is possible, that ensures deriving a rigid raster of an image and facilities input of an information in the computer for consequent processing. The converter of an optical image in an electrical signal for want of application in practice of X-ray medical researches allows to refuse the use of expensive X-ray photomaterials, that can give essential economic benefit.

The converter has the great area of surface, high sensitivity (for white light-not less than 10- lx), possibility of accumulation of a signal and sotrage of the latent image (for want of to room temperature - not less than day. The resolving capacity is determined by affiractional limit of a focusing of a reading IR-ray and makes not less than 5 microns.

The collection of the indicated characteristics of optical and X-ray images sensor (including scanning method on which the copy right certificate is present) has not analogs in domestic and foreign engineering and allow to use an item for solution of fundamental and applied problems of astrophysical researches, and also in various areas of practical medicine (for operative derving X-ray images with their consequent processing, for example, for want of computer thomography).

24.7 THE CORNER TURN DETECTOR

The detector of generating type with the device on surface acoustic waves is intended for measurement the corner turn and can be used.

- In a complex of the automated equipment of various kinds of industry.
- In a robotics.
- In motor industry.
- As the separate device of measuring engineering and instrument making.

Basic characteristics

- maximal measured corner : at nonlinearity of the characteristic of 0.5%, degrees 20
  at nonlinearity of 10% degrees 40
- The error of corner measurement,
  minutes, no more 2
- The range of target signal working
  frequencies, MHz 15.6-16.6
- The steepness of the transformation
  characteristic kIlz/degree not less then 30
- The range of working temperature, °C from - 10 to 85
- The feed voltage, V 10 ± 1
- The consumed current, mA 30.2

24.8 GENERATING TYPE PRESSURE DETECTOR

The detector with a sensitive element on surface acoustic waves is intended for measurement air, gases and liquids pressure in technological environments of the atomic power stations and the petrochemical industry, in transport systems and highways, pneumatic systems of the technological equipment, in a robotics, motor industry and in the other products of mechanical engineering.

Basic characteristics:

The range pressure measured, kIa 98-2450
The range target signal working
frequencies MHz 15.75 - 16.25
Capacity consumption, mW, no more then 300
The basic error, % no more than 0.5

The gauge is easily integrated to the computer, meets the requirements of explosion safety and radiating resistance.

24.9 PIEZOELECTRIC SOUND CONVERTER

The small sized piezoelectric sound converter is intended for transformation sound range electric signals insound and back and can be used.

- as a buzzer of a voice-frequency call in telephone sets,
- a radiator of a sound of watch-timers,
- for scoring of electronic toys, in systems of the security signal system.
- in systems of the signal system of the technological, test, control and measuring equipment, in a robotics, motor industry, home appliances etc.

Distinctive feature of converter IZP-I from analogues such as PSR (Russia) are higher efficiency of transformation (a level of sound pressure) and design which provide its convenient, reliable fastening on the mounting plate and in the device casing.

Technical characteristics:

The range of working frequencies, kHz 1.5-9.0
The level of sound pressure on distance of 0.5 m
on frequency 3 kHz at voltage supply 10 V,
dB, no less then 70

- Peak value of voltage supply, V, no more then 180
- The voltage target in the microphone mode, mV,

no less then 20

- The electric resistance on the alternating current

on frequency 2 kHz, kOm, no more then 10
The electric capacity, nl, no more then 15
The overall dimensions, mm, no more then ∅36x4
Weight, g, no more then 6

24.10 FILTERS ON THE SURFACE ACOUSTIC WAVES (SAW)

The filters on a SAW are intended for formation amplitude-frequency characteristics (AFC) of radiopathes, in particular of pathes of intermediate frequency (IF) of radioreceivers (special and household), timers, preselection of signals. The filters on the SAW with retiming frequency can be used in special engineering.

The basic characteristics:

On the example of the SAW filter for a path RF-MF USW of a Hi-Fi class radioreceiver
the central frequency, MHz 10,7 $\pm$ 0.1
the transmission band at a level 3 dB, kHz 200 30
the brought decay on the central frequency, dB, nore more than 14
the guaranteed decay at detuning from the central frequency
on $\pm$ 0,42-2.00 MHz, dB, not less 40

- the non-uniformity of AFC at detuning on 50 kHz from the central

frequency, dB, no more than 1

- the non-uniformity of group time of a delay in a transmission band 0.2

The technical decisions protected by the copyright certificates are used in filters. The technical and economic characteristics of filters make them competitive in the world market.

24.11 MICROELECTRONIC GAS SENSORS

The sensors are intended for monitoring composition of gas medium f(carbon compounds, hydrogen, nitrogen, moisture and other gases) of different kinds of industry and monitoring of an environment.

The sensors allow for register gas concentration to emissive gases with a large degree of selectivity, stability and with a small response time (3-6 s), have a high sensitivity (for example to CO - 10 ppm, restoration period - no more than 6 s(. Are easily ganged to a computer.

24.12 HERMETICAL DISK NIKEL-CADMIUM ACCUMULATOR -0.26 TYPE WITH INCREASING SERVICE LIFE.

Developed accumulator designed for power supplying portable radioelectronic equipment. It may be used in different electroelectrical appliances and household devices. In accumulator new electrode material containing Ni/Co spinel which is synthesised new technology is used. Service life is increased in 5 time in comparison with known analogies discharge capacity and specific energy is increased 30% specific consumption of material is reduced 25-3%. Operating temperature interval is - 20°C -150°C.

Tehcnical characteristics:
Nominal voltage, V 1.2
Nominal capacity, A h 0.31
Specific energy (volume), W h/dm^3 80.2
Specific energy (mass), W h/kg 30.2
Specific material capacity, g/W h 33.1
Regime of charge 0.026 A, 16h
Regime of discharge 0.052 A, U-1.0 V
Service life, cycles 900
Weight kg 0.0123
The size, mm 25.2x9.3

24.13 AIR-METAL CHEMICAL SOURCES OF CURRENT (CSC)

The CSC is used for the power supply of the wide range of electronic devices illuminating technical appliances of tourists, mountaineers, drivers, hunters, fishermen, different types of electronic toys, etc.

Technical characteristics:

Voltage, V	3.0
Current of discharge, A	0.2-0.4
Time of discharge, hour	10-17
Capacity A *hour	2.5-4.0
Weight kg	0.045
Overall dimensions, mm	90x40x20

Advantages

Eco-friendly, functioning in the wide range of temperature, unlimited term of storage, it doesn't contain precious materials or materials in short supply. The price is 30-40 % lower than the world analogues.

24.14 CUPRIC-MAGNESIUM CHEMICAL SOURCES OF CURRENT (CSC) (3,0-CMB-2,5)

Energy-supply of illuminating devices, lifebelts, rafts, ring-buoys, life-boats, cutters in seas and oceans. CSC are used for the power supply of illuminating and electronic appliances in the state of emergency.

Technical characteristics:

Voltage, V	3.0
Current of discharge, A	0.35-0.5
Time of discharge, hour	24
Capacity A *hour	3.5-5.0
Weight kg	0.085
Overall dimensions, mm	98x49x20

Advantages

The original construction of the case, cathode and anode. The possibility of functioning under water in big depth. Eco-friendly in contrast to the analogues. The price is 50% lower.

24.15 AIR-METAL CHEMICAL SOURCES OF CURRENT (CSC) (3.0-AMB-4,5)

The power supply of different life-saving appliances in marine, river and air fleets in the emergency situations. For emergency power supply of the wide range of different devices. For consumer goods.

Technical characteristics:

Voltage, V	3.0
Current of discharge, A	0.2-1.0
Time of discharge, hour	17-30
Capacity A *hour	2.5-4.0
Weight kg	0.085
Overall dimensions, mm	21x40x89

Advantages

The CSC functions without activating. The start-up is effected by pulling out the ring Easy to produce, eco-friendly. Explosion and fire safe High value of electric capacity, the unlimited term of storage

24.16 THE CHEMICAL SOURCES OF CURRENT OF THE SECONDARY USE (ACCUMULATOR)

Elaborated in the typical size of International Standard MEK HR 116/005 and used for pwoer supply of the series of electric appliances: receivers, clocks, calculators, listening devices.

Technical characteristics:

Voltage, V	1.2
Current of discharge, A	0.8
Time of discharge, hour	1-10

Number of cycles (charge-discharge)-2000

Capacity mA *hour	40-50
Weight kg	0.0018-0.002

Overall dimensions (diameter, height) mm 116.x5.5

Advantages

New, eco-friendly sources of current don't contain PB, Cd, MnO_2, Hg and Li. The term of function (cycling) is 2-3 times longer, the electric capacity is 1.5-2 times higher, and the price is 25-50% lower than the foreign analogues.

24.17 AIR METAL CHEMICAL SOURCES OF CURRENT (CSC) (1.5-AMB-25/40)

CSC are used for power supply of the equipment for communications, electronic and medical device, electrical heating clothes and shoes, illuminating and signal appliances, a wide range of consumer goods, etc.

Technical characteristics:

Voltage, V	1.5-100
Current of discharge, A	0.1-50
Time of discharge, hour	1-100
Capacity A *hour	1-200
Weight kg	0.1-50

Overall dimensions mm according to the modifications.
Advantages

New, eco-friendly reserves sources of current. The construction has been worked out in the CIS for the first time. The neutral electrolyte (water). The unlimited term of storage.

24.18 THE CHEMICAL SOURCES OF CURRENT OF THE SECONDARY USE (ACCUMULATOR)

New highly effective CSC of multi-time use are applied for power supply of the wide range of different electronic appliances and devices, including radio-stations, receivers, household technical equipment, signal and patrol devices, medical appliances, etc.

Technical characteristics:

Voltage, V	1.25
Current of discharge, A	0.2-2.0
Time of discharge, hour	1-5

Number of cycles (charge-discharge)-2000

Capacity mA *hour	1.0-1.2
Weight kg	0.028

Overall dimensions (diameter, height) mm 4.x50
Advantages

New, eco-friendly sources of current don't contain harmful and toxic materials (Hg, Pb, Cd, Mn, Li). The indices by cyclic recurrence are 100% higher than those of the world analogues. The price is 20-30% lower.

24.19 TECHNOLOGY OF METAL BALL MANUFACTORY

The technology includes formation of a drop of the fused metal inthe pulse are generator and updating of a superficial layer in the proper gas environment. Received balls can be used in manufacture of writing units of hall pens, bearings and other devices.

The technology allows to make metal balls of the size from 50 up to 500 micrometers with 10% accuracy, a surface by 12th class cleanliness and to change a chemical compound of their surface.

One half production makes about 0.001 seconds. As an initial material the wire of necessary metal is used.

Advantages in comparison with the existing technology of similar ball reception by method of consecutive driving of components in an abrasive.

the absence of waste products, that is ecological cleanliness of manufacture, possibility of ball manufacturing of any fusion temperature metal; small power consumption , i.e technology reduces power and material resources.

24.20 ACTOBACILLUS ACIDOPHILUSOL4STRAIN FOR OBTAINING PROBIOTIC PREPARATION

The perspective strain Lactobacillus acidoplulus OL4 from noncommercial dairy product, manufactured in Odessa region for obtaining probiotic preparation. This strain has maximum acids accumulation in a milk 390.5 $\pm$ 1.5° T and it ferments milk during 3.8 $\pm$ 0.5° T and it ferments milk during 3.8 + 0.5 hours. It has more intensive antagonistic activity and polyresistance to antibiotic drugs used in medical practice than some other industrial Lactobacillus strains, and it saves viability in model conditions of a gastrointestinal tract.

24.21 TECHNOLOGY OF PRODUCTION OF DRY CONCENTRATE THE LACTIC ACID BACTERIA

The technology of preparation of a dry hacterial concentrate of the strain Lactobucillus acidoplulus OL4 for obtaining a dairy product that can be used incorrecting intestInal normobiota. The tecnology contains the following operations the growth of cells of L acidoplulus OL4 i nthe otpmised nutrient medium, the concentrating bacterial mass with using ultrafiltrational membrane, the mixing fluid cells concentrate with shielding medium and desicating of a bacterial concentrate in a fluidized layer on the inert stuff. The usage of the given technology allows to lower energy output in the process of obtaining of a dry bacterial concentrate with the high quality and activity in 2 times.

24.22 PROBIOTIC PREPARATION ON THE BASE OF LACTOBACILLUS ACIDOPHILUS OL4 STRAIN

The dry concentrate of Lactobucillus acidoplulus OL4 strain for the production of a dairy product correcting intestinal normobiota. The concentrate is powder acquiring the following characteristics the total quantity of lactobacteria in 1 gram - 2.0×10^9 CFU, the level of humidity - 12.6 ± 1.4^0 T/h, the acidity of a clot - $100 + 4^0$T.

The dry bacterial concentrae L acidoplulus OL4 has the capactiy to correct normal biota of intestine of experimental animals caused by antibiotic therapy, and it colonizes vaginal consystem, supporting constant population of lactobacilli

The bacterial concentrate may be used withour previous activation while being dissolved inmilk or physiological solution. When preparing the product one portion of bacterial concentrate (1gr) should be added into 10-12 liters of sterilized milk and this mixture should be incubated for 3.5-4.5 h at 40^0C.

24.23 NEW CLASS OF FUNCTIONAL MATERIALS ON THE BASE OF COMPLEX COMPOUNDS OF GERMANIUM

Germanium with organic multimain acids which has high optical properties which can change by entering the certain impurity at a stage of synthesis. The material has also semiconductor properties. Simultaneously the material has aderbing properties of pair chemical compounds and can be used for creation of gas sensor.

24.24 MICROBIAL TECHNOLOGY OF DEEP CLEANING OF OIL WASTE WATERS

The method of cleaning of industrial-dainage waste waters from emulgated gydrocarbons employs the use bacteria-destruction Pseudomonas fluorescens immobilised on a complex biologically-positive carrier of original composition. The cleaning of waste waters occurs in a "Mikos" bioreactor apparatus or no filters after mechanical or physico-chemcial treatment. The created biotechnology is ecologically and economically feasible, close to natural processes and provides for.

- reducing the amount of emulgated oil products in treated water up to analytical zero.
- cleaning the water from other organic bioresistants of pollution (surfactants, phenols, etc.);
- improving the water quality of waste water according to sanitary-hygienic indices (total microbe count, coli-index) which excludes, the additional microbe pollution of the natural water body;
- treated water is biologically suited for discharging into natural water basins and for repeated used.

The method is protected by 8 author-certificates.

24.25 "ECONADIN" - A NEW BIOPREPARATION FOR CONTINGENCY ELIMINATION OF OIL POLLUTION

The biopreparation "Econadin" (meaning ecological hope in Ukranian) is an immobilisation of non pathogenic bacteria-destructors Pscudomanas fluorescens on an organic substrate (peal) according to special technology and dderived from the natural environment. The new generation biopreparation has sorptive and destructive activity to oil carbons.

"Econadin" is active in a wide range of temperature, buoyant, hydrophobic and after sorption oil products it does not require collection and the destruction of oil hydrocarbons occurs in the natural environment. It does not lose its activity during long storage. Main advantanges of "Econadin " are rapid results, easy use and lack of agressive properties. It is used for cleaning the aquatic environment of ports and coasted zone, for elimination of oil spills and oil products on sediments and also for thorough filtering in the time of treating of industrial waste waters.

24.26 METHOD OF ELIMINATION OF THE OIL FILM POLLUTION ON THE WATER SURFACE

The method of using the "Econadin" biopreparation - a sorbent and destructor of oil hydrocarbons which block oil pollution of the aquatic environment in the shortest possible time prevents spreading and eliminates it with minimum ecological loss.

According to the method of preparation is applied to the polluted water surface as a thin film. The first sorptive effect appears immediately. After sorption of the oil products the "Econadin" biopreparation does not need to be collected and the destruction of oil products occurs in natural conditions. The method is used for nature conservattion biotechnologies in protection of the sea, rivers, lakes and other water basins.

24.27 STRAINGAGE PHOTODETECTOR

The photodetector is the sensitive element on the base of the surace barrier structure (the metal semiconductor contract) that is intended for the detection and modulation of the light in the communication systems, the environment monitoring automatics. The essence of the elaboration reduces to that under the anisotropy pressure the displacement of the long-wave sensitive threshold may be rather efficient because the processing of the structure by the laser illumination on the technology stage of the making.

MAIN TECHNICAL CHARACTERISTICS

displacement of the long-wave sensitive threshold, %50

consumed power, ii W, less 20...50

overall dimensions, mm 0.5 x 0.5 x 1.0

Analysis which on the base of the patient scarch was made, has shown that for the totality essential sign of the technical decision, the photodetector has several preference before analogues. The economic attract of the photodetector is based on the utilisation of the wide-spread group the microelectronic technologies.

24.28 BUBBLE-TYPE GENERATOR OF MONODISPERSE AEROSOLS

The generator operation is based on excitation of capillary self-oscillations during the process of gas stream penetration through a thin bounded liquid layer. Entering through a small outlet of a substrate at an insignificant extra pressure, the gas forms bubbles which burst regularly and form a stream of identical droplets.

MAIN TECHNICAL CHARACTERISTICS :

Size of formed droplets, m	10-100
Droplet formation frequency, Hz	200-5000
Overal ldimensions, mm	200x100x30
Mass (with the liquid to be dispersed), g	300

In the device a technical solution is used protected by the USSR author's certificate, as well as results of the research project supported by the NATO grant. The technical and economic performances of the generator make it quite competitive in the world market. By the principle of operation the generator has no analogs. As for operational action for the droplet formation.

Economic advantages of the generator are based on the simplicity of its structure and fabrication. Approximate price of the proposed generator will not exceed $500, while the only commercially available monodisperse droplet generator with the stream disintegration (firm TSI, USA) costs near $6000.

The device can be used in firms and institutions of the environment protection, medicine, power engineering, and research institutions.

24.29 HYBRID REFRIGERATING SYSTEMS

In last yeas the plenty of activities bound with usage of ablative methods of cooling has appeared. To doubtiless advantages of a method concerns ecological acceptability. They main problems of broad application, considerable overall dimensions and specific consumption of possible, in view of low gradients of propulsions, limitation of climatic conditions of possible usage, necessity for significant amounts of water on compensation of ablative process.

The problems, appropriate to refrigerating engineering are well-known also. The new capabilities open for hybrid systems integrating advantage of both principles of cooling natural and simulated. Their mutual federation will supply a capability of creating of a new generation refrigerating systems. The hybrid systems have no climate limitations of applicability and practically replenishments do not demand freshen by water of an ablative part of the chiller.

As in ablative chillders of an indirect type always there is a part of an airflow ensuring steam cooling and eject able in environment at enough low temperature (but high humidity), this flow can be used for example, for cooling of the condenser of the chiller, that essentially reduces manufacturing load on the aggregate, specially if to take into account, that chilled medium previously is chilled in the ablative chiller at a high temperature level and only then acts on further cooling in the chiller, that is more expedient from the point of view of a themodynamics. Thus the water condensate from the condenser of a cooling machine can be used for organisation of ablative process (replenishment of an ablative system), so that ablative cycle appears practically is self-contained also hybrid system can be exploited or without a replenishment freshen by water, or at a minimum replenishment. Seasonally manufacturing and climatic conditions, the lobe of a heat load on ablative and compressive chillers can be varied, providing, in a year-round cycle of exploitation of the equipment, padding economics of energy. The outcomes of preliminary researches have shown that the hybrid systems are capable to supply economics of energy up to 40% in conditions of year-round exploitation, in matching with conventional systems, at minimum ecological effect on a habitat.

As refrigerating engineering consumes up to 20% o energy made in country the state significance of the project is obvious. The payback of the project will not exceed 3 years. The value of the project for the market of Ukraine is great also he introduces doubless concern for foreign countries for example countries of Central Asia and North Africa of locale.

24.30 LASER PHOTOELECTRIC COUNTER OF AFROSOL PARTICLES

The device operation is based on the light scattering by acrosol particles which are carried by airflow through a focused beam of a laser diode (680 nm, 30 mW). Each particle scatters the light in accordance with its size. The scattered light is registered by a photodiode whose signal in then processed with a PC in a real time scale. Measured data may be presented as total number of particles, their mass concentration and particle size distribution.

MAIN TECHNICAL CHARACTERISTICS :

range of measurable sizes, pm	0.5 5
minimum concentration of particles. 1	2000
aspiration rate, 1/min	0.1 - 0.5
measuring time, min	1.0
overall dimensions, mm	1.0
total mass, kg	1.0

The research and development is carried out on the base of the experience in designing laser devices and acrosol equipment. Technical parameters and performance of the developed particles counter correspond to the modern level of foreign devices of the analogous class. Due to the simplified construction and the use of predominantly domestic components, the cost of the developed device will amount approximately $1000. This is by the order of magnitude lower than the price of western analogs, which makes the device attractive not only in the Ukraine market but also at CIS countries as well as in Eastern Europe, Nea and Middle East.

The device is designed for the current control and monitoring of the air environment in production areas and can be used in firms and institutions of electron, medical and pharmaceutical industries (a problem of "clean rooms"), as well as for the harmful pollutions' control in metallurgy, power industry and in institutions for ecological monitor.

24.31 CONDENSATION-TYPE GENERATOR OF MONODISPERSE AEROSOLS

In the erosol generator, the controlled condensation of a fugitive liquid (dibutylphtalate) vapors on the condensation cores is employed. The size of the particles formed in such a way depends on the evaporation and condensation regime parameters (temperature, flow rate)

MAIN TECHNICAL CHARACTERISTICS :

particle size range, pm	0.3-1.0
size distribution dispersion	%10
consumed power	500
overal diamnsions, cm	20x40x60
mass, kg	8.0

The development is based on the accomplished research for the otpimization of the aerosol generator structure. The technical solutions used can be considered as "know how" Performance of the sample created practically corresponds to parameters of the analogous devices of the same class, fabricated by Western manufacturers (e.g. by he firm TSL, USA). due to the use of domestic components, the developed generator cost price may not exceed $2000. For comparison the price of an analogous. TSI product amounts approximately to $10000.

The deivce can be used in institutions of the health and environment monitoring and protection, medicine, power engineering research institutions.

25. KYIV MEDICAL ACADEMY OF POST-GRADUATE EDUCATION

25.1 "MEDICAL ELECTRONIC PASSPORT" (MEP)

The functionally independent medical Electronic Passport (MEI) on DVI), which contains all items of information onthe patient, is offered. the system of representsation of the information in MEP is built. The pricniples of a validity maintenance for the procedures of MEP application in health care are proposed. The maintenance of unauthroised access production is designed, the logics of creation of the selective access systems to information in MEP is offered. The structure of a global information system of depositing, storage, looking up and data processing concerning personal health of the citizens is based on the unification medical electronic documentation. The principles of the solutions making in medicine are adapted.

The application of the MEP in practical medicine wil allow.

- to ensure acceptance of the operating solutions in case of pressing condition at the expense of obtaining the full information about the patient.
- to ensure patients health condition monitoring during all of his life, to recommended preventive and improving measues at the stage when return of main systems of an organism of the person to the condition of the norm is still possible.
- to have a realistic dynamic picture of the population health structure with allocation groups of risk both by their localisation of their occurrence and professional work to create information basis for maintenance of a legal protection both patient, and doctor.

26. KHARKIV NATIONAL UNIVERSITY OF RADIO ELECTRONIC

26.1 THE FIBER-OPTIC TRANSFORMER OF VISUAL FASHIONS

The hardware-software device for synthesis of a new tyupe visual fashions is offered, which provides a complex for support of psycho-physiological states of people.

The transformer is implemented as independent hardware-software devices.

Spheres of possible introduction of the transformer:

- formations of color registration of psychologically comfortable hands of dialogue of the people.
- in rooms of psychological relief of dispatching items of control systems of responsible industrial objects;
- the entertaining industry;
- Psychoregulating, psychocorrecting and psychoadapting opportunity of colodynamic influences were confined by long-term examinations.

The analogs in the world are not present.

26.2 INFORMATION SYSTEM FOR COMPLETE ACCESS TO INTERNET THROUGH A RADIOTRANSMITTING NETWORK

Model sample of the terminal for complete access to Internet through a radio transmitting network. The system of complete access to Internet comprises.

- The server connected to Internet.
- The computer of the user with the software for access to Internet.

Terminals for an exchange sectional of the server and user computer on a network of a three program announcement;

- The compounding devices set on transformer substation and use's transformer.
- Distributive cable and domestic posting of three-program radio

The model trials have shown a reality of the put problem. The system, works croiiko without malfunctions on settlement velocities equal 33600 bits/s.

26.3 THE PROGRAM COMPLEX FOR MONITORING VERIFICATIONS OF THE USER

The program complex designed which implements in a database of some exterior attributes of the treatment of the user by operation with the program. At the following in test system is developed accumulation, processing, evaluation of coefficients, which correlate. As the exterior attributes of the user undertake motions of the mouse. The program complex contains.

1) The special module Spy, that files parametes duration of arbitrary mouse motions, quantity and quality of mouse tracks. The results of each recording are maintained in a database for everyone tested and it are taken into account at a self-acting correction of parameters system at the following inputs.
2) Toolkit of the manager for an attuning of a shell,
3) A database of users.

The program system is constructed on client-server technology and based on insert in everyone transaction with the server of a special package-trailer, which is shaped by the module Spy. The package-trailer carries a portion of the information, which characterizes the user during operation with system. The program complex is easily transferred on any program platform and can be built in system.

27. UZHGOROD NATIONAL UNIVERSITY

27.1 NEW BACTERIAL PROBIOTIC "MONOSPORIN-IIK" (ANTIKI, EBSIELLOSIS)

We have developed a new veterinary preparation "Monosporin-HK" based on B subtilis stram 090 in two medicinal forms usual lyophilic-dried, and new pel-like, for the prophylactic and therapy of klebsuellosis etiology diseases. The strain B. subtilis 090 was selected among over 900 other bacilli strains isolated from various sources. The given culture demonstrates high antibacterial efficiency to certain pathogens of opportunistic infections in experiments in vitro Application of B. subtilis 090 per as may to a high extent prevent and treat the infection caused by Klehsiella pncumonia reproduced on various experimental models with oral, intranasal and parenteral infect introduction to usual non-linear misc. Similar prophylatic and therapcutic use of the strain B. subtilis 090 signficiantly reduces the experimental animals' mortality caused by introduction of salmonella and staphylococcus toxins. The strain B. subtilis 090 does not cause changes of main indices of the organisation's normal microflora. In conditions of broad experiment on agricultural animals and poultry with the aim of industrial testing of the preparation, its stimulating effect on their general condition, weight gams and certain biochemical blood indices, were revealed. Histological and electronic-microscope researches proved absolute harmlessness of "Monosporin-IIK" at different applicationj dosages. It is also worth emphasizing that some strains of B. Subtilis 090 are characterised by a high level of fermentative activity, first of all, of amylolytic, pectolytic, lipolytic, protcolytic, lysozyme ones, and are able to produce antibiotic substances and activate macrophages. Most probable mechanisms of anti-klebsiellosic efficiency of "Monosporin-HK" are the following competition for nutrients, production of antibiotics and other biologically active substances, stimulating effect upon the immune system of the host's organism. Its prophylactic application provides for the conditions for adequate mobilisation of thyroid gland, that correspondingly being reflected by normalisation of indices of its functional activity. Previous researches showed advantageous regulating impact of the given preparation upon the course of lipid metabolism of the laboratory animals' organism i nthe state of hypothyroids.

Impact of "Minosporin-HK" active base - B. subtilis 090 upon main indices of different sevctions of the intestinal mucous condstitutent and systemic immune response were studied in detail on sterile linear BALB/c mice. Certain changes of the immunological indices of mucous (local) immurie response of formerly germ free BALB/c mice's organism to the peroral introduction of bacilli was revealed, viz: activation of mesenteric lymph node and Peyer's patch reproducing centres was noted. The highest activation of mescenteric lymph node and Peyer's patch reproducing centres was noted. The highest activation was revealed with the help of FAC analysis mainly for IgA and PNA positive inductions in mesenteric lymph nodes and Peyer's patches.

27.2 CHALCOENIDE NON-ORGANIC RESISTS AS RECORDING MEDIA FOR HOLOGRAPHY, LASER AND OPTICAL LITHOGRAPHY

Holography: Chalcogenide non-organic resists were used to fabricate relief holograms and their metal matrics, holographs, diffraction gratings (1200 to 3600 mm^{1} size up to 100x100 mm^{2} - 60% efficiency under nonpolarised light, 10^{6} stray light level), and various focusing holographic optical elements.

Laser lithography: Element sizes achieved for mask formation under focused laser beam were fabricated up to 0.2 for negative reside and up to 0.5 for positive resists.

Optical lithography: Element sizes achieved - upto 0.5 both for positive and negative lithography.

27.3 WAY OF COMPLEX CLEARANCE OF THE HIGHLY CONCENTRATED INDUSTRIAL WASTE WATER

The new economical model for effective treatment of industrial and also agricultural polluted waste water on the basis of klynoptilolite mastrix by using of absorbed on their surface most perspective hacterial biodestructive strains have been developed.

The complex clearing of industrial sewages from impurities of the different nature, excluding from phenols, to include clearing by means of phased passing of a polluted water through two stratums of sorbent and biofilter which one represents a mixture okf a course granular sorbate material together with culture of bacterias. This way differs by the fact that as sorbent and as the component of the biofilte will be used klynoptilolite of Sokyrnycya, moreover the clearing of industrial sewages conduct in three stages the first stage represents mechanical clearing in single layer elutriators by means of sorbent, second-biological sewage cleaning - through the biofilter, that is sorbent together with bacterial biodestructive strain Aeromonas hydrophila AF01, adsorbed on its surface, and third stage alterpurification and disinfecting of water - at the expense of sorbent Diameter of grains of a fraction klynoptiloite for stage of mechanical clearing 0.5-1.0mm will by, for stage of a biological sewage cleaning - 5.0-7.0mm, for stage of an after purification and disinfecting of water- 3.0-5.0mm.

28. NATIONAL TRANSPORT UNIVERSITY

28.1 APPARATUS FOR DIFFUSIVE BORATING OF METALWARE USING NONOXIDATIVE BORATIVE HEAT CARRIERS AND EXTERNAL MAGENETC FIELD

The proposed technological apparatus includes the following major components, solenoid, solenoid powre supply, electric furnace with container.

The Apparatus is designed for strengthening the machinery metal, parts by applying the diffusive boration in nonoxidative borative heat carriers and external magnetic field. Also it can be used for thermo-chemical treatment of machinery and parts.

The Apparatus allows for the first time in practice to effectively use the magnetic field for intensifying diffusive saturation of surface layes with atomic boron.

The duation of boration process is significantly increased and allows to obtain the mono-faze of low-boron boride Fe_2 B, which allows high physico-mechanical properties of surface metal layer such as durability, wear resistance, thermal stability and heat resistance and corrosion-resistance.

The Apparatus could be used for manfuacturing and repair of machinery and parts as well as other equipment for strengthening and renovation.

28.2 MEASUEMENT OF ROAD STRENGTH, ROUGHNEES AND FRICTION

PCSU - Multi-purpose road measuring equipment designed for defining the strength of flexible road pavements, road surface friction contro land road roughness complying with National Standards.

Application

- in the operational control of regulating the technological processes during the laying of road pavement (RP) layers and surfaces;
- in final acceptance quality control for defining the unsatisfactory sections of roads with low strength, low friction and high roughness of the surface.

The Condition of use.

PCSU can be used as the trailer for special automobile, which is equipped with the necessary water tanks (not less than 400 litres). Any passenger car also can be used for lowing the PCSU trailer for specified measurements. The measurements are carried only at temperatures above 0 Celsius and strictly in accordance with Road Traffic Rules and Law and in accordance with Industrial Safety and Accident Prevention Law. The tow personnel team accordance for the PCSU: operator and the driver of car.

Metrological Parameters

Road Strength Measurement range, MPa from 100 to 400

Main relative error for strengthe measurements, % no more than 20.

Road Roughness Measurement range, sm/km, from 0 to 500

Main relative error for roughness measurement, % no more than 5

Road Friction Measurement range from 0.1 to 0.9

Main relative error for road friction level, % no more than 5.

29. EAST-UKRAINIAN NATIONAL UNIVERSITY

29.1 MACHINE FOR CUTTING SILICON MONOCRYSTALS TO PLATES

Technical novelty of the machine lies in the fact that the cirde width of is cutting instrument, diamond cutting, wheel with inner cutting edge, is smaller than the diameter of the cut monocrystal, it is able to pass through the crystal with all its effective area and to make a cut of unrestricted depth.

The given way of cutting ("on exist") allows to obtain plates with big diameters at relatively small dimensions of the cutting wheel. It is technically realised by combing the instrument with electrical machine's machine's rotor which remains in stable spatial position during rotation without mechanical supports and electrical contacts.

High rotation frequency allows the instrument to gain the needed rigidity and ensures progressive cutting regimes when linear velocity of cutting edge reaches 40-80m/s. The absence of massive spindle unit not only makes the machine less powe consuming and raw material intensive, but also raises it svibrostability. The mass of the cutting wheel rotor-is small and doesn't act as vibration source during rotation without mechanical supports.

The presented machine has the following advantaes.

It has no restrictions on the diameter of the cut monocrystals.

It provides a higher quality of the cut plates.

It's cost price is lower.

It has higher productivity together with reduction of operating costs.

29.2 INVARIANT HYGROMETER OF BULK MATERIALS IBMC-1

The invariant hygromete of bulk materials IBMC-1 is applied in an agriculture to a grain; in a process industry for sleets and beads; in building for sand, cretaceous etc; in procuring and enriching areas for ores, coal and products of their processing.

The heightening of exactitude of monitoring of damp of bulk materials allows considerably improving quality of production, to lower losses for processing of raw, reception of production. The existing high frequency hygrometers of bulk materials have no enough split hair accuracy.

In a gear utilised advanced design; a computational method of damp on model of an alternate corpuscle of bulk material, method of seperate measurement of fissile and jet component of conductance of a stuff with the help of diode-capacity bridges, technique of grading of a hygrometer at usage of the hygrometer.

The gear consists of analogue and digital parts. To an analogue part the high-frequency generator two the diode-capacity bridge, analogue compound conductance of stuff.

The microcountroller with built an analog-digital converter, template pad, liquid-crystal indicator, device of exchange of the information with the personal digital computer goes intok a structure of a digital part of a hygrometer. The constant voltage from bridges will be converted an analog-digital convertter to a numerical code which one is treated by the microcontroller and the magnitude of damp on average capacitance of an alternate corpuscle for all volume of bulk material is determined for the conforming stuff. The availability in a gear of the microcontroller with a large amount of memory allows a gear to have up to 100 calibration performances of stuffs and to save observed data even without power supply of a gear. The gear has the removable converter, which one is easily spacefilled by bulk material and is drained Power supply of a gear also possible from batteries by voltage 12 V. The designed hygrometer MBMC-1 has lower price compared with world analogs.

29.3 DEVICES OF NON-DESTRUCTIVE TESTING AND DIAGNOSTIC SYSTEM

1. The eddy-current testing instruments for the control of pipers in a flow mill.

The eddy-current testing instruments for the control extended cylindrical, a lot of side or rectangular pipes, wire from ferromagnetic and nonferromagnetic material. Testing instrument can be established in a flow mill for the continuous control or work independently for cut of articles. Controllable diameter of articles from 2 up to 219mm at thickness of a pipe wall up to 12mm. Testing instrument is capable to reveal and to distinguish separate defects chain of defects, through and superficial defects.

Due to high sensitivity testing instrument and automatic indemnification of change of a backlash the control o fpipes with the landed crids in carried out.

2. The ferroprobe magnetic testing instrument for the control of complex geometrical form articles.

Testing instrument is intended for the control of complex geometrical form articles (step shaft, axes of wheel pairs, rails that others). Testing instrument provides scanning in all to its length and reveals superficial and undersuperficial defects on depth till 7-10mm of any orientation. Realisation of the control does not need magnetization of article. Testing instrument has five independent channels, which provide the control of all transitions. The work of testing instrument is operated with the PIC-controller, which transfer all received information to the computer. Here information is processed and is kept.

3. The two-components ferroprobe magnetometer.

Two components ferroprobe magnetometer MA2-2 is intended for measurement of a magnetic field intensity in space and on a surface of articles in conditions of manufacture. It is used for adjustment testing instruments, systems of magnetizative and demagnetizative measurement residual magnetizability of details, pipes, large-sized articles. Magnetometer has a high noise stability, reliability of received result, temporary and temperature stability . It is reached at the expense of use in quality magnetic-sensitive element ferroprobe with impulse excitation and application of new amorphous alloys at manufacturing cores ferroprobe.

Range of measurement magnetic field intensity 20-10000A/M, error of measurement 1.5-3%.

4. Portable ferroprobe testing instrument and Portable eddy-current testing instrument

Portable ferroprobe testing instrument III-I for the manual and automatic control of the complex geometrical form details of such as step shall, the rail case details and others is intended. At the automatic control III-I is completed by a drive with numerical program management of the gauge. The high sensitivity testing instrument allows to supervise details through varnish-paint covering with use of local magnetization. It enables to supervise separate details without dismantle, for example, rack the chassis of the plane or axes of wheel pairs.

5. The automatic demagnetizative systems are intended for demagnetization of various configuration and geometrical sizes details (processed or transporting) with application of magnetic adptations from steels of any marks. The magnetic system is constructed by a modular principle, it allows to create demagnetizative area of any sizes. The base module with the sizes 600x400x300mm has height of a zone demagnetization 150mm. The electronic control system is unversal and can work with all types of magnetic systems. Time demagnetization 10-15 with, residual magnetizability 100-200 A/M.

30. THE OPEN CORPORATION IS "BOLSHEVIK"

30.1 COMPLEX FOR TUNNEL BORING KT-62A24

Complex is intended for mechanised building of the tunnels both through the unstable water-saturated earth and through the stable rocks with the natural moisture content.

Traditional method of tunneling under the complicated geological conditions (floating earths and so on) needs high expensive freezing of earth, sinking the borcholes from the ground surface as well as the large labour expenses.

Having no analogues among the drift mining machines in Ukraine and CIS, the complex KT-6.2A24 eliminates the disadvantages above and provides the following

- speed of tunnel mining increasing by 3-4times;
- labour expenditure lowering especially that of manual labour;
- considerable lowering of the metro building costs;
- eliminating of a necessity to destroy the town building over the tunnel trace.

30.2 TUNNEL ESCALTOR OTX-3/75

The escalator is intended for transporting of the passengers at the Metro kstations. Analogous by design unit may be used as interstorey escalator in the underground subway, at the highspeed tram stations, in the public buildings.

New generation's escalator OTX-3/75 has the following advantages in comparison with the working machines.

- increasing of the station carrying capacity-these four escalators may be mounted in the standard tunnel instead of three traditional ones;
- power consumption and metal consumption are 30% reduced;
- run till overhaul is 3 time increased;
- control, check and diagnostics are automated;
- space of the escalator rooms is reduced;
- volume of building-and-mounting works for metrok stations is reduced;

30.3 LINE FOR PROCESSING THE WORN-OUT TYRES & RUBBER WASTE

We offer to supply the process line for processing the worn-out tyres (among them the ones with metal cord) and rubber waste into a fine-dispersded rubber powder devulcanised.

The cost of arecovered powder is 15-20 times less than the cost of raw rubber. The powder can replace 20 per cent of raw rubber during production of tyres and technical rubber articles or 80 per cent of it during production of consumer goods (soles of boots, rugs and the like) and minor rubber products (rail chairs, the surfacing for railway crossing and stock-rasiing farms and othes).

The process line performs the two-stage crushing of worn-out tyres, the following grinding in disperser-extruders, separation from an obtained powder the elements of metal or textile cords.

The base unit of the line is machine of new generation a screw-rotor disperser-extruder of DEKCHER-150 or DEKCHER-230 tyes that devulcanizes a rubber in parallel with its grinding.

In accordance with the necessary production rate, the line is completed with the different number of the single-type machines and this number of machines determines the area occupied for the line and the quantity of consumed power.

30.4 UNIT FOR PRODUCTION OF FUEL MIXTURES WITH USING THE RAPE OIL

The unit is designed for production of the diesel fuel with the help of mixing and special cavitation treatment of the components. The mixture consists of 70-90% of petroleum fuel and 30-10% of oil out of rape seeds.

The unit incorporates the extrudes for cold pressing the oil out of rape seeds and the hydraulic dynamic mixer.

The advantages of the present practice application are:

- saving the difficult-to-obtain petroleum
- renewing the vegetable ram material;
- comparative coological puriuty of the combustion products;
- possibility to export the contaminated solts and to recultivate then by growing the rape.

The unit is simple for use, occupies not great area.

30.5 SHAPES VULCANIZERS OF TYRES

The shaper-vulcanizers are designed to shape and vulcanize the diaggonal and radial design tyres in collapsible moulds and moulds with equaorial joint. The design allows to reset the shaper-vulcanizers from the standard size of tyres to another.

Wide range of shaper vulcanizer (B) is offered.

40°, 45°, 55°, 63.5°, 75°, 88°, 100° and 125° for exploitation at tyre works in manufacturing the automobile and tractor tyres.

shaper C/1-300 and vulcanizers 1-4500 (200°), 1-2300 M are manufactured too. They are intended to shape (C/1-300) and vulcanize (rest) superlarge-size tyres.

It is made two types of B 10° - "CHODOMATIC" and "BAG-o-MATIC" ones, including the machines with vertical travel of cross-piece and plate heating. According to consumers' demands B 42°, 48° and 40° can be run.

36. DONBASS STATE ENGINEERING ACADEMY

31.1 TECHNOLOGY, INDUSTRIAL, EQUIPMENT AND FACILITIES FOR HOT ROTARY ROLLING WITH FRICTION TOOL.

We worked out and mastered technological process and equipment for hot rotary rolling by means of friction tokols that allow to get shell mould products from tube pieces or intermediate products requiring minimum machining with machining allowance depending on profile intricas7 and its dimensions not more than 0.5-1.5 mm each side.

Due to this labour intensity is 2-3 times lower, the use of metal is 30-40% less and reduction of production cost accordingly.

Welded hot and cold rolled tubes, drawn tubes with higher precision cab be used.

Materials for tubes are carbon steels (st2.20, 40) medium carbon steel (20X, 30X, 40XTH, 40XTHM, 40XTCA) tool steels (7,8,IIIx15) and somealloy steels.

We mastered processes for tube diameters 20-300mm at wall thickness 0.8 iS mm tube section length is not limited.

Method of hot rotary rolling increases the quality of product producted if compared with other deformation methods. During the process the defects of metallurgical and rolling production (lamination, flaws, laps and so on) that may not be detected during other methods of treatment are revealed. Besides during rolling texture fibres of metal are not rimmed and metal sexture of products provided have smooth bends (without stress concentrators that follow the bend of the part.

Highly productive rotary processes are used the produce the following parts:

- geometrical bottoms of any form,
- neck-type narrowings;
- high pressure vessels, filter bodies;
- drums and rollers of belt conveyers;
- boiler plant equipment;
- oil and air cylinders;
- parts with flanges

31.2 AVERAGE AND HIGH TEMPERATURE LUBRICANTS FOR HEAVY-DUTY UNITS OF SLIDE FRICTION AND SLIP

At present Ukraine has no its own average-temerpature lubricants with the working temperature to 200-250° C, it has no high-temperature lubricants with the worksing temperature to 450° C and to 800° C for a short time.

The average-temperature lubricants of the type. The average-temperature lubricants of the type "Khynoid-94" which were developed by us can be used in heavy-duty speedy and slow units of slide friction and slip (as scaling grease in the production of bearing, hubs of rolls in handling lines of rolling mills, while operating machine tools, automobiles etc.). counterwearing, counterscoring and antifrication properties are increased almost by an order greater compared to the most effective lubricants.

High temperature lubricants are high adhesion materials for heavy duty slow unis of slide friction and threaded connections, chain drives and gearings (firing kilns for bricks, annealing furnaces for aluminium pipes, in the production of glass, china, hubs fo rolls in handling lines of rolling mills, etc). Lubricants resist the influence of corrosive medium, they are not washed with water, hence they reduce the environmenta pollution.

Earlier such lubricants but possessing lower technical characteristics were bought abroad. For example, for chain drives, in the furnaces for annealing of aluminium pipes in perfumery production the high-temperature lubricant of German from ":Kluber" was used.

The lubricants developed by us have undergone the industrial tests. They have been introduced at the enterprises' "Impuls" (Shostka). Intergraed Works "Aliye Parusa" (Nikolayev)

31.3 TECHNOLOGY AND EQUIPMENT FOR CRASHING AND SUPER LARGE SIZED TYRES

The utilisation of worn-out tyres is the urgent problem for cities, lfrge settlement and industrial regions, as they cause long-term and stable pollution of the environment.

In Ukraine a great many of tyres with the total weight of 150,000 tons becomes worn-out annually. Talking into consideration the whole number of tyres available about 230,000 tons of them need to be processed to Donetsk region it is necessary to salvage worn-out tyres 8,000 ions in weight.

The technologies and equipment developed by the Dombass Engineering Academy allow to crush tyres into crumb by belt saws. The process is characterised by increased efficiency, minimal power consumption, finer dimensions of the crumb. The original properties jof rubber are not changed during the processing.

The further application of rubber crumb for tyre production will allow to get economical efficiency of more than 2.5 million US dollars.

Rubberr crumb may be applied for production of:

- rolled, roofing water proof materials;
- moulded rubber articles for agriculture;
- rubber sanitary ware;
- rubber mastics and bituminous-rubbercements;
- aibber powders, improved ingredients for tyre stock.
- bicomponent filters for plastic and rubber ware;
- marketable rubber crush.

32 VERNADSKIY TAVRIDA NATIONAL UNIVERSITY

32.1 BIOTECHNOLOGICAL METHODS FOR CREATION OF TISSUES COLLECTION OF RARE AND VANISHING PLANTS

More then 10 species of plants are disappeaing every year in the World. It caused increasing of anthropogenic pressure on nature. This siuation becomes much more difficult because of unsatisfied common ecological state influncting on reproduction systems and restoration of plant populations. In this conditions endemic and small number species suffer mostly becasue of their specific ecological-biological and phytocenotic peculiarities.

At present time in Ukraine the highest temps of genetic erosion in Ukraine are observed Thus during the last decades the Crimean flora have lost 31, by some evaluations-39 species, among them 21-from the flor of Ukrane.

In this situation measures directed to preservation, restoration and rational use of plant's resources are necessary. The elaboration of biotechnological methods of reproduction of plant species, creation of genetic banks as re-planting cell cultures will allow to solve a main part of these problems as well as obtain valuable products of medical use not from the natural raw but from cultivated cell biomass. For preservation of genetic fund and rational use of plant resources of the Crimca a collection of cell cultures planted in controlled condition on artifical nutritive media was created. At the present time the collection includes 25 plant species and every year 2-3 new species have been added. A basis of the collection consists from the highly decorative Crimean flora species and also species that are sources of valuable biologically active substances. The collection is supported by periodical cell, tissue, oran and plants-regenerants sub-cultivation and also for account of minimisation of growing and development processes in low positive temperature conditions.

For creation of the collection tissues and organs of the Crimean plant species growing in natural phytocenoses were used. For every plant specie the optimal explant types for effective micro-reproduction and obtaining of callus culture biomass were given. Tasks of micro reproduction are solving on the base of isolated meristems, germs, cultivation and also induction of morphogenesis from explants of vegetative, generative organs and callus cultures.

A possibility of plants-regenerants deposing in conditions in vitro and their adaptation to normal planting conditions with latter transfer to the nature for supplement of disappearing populations is shown.

32.2 MAGNETO-OPTICAL ANALYSERS

Magneto-optical analyzers are used in defectoscopy and criminalistic research

- for hidden defect detection under surfaces of metallic components.
- for phonoscopic examinations (identification of magnetic record appliances, search for signalogram montage traces from magnetic data carriers, partial lost data recovery);
- for verification of identification number of automobile parts and weapons;

The action of the magneto-optional analyssers is based on visualisation of spatially non-uniform magnetic fields produced by magnetic data carriers (magnetic tapes, disks) or various defects. In the analysers, epitaxial ferrite garnet films are used as the active medium of transformation.

33.DNIPROPETROVSK NATIONAL UNIVERSITY

33.1 RESEARCH SCHOOLS OF THE DNIPROPETROVSK NATIONAL UNIVERSITY

The University scentific has been done within the framwork of the following research schools and creative groups that has developed lately. Aero and hydromechanics Mechanics of a deforming solid; Physical material studies, Physics of active dielectrics and elements on their basis; Physical and mathematical neuro-bcybernetic process modeling; Function approximation theory; Fundamental and applied problems of spacecraft equipment design and application; Geobotany; soil science and ecology, Radiobiology and freshwater radioecology; Molecular biology and plant physiology; Physiology and biochemistry of microorganisms; Hydrobiology and ichthyology; Stratigraphy of phanerozoie sedimentary strata; National psychology in the system of national relations; Pedagogical psychology; The development of the state system Ukraine.

33.2 33.2 NEW BORON-CONSTAINING MATERIALS TO WEAR RESISTING COATING

The new boron-containing materials allow to generate a different properties of coatings by means of complex chromic maganese, nickel alloying and also a various treatment regines application.

The one-or two phase boride coatings with high bardness and thickness of 50-250 are founded on low-carbon, medium-carbon, and high carbon steel surface and surface of low-alloyed, intermediate-alloy grade steels. The coatings increase the wear resistant during dry friction and friction in an abrasive medium containing alumina, aluminosilicate, silicon dioxide metal oxides. Besides, the coatings increase a heat resistance, corrosion stability in a number of cases.

A controlled thickness of uniform continuous boride layer is secured. All sorts of parts configuration ae strengthened. If necessary a local protection for no borated regions of surface is used.

The coating havve a hardness of 12-20Pa depend on grade steel, coating type, service conditions and weat resistance is 2-10 times as much in comparison with conventional steel-quench methods and 15 times as mach for work with non-metallic materials (rubber, wood, plastic ceramics) contact.

The boron-containing materials are recommended in the machine-building, woodworking industry, metallugy, refractors industry and oil industry and also repair, tool fabrications of others branches of industry.

The boron-containing materials have been tested in different branches of industry for wide parts spectrum and have been used entirely. There is a selling availability of technology and unit of equipmen for electrolysis borating line include the cycling block so that the chemical-thermal treatment was realised in automatic regime.

33.3 HOLOGRAPHIC TECHNOLOGIES OF THE NOT DESTROYING, CONTROL IN AEROSPACE ENGINEERING

The holographics of the not destroying control are actively used in air and space-rocked branches from middle 70 years. The basic advantages of the not destroying holographic control are its non-contact nature, high sensitivity and info return, absence of the special requirements to processing surface of controllable sites and products. The holographic technologies are especially effective at the control of the not continuous of designs of a various type.

The skeleton of batteries of photo cells represents the 3-layer panel, which average layer is formed by an interlacing the strips of material and represents a cellular design. At manufacturing responsible designs from such panels them it is necessary to supervise on absence faulty glueings between layers. An effective method of such control is holographic interferometry. For application of this method inside the panel create superfluous by a way. To pump up and receive interferognant of a surface fo the panel. For definition of opportunities holographic interferometry at the control of the given type of defects, and also for definition of influence of defect on durability and deformation propertty, the settlement model of a design was developed on the basis of final elements. The sensitiviity of a method holographic interferometry for the control of the given kind of defects considerably surpasses opportunities of other methods.

For critical section of the chamber of combustion of the liquid rocket engine probable the defects such a sdderings in different places, in particular, in area of connection of steel and bronze parts are. The method holographic interferometry allows effectively to supervise defects of such type. The technology, created on the basis of this method, is used for the serial control of designs. Accuracy and sensitivity of a method were investigated on mathematical model created on the basis of a method of final elements.

33.4 FOREST RESTORATION OF THE LANDS VIOLATED BY THE COAL MINING INDUSTRY

The intensie development of industrial potential of Ukraine has cause pollution of an environment, occurence destruction soils, broken natural and atificial biogeocenoses (ecological systems).

Since 1974 the Dnipropetovsk national university is the coordinator of works in sphere of recultivation of the broken soils in Central Donbass, Western Donbass, Alexandria coal pool, Lviv-Volyn pool and in other regions of Ukraine.

Comlex expedition of the Dnipropetrovsk national university, faculty of geobotany, soil science and ecology and faculty of zoology and ecology have developed theoretical bases of the recultivation and secondary use of he broken soils. The geobotarists, zoologists, soil, scientists climatologists, hydrologists and representatives of oher specialities take part in work.

The ecologically proved models of design artifical soils and forest planting recreational melioration of functions are created. Is development original typology of forest conditions and typology principles of designs steady durable pertinantion of forest plantings for successful realisation recultivation of the broken grounds.

34. KHERSON STATE TECHNICAL UNIVERSITY

34.1 DEVICES FOR QUALITY CONTROL OF TEXTILE MATERIALS

Automatic examination of fabrics.

Systems constructed on the basis of passive scanning rulers for the control of fabrics of rough structure are offered.

- television systems for the control of high quality fabrics.

Use of method of dissection of image in the systems reduces cost of high-quality television system, allows to create simple in operation system with high sensitivity to all types of defects of fabrics.

- precision laser systems for the high-speed control of big-width cloths.

The laser system on the basis of method of division of the basic beam provides the high-speed control of defects of structure of fabric, simplicity of operation and high quality of the control.

System of automatic correction of weft. has sensitivity to residual pressure in structure of fabric that gives additional opportunities in technology of fabrics finishing.

It can be used in a combination with various types of correct fields and any final equipment of finishing manufacture.

System of express control of quality of fabrics

Supervision and estimation.

- color of fabric, shade and saturation, uniformity of dyeing/
- density of fabric by weft and basis.
- orthogonality and uniformity of structure of fabric.

Work with the system does not demand a special retraining of the personnel.

34.2 THE NEWEST TECHNOLOGIES IN TEXTILE INDUSTRY

Textile subsidiary substances (TTS) of universal purpose for special kinds of textiles materials finishing.

We have developed theoretical positions on creation of new TSS for giving to textile materials:

- water-repellent;
- acid-protecting;
- fireproof;
- antimicrobic;
- anticontaminating finishing;

Preparation are created on the basis of the highest fat acids, allowing to carry out one-phase way of finishing.

Preparation are distinguished by the low cost price, goiod solubility in water and compatibility with other TSS, stability at storage, ecological cleanliness. They provide reduction by 20% of power and by 15% raw expenditures for obtaining of eady products.

Finishing composition are approved under production conditions with positive results. Technology of textile materials dyeing by pigments.

Structures for dyeing textile materials by pigments, the general circuits of finishing fabrics allowing to lower the cost price and power consumption of technology of dyeing are developed.

The structure of pigment dyeing compositions is optimized with the purpose of manufacturing ready final forms.

The dyeing composition is distinguished by lowered material consumption, it is stable at storage.

Obtaining of bast raw material

The way of programme control of technological process of transformation of flax-straw into the material of doubling with application of chemical compositional materials is developed. It allows to reduce term of spreading by 2 times and to reduce losses of fiber by 40%

The programmed technology provides realisation of the consant and quality control of the material of doubling.

New way of wool washing.

- considerably intensifies the process of wool washing.
- the amount of textile-subsidiary substances used for washing is five times reduced that allows to facilitate the process of sewage treatment.
- application of this way will allow to lowwer three times the amount of water used for initial processing of wool;
- reduces amount of the polluted water drains.

34.3 TECHNOLOGIES OF MICROBIOLOGICAL MANUFACTURE OF POLYSACCHARIDES AND SPHERES OF APPLICATION OF PREPARATIONS ON THEIR BASIS

Technologies of obtaining polysaccharides of microbiological way of manufacture from the available natural raw material and preparation which have a wide spectrum of application in technologies of light, textile, chemical and food industries and agriculture have been developed by the team of authors of Kherson State. Technical University and D.K. Zabolotny Institute of Microbiology and Virology of the National Academy of Sceinces of Ukraine.

For textile and light industries, easily soluble polymers on the basis of polysaccharides and polyacrylates have been created that have a number of advantages: they are easier dissolved in cold water and they do not demand expenditures of energy when preparing technological solutions.

Application of preparation in the processes of sizing cotton, woollen and viscose yarn and bases from mixes of fibres allows.

- to lower the expenditure for the process of textile bases sizing by 15-25%;
- to speed up desizing and removal of admixtures when preparing textile materials;
- to lower the expenditures for fabrics finishing by 20% and to increase the quality of fabrics.

The introduced technologies and preparations for cotton yarn sizing reduce the expenditures of starch by 30-50%, raise the parameters of breaking load by 20-25% reduce the breaking parameters by 25-30% replace polyvinyl spirit in size structures by 30-50%.

Technologies of fabrics finishing reduce application of thermoreactive resins by 20-30% reduce the contents of free formaldehyde in ready fabrics by 1.5-2 times, give soft surface to fabrics, replace up to 40-60%$ of natural thickeners in dyes for fabrics printing.

Prepaations have passed industrial stests in Ukraine. The normative and tchnological documentation on preparation has been developed.

For household chemistry, manufacture of rare household starching and thickened detergents for household purpose, and also means for disinfection, deodorization and washing of motor transport, equipment of the industrial enterprises has been organised.

The formulas of ecologically harmless water soluble glues for premises framing and other bu9ilding purposes have been developed. Use of such glues in timber industry allows to produce non-polluting wood-shaivngs furniture.

For agriculture, technologies of use of preparation for a purposeful attaching of pesticides, growth stimulators and bacterial fertilisers on seeds and plants have been developed and introduced. Technologies of seeds and plants protection with application of these sticky substances in plant-frowing reduce the poisonous chemicals dose by 25-30% without reduction of their protective action. The State Chemical Committee of Ukraine recommended their constant use as sticky substances in seeds processing and protection of plants against diseases.

When processing seeds of grain, leguminous crops and cotton, the water-permeable convering is formed, which together with poisonous chemicals, growth stimulators and micro-and macroelements provides increase of productivity by 10-20%.

For food Industry, food additives which allow to make high-quality products with the low cost price, to replace expensive material thickeners for baking, confectionery and sweet products, to obtain high-quality bakery products from low-sticky flour have been created. It is recommended for production about 40 receipes of confectionery and bakery products with the use of the developed polysaccharides, that will allow to increase qualitative and economic parameters of work of the food enterprises. all receipes have passed tests and have been highly evaluated by the experts and recommended for consumption.

34.4. PERSPECTIVE DIRECTIONS INFORMATION TECHNOLOGIES

Discovery of the Principle and its Influence on Recurrence of Successful Expeiments in Chemistry

If allows to affect the outcome of chemical reaction when planning chemical experiment with the purpose of possible recurrence.

Integral Optical Logic Elements

It performs calculation of logic operations in optical way during construction of optional computing means in navigating devices, diagnostic equipment.

Photoelectric Multiplier with Adjustable Factor of Amplification

It allows to adjust factor of amplification and excludes creation of potential holes interfering formation of the output signal.

Spheres of use in experimental physics, pulse photometry, mediine

Optical Keyboard

It does not contain electronic components. All transformations are carried out exclusively in optical way.

Sphere of use experimental physics laser engineering, medicine, means of *automation of technological processes and navigating devices.*

Thermal Engine of Rotary Movement

It is an inertialiess of rotary movement using effect of thermal radiation. Sphere of use automation of production processes, research, medicine, devices of computer technology.

Device for Heads Positioning in the Disk Information Accumulators

Has high mancuverability without use of electric power for positioning. spheres of use experimental physics, metallurgy, organic synthesis of polymeric materials, devices of test engineering and metrology.

Optical Device of the Scanning Heat Vision System

Allows to receive the qualitative display of borders of the temperature fields of the researched objects with high resolution. It is ensured by physical properties of the materials used and a special design feature of the device.

It is used for study of temperature fields of the biological objects.

Peristaltic Pump

is a pump for transportation of melt of the non-ferrous metals in a wide range of temperatures.

It is used in creating means of automation of production processes, in research.

34.5 PROTECTION OF THE ENVIRONMENT INFORMATION-ANALYTICAL SYSTEM OF MONITORING AND FORECASTING OF FOREST FIRES

It allows to form electronic maps of forest areas, visually to display on them distribution of forest fires.

It can be used for revealing the most fire-dangerous sites of district with the purpose of planning fire-prevention actions, such as inspection of district, an arrangement of fire services, making of fire prevention strips; calculation of ways of evacuation of people at fires, development of new and improvement of existing samples of fire-prevention engineering; forecasting of ecological consequences related to forest fires, construction of operating plans of suppression of forest fires.

Sanitary sensor for tection of nitrogen dioxide in industrial zone with sensitivity of $1\text{-}10^{-7}$ % vol.

Is a concentration galvanic cell with the liquid electrolyte working at the range of temperatures from 8^0C to 40^0C. Sensitivity of the secondary device is 5 m V.

It can be used in technological gases gas chromatography. Application in household premises is possible.

Imitrins

Application of imitrins allows to create lasers with smooth recognisation of length of wave of generation within the limits of 480-620 nm having qualitatively new characteristics.

Estimated cost of 1 g of dye is 10-20 times lower than cost of dyes of cumarin type.

Imitrins can be used in all branches where laser engineering is applied.

35. DNEPRODZERZHINSK STATE TECHNICAL UNIVERSITY

35.1 CELL BIOTECHNICHNOLOGY IN EARLY DIAGNOSTICS OF THE MAN ECOLOGICAL DISEASES

By the employees of dnieprodzerzhinsk state technical university is developed high technology, informational way fo early diagnostics of the men diseases arising for the ecological reasons.

The biotechnological circuit of diagnostics includes concentration of nuclear elements of a various blood, research fo the thin morphological characteristics of cell populations; registration of the leukogram protocol with the indicating of 20-50 parameters, the formulation of the diagnosis, improvement of treatment strategy for the patient.

The way allows to leave on diagnostics of a little investigated a mielodisplastic set of symptoms, which can be regarded as "ecological AIDS". At an early stage this way records development at the patients of leucosis, malignant tumours, opens the reasons of a senilism of an organism, early lethality, instability genome of the man induced by the factors of external medium, including the radioactive or physical factors.

The way allows revealing presence of cancer dangerous situations 7-10 jyears prior to occurence of local tumor process and is well timed to interfere with strategy and tactics of treatment for the oncologic patients. The revaling of the factors, which are dangerous for the population, allows developing series of measures on improvement of an ecological situation in the country or region.

The way is used also for diagnostics of diseases caused by serious metals (of illnesses Minamato, "Itai-Itai", nickel and copper intoxication), uzho, kirichanka, chronic benzol intoxication and vinylchlorade illness, sugar Diabetes etc.

The way is effective in diagnostics;

- Diseases of endocrine system (thyroid gland);
- General diseases of an osteal brain (anemias, leukoses);
- Dispessions of system of a hemopoiesis;
- Statuses of immunity deficiency;
- Autoimmune conflicts (lupus crythematosus);
- Chronic inflammatory processes (aseptic);

The method is used for a rating efficiency of treatment (chemical and radiotherapy, ; applicability of medicines;

The way of biotechnological diagnostics allows excluding a puncture of an osteal brain, biopsy of lymphonoduses or lien.

Method was approached at production of the diagnosis at four thousand patients surveyed in various regions of CIS.

35.2 COMPLEX ENERGY SAVING TECHNOLOGY OF FINISHING; PROCESSES OF PROCESSING OF STEEL AT RECEPTION OF QUALITATIVE METAL PRODUCT

The modern conditions of scientific development in a direction of improvement of finishing technological opeations of reception of steel products (operational processing of liquid steel on the unit ladle-furnace, casting process of steel, rolling manufacture) is analysed.

The results of experiments and numeical accounts of a thermal condition of metal in the period of operational development with the complex account of features of heating, cleaning, modifying and updating of metal structure are demonstrated, hydrodynamical and heat and mass transfer processes, which occur in a steel ingot during its filling and further hardening, and which provide formation of structural and chemical heterogencities of a steel ingot, mechanical pressure in a body of continuously casting preparation with the account of heatphysics, hydrodynamical and liquational processes, including at various kinds of external influence, new mathematical approaches to the decision of tasks of heat and mass transfer, which occur in processing of metals by pressure.

The introduction of results of researches scientific at the enterprises of Ukraine and countries of CIS is shown. The effect of economy of power and raw resources is shown for each stage of processing of metal

35.3 DIGITAL SIMULATION OF THE TERRITORY

Collaborators of the Dneprodzerzhinsk State Technical developed science intensive method of the numbering of the raster topography maps with vector description of the contours and surfaces.

At the base of the developed method lay the author's researches in optimization of the nodes of the splines and in sphere of the non-separable waelets.

Received method permits to

- automatize the procedure of the conversion of the topography maps from raster form to the vector form.
- reduce the data needed to representation of the vector information from topography maps.
- realise the correction of the object on the map.
- get the information about custs of the surfaces, isolines, isobaths and so on.

Developed method can be used inconstruction of the vector maps and its using in devices with low capacity, mobile devices, navigation aids and so on.

35.4 IMAGE COMPRESSION

Collaborators of the Dneprodzerzhinsk State Technical University developed science intensive method of the compression fo the color images based on non-orthogonal wavelets.

Received method includes filtration of the high frequency and low frequency components, quantization, using of the dictionary and entropy methods of coding. At the base of the developed method lays the technology of the compensation of the error.

On every step this technology permits to remove the error acquired on previous step. Imporant feature of the received method is designing of the coder to the fixed scheme of decoding. It permits to get high speed method of the decoding of the image.

Developed method can be applied to the compression and transfer of the images using the communication channels with limited capacity. For example:

- digital optics
- internal-technologies
- web-cameras
- cameras of auto tracking
- web-conferences.
- digital video

Method was approved. It gave the results better than present analogues.

36. DNIPROPETROVASK STATE MEDICAL ACADEMY

36.1 MODULAR HIP END PROSTHESES ORTEN

The field of application of modular endoprostheses ORTEN includes medial fractures of the femoral neck in elderly patients; idiopathic, traumatic and displastic hip arthrosis; avasocular necrosis of the femoral head, rheumatoid arthritis, anklosing spondylitis, systemic lupus, tumors of the proximal part of the femur, revision hip surgery.

The wide spectrum of sizes of acctabular and femoral components, of total hip endoprostheses ORTEN allows choose individually the construction of implant for any clinical case. endoprostheses ORTEN is reckoned on cermentless, cemented and hybrid fixation of components.

Endoprostheses ORTEN are certified and permitted by the Health Ministry of Ukraine for the clinical applying. The modern technologies are used for their manufacturing in key plants of Dniepropetrovsk region. Research officiers of Chair of Orthopedics and "Trauma of Dnicpropetrovsk State Medical Academy for the development in the field of joint replacement took more than 20 patents of Ukraine.

37 BUKOVINA STATE MEDICAL ACADEMY

37.1 LINING FOR DEMATOMES

It is intended for operations of free grafting of the skin. It is a flexible plate whose one side is fitted with multiple hollow projections open with holes on the opposite surface of the plate. The plate and the projections are made of the same material that ensures sufficient resistance to bending for the purpose of moulding of the skin of a donor's site and keeping grafts from contractions and it has hardness which enables to cut with the knife of the dermatome.

The lining impats to electric, mechanical and other dermatomes the ability to cut out gaping line fenestrated perforations or sites of smaller thickness in skin grafts and preserve islets of al lthe skin layers or superfficial derma layers on donor" wounds.

It increases considerably the square area of skin grafts without placing sutures, widens the application of grafts of larger thickness, improves their engraftment and healing of donor's wounds.

It creates technical possibilities of implementing combined strip-like auto allodermoplasty of extensive deep and critical burns with the restoration of the entire and permanent integument by means of autografts during the operation and whose area makes up only 1/3 1/6 of the wound surface.

It was used during operative treatment of 3200 patients. It considerably diminishes lethality, invalidism from burns and improves the functional and cosmetic results of skin grafting. The duration of operations is shortened by 2-3 times.

38. CHERCASSY STATE TECHNOLOGICAL UNIVERSITY

38.1 THE SOLECTIVE METHOD NECROSE CANCER TISSUER WITH USING OZONE TECHNIQUE

The action of ozone in the cells with task to decary membranes, plasm, kerns and other organelles. The new oxidation solution, which destroy cancer tissues, cosists of ozone, water and special firm reagent. This solution has not only ozon, molecule bat the oxidation particles. Which oxygen contents (OCP) (HO•, HO• O• O• RO• RO• RO• and another 3. This particles have oxidation action more.

ozone concerning to ozone. This fact is knowed for all, K, OCl to almost al lbiologic polymers is to On 3-4 degree more. The main aim during in separate is the creation high level in separate cases, very high levels concentration (but regulated) OCl, for this is using the method not the full destruction ozone concentrations in solution.

38.2 THESYSTEM OF REMOVING TOXIC SUBSTENSYS IN EXHAUST CARS GASES

The side system of serve of ozone in a fuel-air mixture right before incincration is developed, or by the dosage of ozone in a petrol before the serve o fhim on formation of fuel-air mixture. It can deliver work of the system to the methods of podavlennya formation of toxic admixtures in exchaust gases of engine on the stage of burning of toplivo-vozdushnoy mixture. In first case the content of toxic admixtures in exhaust gases goes down due to oxidization of hydrocarbons in fuel-air mixture, and in the second - due to the synthesis of kislorodosodergashih connections in a liquid phase during the dosage of ozono-air mixture in a fuel.

The systme is assembled on an egine and sosotoit from the following blocks.

- block of preparation of air (includes a compressor, filter, osushitel of air);
- block of generation of ozone (the transformer of tension, generator of ozone, includes);
- contact block of ozone with a petrol (includes a carburetter (injector), inlet collector);

The system is able to work on the side of car autonomously. Serve as a source of tension for the generator of ozone storage battery in combination with the transformer of tension.

38.3 THE TECHNOLOGY OF REMOVING TOXIC SUBSTANCES IN HUMAN BLOOD

The scientific workers of Laboratory of ecologycal problems of Cherkassy state technological universiny and the personal of the Cherkassy hospital No. 1 were conducted researches with the purpose of the use of ozone method for the detoxication of blood of patients. During the conducted researches the optical conditions of effective destruction of toxic substances by the ozone method were set, and without the change of concentration of valuable components in human blood.

38.4 THE MODEL OF GELIOAEROBARICAL POWER STATION "GABPOS-TAMING THUNDERSTORM"

The gelioacrobarical Power Station "GABPOS - taming thunderstorm" consists of transparent for sun light material, which located on the flat earth square; in the middle of the square stands the tower, equipped the turbine with enerator, one produces electricity energy, under the transparent material made the basin with water, the edge transparent material have the special catch-walls for wind, which made in the form of spastics (special oriental cross), one have the mechanism for the regulation movement their outer ends in accordance with the direction of wind, ejectors for the spray water located on the top of tower; turbine have special electrical conducting surface.

The sun's radiation heat water in basin, the water evaporates, the temperature and humidity air under transparent material rises, one goes on the top of tower drives turbine and the electricity are producing. On the electrical conducting surface may be to give on the charges; the water vapors condensed and pure water flows back toward the basin. in the winter with the help ejectors located on the top tower spray the water, the heat crystallisation produces, the temperature of air above tower rises and this initiates to begin the air movement in the toward up of tower, the turbine produces the electricity.

39 COLLECTIVE RESEARCH-AND-PRODUCTION ENTERPRISE "CRPATHIANS-CHERNOBYL" OF TRUSKAVETS THE LVOV AREA UKRAINE

39.1 MACHINE FOR VACUUM MMHTI, UTENSILS AND MEDICAL TOOLS FROM VIRUSES, BACTERIA AND OTHE POLLUTION

The summary. On the basis of scentific researches and the patented inventions the project 3464 for washing household utensils, surgical tools, medicals from dangerous viruses and bacteria with application of vacuum + ozone which destroys any viruses and hacteria, a mould, mushrooms and microorganism is created. The machine works according to the computer program. An automatic mode. Water and any wasing up liquids is applied. Clearing three times, plums of water, dring and sterilisation is carried out vacuum. Time of a full cycle of 10-12 minutes. The machine can be produced any sizes. From small 1 x 0.8 meters up to 3 x 2 meters for restaurants, army parts and hospitals, cafe. The Machine can have heating of water or water is applied. The machine is tested.

39.2 MOBILE SURGICAL OPERATIONAL

Globalization of economic and division of the world into the advanced and poor countries which are not provided natural, power and financial resources, local terrorist conflicts, transport and ecological accidents, earthquakes, flooding, presence of the rocket, nuclear, biological weapon, demand protection of civilians against mass destruction, in particular, granting not slow medical aid on a place of unforeseen event. Present medical the help the victim during failures, accidents, and nuclear explosions, on falling of terrorists is poorly effective, that results in hundreds, lost peace inhabitants, and also military men Hospital are at great distance from such places of eents, and wounded do not receive full medical and 30-60 minutes after wound which results in penetration into blood of the wounded viruses, bacteria, microorganisms, poisorious substances and is the reason of difficult consequences (investigations) which it is not difficult for treatment by known medical technologies. The delay from granting immediate medical aid is a principal cause of destruction of victims, which has arisen on significant distances fro mthe big cities in which there are moder modern medical centres for such help. The statistics has confirmed, , that the medical centers, hospial, separate hospitals in the big cities always are overflow, mainly adopted to sepcialisation.

40 NATIONAL ACADEMY OF SCIENCES OF THE UKRAINE G.V. KURDYUMOV INSTITUTE FOR METAL PHYSICS

40.1 AMORPHOUS AND NANO-CRYSTALLINE MEAL ALLOYS

The alloys are manufactured by the technology of rapid quenching of the mel in the form of ribbonbs with thickness 20-100 micrometers, width from 1 up to 30mm and length up to 1000 m and more.

40.2 HIGH TEMPERATURE SUPERCONDUCTING BANDPASS FILTERS FOR MICROWAVE

Filter was produced from $Yba_2Cu_3O_{7.8}$ films, was deposited onto both side of sapphire substrate buffered CeO_2.

Applications benefits for communication systems:

- capaciting/covering increasing
- quality of service enhancing
- reducing of handset transmit power
- battery work cycle elongation

41. KIEV NATIONAL TECHNICAL UNIVERSITY OF ARCHITECTURE AND CONSTRUCTION

41.1 STRUCTURAL SOLUTIONS OF THE BUILDINGS OF THE INDUSTRIAL APPOINTMENT

The buildings for the universal appointment with the frame of the "I" section elements with constant or varying height of the web consist of the one-spun (multi-span) transvese frames, which parameters are accepted in accordance with the normative and technical documentation.

During the elaboration fo the individual and experimental objects are possible the deviations from the standards.

For the considered frame skeletons is accepted the spacing of the frames is accepted 6m with the purlin system of the fixing of the sheeting constructions. In the capacity of the purlins are accepted the profiles of the channel/shaped and C.. shaped sections. Depending on the loading slope of the cover, spacing of the frame are foreseen three variants of the constructive scheme of the purlin, cutting, the fixing of the purlins is produced with the bent angle iron, which is fixed to the upper belt of the rafter, continuous - with the dofering of the purlin abuts, which are adjacent to the rafter with the cappinbg of the same profile, continuous with the decreased span at the expenses of the arrangement of the buttresses made of the single angle irons.

In the longitudinal and transverse direction the hardness and geometrical invariables of the building is provided by the system of the wind bracings, the scheme of which location meets the requirements of the design norms. The wind bracings in the plane of the cover, the wind bracing beween the columns are foreseen with the crossed scheme and it provides their work in tension with any directioj of the acting loads 9wind, occasional influences). The work of the wind bracings in tension gives the possibility to produce them of round steel with the maintenance of their inclusion in the space work of the primary framing at the expense of the tension during the assemblage.

The enclosure cover and wall constructions are made of the prefabricated three-layer panels with two metal cotings made of the zinced profiled sheets, which are fixed to the porlins of the primary framing with the self-tapping screws and to the mineral woold heat insulator which is put between them. The splices of the panels are lap.

The constructive solutions of the buildings frameworks allowed to accept their main sizes and basing on the static calculations taking into account their construction in different climate. Ukrainian regions the sizes of the elements sections of the transverse frame (posts and rafters) and to determine the whole construction quantity of metal for different most widely spread spans.

With the help of the automated complex SCAD the posts and the rafters of the frame are divided on the line of the lanellar elements and it gives the possibility of the more detailed analysis of the whole construction work. On the drawing Ia is demonstrated the real fixing of the rafter to the column and on the drawing Ib is demonstrated the areas of the tensions under the static load.

The guarantee of the efficacy of the proposed solutions of the frameworks of the industrial buildings with the universal appointment is possibility of producing the elements of the transverse frames with an automatic method. Such possibility allows to make the welding works with high quality of producing and technological comfort.

42. NATIONAL TECHNICAL UNIVERSITY "KIEV POLYTECHNIC INSTITUTE"

42.1 BIOTECHNOLOGY OF NOVEL DRUGS BASED ON LAB WITH COMPLEX THERAPEUTICAL EFFECTS

The approaches to selection of probiotic strains of Lactobacillus were developed. The technological principles of cultivation producents for active biomass generating-substations for preparations of new generation with a wide spectrum of therapeutic effects. The technological parameters for the directed biosynthesis of lactobacillus and its derivatives
with expressed immunomodulating and/or antgonistic properties are found. At present we have created and prepared for manufacturing the numbers of preparations in Finished Dosage Form on the base of Lactobacillus biomass.

Ready medical forms of drugs with these therapeutic effects and with patogen antagonistic and resistance to majority antibiotic and cylostatic properties was produced.. These drugs, as probiotics andinjection preparats, are applied at therapy support of antibiotic, chemo and radiotherapy of oncology and infection disease.

42.2 HYBRID WINDSOLAR SYSTEM

The system works as autonomous and reserve (grid or engine generator) electricity source with 30 kW power.

42.3 TECHNOLOGIES OF WASTE WOOD UTILISATION FOR PRODUCTION OF FIRE-RESISTANT BUILDING PLATES AND FUEL BRIQUETTES

The Raw material for production fire-resistant building plates and fuel briquettes there is waste of wood (the chips of wood, shaving, tear lead), straw of the cereal cultures (the wheats, rice, ryes), linen, cotton lant. In proposed technologies are used special ecological clean connecting material with fire-resistant, which is adjusted, with expenses 5-8% from mass absolutely dry material. The factors to toughness of the plate from waste of wood there are at a level of plate type OSB. The approximate prime cost of the plate is 1-1.5$ for 1 m2.

42.4 TECHNOLOGY OF UTILISATION NON-WOOD VEGETABLE WASTE

Proposed technology to utilisation agricultural waste allows to get the half-finished pulp for production cardboard paper products and there is more ecological clean, than existing in world practical of technlogies.

Given technology is based on neutral sulfite method of delignificagion raw materials, which allows to enlarge the yield of pulp, get the additional energy and reduce gas and liquid blowing in surrounding ambience in comparison with traditional methods of delignification.

The propsal process can be use on new or on existing enterprise after small modernisation for each concrete plant.

42.5 COMPUTERS FOR EDUCATIONAL INSTITUTION AND PRE-SCHOOL EDUCATION WITH PROTECTION OF USERS FROM ELECTROMAGNETIC EMANATION

Protractedly influence on children health from serial computers with electromagnetic emanation during 1-2 hours a day result in to a high probability to different illness. For example electromagnetic emanation causes and increases such decreases central nervous and cardiovascular system, respiratory tract, had eyesight. Negative changes in human organism caused by electromagnetic emanation accumulate during the whole human life.

New generation safety computers which calls attention contain repression of electromagnetic emanation in all ranges from radio frequency to ultra-violet influence on human health.

42.6 MODERN DIGITAL SYSTEM OF DATA TRANSMISSION AND DIGITAL TV BASED ON MICROWAVE TECHNOLOGIES

BARS-D broadband wireless solutions offer region level operation of all kinds the opportunity to increase customer spending on existing services and products, and to generate new revenue. Out point-to-multipoint wireless Ethernet solutions significantly shorten return on investment with cost-effective broadband delivery to public venues of any size-from large group of subscribers (airport or entertainment complex with hot-spot) to SOHO/small business of individual and venue owners to promote existing products and services and to offer a variety of subscription plans that meet different users needs. "BARS-D" is a modern and optimal solution for designing new and combining existing information networks in various establishments and institutions of both state and private ownership forms, providing output to the external telecommunication networks existing in the Country.

42.7 SUPERCAPACITORS-A NEW TYPE OF ENERGY STORAGE DEVICES FOR PULSE POWER APPLICATIONS

Power Point presentation can be made if the topic is of interest. Our research group is a world leader in developing the super capacitors, which demonstrate the superior performance including the high energy and power density. Over the past year we presented our results in Japan, Singapore and twice in the USA. Out super capacitor prototypes were tested in the Institute of Transportation Studies (Davis University, CA, USA, and their tests verified our results.

42.8-42.9 ENZYME PREPARATION REFINZIM

Refinzim is the preparation on the base of lytic enzyme complex by microbial origin Enzyme complex is producing by the actinomycet strain, which received by genetic selection methods.

The enzyme preparation is characterization of termostability in 60-65° C and the special stability of protheolytic activity. Optimal temeprature for the lysis of the most microbial culture is 45-50°C.

Refinzim is distinguished oneself by higher stability to the influence of acidity of medium the activity restoring is take place after decreasing acidity to pH 2-3 nonback enzyme inactivation-after pH 13. Optimal pH for the lysis of most microorganism is pH 5.5-8.5, for the spore bacillus-6.0-6.4 and 8.4-9.0, for the gramnegative bacterium - ph 6.0 and 8.5-9.0.

There are some enzymes with different specificty in composition of preparation, proteinases, peptidases, muramidases, colagenase, lytic enzymes, which provided high antimicrobial activity of preparation in attitude of wild spectrum pathogenic microgranisms.

The enzyme complex have the ability to destroy cell walls mostexpression in attitude of the microorganisms, which concern to the kind Staphylococcus, Streptococcus, Bacillus, Lactobacillus Proteus, Candida, Escherichia and some others.

When was determined the toxicity of substance of Refinzim, there was establish LD_{59} for the mousses by parental using of enzyme, which is 2800 mg/kg. Evaluation of cytotoxicity and potential mutagenic activity of preparation allow to make a conclusion, that refinzim in experiments on the cell culture of fibroblasts not possession of mutagenic activity of preparation allow to make a conclusion, that Refinzim in experiments on the cell culture of fibroblasts not possession of mutagenic activity and challenge a weak cytotoxicity action.

The preparation may be used for the treatment of the wound of superficial localisation by different origin-burning, afteroperation, infection process, trophycal ulcer. Enzyme composition make a possibility of treatment without complication-inflammation etxc.

Enzyme preparation may be using in composition of antiseptically washing means for the treatment of hospital surface, washing.

43. LVIV NATIONAL POLYTECHNIC UNIVERSITY

43.1–43.6 RADIATION RESISTANT SEMICONDUCTORS, SENSORS AND MAGNETOMETERS

Semiconductor III-V materials resistant to the neutron exposure were created at Magnetic Sensor Laboratory.

They are destined for the manufacturing of stable radiation resistant sensors of magnetic field. These sensors' characteristics remain stable under the conditions of fast neutron exposure : the change in the sensors' sensitivity does not exceed 0.05% up to the fluences of $F–10^{15}$ $n.cm^{-2}$, and it does not exceed 1% up to fluences of $F–3.10^{16}$ n.cm.

On the basis of radiation resistant sensors, the intelligent magneto-measuring systems were created with the functions of self diagnostics and self correction.

Advantages

- The highest radiation resistance in the world (0,05%),
- Operating capacity under extreme conditions, i.e. in strong magnetic fields, at cryogenic temperatures, under hard radiation loads.
- High precision of measuring channels of magneto-measuring system (0,01%).

Areas of Application

In the participle accelerators for magnetic field monitoring :

- In the spacecrafts – in magnetic system orientation and stabilization of satellite in orbit.
- In medial cyclotron – for complex magnetic system mapping.

Development status

All developments of the Laboratory presented, are performed as operating samples. Developments are tested and ready for implementation.

43.7 METHODS OF THE MULTICOMPONENT WATER-SALT SYSTEMS PROCESSING WASTES UTILIZATION AND METHODS OF RECEIVING OF VALUABLE COMPONENTS FROM THEM

The multicomponent water-salt systems have the very important value, in particular in the aspect of rational use of nature, because they belong to most widespread on a planet. As far as processes are rational or inefficiently organized depend economic efficiency of production, in particular unit cost, and also scales of the human influence on the natural surrounding an environment.

For making of decisions strategy of the given problems it is necessary :

1. To be determined with what generally products can be got from them.
2. To set, what exist necessities and markets of sale of these matters now and in a prospect.

Creation of the imitation computer programs on the base of new approaches to the mathematical design of equilibrium and trajectories of processes of dissolution and crystallization (in particular factious) are perspective direction of scientific-searching approach, providing by their enough complete base of experimental reference data about solubility for the interval of temperatures, which conduct the control laboratory experiments for final clarification of parameters of the technological modes.

The programs for computers for the automated calculation of parameters of equilibrium surfaces in the simple water-salt systems with the arbitrary number of components are developed and approved.

44. SCIENTIFIC & PRODUCTION DEPARTMENT "FLEGMIN OF "SVENTANA" AND

44.1. TECHNOLOGY FOR REHABILITATION OF CONTAMINATED REGIONS AND RECULTIVATION OF FUTILE SIOLS

The achievements is getting of new materials on natural zeolites base, with most modern technical developments, allow us to begin a realization of complex project for creation "Autonomous scheme for ecologically clear and unwasted vital activity and self-ensuring, including in regions of futile soils". We hope that such "Eco Villages", required for many regions on the Globe, will be attractive for investing of state and private capital.

An "Eco Village" include: dwelling complex for 5-20 000 persons, living in block cottages; lock-and-key technological block – the production of several types OMC, which are a substratum and ecologically pure fertilizer for hothouse farm of "Solar Vegetariun" type, system on electro-lasma processing of water, intended for clearing different waters, including sewage water and industrial sewers, sub soil and sea waters desalinization, to drinking standards in particularly; the system for pirolysis conversion of hard home waste, biomass and waste car tires, that will ensure a village and its infrastructure with alternative power resources (home gas, diesel and boiler fuel);the bocks for bacterial conversion of food production and farms waste (including manure and chicken excrements) in mixture with zeolite in the methane-tanks, that will allow to get the good organo-mineral fertilizers and biogas.

Thereby, are crated the conditions for self-ensuring of Village by products of nourishing, water, power resources and others, but in the base of whole scheme lies a qualify using the products of natural minerals modifying and goal-directed conversion of vital activity waste. Expenses on the construction of Village and its infrastructure will be compensated in 7-10 years completely.

44.2. THE ORGANO-MINERAL COMPOSITES WITH POROLONGED AND SELECTIVE ACTION FOR ECOLOGICALLY CLEAR AGRICULTURAL PRODUCTION

The organo-mineral composites (OMC) on Zeolite-containing minerals basis in mixture with compound of hydro- and oxy-humie acids ("Sprout plus") are improving a structure of soil, preventing the nitrates forming , raising an efficiency of agroproduction on 25-60%, due to presence a selective sorbent (Zeolite P), intended for soil decontamination form technogenic pollution and ensuring the condition for ecologically clear husbandry, are bonding the heavy metals cations and radionuelides in water-unwatched forms. A raw material for the OMC- production (natural Zeolite and lignite) exist in may regions of the World.

The features of sorbent a contain of Zeolite P phase in the peodict is 95-98%; water not more than 15,2%; admixtures (clay, quartz, mica) not more than 10,0%; correlation $SiO_2/A1_2O_3$ – 2,5-2,7; average size of particles – 0,2 mm. Efficiency of heavy cations binding in soil before 998 % Degree of radio-stroncium and Pb, Zn, Cu and other cations transition into biomass is falling in 4-5 times for plants of 2-8 – weeks age already. The expenses of OMC – 2-5 tons on I hectare depending on degree of soil contamination. Zeolite P contain in the OMC composition 1-5 mas % The price of composites about USD 150/ton, selective sorbent cost before USD 500/ton. Technology for getting a sorbent is greatly simplified in contrast with the prototype (USA Patent, 1973), and a product outlet is in 4,5 times above.

Zeolite P in mixture with OMC is tested for soild decontamination from heavy metals cations (outlets of battery plant) and radiating pollution (in Chernobyl alienation zone), for efficiency of agricultural production raising (experimerntal cultures- cucumbers, onion, tomatoes pepper sweet eggplants, carrot, cabbage, bob and corn cultures) –analysis of soil quality has shown that when using an OMC the contain of easy hydrolyzing nitrogen, mobile phosphorus and exchange potassium exceeds a control variant. On the example of tamatoes is noted and increasing of fruits quality – a contain of dry material is increase4d on 1,2-0,6%, vitamin C- on 0,2-1,4 %, sugar on 0,4-0,6% Contain of nitrates does not leave for frames of most possible concentration.

The maximum profit during vegetable cultures growing is received when an OMC 1% contributing in amount 1,5 ton/hectare. Under local contributing of OMC a profit is greatly increasing due to raising of harvest increasing. When processing the plants of tomatoes by preparate "Sprout plus" a maximum profit is in 3 times above in contrast with traditional stimulator of growing "Ivin". When using of OMC the mineral fertilizers are not contributed into soil or is reached a reduction of their using about 50%.

44.3. THE SYUSTEMS FOR ELECTRO-PLASMA CLEARING OF INDUSTRIAL AND SEWAGE WATER, FOR DESALINIZATION OF SEA AND SUBSOIL WATERS FOR THEIR ECONOMIC USING

The electro-plasma technologies – principally new methods for disinfection, desalinisation and clearing of water solutions, which have significant economic, ecological and other advantages over existing traditional methods: high degree of clearing from microflora and organic pollutants, high degree of water flows desalinization, absence of need in regents, low energy expenses (0,4-1 KW*hour/1m^3 water), small size (installation on 20m^3/hour occupies an area efore 10m^2),, high ecological safety level. Is possible to make a enterprises from contamination by oil-products, fat, dye substances, salts of heavy metals, fluorine, radionuclides, organic compounds. Such technology allows to clear the fields and gardens, or accumulating in reservoirs for fish breeding and etc.

Electro-plasma technologies are applicable for desalinization of sea and subsoil waters and for getting of relatively pure drinking water. Under energy expenses 1 KKW*hour on I m3 water is practically solved a problem of a sea water using for home need (particular decision a global problem of fresh water deficit in the World).

Are designed the module blocks with productivity form 5 to 20 m^3/hour (is possible- to 500 m^3/hour). Terms for creating of installation on 10 m^3/hour – 8 months. The cost of membrane installation of company "ROHEM" on similar productivity in 5 times above than electro-plasma system.

44.4. PRODUCTION OF EXTINGUISHING POWDERS (EP) ON OXYDE-SALT BASIS FOR BROAD CLASS OF FIRES (A B C D)

Making a new generation of EP is based on qualifying management of high dispersed materials parameters and with account that in process of extinguishing (in acts of combustion inhibition) only 10-20% surface layer of EP particles are taking a art, but their rest mass is a carrier of "active base "and reactionary centers only.

Within the framework of joint activity and under financial participation of Partner an issue of experienced- industrial parties of EP production volume may be 1000-5000 tons. Cost of works within the framework of 2-years joint activity- about USD 400 000 (ensuring an activity of laboratory, developing of technological basis for EP getting, equipping of pilot production by rectors, drying and dispersing installations). Cost of making an industrial production, will forms approximately USD 1200 00. Under realization price of EP about USD 600-700 for 1 ton, the production expenses will be compensated in years.

Is possible to neglect a deficit of orto-phosphorus acid, which is a raw material for the phosphoric-ammonia salts production (a base for traditional EP and mineral fertilizers). Herewith an important role is in using the most modern disersing technologies on the base of acoustic-whirlwind mills. Active component for ensuring a mass issue of extinguishing powders is planned to get on experienced industrial base for sorbents production, including by chemical correcting and washing wates utilization. With an acoustic whirlwind mill using is attainable the EP dispersity in 0-5 u; a productivity of such mills as block design regulation a desperse composition of supposed EP and other its features, but on the same chemical base, will be created an EP for three-dementional extinguishing. In future is possible and reasonable to crate other powders, including for special purpose (for atomic objects for ministries of defense and on extremal situations). Their extinguishing efficiency is in 2-8 times above than for traditional powders.

44.5. TECHNOLOGIES FOR THERMAL FRACTIONING OF ORGANIC RAW MATERIAL, INCLUDING WASTE TIRES FOR ALTERNATIVE POWER RESOURCES RODUCTION

Synthetic fuel production by the pirolysis of secondary raw materials (different waste) is an alternative to using a fossilized fuel and allows to come out from crisis condition of economy. Particular interest present a thermal fractioning of high claoric waste (waste cartires) Pirolysis production also may use the resources of town rubbish heaps as raw materials, that certainly will bring an ecological situation to sanitation. Practically from each ton of high caloric waste is possible to get not less than 510 kg of fluid fuel, before 100m^3 of gas and semicoke. Currently is passed an overall test the pilot installation on polyethylene conversion with productivity 3 tones per day, and is built a small shop for the conversion before 50 tons of home waste per day. Advantages of technology – its closed reserved nature, diversifying by principle absence of constant outlet in the environment.

As experimental-industrial variant is offered a construction of module installation for pirolysis conversion of car tires. Work loading of reactor is about 4 m^3 of crushed rubber per I cycle (about 1 ton). In the event of mass conversion may be realized 5-6 cycles per day (not less than 5 tones). In need of more "mild" conversion of tire rubber (for getting a fluid fuel on the whole) the processes velocity must be equivalent to 2-3 cycles per day. Herewith a price of pirolysis block forms USD 250 000. Such installation is energetically equivalent to 1,5 MW (at the rubber processing). Technological scheme can be built in 0,5 year on the 50 m-platform. In the ecological pure process from 1 ton of conversed rubber is possible to get a marketable products on sum of USD 1700.

45. NAIONAL TECHNICAL UNIVERSITY <<KHARKOV POLYTECHNIC INSTITUTE>>

45.1. TEST DISEASES DIAGNOSING SYSTEM

45.2. PAST WITH THE PROTECTIVE COATINGS APPLIED USING THE THECHNIQUE OF THE DIFFUSIVE CARBIDE SURFACE ALLOYING

45.3. TECHNOLOGY OF MICRO-ARC OXIDIZING OF THE PARTS MADE OF VALVE METAL (AL-ALLOYS, ETC.)

45.4. METHOD OF MAGNETO-PULSE METAL WORKING

45.5. TECHNOLOGY FOR THE PRECISE WORKING OF OPTIC POYM ARTICLES

45.6. CEMENTS OF SPECIAL PURPOSE ON THE BASE OF MAN-CAUSED RESOURCES

45.7. DEFECTOSCOPE "LITTLE"

45.8. DEVICES FOR DIAGNOSTICS AND RECAUTIONS OF ELECTRICAL MACHINES

45.9. MEDICAL OZONIZER

45.10. HUMIDITY MEASURING INSTRUMENT

45.11. HUMIDITY AND OILNESS MEASURING INSTRUMENT

45.12. MULTI-LAYER X-RAY MIRRORS

45.13. TECHNOLOGY OF TUBES PRODUCTION

45.14. IMPELLER OF THE HIGH-HEAD RADIAL-&-AXIAL HYDRAULIC TURBINE FR80 (H_{MAX}=500M)

45.15. IMPELLER FOR THE AXIAL-FLOW PROPELLER TURBINE (FOR THE ADVANCED CONDITIONS OF HYDROELECTRIC POWER STATION (DNIPRO HPS-2) MODERNIZATION)

45.16. CUTTER

46. FED'KOVICH CHERNIVTZI NATIONAL UNIVERSITY

46.1. NANO- AND THIN FILM SEMICONDUCTOR STRUCTURES: THEORY, TECHNOLOGY AND DEVICES

The exposition presents the achievements of Department of Theoretical Physics and Department of Electronics and Energy Engineering of Chernivtsi National University in the field of theory and technology of nano-and thin film semiconductor structures. The original theoretical results cover the influence of electron-phonon interaction in quantum dots and cylindrical quantum wires for multi-phonon approximation. Advancements of the growth technology developed for nano-crystals incorporated into polymer matrix are shown for the used to obtain high-quality thin film semiconductors, metals, and insulators, such as thermal evaporation, magnetron sputtering etc. are presented for the case of thin films of several A_2B_6 materials and semiconductors with chalcopyrite structure – for $CuInse_2$ in particular.Parameters of $CuInSe_2$ solar cell are given as an example of possible application of chalcopyrite thin film materials. Nano- and thin film semiconductor compounds, reported in the exposition, have supreme quality and competitive with the existing world analogs.

46.2. SEMICONDUCTOR A_2B_2 AND A_4B_6 MATERIALS FOR OPTOELECTRONICS

Exhibit demonstrates achievements of scientists working at Department of Electronics and Energy Engineering of Chernivtsi National University (ChNU) in the field of material science of A_2B_6 and A_4B_6 semiconductor compounds, which have wide range of applications in different optoelectronic devices. In particular, we present binary, ternary, ternary, and quaternary solid solution of narrow gap semiconductors on the base of mercury telluride and selenide, wide gap semiconductor based on cadmium zinc tellurides and lead chalcogenides. Significant attention is paid to A^2B^6 and A4B6 semiconductor solid solutions alloyed with chemical elements with incomplete 3d- and 4f-shells. These materials are of significant interest for new progressive interdisciplinary field of spintronics.

The authors developed and optimized growth technology for bulk A2B6 and A^4B^6 materials (using methods of Bridgeman, Czochralsky, band recrystallization, controlled crystallization, crystallization from solution, melt and vapor form) and thin films of these materials (using thermal evaporation in vacuum and magnetron sputtering). Main electro-physical characteristics of both bulk and thin film A^2B^6 and A^4B^6 materials were investigated; they proved to correspond to the world requirements or even surpass them.

Computer presentation of the exhibit makes it possible to become acknowledged with main directions, aims, and investigation methods of A^2B^6 and A^4B^6 materials at our Department. It also illustrates the types of semiconductor materials and gives their main parameters. It worth noting that cadmium telluride and solid solutions based on it has high photosensitivity in both visible and near IR spectral ranges. They are highly sensitive towards X-, α-, β-, γ-radiation and have high temperature stability (up to 800°C), which favors their use for high-efficient electro-optical modulators for CO_2 lasers filters, windows, lens; detectors of X-, γ-radiation; amplifiers and trigger for fiber optics communications, solar cells, etc.

46.3. SEMICONDUCTOR COMPOUND $HG_3IN_2TE_6$- NEW PEOMISING MATERIAL FOR OPOTOELECTRONICS,DOSIMETRY AND FIBEROPTIC COMMUNICATIONS

Exhibit demonstrates achievements of scientists working at Department of Electronics and Energy Engineering of chernivtsi National University (ChNU) in the field of material science of semiconductors with stoichiometric vacancies. Such materials have numerous physical features, such as insensitivity to ionizing radiation and high-energy particles, crystal surface inertness to absorption atoms from the atmosphere, independence of crystal characteristics on different impurities with high threshold concentrations.

Mercury indium telluride ($Hg_3In_2Te_6$) belongs to defect semiconductor group and according to our investigations is a promising material to develop optical filters and efficient detectors for infrared, ionizing radiation, temperature, and detectors for fiber optics applications.

The authors of the exhibit developed the growth technology for $Hg_3In_2Te_6$ using Bridgman method. Main electro-physical characteristics of the crystals obtained were investigated and laboratory prototypes of optoelectronic devices on the base of this new material were created. In particular it was found that under T=300K the bandgap of $Hg_3In_2Te_6$ is 0.74 eV, electron concentration is 5.10^{18} – 2.10^{19} m^{-3}, carrier mobility is 0.02-0.04m^2.V.s. Material investigated shown high parameter stability to the action of ionizing radiation together with electric inactivity of the impurities up to concentrations of $5.10^{19}cm^{-3}$.

Exhibit demonstrates possible applications of $Hg^3In^2Te^6$ in prototypes of self-calibrated detector for fiber optic communications with quantum efficiency greater than 80%, ultra-fast (inertness $\lesssim 5.10^{-9}$s) and two-element high-sensitive photodiodes, high efficient optical filter for the spectral ranges of 1.85-30 m. Parameters of these optoelectronic devices correspond to those of existing foreign analogs or even surpass them.

46.4. EFFICIENT SOLAR CELLS FOR HOUSEHOLD APPLICATIONS

The exhibit illustrates the achievements of scientists working at Department of Electronics and Energy Engineering of Chernivtsi National University (ChNU) in the field of solar engineering for high-efficiency and cheap household devices. Solar cells of different (Powering electro-puncture diagnostic device and automobile dimension indicator), and 16V (powering potative TV-set, notebook, etc.) are presented as examples of possible domestic uses of solar energy. Solar cells developed could be used to compose solar modules with required power output. Electronic Industry plants of Chernivtsi Region of Ukraine have the necessary production capacity to manufacture cheap solar cells (comparing to the foreign analogs) in high quantities. Lifetime of such cells under normal operating conditions is estimated to 30-50 years.

47. MAKAROV NATIONAL SHIP-BUILDING UNIVERSITY

47.1. PLANT ON PROCESSING OF THERMOPLACTIC POLYMER WASTE IN ALTERNATIVE FUEL

47.3. SMALL – SIZE HIGH-PERFORMANCE OIL SEPARATOR

47.4. RECOVERY OF NEW COMPOSITION MATERIALS

47.5. UNDERWATER TECHNOLOGY CENTER

47.6. CENTER OF APPLICATION STUDY IN POWER ENGINEERING

47.7. CENTER OF WELDING AND CONTIGUOUS TECHNOLOGIES (ULTRASONIC DETECTION)

47.8. CENTER OF WELDING AND CONTIGUOUS TECHNOLOGIES (HIGH-STRENGTH HARDENED STEEL WELDING)

47.9. ECOLOGY PROBLEM CENTER

47.10. CENTER OF ADVANCED ENERGY TECHNOLOGY

48. RESEARCH INSTITUTE OF LASER BIOLOGY AND LASER MEDICINE OF MESU

48.1. KOROBOV'S PHOTON MATRIX "BARVA-FLEX"

The basis of the therapic action of the apparatus "Barava-Flex" is formed by the ability of light of visible and infrared range of the spectrum to enforce the energy activity of the cell membranes, to set going the regenerative processes, to increase the oxygen uptake by the tissues, to stimulate the creation of ATP in the mitohonrions and this is what increases the bioenergetic potential of the cells.

The light of the visible and infrared range of spectrum has an antiphlogistic, healing and analgesic effects, it normalizes arterial pressure, neutralizes pain syndrome in the joints, spine and muscles.

The light of the visible and infrared range of spectrum normalizes the work of regulatory system of the human body (immune, endocrine and central nervous system).

Under the impact of the light the microcirculation in the zone of radiation treatment is activated, which allows to use medicinal products more effectively and reduce their dosase.

Photon matrices "Barva-Flex" are supplemented with magnetic matrixes "Barva—Flex Mag", which provides for the combined photon-magnetic effect.

Photon matrices "Barva-Flex/RIR" and "Barva-Flex/Y" have a powerful radioprotective effect.

Photon matrices Barva-Flex/RIR and "Barva-Flex/B" provide for prophylaxis of the cancer diseases and highly effective treatment of the trophic ulcers.

The usage of the photon matrixes reduces the term of treatment of the most widespread diseases by 2-36 times.

48.2. KOROBOV'S LAZER MASSAGER "BARVA- LMK"

The basis of the therapeutic action of the apparatus "Barva-LMK" is formed by combined action of the two factors- laser emission the pressure massage.

Under the influence of laser emission the energy activity of the cell membranes increases, regenerative processes are activated, oxygen uptake by the tissue increases, creation of ATP in the mitohondions is stimulated, which increases the bioenergetic potential of cells.

Lases emission has an antiphlogistic, healing and analgesic effects, it normalises blood pressure, reduces pain syndrom in the joints, spine and muscles.

Lases emission normalises the work of the regulatory systems of the human body (immune, endocrine and central nervous).

The irritation caused by the needle-shaped roller of the massager is received by the skin, muscle and joint receptors and are then transmitted to the upper parts of the central nervous systems that is the cerebral cortex. These irritations cause reciprocal reflex responses vasmotor and trophical kind.

Under the influence of such reactions oxidation-reduction processes increase, and they improve the supply of the muscles and lead to improvement of their motor functions.

48.3. KOROBOV'S PHOTON PROBE"BARVA-GPU"

The basis of the therapeutic action of the apparatus " Bava-GPU" is formed by the ability of visible and infrared ranges of the spectrum ranges of the spectrum to increase energy activity of the cells membranes, to activate regenerative processes, to have antipohogistic, analgesic and healing effects.

In combination of the light-therapy with medical one the concentration of the medicine in the zone of light treatment increases, its effect is prolonged, the medicinal effect increases, and it allows to reduce the doses of the poharmaceutical preparations, especially those dangerous because of their negative effects, such like antibiotics.

Due to the position of the light-emitting diodes inside the probe on the illuminated surface such a level of density of power of illumination is created which is necessary for getting an optimal therpeutic effect.

The use of the photon probe "Barva-GPU" reduces the term of treatment of human diseases by 2-3 times.

48.4. PHOTON-MAGNETIC COMPLEX "BARVA-PHMK"

The basis of work of the apparatus "Barva PMK" is the light of visible an infrared range of spectrum to increase the energy activity of the cell memberanas, to activate regenerative processes, to have an antiphlogestic, analgesic and healing effect.

For the purpose of inforcement of its therapeutic action the apparatus "Barva-phMK' is supplied with an annular constant magnet, which allows to execute combined light-magnet therapy.

While combining light-and –magnet therapy with medical treatment, the concentration of the medicine in the zone of influnce increases, iots effect is prolonged, the therapeutic effect reinforces, which allows to reduse the doses of the medicines, especially those dangerous because of their side effect-antibiotics.

Due to changeable mouth-pieces that apparatus can be used for the treatment of wide range of diseases.

The use of apparatus "Barva phMK" reduces the term of treatment by 2-3 times.

48.5. PHOTON-VACUUM MASSAGER "BARVA-PNEUMO"

The basis of the therapeutic action of the apparatus "Barva-Pneumo" is the combined action of the two factors – negative pressure and light.

The vacuum massager provides massage of both surface and underlying (inner) tissues. Such kind of massage strenuously dilate or narrows limp vessels, opens dysfunctional capillaries and so activates blood flow and nutrition of the tissues, increases the withdrawal of toxic substances with secretion of the sweat-glands to the skin surface.

Under the influence of light the energy activity of the cell memberanes increases, regenerative processes are activated, oxygen intake of the tissues increases, production of the ATP in mitohondrions is stimulated, which increase the bioenergetic potential of the cells.

Light has an antiphlogistic analgesic and healing effect, it normalizes blood pressure and reduces pain.

Light normalizes the work of regulatory systems of human body (immune, endocrine and central nervous ones).

The use of the photon-vacuum massager "Barva-Pneumo" reduces the term of treatment of human disease by 2-3 times.

48.6. ANDROLOGIC COMPLEX "BARVA-ANDRO"

The basis of the therapeutic action of the apparatus "Barva-Andrpo" lies in the combined action of the three factors – local negative pressure, light and magnetic field.

The essence of the method lies in the fact that penis which is placed into a pressure chamber, is under pressure, which is less than atmospheric (for 150-300 mm). The blood which is rich in oxygen under normal pressure, comes into the tissues, and an active oxygenation and hyperemia of the tissues take place. Due to the difference in pressure and an intensive blood flow, thanks to powerful stimulating influence of visible and red range of spectrum light, and also due to the effect of the magneto static field , major part of the thinnest capillaries of the organ opens and fills with blood. The above mentioned effect causes blood flow to the penis with consequent erection effect. Simultaneously a great number of previously dysfunctional capillaries are included into the blood circulation baro-, thermo and chemo-recepotores of the skin and vessels of the penis are irritated, the impoules come into the spine and cerebrum and cause the corresponding changes of spine central nervous system.

Due to the usage of combined action of the three factors the apparatus "Barva-Andro" gives a possibility of treatment of such diseases as erectile disfunction syndrome 2-3 times more effectively than monofactor analogues.

48.7. PHOTON PHYTOBAR "BARVA-FFB/4"

Of phytopreparations (phyto-teas), medicines used for treatment and porophulaxis of the most widespread human diseases.

The positive effect is caused by the change of water molecular structure, their ability for aggregation under the treatment by radiation of different parts of the spectrum.

49. DONBASS NATIONAL ACADEMY OF CIVIL ENGINEERING AND ARCHITECTURE

49.1. DEVELOPING AND INRODUCING THE WORLD-MARKET COMPETITIVE OPTIMAL RELIABLE POWER LINE STRUCTURES

Using the optima one-stage computer –aided design system for power transmission line supports of higher reliability, developed at the academy, which takes into account the land configuration, weather conditions, potentialities of manufacturing plants and the possibility to build up with a diagnostics system, as well as the technological capabilities of the proving ground for power transmission line supports and tower structures, the design, production, testing and construction of ready-to-operate economical power transmission lines allowing to cheapen the lines up to 15% are available.

49.2 DEVELOPING THE METHODS OF ANALYSIS AND DESGN OF LARGE SPAN BAR AND MEMBRANE SHELL ROOFS (INCLUDING INDENTED ONES), WITH THE RELEVANT GUARANTEED RELIABILITY

Developing the analysis and design procedures for rational in terms of material costs types of bar and sheet shell roofs with light metal structures (from small architectural forms, such as roofs over parking places, cafes, other public works to large span roofs over stadium stands), while ensuring required reliability values of structures throughout the operational cycle.

49.3 ADJUSTING TO THE CONDITIONS OF PEOPLE'S REPUBCLIC OF CHINA AND ORGANIZING COMMERCIAL PRODUCTION OF ANTISCALE ELECTRIC APPARATUS FOR BOILER PLANTS AND CIRCULATION WATER SUPPLY SYSTEMS

On the basis of the results obtained from long-term industrial test of apparatus using the technology of scale electric treatment in boiler plants and enterprise, as on the basis of production drawings of 6 nominal sizes of commercial plants, the organization of production if 100 apparatus at the first stage is proposed with he consequent extension (if sales succeed) up to 1000 apparatus per year at the second stage. Production can be based at any machine works or well-powered machine workshops.

49.4. USE OF IR-IMPACT TECHNOLOGIES TO RECOVER THE CAPACITY OF DROPPING MEDIUM CONDUCTIVE CHANELS AND THE YIELD OF WATER AND OIL WELLS

Introducing the advanced air-impact technologies using wave processes to recover pressure and non-pressure pipelines 80-3000 mm in diameter, as well as flutes, channels, pumping station chambers, heat exchangers, tanks, reservoirs, hard rock crushing, foundations of outgoing buildings and constructions. The technology of recovering the yield of deep water and oil wells requires development as for basic and auxiliary equipment.

49.5. TAR POLYMER CONCRETE AND ASPHALT POLYMER CONCRETE WITH INTEGRATED MODIFIED MICROSTRUCTURE FOR CONSTUCTION OF HIGHLY DURABLE AUTO-ROAD FLEXIBLE AVEMENT COVERINGS

Working out the technology of durable asphalt polymer concrete and tar polymer concrete (calculatingly for 4-5 years for interim overhauls and 10-12 years for complete ones) of a combined microstructure with higher coefficients of ageing, water-resistance for auto-road coverings, operating at the temperature range – 32.5....75^{0}C in hot and wet climate and under aggressive environment impact.

49.6. LOW-FLUX (0,5...2%) SOLUBLE SOIUM SILICATE AND ALUMINATE FIREPROOF CONCRETE

Introducing the technology of production of fireproof concrete from liquid glass and sodium aluminate solutions with hardeners (activated kaolin and similar clays, activated with alumina, silica, etc.) that do not reduce the melting temperature of fireproofing aggregates. Concrete curing happens at normal temperature and humidity conditions, in water, steam curing, autoclave curing and drying. Concrete compressive strength before drying equals 5-30 MPa, after drying at 105...110°C – 15-50 MPa, the concrete withstand temperature 1600...1770 °C Fields of use: monolithic linings, lining compounds for ferrous and non-ferrous industry, coke chemistry, various thermo aggregates.

49.7. PROVIDING THEORETICAL AND TECHNOLOGICAL BASIS FOR DEVELOPMENT OF SELF-SUFFICIENT HEAT SUPPLY SYSTEMS

Increasing the efficiency of heat supply systems though developing of plants for self-sufficient heat and water supply systems and thus by reducing the length of heat networks, as well as through working out the ecological heat generators with the efficiency coefficient up to 94%, capacity up to 3 MW, three-circuit heating accumulator plants, Sterling machine-based combined systems with heat pumps and developing with modular designing variants, introducing the continuous monitoring to respond to a situation automatically. Application of developments will permit to reduce organic fuel consumption in 1.5.....2 times.

49.8. DEVELOPING THE METHODS OF ENDURANCE ANALYSIS OF CONSDTURCTIONAL METAL STRUCTURES

Development of existing and new methods of endurance analysis of bridgework space structures (bridges overpasses, elevated roads, aqueducts, viaducts etc). through specification of values of active actual loads, study of strain-stress state peculiarities in joints and units, while taking into account residual welding and rolling stresses, considering the actual structure operation.

49.9. RECOVERING THE AUTOMOBILE ACCUMULATORS. ECOLOGICAL AND RESOURCE SAVING ELECTROCHEMICAL METHOD TO RECOVER THE WORKE OUT LEAD-ACID AUTOMOBILE ACCUMULATORS

Updating and introducing the electrochemical method to recover the lead-acid automobile accumulators, which consequently permits to obtain the lead pure up to 99,98% as well as the polypropylene crumb and accumulator electrolyte.

50. THE SCIENTIFIC INDUSTRIAL ENTERPRISE "PRECISION ABRASIVES"

50.1. MICRO AND SUBMICROPOWDERS OF SYNTHETIC DIAMONDS (NANODIAMONDS ALSO)

Micro and submicropowders of synthetic diamonds (nanodiamonds also), especially "soft" marks such as "Resinbond", are applied to comuter, electrotechnics jewellery production etc.

Authors offer the creation of production of superfine diamond powder with the annually volume of production in 30 millions carats and cost price 6-8 cents per carat. Realization of such project will cost 2 millions USD and it will be recompensed during 5 years. Time of realization of the project is 3 years.

Authors offer also the methods of receiving of adgasive-active bonds for the production of cutting and abrasive diamond and CBN tools: segment diamond saws, the diamond tools for processing the glass, plastics; grinding cireles, ruling pencils etc. Also making of adgesive-strong plotting diamond of the stratum on steel bars of the customer for the profile tool by the diameter up to 175 mm.

52. "SELMA"

52.1. WELDING RECTIFIER VD 506DK SEMIAUTOMATIC ARC WELDING MACHINE PDGO-510 CONTROL UNIT OF THE WELDING PROCESS BUSP-TIG)

Welding rectifier VD-506 DK is designed for manual are welding by electrodes of basic or cellulose coating; for argon-are welding of all metals and alloys excepting aluminium and its alloys by non-consumable electrode at direct current when completed with control unit of the welding process BUSP-TIG; for semi-automatic welding in the atmosphere of shielding gases at direct current when completed with semiautomatic machine PDGO-510.

52.2. ARC WELDING MACHINE UDGU-251 AC/DC

Welding machine for are welding UDGU-251 AC/DC is designed for argon-are welding by non consumable electrode and for manual arc welding by coated electrodes at alternating and direct current of all types of metal and alloys.

52.3. SEMIAUTOMATIC ARC WELDING MACHINE PDG-351

Semiautomatic arc welding machine PDG-351 is designed for semiautomatic gas-shielded welding of low carbon and low alloyed steel at direct current by consumable welding wire.

53. PHYSICO-TECHNOLOGICAL INSTITUTE OF METALS AND ALLOYS OF NASU

53.1 CORROSION-RESISTING BIOINERT COBALT, NICKEL AND TITANIUM BASED ALLOYS FOR MEDICAL CONSTRUCTIONS PRODUCTION

Joint research work of Physics-technologies institute of metals and alloys of National academy of science (PTIMA NASU) and medical Institutions of Ukraine is concerned over the composition and technological schemes which would allow to produce bioinert Cobalt, Nickel, Titanium based alloys that are appropriate to the ISO standards for the medicine-aimed alloys.

The process of melting and ingot casting from Co-Cr-Mo alloys is primarily based on the advanced technological know-how of the double-step vacuum-induction and electron-beam melting of the pure initial materials. High temperature melt processing provides highly refined of alloys from the detrimental admixtures.

Proposed technology allows to obtain phase-stable high-precision alloys already at the stage of billets casting. Certain element' evaporation control during the melt process assures the products to have definite exploitation properties.

Cast and deformed parts from modern materials are already widely applied in medicine : extremities orthopedic prosthesises, shunts for cardiovascular surgery, cast billets for orthopedic dentistry, surgery instruments for jaw-face surgery.

Electron-beam melting process resulted in development of a new technology of high-precision shaped cast billets production from VT1, VT5, VT6 tital alloys used for extremities orthopedic prosthesises. The new process of casting in chill molds allows to minimize required mechanical operations and obtain highly refined surface.

Facilities of leading medical institutions is currently employed to test intra vessels shunts prosthesises and antiembolic filters for the low-invasive methods of vessels narrowing treatment with the help of catheter insertion through the peripheral vessels.

Technical specifications was developed for the production of bioinert cord to construct surgery devices for surgical operations with the use of laparoscopy as well as in traditional surgical operations.

Implementation of the developed technological scheme of the bioinert alloys cast gives an opportunity to refuse medical alloys import with the consequent budget keeping. Furthermore, considerable social effect will be gained thanks to increased 1.5–2.0 times exploitation period of implants and medical devices along with decreased adaptation period of patience after surgical operation.

54. THE E.O. PATON ELECTRIC WELDING INSTITUTE OF THE NATIONAL ACADEMY OF SCIENCES OF UKRAINE

54.1 ELECTRIC WELDING OF SOFT LIVE TISSUES

The Institute developed a procedure and made a welding system, which allow joining soft live tissues by high frequency currents. The action of this method of producing a welded joint is based on the effect of dosing the electrothermal impact on the structure of protein molecules. This enables joining the cut live tissues without using suture materials, which accordingly facilitates the restoration of physiological functions of the tissue and preserves the viability of the damaged organ. By the start of 2004 about 2000 operations were performed on different human organs. No post-operative complications or haemmnorhage were found in any of the cases of applying the new medical equipment.

54.2 PRESSURE WELDING OF RAILS AND PIPES

The Institute developed technologies and equipment for pressure welding of rails and pipes with different wall thickness and diameter of up to 1420 mm. A range of diverse stationery and mobile welding machines have been designed and manufactured in co-operation with the Kakhovka Plant of Electric Welding Equipment which are now operating in more than 75 countries of the world.

54.3 PRECISION EXPLOSION WELDING OF METAL STRUCTURE ASSEMBLIES

Precision explosion welding was developed to produce welded joints of similar and dissimilar materials on a limited surface of metal structures with a high performance on the level of that provided by high technologies.

54.4 PRECISION EXPLOSION WELDING OF METAL STRUCTURE ASSEMBLIES

Precision explosion welding was developed to produce welded joints of similar and dissimilar materials on a limited surface of metal structures with a high performance on the level of that provided by high technologies.

54.5 AEROSOL ACTIVATOR FOR TIG WELDING OF STEELS AND NICKEL ALLOYS

Aerosol activator developed at PWI allows performing square-butt single-pass welding of parts up to 12 mm thick, repairing various defects (pores, cracks, etc.), penetrating the materials to 14 mm depth, and increasing the efficiency of the welding process 5 to 7 times.

54.6 SMALL SIZED INSTRUMENTS TO DETERMINE RESIDUAL STRESSES BY HOLOGRAPHIC AND SPECKLE-INTERFEROMETRY

This equipment was developed to determine the residual stresses in different technological processes, for instance, welding, casting, and stresses arising in operation of various mechanisms or during their manufacture.

The equipment enables real-time monitoring of the kinetics of residual stresses under load.

55. KHMELNITSKIY NATIONAL UNIVERSITY

55.1 ACOUSTIC EMISSION NONDESTRUCTIVE TESTING AND PREDICTING STRENGTH OF UNITS AND PARTS OF MACHINES, INCLUDING ELECTRONIC CONTROL SYSTEM

It is designed the original station of acoustic emission (AE), which is 6-chant measuring system performing measuring the following AE parameters : maximum amplitude, activity, coordinates, signal shape and extension. It's the measuring train, which consists of three modified acoustic emission instruments connected to piezoelectric sensors, and computer. Each instrument can work separately or in train. Created software processes data of AE, gathered during testing, to display 2/3-D diagrams of AE : time rating or location charts.

The offered methods for non-destructive testing are developed as result of extensive testing of laboratory specimens and real items under simple load, such as tension, shift, bend and in complicated stress conditions : dynamic stress, thermal and pressure cycling etc. They use correlation discovered between AE parameters and mechanical characteristics to estimate or predict ultimate strength during nondestructive testing (when testing stress covers only elastic strain). Moreover methods of linear, plane (2-dimensional) and space (3-dimensional) location of growth defects (those, which cause fatal destruction) in items being tested are worked out.

The applications of developed methods are : static and dynamic bend testing of pumping rods applied in oil-gas industry; hydraulic testing high pressure gas tanks; diagnosing welded joints in process of forming their structure; static and dynamic bend testing of strength of levers of truck lift; testing strength of ceramic capacitors working in conditions of thermal cycling from $+60^0$C to -50^0C; location of defects in soldered joints of printed circuit boards; testing strength and hermeticity of micro-assemblies flying onboard and sustaining inner pressure drops on takeoff and landing.

55.2 SELF-LUBRICATING FLUOROPOLYMER-CARBON AND FLUOROPOLYMER-CARBONMETALLIZED COMPOSITES

Designing the technology of production of compositional material of high wearing quality.

Anti-frictional material flubon is a polymeric composite material on the basis of polytetrafluorincethylene, sopolymers of ethylene and tetrafluorincethylene and other fluorine-containing polymers, modified carbon fibres and other fibre and dispersed stuff. The optimal complex of compositional material properties is defined by : stuff dispersion, equality of its distribution in polymeric matrix and by the character of the interaction between the stuff and the polymer. The technology of production of anti-frictional carboplastics flubon includes such stages : composition preparation, pressing and thermo-processing of the material.

Flubon is described by high wearing quality and chemical resistance, low friction index. Details of flubon material are used in the joints of friction of technological equipment of different designation : sleeve bearings, packing rings, end seals, separators of rolling contact bearings and journal bearings. In this case higher durability and reliability of the equipment, saving of lubricating materials is assured. Also increased chemical resistance, reduction of metal consumption as well as reduction of expenditures on the repair and maintenance of machinery, and on the regeneration of catalysts for chemical production are ensured.

55.3 LUBRICATING AND LUBRICATING-COOLING MATERIALS ON THE BASIC OF THE MODIFIED RAPE OIL

The creation of lubricants on the basis of modified rape oil and other technical oils which can be produced in Ukraine as renewable raw material of required quantity, is characterized by the imperfection of their structure that has negative influence on their trybotechnical features. Thus, the necessary is a special, experimentally determined chemical modification of the oil structures, physical and chemical processing of the modified oils which would change the structure of oils in specified direction : to improve useful properties and trybotechnical characteristics of new modified materials. The processes of modification and of physical and chemical treatment are worked out; technological processes are made optimal. The properties of products, i.e. of basic components and of lubricant compositions on its basis, are well-studied.

The samples of transmissive and industrial lubricants, of hydraulic liquids, plastic lubricants, cooling mixtures (emulsol of lubricative paste) for mechanical processing are received.

55.4 ION-PLASMA DIFFUSION COATINGS

The technology reduces the co-efficient of friction from 0.20 to 0.12 (alloys of refractory metals). The limit of multi-cycle endurance is increased by 1.9 times in the air, by 3.6 times in the medium of 3 percent Na Cl solution.

The technology is intended for hardening machine parts, tools and equipment which function under different operational conditions. The given technology is distinguished by highly economical operation, efficiency and surpasses ion hardening in ammonia media. In this case hydrogen embattlement and unhardening of the base by hydrogen is completely eliminated which is particularly important under cyclic and impact loads. The technology is ecologically clean and ensures better labour conditions. It is distinguished by good controllability of the process, as well as by the variation of physico-mechanical characteristics and phase composition of the surface layer in wide ranges. On this basis the techniques and the mathematical model for optimization of the properties of the article being hardened have been worked out depending on particular operational conditions and the brand of the material.

The conducted industrial tests of the parts hardened according to the proposed technology showed the increase of their wear resistance. Thus, wear resistance of instruments from tool steel including extensions (machining of grey pig iron) increased by 16 times, that of M27 screw taps (machining of chrome-steel) rose by 2.5 times, and that of pin milling cutters (machining of medium-carbon steel) – by 2.2 times. Also wear resistance of disk saws (machining of wood) increased by 5 times, that of hard alloy (machining of chrome steel)- by 2.7 times, that of cutting dies from chrome-vanadium steel (machining of transformer steel)- by 2.5 times. Wear resistance of casting moulds from nitrided chrome-molybdenum- aluminium steel for casting aluminium rose by 3.5 times, and that of piston rings from modified cast iron increased by 10 times in comparison with unhardened ones.

This technology and equipment for its introduction have been developed by the Podilsky Scientific Physico-Technological Centre (PSPTC) of the Technological University of Podillya. The areas of the Centre's activities are : development of technology as applied to the design and operational conditions of an article (object), fulfillment of orders on hardening of machine parts, tools and equipment, production of equipment, introduction of the process, personnel training, and warranty servicing.

55.5 EXTRUDERS OF FODDER GRAIN

The proposal is for the collective farms and enterprise it is high technology equipment for the production of high-guality feed-stuff with waste products of processing grain, wheat, barley, corn, peas, rye, soy-bean and grain of poor guality. It includes mineral and organic supplements for cram. The technology is based on baric processing of fodder grain and waste products. The method of extruding is used here that is the processing grain and waste products. The method of extruding is used here that is the processing grain and waste with a high temperature (160°C) and periodically variable (10 MPa) pressure. These processing influences the deep structural changes of nourisher grain. Its antimycotic and provides for escape of vermin's, which infect animals.

55.6. SYSTEM OF DECISION MAKING SUPPORT OF MODERNIZATION PROCESS OF TELEPHONE ELECTRO COMMUNICATION MTEZ

The system of decision making support of modernization process of telephone electro communication MTEZ is a scientific practical project of Department of Computer systems in Technological University of Podillia (Khmelnitskyi).

MTEZ is designed for solving the task of choosing optimal variant of modernization and increasing efficiency of usage of functioning telephone communication.

The system is a programmed means, that gives the possibility to get enough analytical information for support and substantiation of future decisions.

MTEZ program consists of:

- data base, containing information about:
- automatic telephone stations (ATS) in the region and their functional characteristics;
- results of preliminary stages of modernization, etc.
- structure of neuron networks for solving different types of tasks.
- subsystem of dialogue with the user that ensures the possibilities for data introduction and for getting reference of system functioning, revising data base and making corrections, getting reference information;
- subsystem of information processing, represented by the set of functions with the help of which all necessary calculations are done.

The basis of the system is the conceptual model of modernization of telephone communication that gives the possibilities to choose cost, quality and quantity criteria of modernization and structural connections between them.

Modelling of modernization process is done on the basis of artificial neuron networks (ANN). Neuron network models are worked out. They give the possibility to present detailed component-criterion structure of telephone communication modernization process, to simplify the process of determining the most efficient variants of telephone communication components of modernization, allow to take into account the total influence of separate partial constituent peculiarities of to be modernized region is used. System-employing recommendation are based on earlier gained experience in modernization, that's why they are maximum approximate to the specificity of the region.

The system of decision making support of telephone communication modernization MTEZ gives the possibility for the specialists who are not well-informed about the theory of ANN and programming to choose optimal strategies of telephone communication modernization and to compare their efficiency, taking into account such programmed qualitative indices of electro communication as: quality of telephone talks, number of misconnection between users, number of wrong automatic determination of telephone numbers, etc.

The introduction o f this system in Khmelnitski region gave the possibility to reduce modernization expenditure at 2,4 mln Hm in 2002 year and to improve the quality of telephone communication due to the successful improvement of telephone talk quality at 10% and the reduction of misconnections from 8% to 1%, of wrong automatic determination of telephone numbers from 7% to 0,8%, of misconnections between users from 5% to 1,5%.

56. BARANOV (PVT.) LTD

56.1 MFNILINE INTENDED FOR POWER CABLE TEISTING (MKC 4X 1200)

The line offered to your attention is the most acceptable for the cable manufacturing enterprise. Which striving to produce the different kinds of power cable or modernize the existing lines without additional expenses needed to building additional production squares.

The line is convenient and universal in operation and maintenance since it could be provided with own jib having up to 2 tn – hoisting capacity and it is not required a: additional workshop cranes.

The line is differ from the similar used in cable manufacturing thanks for it uncommi short length and width as well as the university.

As distinct from the majority of existing lines for cable twisting, the following unique design ideas are used in this line:

- Frequency adjusting allows to abandon the using of complicated and metal bull kinematics transmissions as well as it allows to extend the vaiability of twistii pitches and linear speeds. That allows as well to bring the reactive power whi operating of lines practically to nothing.

The above lines allow for twisting of round and sector insulating A1 and Cu cores according the formula: 2xS, 3xS, 4XS, 5xS, or 3xS + 1x-(S- wire section, t is recommended twist 10.16,25,35,50,70,95,120,150,185,240 mm^2) or aerial insulated wires. The cable twisting is performed in turning off mode with reverse rotation as well.

The torsion mill design allows to mount in center of twisting the "cordel" plait< another elements as a core insertion.

Wire reels # 12 are suggested to be used as a output reel as the length of the wire rod coil over the reel # 12 is sufficient for getting the finished twisting for the length allowing to fire two reels, # 18 and # 20 (01800 and 02000 mm) correspondingly.

Line's set is available :

a) to the wheel traction of 01900 mm is used only electric current;

b) to ribbon traction is used electric current and compressed air.

57. AN.PODGORNY INTITUTE FOR MECHANICAL ENGINEERING PROBLEMS

57.1. SELF-CONTAINED LIFTING GEAR APU-1

The operation of the gear is based on blowing off the opening, flexible shell with hydrogen generated by a reaction of the outboard water with the hydroreacting composition.

the gear allows lifting different loads from big occan depths in the self-contained regime.

57.2. WINDMILL WITH A HYDROGEN ENERGY ACCUMULATOR

The windmill is intended for converting the energy of wind with the velocity of more or equal to 3 m/s into electric energy of a.c. voltage 220/380 V, 50 Hz and power 10 kW, and production of an ecologically clean energy carrier (hydrogen), as well as gaseous oxygen as a commercial product.

The advantage of using a hydrogen accumulator is that it can accumulate hydrogen at a high pressure, and in case of no wind it can generate electric power in operating as a fuel cell.

57.3. INCREASING THE EFFECTIVENESS OF DIFFERENT TECHNOLOGICAL PROCESSES BY EMPOLOYING THE METHOD OF MAGNETIC-VORTEX ACTIVATION OF FLUID MEDIA

Magnetic-vortex hydrodynamic activator are intended for treatment of dynamic flow of fluid media with a specified-intensity magnetic field. The objective of the development is as follows: increasing the effectiveness of different production processes and technologies employing fluid media by using activation and qualitative modification of the kinetics of non equilibrium physico-chemical and other phenomena in these production processes, and to reduce production costs.

57.4. TECHNOLOGY FOR ELECTRIC PULSE TREATMENT OF SEWAGE

The technology ensures highly effective treatment of industrial sewage for physical-chemical contaminants, including heavy metals, radionuclides and oil products.

The technology is based on the electric pulse method of treatment of wastewater by impulse electric charges in a reactor loaded with machining rejects.

The technology offered has a number of advantages over known chemical, electric and galvanic coagulation treatment processes.

57.5. CONTROLLING ELECTRISATION OF STEAM FLOW IN A TURBINE

The fact of presence of electric charges in the flow of wet steam turbines has been first established in world practice.

The methods and means developed for controlling the charge of wet steam flow allows reducing energy loss in the turbine flow part, intensify the process of steam condensation and increase vacuum in the condenser.

Employing the development increases the turbine capacity, and reduces fuel consumption.

57.6. HIGHLY EFFECTIVE REGIMES AND METHODS OF GRINDING CURVILINEAR AND FLAT SURFACES OF HARD-TO-MACHINE PARTS

The method excludes the necessity of using milling operations and specialized cooling emulsions; increases machining output by 3 to 8 times; reduces the process energy consumption by 2 to 3 times, and guarantees quality machining.

57.7. DEVELOPOMENT AND INCESTIGATION OF FLOW PARTS IN HYDRAULIC MACHINES

IPMash NAS of Ukraine is the leading organisation in Ukraine for developing flow part o Kaplan turbines and Francis pump turbines for HPS,PSPS and micro HPS.

The institute can execute projects in developing flow parts and model samples of Kapla turbines heads for heads 5 to 80 m, Francis pump turbines for heads of 70 to 500 m, and micro HPS.

The results of investigations have been implemented in several projects for HPS at PSPS.

57.8. TECHNOLOGY OF CONVERTING A FOUR-STROKE DIESEL ENGINE TO A GAS ENGINE

Converting diesel engines ands power installations to alternative fuel, viz natural gas saving petroleum fuel; reducing toxicity and increasing engine life.

58. PETRO MOHYLA MYDOLAIV STATE UNIVERSTY

58.1. REGULATION TECHNOLOGY OF THE STUCTURE FORMATION OF THE SPUN CASTING WITH THE PURPOSE OF PROVIDING GIVEN PHYSICAL AND MECHANICAL ENGINE PROPERTIES (DETAILS OF AUTOMOBILES, TRACTORS AND VESSEL ENGINES)

For maintenance of required variable wear resistance of the cylinder liner on length forming, reception of a working surface with variable properties is necessary. The given structure, hardness, and wear resistance in each point of a working surface of the cylinder liner is possible for receiving at the determined speed o crystallization and cooling of metal in this point.

The structure of cast-iron cylinder liner should have graphite of the lamellar form a straight line or vorticity shape, a metal matrix as sorbitic pearlite full a absence of structural- free ferrite and inclusion cementite in quantity no more than 5 per cents of the area of thin section. Formation of this or that microstructure (feffite, sorbitic pearlite, cementite, graphitic) depends on speed of hardening and moulding cooling. Cooling speed depend on properties of the used foundry form and thickness of a wall of moulding. Reception of grey cast-iron with the low maintenance structural – free cementite need the slowed down speed of crystallization of moulding, i.e. mould with the minimal heat conductivity.

Crystallization of part blank should be implemented with a lowest speed of cooling which is possible for allocation of graphite of the necessary form and the size, in required quantity, with optimum character of distribution and suppression carbide forming processes. For this purpose the form is necessary for making with the minimal heat conductivity and a thermal capacity.

During crystallization and cooling of a part blank the cast-iron temperature decreases, and the temperature of the form grows, heat removal from moulding decreases and speed of cooling is reduced. In case of passive cooking at achievement of temperature pearlitehoro transformations speed of cooling is so reduced, that in result is formed pearlite low dispersiveness and inclusion of ferrite. The increase of heat conductivity of the form for acceleration of cooling results in acceleration of crystallization process and allocation structural – free cementite. thus at passive colling of cast-iron mouldings it is possible to receive in structure either graphite + pearlite + ferrite with hardness 170... 180 HB or graphite + pearlite + ferrite + centite withhardness 230...270 HB. It is impossible to receive in ral conditions a pure pearlite structure of cast-iron with hardness 250...280 HB as moulding without control of cooling speed of moulding.

Receiving of the given structure and hardness of cast-iron is possible by control of moulding structurization processes. The temperature of melt of cast-iron in the big degree influences the size of a grain and quantity of graphite inclusions through reduction of the centres of crystallization due to their dissolution at increase of temperature of melt. Harmful influence of high metal overheating (for input of necessary alloying elements) on cast-iron wear resistance is possible to avoid by application of fustible ligature. Application ligature also in addition refines metal and improves its quality in comparison with individual input of alloying elements.

At cooling moulding up to temperature on 50...80 ^{0}C above the A3 point (723^{0}C) it is necessary to carry out artificial compulsory cooling of moulding with the raised speed. Speed of cooling should be chosen such to provide intermediate disintegration austenite and formation of a disperse and solid product of transformation as sorbitic pearlite with hardness 250...280 HB. Cooling of moulding is necessary for spoping at temperature 400...500^{0}C for exception of an opprtunity of martensite formation. Besides slow cooling of moulding from 400....500^{0}C provides its self-tempering and removal of foundry pressure.

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58.3. COMPOSITE MATERIAL OF CONSTANT MOULDING MATRICES FOR THE CAST-IRON DETAILS MOULD, EXCLUDING THEIR WHITENING

With the purpose of improvement of quality of an external surface of moulding, exception superficial chilling of part blank, increases of resistance of the form are offered to be made multilayered chill mould (Fig 1).

It contains (Fig 1) the body – 1, a layer of heat insulation material- 2 and a constant layer –3 of carbide contacting with liquid metal. A layer of carbide's is received by carbidesation of surfaces of the pressed spongy material have in 4-6 times smaller heat conductivity in comparison with cast-irons. Pressed sponge material's has even less heat conductivity.

It is established, that the effect of increase heat-insultation appears from the value of porosity of 2% of and grows up to 50%. The density of packing of metal's granules allows to change heat-conductivity properties of the basic material chill mould, and it reduces speed of moulding crystallization. The layer of carbide, having high temperature of fusion (3000^0C), sharply raises thermal resistance of material facing and limits physical and chemical interactions of the form with liquid cast-iron. It provide high quality of a surface of cast products ands higher resistance of the form.

To make heat-insulation layer of the pressed spongy material it is offered by a way of the powder metallurgy giving the minimal allowances on processing. It allows to adjust porosity of a material that changes heat conductivity of the last.

Except for the general increase of hardness of moulding and improvement of structure, the technology of structurization control of cylinderlines allows to remove the lacks inherent in a way of spun casting.

58.4. DEVICE FOR PUMPING ELECTROCONDUCTIVE LIQUID

Object of research and his function

Device for pumping electro-conductive liquid is designed to pump toxic electro-conductive liquid, melted metals and salts. It can be used as cooling device also.

Device for pumping electro-conductive liquid is designed to pump toxic electro-conductive liquid, melted metals (mercury, aluminium) and salts. It can make preservation of the environment. Windings of device can have artificial cooling; they are installed in air. Liquid of device have contact with magnetic core only.

Area of application

Device for pumping electro-conductive liquid is designed to pump toxic electro-conductive liquid, melted metals and salts. It preserves the environment.

It can be used in metallurgy, chemistry, as cooling device in atomic plants.

58.5. COGENTERATION SYSTEMS

Cogeneration systems for combined production of heat, cold and mechanical or electrical power.

Cogeneration systems are based on new jet stream energy saving technologies.

Cogeneration systems can be integrated into convention internal or external combustion engines and gas turbines or used as separate ejector waste heat recovery refrigeration machines and steam producing heat pumps.

The main advantages

- energy and fuel saving
- lowering Global Warming level
- saving water
- high engines efficiency at high air ambient temperature
- high reliability
- ruggedness
- simplicity
- low capital and installation costs
- short payback time.

Applications

- heat and power plants
- heat pumps
- heat supplying systems for energy and technological plants in chemical, petrochemical, mitallurgical, paper, (food preserving, sugar, spirits, meat and dairy) industries
- plants employing renewable sources of energy: bioenergy, geothermal energy, solar energy.

59. NATIONAL UNIVERSITY OF FOOD TECHNOLOGIES

59.1. MILK CONDENSED WITH FRUCTOSE

The condensed lactic canned food are yields which are capable to be stored without damage and without modifications of initial indexes during a long term of storage. The given group of yields is in demand of the Ukrainian customers.

Traditionally as preserving matter by production of the condensed lactic canned food Saccharum will be used therefore of carbohydrate composite these yields contains in a significant amount a saccharose and lactose (lactose). The consumption of yields of the high in indicated carbohydrates can become a reason of magnification of a mass of a skew field of the man, increase of ecological conditions has stipulated magnification of an amount of the people by ill sugar Diabetum and prone to this disease, the consumption of similar yields is not recommended to which one.

One faculty of a process engineering of milk and lactic yields of national university of alimentary process engineerings together with the specialists of COTTONS "Ovrutsky milk-tinned food factory" is offered production of the condensed lactic yield, and as preserving matter by his (its) production the monosaccharide of a natural genesis- fructose will be used.

By results of the conducted researches by the writers is made out and the State patent of Ukraine No 34 116 And (15.02.2001 Bulletin is obtained No 1), the Mode of production of the condensed lactic yield" in Ukraine and Russia is sent the request for the invention "02070938-025-2002 Milks condenses with fructose are designed THAT For 15.8 – The technical condition and technological instruction. The given yield is suitable for direct consumption, and also for usage as an intermediate product. The condensed milk with fructose is made from normalized or low-fat sterlizible of milk by an evaporation of a part of water and preservation by fructose with the subsequent cooling and packing of a finished stock in consumer tare.

On organoleptic indexes the yield should correspond (meet) to the following requirements: taste and odor- sweet, appropriate fructose, with the expressed smack sterilization, without outside smack and odors; the solid-to-liquid ratio-homogeneous on all mass, without presence of palpable at taste chips of lactose, is enabled farinaceous solid-to-liquid ratio and settlings at the bottoms tares at storage; colour- from cream up to hazel, even on all mass.

59.2. THE CAKE "NORTH BEAUTIFUL WOMAN"

The figured shortbread with original compounding composition and various taste gamut with addition of beta-carotin.

A beta-carotene is biologically active addition of many function's action which recommend for strengthening of the immune system of organism and also as an antioxidant.

Concentration of free radicals in the organism of man increases under action of ionizing radiation, at stresses, senescence, harmful terms of work, accordingly, new products with the inclusion of carotence can be recommended in the ration of feed for the population resident in ecologically unfavorable districts.

Except for the rise of biological value of food stuffs; a beta-carotene affects technological properties of new wares; it is natural dye, and also lengthens the term of storage of products with fat.

According to data of medicine, day's necessity in a vitamin A makes I mg/day, *in recalculation on beta-carotene- 6 mg/day.*

In compounding of the thin captain << North beautiful Woman>> it is included from 2-2,5% compound of beta-carotene to composition of ingredients, that provides the rise of food and biological value, improvement of taste indexes, extension of terms of storage.

for a change taste gamut of thin captain, consisting of wheat flour of top grade, vegetable fat, products of egg; beta-carotene the fruit additions used as finishing ready-to- cook foods are include also; fruit jelly, raisin, prune.

59.3. ASSORTMENT OF PRODUCTS FROM CHEESE SOUR-MILK ON TECHNICAL CONDITION 02070938-021-2000 "PRODUCTS SOUR-MILK PASTE LIKE"

CURDS:

Cream curds, 25% of fat: sweet with vanilla, with fruit- berry filler and additives," Plus honey", "Surprise",.

Cream curd, 10% of fat: salty, sweet, with vanilla, with fruit-berry filler and additives, plus honey", "Surprise", a cream- brule, cappuccino, chocolate;

curd" Taste of ice-cream ", 7% of fat: sweet, with vanilla, with berry and additives, a cream- cappuccino, chocolate;

cream curd juicy, 10% of fat: with greens, with vegetables and greens, with vegetables and greens and spice, with a paprika, from a horse-radish and spice, with mustard and spice, with caraway seeds, with spice.

CREAMS:

A cream curd oil 25% of fat: with greens, with honey, citron with candied fruits, with vanilla, with cinnamon, with fruit-berry filler and additives, with nuts, from coffee, from cocoa, with glaze, with chocolate glaze and nuts, with chocolate glaze and a wafer crumb, with chocolate glaze and raisin, with chocolate glaze and a coconut shaving.

PASTES:

Paste cream-curd, 12% of fat: sweet fragrant, with honey, with kapanejbio, citron with candied fruits, with vanilla, with cinnamon, with fruit-berry filler and additives, with nuts, from coffee, from cocoa, with glaze, with chocolate glaze and nuts, with chocolate glaze and a coconut shaving, with it is expected, with it is expected karkade, with chicory, with a dogrose, with a dogrose and with honey, with mint, with mint and with honey.

DESSERTS:

A dessert " Curd delicacies", 5% of fat: sweet fragrant, with honey, with fruit candy, with a peanut in chocolate, with halvah, citron with candied fruits, with canilla, with cinnamon, with fruit-berry filler and additives, with nuts, from coffee, from cocoa, with glaze, with chocolate glaze and a coconut shaving, with it is expectex, with it is expected karkade, with chicory, with a dogrose, with a dogrose and with honey, with kjlkjlkjlkj with lkdhfjhdskj and with honey, with mint, with mint and with honey;

a desert "Curd delicacies ", low-fat: sweet fragrant, with honey, with fruit candy, with a peanut in chocolate, with halvah, citron with candied fruits, with vanilla with cinnamon, with fruit-berry filler and additives, with nuts, from coffee, from coca, with chocolate glaze and nuts,

With chocolate glaze and a wafer crumb, with chocolate glaze and raisin, with chocolate glaze and a coconut shaving with tea, with tea and karkade, with chicory with a dogrose, with a dogrose and with honey, with mint, with mint and with honey.

59.4. VITALON- THE BEVER OF HEALTH

Nowadays, the malignant ecological situation which is conditioned by negative influence of small radiation doses and other aggressive factors of environment, it is necessary to invent the new drinks which would have curative and preventive properties, besides high organoloptic indices. National University of food Technologies in collaboration with scientific and Research Institute of Gerontology of Ukrainian Medical Sciences Academy and MBI of National Academy of Science in Ukraine worked out a series of drinks called "Vitalon," which correspond to all mentioned requirements. The technology is based on traditional recipes or preparing the so-called "tea kvass" with complete usage of natural raw material.

According to the results of medical andbiologicalresiarches carried out in different groups of patients in Ukrainian Ministry of Heath Protection "Peremoga" Sanatorium, we can affirm that drinks "Vitalon" have the active curative influence which is evident in intestine biocenosis normalization, and general imporovement of metabolic processes. The expressed biological effect helps to improve the functional state of human organism, along with the absence of negative side effects The high organoleptic indices of "vitalon" series drinks are confirmed by the awards received on the international degustation competitions, and they are the main factor of their high demand among high demand among the consumers.