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20649

UNIDO - United Nations Industrial Development Organization

Promotion of Local Technologies

Agreement n^o. 93/311

Final Report

Consultant

By José Adeodato de Souza Neto
29/033/94

Approved by *Vincent de M...*

Introduction

The present report was prepared in the fulfillment of agreement no 93/311, Promotion of Local Technologies. It has the purpose of assisting the promotion and commercialization of selected Brazilian technologies, locally developed, adapted or innovated in other developing countries. ~~Priority~~ was assigned to the area of ~~informatics~~, although other industrial areas are also presented.

Sampling

An initial list of potential technologies was obtained from the Chief Executive Officer of the National Research Center for Informatics, CTI (Fundação Centro Tecnológico para a Informática), from the former National Secretary of Informatics, from the Executive Secretary of Brazilian Society of Informatics, a few selected university professors and industrial executives, technology transfer offices of major universities and research institutes, and from the major patent lawyer office in Brazil.

This was not an exhaustive sampling, nevertheless it provided a representative group of technologies.

Table 1 presents the bulk sample or the initial list of technologies that has been used.

Screening

The above list is already the result of some selection, which was carried out during the first contact with the potential source of technology. Therefore, the information obtained is not homogeneous, in the sense that some data have been previously screened. The list was processed with the purpose of reducing the number of interviews, the amount of work used to collect documentation and to carry in depth analysis. Although intuitive criteria have been used in performing the screening, the following explicit rules were generally employed:

1. The degree of demonstration of interest by the technology holder, as measured by the prompt reply to questions and for additional information, presentation of organized data, etc..
2. The existence of a capable industrial backup for the technology transfer phase, that usually requires provisional supply of parts and components, support to engineering, sales, training of personnel, etc. was considered vital.
3. The evidence of reliability of the technology. A commercial scale demonstration was considered important as a measurement of reliability.

Table 1 - Bulk Sample of Technologies Which Have Been Screened

Institution	Contact Person	Area	Technologies
University of São Paulo Technology Transfer Office	Eduardo José Siqueira Barbosa Project Director - CECAE	All areas	List of 86 patents or patent requests, with the description of the invention and the industrial use.
University of Campinas	Jorge Nicola Director - Technology Transfer Office	All areas	List of 56 patents or patent requests, with the description of the invention and the industrial use.
Federal University of Rio de Janeiro	Angela Uller Director Fundação COPPETEC (Equivalent to Tech Transfer Office)	All areas	Three "softwares"
Ministry of Science and Technology, CTI - The National Research Center in Informatics	Carlos Ignácio Zamitti Mammana Acting Director General - CTI	Informatics	One offer on prototyping technology.
TELEBRÁS S.A. (State owned holding of telecommunications in Brazil)	Mauro de Lima Coimbra Section Manager CPqD - TELEBRÁS (Natl. Research Center)	Telecommu nications	Four technology offers for licensing, three offers for specialized technological service and general areas of interest where TELEBRAS has built competence.
IPT (Larger Polyvalent Research Center in Southern Hemisphere)	Cecílio Lopes Garcia Tech Transfer Contracts	All areas	Six technology offers for licensing together with a Brazilian industry.
CERTI Foundation. Located at the campus of Federal University of Santa Catarina. Run by a group of industries among which Volkswagen, Pirelli, etc..	Carlos Alberto Schneider Fundação CERTI	Informatics	Holographic station designed to simplify displacement, strain and stress measurements, using TV holography (ESPI).

4 S Informática Indústria e Comércio Ltda.	Celso Schmidt - Director - Introduced by Fundação CERTI	Informatics	TV Broadcasting Automation System
REIVAX Automação e Controle	João Marcus Castro Soares - Director - Introduced by Fundação CERTI	Informatics	Hydroelectric Power Control Systems
AsGa Microeletrônica	José Ellis Ripper Filho - President	Micro- electronics	Optoelectronic Devices for Optical Communications
Oxitenó	Araguaryno G. Abichara - Director - Direct contact and also in cooperation with IPT	Chemical Industry	Seven process technologies in alcohol chemistry and one catalyst technology.
ESCA (multidivisional company dedicated to control systems, engineering project, telecommunications and environment).	Descartes de Souza Teixeira Marketing Manager (Holding)	Informatics	Two technologies have been selected among others
RIMA Impressoras S.A.	Eduardo Fanucchi Executive Director	Informatics	Dot matrix printers and printing devices
SID - Informática S.A.	Ricardo Torres - Technology Manager	Informatics	Two technology offers. Bank automation system and point of sales (commercial automation)
DIGITRO (associated with GYRON)	José Fernando Faraco President	Informatics	Robot helicopter for remote sensing
VALLEE S/A	Roberto S. Waack Vice-president	Veterinarian	Animal vaccine
Heliodinâmica	Bruno Topel	Micro- electronic	Solar cells
ZETAX	Cleber Barbosa Commercial Director	Telecommu nication	Telephone switching stations

Recommended technologies

Table 2 summarizes recommended technologies. A profile of each technology offer is presented at the end of this document, and further details, on the technology and on its holder, can be found in the attached printed material (annexes).

Promotion schemes

Technology is a means to differentiate products in the market, or to produce them at costs that are lower than competitors. Therefore, the more exclusive or privileged the technology, the higher its value. Usually, a strong patent position will raise the value of the technology and the lack of protection weakens it. Secrecy is often a protection strategy, in the absence of industrial propriety right.

This sense should also be observed while promoting technologies. The image of something special, that is only offered to a very small group of selected investors, has to be preserved. It makes the proposals more attractive. Conversely, if the offer is broadly disseminated it may work the other way around, i.e., it may depreciate the value of the technology. In reality, potential clients (investors) for a new technology are a small selected group and, to some extent, oriented toward segments of markets or kinds of businesses. The promotion scheme should then be oriented to a specific clientele, and not to the general public. Therefore, the use of catalogs, data banks and similar approaches is much questionable. Individual visits to selected clients are preferable, although not the only way to disseminate the information.

Special consideration have to be given to the cases of SID Informática S.A. and ASGA S.A.

They have been in China, as part of a mission led by FINEP (national pre-investment financing agent). In general, they have prepared their offer, bearing in mind the Chinese market. They notice much interest from the Chinese hosts, and some have established good contact and started negotiations already.

SID Informática, is a local company dedicated to bank automation and retail automation systems, among other areas. The Chinese showed great interest in their cash dispenser, in particular, due to its technical characteristics, a competitive price and the fact that there are thousands of such terminals operating under high reliability, in Brazil. Currently they are looking for a local partner with whom to do business. They suggested that the local counterpart should have manufacturing capability as for the production of micro-computers, standard knowledge in software development and, most important, good and influent channels with the banks. Next May, there will be a Fair on Bank Automation, in China. SID Informática will participate in the fair if they find their partner or future collaborator before the event.

Direct contacts with SID for this purpose should be held with

Ricardo Torres
Technology Manager
SID - Informática S.A.
Rua Dr. Geraldo Campos Moreira, 24C
04571-020 São Paulo, S.P., Brazil

Tel: (011) 531-6377 ext. 2264
Fax: (011) 542-3675

ASGA, is a local manufacturer of components for optical fiber communication. Dr. Chen Lianghai, Vice-Director of The Institute of Semiconductors, The Chinese Academy of Sciences, where there is manufacturing of the same type of components, had studied at University of Campinas (São Paulo, Brazil) under the advise of Dr. José Ellis Ripper Filho, presently the President of ASGA.

During my interview with Dr. José Ellis Ripper Filho and Dr. Robervagner Salgado, on March 10, in Campinas, I learned of their interest in starting some cooperation with China, not necessarily licensing, but interchanging of industrial information. They believe Brazil has a larger experience in productivity and industrial operations, and China has an excellent technical background. They even foresee the possibility of getting some supplies from China.

Additional information on such visit and exchange is attached. They would like to know how UNIDO could assist them in implementing such cooperation.

Direct contacts with ASGA for this purpose should be held with

Robervagner Salgado
Director
Rodovia Dr. Roberto Moreira, Km 4. CP 132
13.140-000 Paulínia, S.P., Brazil.

Phone: (0192) 74-3210
Fax: (0192) 74-3988

Table 2 - Recommended Technologies

Offer #	Title	Area	Holder	License	Joint Venture	Cooperation
1	Transpotation Fleet Management Control System	Informatics	ESCA	yes	yes	
2	Air Traffic Control System	Informatics	ESCA	yes	yes	
3	Point of Sales Terminal	Informatics	SID	yes		
4	Banking Automation System	Informatics	SID	yes		
5	Matrix Printers and Printing Mechanisms	Informatics	RIMA	yes	no	
6	Argon injection in electric arc furnace	Metallurgy	IPT	yes		
7	TV Broadcasting Automation System	Informatics	4 S	yes		
8	Holographic Station	Chemistry	CERTI	yes		
9	Vibration Monitoring Instruments	Informatics	IPT	yes	yes	yes
10	Tachometric Transducer	Informatics	IPT	yes		
11	Hydraulic Rail Point Switch	Informatics	IPT	yes		
12	Super Magnets of Neodymium-Iron-Boron	Materials	IPT	yes		*
13	In-Motion Weighing System	Informatics	IPT	yes	yes	
14	Optoelectronic Devices for Optical Communication	Telecom	ASGA	no	no	yes
15	Inspection and Surveillance System	Informatics	GYRON	yes	yes	yes*
16	Zinc Oxide Catalyst Production Process	Chemistry	OXITENO	yes		
17	Acetaldehyde from Ethanol	Chemistry	OXITENO	yes		
18	Acetic Acid from Acetaldehyde	Chemistry	OXITENO	yes		
19	n-Butanol from Acetaldehyde	Chemistry	OXITENO	yes		
20	Glycol Ether Acetates	Chemistry	OXITENO	yes		
21	Acetates	Chemistry	OXITENO	yes		
22	Glycol Ethers	Chemistry	OXITENO	yes		
23	Alcanolaminas	Chemistry	OXITENO	yes		
24	Estimation of Parameters and Design of Experiments	Informatics	COPPETEC	yes		*
25	Mcasurements of Structural Movements	Informatics	COPPETEC	yes		
26	Work Station for Software Development	Informatics	COPPETEC	yes		
27	Digital Stored Program Control Multiapplication Platform	Telecom	TELEBRÁS	yes		
28	Inductive Card Based Payphones System	Telecom	TELEBRÁS	yes		
29	Antenna Technology	Telecom	TELEBRÁS	yes		
30	Dual Channel Digital Radio	Telecom	TELEBRÁS	yes		

* Not fully developed.

Recommended Technology Offers

TITLE: Transportation Fleet Management Control System

DESCRIPTION

RODOSAT, a satellite-based mobile telecommunication system, has been designed to monitor and control transportation fleets, of any type: trucks ferries or trains. It provides continuous tracking of each vehicle, monitors cargo variables, allows two-way communication between vehicle and its company, by a simplified message forwarding system.

The control center receives, decodes and processes the data, transmitting the information to the end-user under full confidentiality.

The user center, a microcomputer based system controls each vehicle. A software and a friendly man-machine interface display roads, sites, maps, identifying vehicles, and providing customer's desired reports.

Embarked subsystem is composed of an omni-directional antenna, a ruggedly constructed transceptor and a control terminal with display and keyboard, handy to the vehicle operator.

MAIN ADVANTAGES

Low cost, friendly user-system interface and full assistance on implementation. It can be adapted to other satellite system than IMARSAT, depending on studies.

MAIN APPLICATIONS

Management and control of transportation fleets, of any type: trucks ferries or trains. Implementation of just-in-time management.

DEGREE OF DEVELOPMENT

Full operation in 11 fleets in Brazil.

ECONOMIC DATA AVAILABLE

Upon request.

COMMERCIAL OFFER

Licensing agreements, engineering, procurements, proprietary software, training and full support to the business establishment .

Technology Offer. Ref. 1

CONTACT

ESCA - Diretoria de Marketing
Alameda Araguaia, 1142 - Alphaville
06445-940 Barueri, S.P., Brazil.

Telephone 55 11 725-4100
Fax 55 11 725-1742.

TITLE: Air Traffic Control System

DESCRIPTION

ESCA 4000 - Air Traffic Control System for Terminal Areas is an advanced and compact product recently developed by ESCA to support and automate the procedures involved in the coordination and control of air traffic, contributing for flight safety. It utilizes an open architecture platform - ETHERNET network, UNIX, X-Windows, and flexible software design. An advanced graphical interface, based on X-Windows, allows a complete and accurate visualization of the area under control and has been implemented in high resolution color monitors - up to 2048x2048 pixels.

MAIN ADVANTAGES

Friendly user-system interface; full assistance on implementation; modularity allows easy expansion; Operates in local network, which improves reliability; Complies with the standards of International Civil Aeronautic Organization; Electronic Flight Strips on color monitor; Latest commercially available hardware technology, integrated with a comprehensive set of functions in a software product.

MAIN APPLICATIONS

Air traffic control system for en-route and terminal areas.

DEGREE OF DEVELOPMENT

Two systems are operational in Rio de Janeiro and São Paulo, Brazil.

ECONOMIC DATA AVAIL ABLE

Upon request

COMMERCIAL OFFER

Licensing agreements, engineering, procurements, proprietary software, training and full support to the business establishment.

CONTACT

ESCA - Diretoria de Marketing
Alameda Araguaia, 1142 - Alphaville
06445-940 Barueri, S.P., Brazil.

Telephone 55 11 725-4100
Fax 55 11 725-1742.

TITLE: Point of Sales Terminal

DESCRIPTION

Modular system composed of a PC 80386 processing unit, display unit, key board and printer. Hardware and software, a complete solutions, specially designed to meet the needs of retailers, wholesalers and service businesses.

MAIN ADVANTAGES

- Based on an architecture compatible with a PC standard, it can be easily connected to other systems.
- Due to modularity and versatility, it can be adapted to various market segments.
- May be connected to various peripherals, such as scanners, conventional printers, customer auxiliary keyboard, money drawer, check printer, etc..

MAIN APPLICATIONS

Point of Sales Terminal

DEGREE OF DEVELOPMENT

Fully developed commercial use.

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Licensing agreements. Assistance can be provided for the establishment of a new business, as well as the provisional supply parts and components.

The possibility of capitalizing the technology transfer costs to a new venture can be considered.

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TITLE: Banking Automation System

DESCRIPTION

Complete know-how of banking automation system:

- Teller Terminals
- Cash Dispensers
- Financial Operation Terminals
- Deposit Terminals
- Data base and communication servers
- Softwares

MAIN ADVANTAGES

- The philosophy of a modular system (independent terminals for deposit, cash dispensers and operations) reduces cost and improve reliability, as compared to integrated terminals.
- Ample experience in Brazilian market (first or second rank on sales), supplying the major banks in the country.
- Open design. System is compatible with virtually all communication protocol, been suitable for addition to existing ones.

MAIN APPLICATIONS

Full or partial automation of banking.

DEGREE OF DEVELOPMENT

Since 1981 banking automation system have been in commercial operation.

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Licensing agreements. Assistance can be provided for the establishment of a new business, as well as the provisional supply parts and components.

The possibility of capitalizing the technology transfer costs to a new venture can be considered.

Technology Offer. Ref. 4

CONTACT

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Fax: (011) 542-3675

TITLE: Matrix Printers and Printing Mechanisms

DESCRIPTION

Technology for matrix printers and print mechanisms for a variety of applications is available from the leading company in Brazil, that holds over 40% of printers market. The company has international experience, operates branches overseas, exports about 10% of its production and has licensed out its technology abroad.

Printer models will range from 9 do 24 pins and up to 500 cps. Printing mechanisms will meet the needs of bank tellers, cash dispensers ADM ATM, points of sale, cash registers, miniprinters, telexes and special applications.

Along with the technology, agreements could include assistance to licensees in establishing the new business, as well as the provisional supply of parts and components.

The technology includes the manufacture of major components and assemblies.

MAIN ADVANTAGES

- ◆ The technology is suitable to the prevailing conditions in developing countries.
- ◆ Open technology transfer agreements can be negotiated.

MAIN APPLICATIONS

General office use and business equipment.

DEGREE OF DEVELOPMENT

Full commercial scale for many years

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Licensing agreements. Assistance can be provided for the establishment of a new business, as well as the provisional supply parts and components.

Technology Offer. Ref. 5

CONTACT

Eduardo Fanucchi - Diretor Superintendente
Rima Impressoras S.A.
Estrada da Aldeinha, 618/648 Alphaville
06465-100 Barueri SP Brazil

Phone: (011) 421-2581

Telex: (011) 72231 RMIP BR

Fax: (011) 725-1446.

Technology Offer. Ref. 6

TITLE: Argon injection in electric arc furnace.

DESCRIPTION

The unstable arc is one of the biggest problems concerning steel making in electric arc furnace. The controlled injection of argon gas, through hollow electrodes, leads to an enriched, flexible and stable arc. Such arc can be elongated, improving heat transfer, reducing furnace wear, fusion time, etc..

The technology includes the preparation of the electrodes, which requires a special drill bit, the adaptations on the mechanical lathe, the design and operation of the gas flow control system. It can be applied on the remodeling of an existing arc furnace or on the design of a new one.

An international patent has been requested.

MAIN ADVANTAGES

It is applicable to a new arc furnace or adapted to an existing one.

Reduces at least 15% of electrode wear, 8% of insulation wear, 8% of power consumption, fusion time, maintenance, reduces flickering on the power line, noise level, etc.

Works both on DC or AC furnaces. Its easy to install.

MAIN APPLICATIONS

In general, it is applicable on all types of electric arc furnaces to provide improved operation and higher performance. Industrial experiences have been developed specifically in steel manufacture.

DEGREE OF DEVELOPMENT

Two units are operational in Brazil in steel production: 10 ton and 35 ton furnaces.

ECONOMIC DATA AVAILABLE

Data can be supplied upon request. For the two operational models referred above, the pay-back time was six months.

COMMERCIAL OFFER

Manufacturing license (patent and know-how) and the necessary technical assistance.

Technology Offer. Ref. 6

CONTACT

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05508-901 São Paulo, S.P. Brazil

Tel: 55 11 268-2211 ext. 118
Fax: 55 11 268-8140, 55 11 869-3353

TITLE: TV Broadcasting Automation System

DESCRIPTION

MASTERCART is the result of the integration of standard parts and components such as PC 386 board, VGA monitor, keyboard and others, that permits monitoring and managing program material for TV broadcasting. It works in conjunction with specially designed switchers, commutators and audio-video amplifiers.

A flexible software, on hard disk, keeps track of all events generating a file which is the basis for a variety of reports, including automatic invoicing of clients, and others.

MAIN ADVANTAGES

It is a modular system, thus allowing different configurations to meet the user needs.

It is low cost, simple to build, to operate and maintain.

Intelligent serial interface. Full control of VT functions (up to 6 VTs of U-Matic, S-VHS, M-II and Beta types).

MAIN APPLICATIONS

TV broadcasting program management.

DEGREE OF DEVELOPMENT

Several units in commercial operation

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Licensing agreements. Assistance can be provided for the establishment of a new business, as well as the provisional supply parts and components.

CONTACT

Celso Schmidt
Diretor
4 S Informática Ind. Com. Ltda.
Rua Lauro Linhars, 125/3
88036-000 Florianópolis, S.C., Brazil

Tel: (0482) 34-0445

Fax: (0482) 34-0855

TITLE: Holographic Station

DESCRIPTION

The holographic station is the result of the integration of optical, mechanical and electronic devices with a powerful software designed to simplify displacement, strain and stress measurements, using TV holography (ESPI).

MAIN ADVANTAGES

- flexible illumination points by positioning with optical fibers;
- fast and accurate position determination;
- multiple fiber illumination;
- computer controlled optical fiber switch;
- built-in least square algorithm for accurate calculation of 3D displacements, strains and stresses;
- built-in phase stepping device;
- advanced phase computing algorithm;
- interactive phase unwrapping algorithm;
- flexible Fourier filtering algorithm;
- graphical general displacement, strain and stress field visualization;
- graphical point by point analysis of each measured quantity.

MAIN APPLICATIONS

Research, non-destructive testing and engineering development involving very small strain, stress and displacement measurements. Examples:

- thermal expansion measurements;
- study and testing of composite materials;
- crack study and detection;
- high temperature stress measurements.

DEGREE OF DEVELOPMENT

One station fully operational at industry. Patent request for optical fiber switch

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license (patent and know-how) and the necessary technical assistance.

Technology Offer. Ref. 8

CONTACT

Armando Albertazzi Gonçalves Jr.
Campus da UFSC, C.P. 5053
88.049-970 Florianópolis, S.C., Brazil

Phone: 00 55 482 34-3000

Fax: 00 55 482 34-1514

TITLE: Vibration Monitoring Instruments

DESCRIPTION

Vibration Monitoring Instruments. Vibration Transducer - Non-contact, eddy-current displacement sensor, for radial vibration and axial position of monitoring of machinery rotors. Vibration Monitors - On-line analog monitor, for machine health condition supervision, monitoring radial vibration and axial position of rotors, structural vibrations, bearing temperatures, etc..

MAIN ADVANTAGES

Sturdy construction, good durability for not having movable parts, fully compatible with API 670 standard for petrochemical industry.

MAIN APPLICATIONS

Machinery health supervision of medium and large rotating machines in the main process industries, like steel mills, paper-rolls, steam and gas turbine, turbo compressor trains, hydroelectric power generators, etc..

DEGREE OF DEVELOPMENT

Original development was carried at IPT (research institute) and licensed from it. Today, there are over 2,500 machines being monitored using portable analyzers and predictive maintenance software.

ECONOMIC DATA AVAILABLE

Can be supplied upon request.

COMMERCIAL OFFER

Licensing agreements. Assistance can be provided for the establishment of a new business, as well as the provisional supply parts and components.

Looking for partners to develop new products and/or who could provide latest generation technology of electronic circuits and components.

Technology Offer. Ref. 9

CONTACT

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05508-901 São Paulo, S.P., Brazil

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Paulo Mario R. da Cunha
CONVIBRI S.A.
Rua Amália de Noronha, 145
05410-010 São Paulo, S.P., Brazil

Tel: 55 11 280-8602
Fax: 55 11 853-7345

TITLE: Tachometric Transducer

DESCRIPTION

Transducers are variable reluctance devices assigned to angular speed measurement. When installed close to the teeth of a gear they generate an output tension with a frequency that is proportional to the rotation speed.

MAIN ADVANTAGES

Sturdy construction, work under severe environment conditions, such as high temperature or dust-loaded ambients, immersed in water or oil up to 120° C.

MAIN APPLICATIONS

Rotation measurements. Can be applied to trains and subways, elevators, escalators, cranes, etc.

DEGREE OF DEVELOPMENT

In full commercial use.

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Licensing agreements. Assistance can be provided for the establishment of a new business, as well as the provisional supply parts and components.

CONTACT

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02517 São Paulo, S.P., Brazil

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Fax: 55 11 857-1720

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TITLE: Hydraulic Rail Point Switch

DESCRIPTION

The hydraulic rail point switch detects the position and locks rail point. It consists of a steel case and the following components: DC electric motor, hydraulic pump, fluid tank, two hydraulic cylinders and operating bar that moves the rail points to normal and reverse positions. Two position detectors with electric contacts are actuated by the rail points.

It can operate both in a trailable (with 2 pairs of springs) or untrailable (with locking hooks) way and may be supplied by DC or AC voltage.

MAIN ADVANTAGES

1. Built with standard hydraulic components and parts.
2. Left and right mounting without modification
3. Fast operation of nearly one second response time
4. Small number of moving parts increases reliability and reduces maintenance
5. Low cost
6. Electric voltage is compatible with standard signaling and control systems.

MAIN APPLICATIONS

Rail points switching for rails up to 60 Kg per meter.

DEGREE OF DEVELOPMENT

Five years of prototype operation at a railroad.

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license and the necessary technical support

Technology Offer. Ref. 11

CONTACT

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TITLE: Super Magnets of Neodymium-Iron-Boron

DESCRIPTION

Manufacturing process for Neodymium-Iron-Boron magnets, that uses powder metallurgy techniques.

MAIN ADVANTAGES

1. Magnets have high magnetic fields with low volumes of material;
2. Low cost and simple manufacturing process;
3. Raw material cost has steadily decreased since 1987.

MAIN APPLICATIONS

1. Wherever high intensity magnetic field and small volumes is necessary, i.e., where miniaturization is required;
2. Voice coil motors, specially used in Winchesters disks;
3. Speakers and earphones

DEGREE OF DEVELOPMENT

The process was optimized in bench scale (100 g/run)

Product reached $(BH)_{\max}$ de 35 MGOe

ECONOMIC DATA AVAILABLE

Typical international price, in 1993: US \$ 150/Kg.

Minimum investment: US \$ 500,000

COMMERCIAL OFFER

Manufacturing license (patent and know-how) and the necessary technical assistance.
Industrial backup would be provided by the manufacturer of samarium-cobalt magnets.

CONTACT

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TITLE: In-Motion Weighing System

DESCRIPTION

The equipment is composed of two force transducers (standard strain gage) installed in two pieces of rail, connected to a signal conditioner and to a PC microcomputer. The strain gages and temperature compensation sub-system are protected against severe environmental conditions and voltage transients.

System provides measurements of:

1. Axle weight and speed;
2. Wagon weight (1% accuracy) and speed;
3. Train weight (0.2% accuracy) and speed;
4. Other operational information.

MAIN ADVANTAGES

1. The complete installation can take as little as 5 hours from the beginning of the work in the track to the first weighing;
2. Low cost;
3. Reduced time of weighing;
4. Force transducers are directly installed on the track, without any additional concrete or metallic structure.

MAIN APPLICATIONS

Weighing wagon and trains in motion.

DEGREE OF DEVELOPMENT

Several units are operational in the main Brazilian railways.

ECONOMIC DATA AVAILABLE

Upon request. In one of the cases, payback was one month.

COMMERCIAL OFFER

Commercial representation, joint venture or licensing would be considered

Technology Offer. Ref. 13

CONTACT

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05508-901 São Paulo, S.P., Brazil

Tel: 55 11 268-2211 ext. 118
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Israel Minguim
STA - Sistemas e Tecnologia Aplicada
Rua José Bonifácio, 485
Ribeirão Preto, S.P., Brazil

Tel: 55 11 819-5189
Fax: 55 11 869-0310

TITLE: Optoelectronic Devices for Optical Communication

DESCRIPTION

Laser Diode: Cooled and Uncooled Laser Module. Dual-In-Line 14-pin package contains a high reliability Fabry-Perot, or DFB, 1300 nm or 1550 nm InGaAsP laser diode, coupled to single-mode or multimode optical fiber and InGaAs monitor detector. Rated output power from 0.1 to 2.5 mW.

Pump Laser: Cooled Laser Module. Dual-In-Line 14-pin package contains a high reliability 980 nm or 1480 nm laser diode coupled to single-mode optical fiber and monitor detector. Rated output power from 20 mW to 60 mW.

LED: Cooled and Uncooled LED module. Dual-In-Line 14-pin package contains a high reliability edge-emitting LED, 1300 nm or 1550 nm coupled to single-mode or multimode optical fiber. Rated output power from 5 μ W to 50 μ W.

Detectors: Pin Module. Dual-In-Line 14-pin package contains a high reliability, low-noise and high-responsivity InGaAs detector coupled to single-mode or multimode optical fiber.

Receivers: Pin-FFT Module. Dual-In-Line 14-pin package contains a InGaAs detector and hybrid, or integrated circuitry, preamplifier designed for fiber-optic receivers. Operating data rates from 2 Mb/s to 140 Mg/s.

Fused Couplers and Splitters: Single-mode or multimode optical fiber, N x N port devices, with n=2, 4, 8, or 16 available.

Wavelength Division Multiplexer - WDM. Single-mode wavelength division multiplexer. Fused-fiber coupler which is designed to have a split ratio of 0% and 100% at 1300 nm, and 100% and 0% at 1550 nm. Also available for 980 and 1550 nm.

MAIN ADVANTAGES

Special soldering speed manufacture and reduces cost. Up-to-date technology. Low cost.

MAIN APPLICATIONS

Optical Communication

DEGREE OF DEVELOPMENT

Supplying Brazilian market, with major clients such as ALCATEL, NEC, and many local firms.

ECONOMIC DATA AVAILABLE

Upon request

Technology Offer. Ref. 14

COMMERCIAL OFFER

International cooperation on products and technology (two-ways). Particularly with:

Institute of Semiconductors
Chinese Academy of Sciences
P.O. Box 912 - Beijing 100083 - China

Fax: (+86) 1 256-2389
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CONTACT

Robervagner Salgado
Director
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13.140-000 Paulinia, S.P., Brazil.

Phone: (0192) 74-3210
Fax: (0192) 74-3988

TITLE: Inspection and Surveillance System

DESCRIPTION

Inspection and Surveillance System composed of an unmanned aerial vehicle, its payload, a ground control station, and a support vehicle.

Standard payload is a color video camera. Images are down-linked in real time to the payload control panel at the ground control station for viewing and recording.

Up to two unmanned aerial vehicles can be fully maintained, supported and operated by one man, from the ground station.

MAIN ADVANTAGES

Inspection and surveillance under circumstances where other system do not work. Low risk and low cost. Initial investment and operational costs are orders of magnitude less than regular helicopter.

MAIN APPLICATIONS

Management of environment and natural resources; agriculture, forestry, hydrology, collecting samples of stack fumes, etc.

DEGREE OF DEVELOPMENT

Fully developed mechanically. Final stage of development as far as control systems are concerned. Patent applications were requested.

ECONOMIC DATA AVAILABLE

Upon request. Estimates of operational costs and investments.

COMMERCIAL OFFER

Licensing and joint ventures would be considered

CONTACT

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Executive Director
Gyron Tecnologia em Servo Sistemas Ltda
Rua Lauro Linhares, 125
88036-000 Florianópolis, SC, Brazil

Tel.: 55 482 34-1591
Fax: 55 482 34-3745

TITLE: Zinc Oxide Catalyst Production Process

DESCRIPTION

The process comprises the production of ZINC OXIDE CATALYST starting from zinc oxide and inorganic acids and alkalis. A catalyst precursor is obtained in an intermediate stage, conformed and submitted to an activation process, producing a high resistance and high performance material.

MAIN ADVANTAGES

The process is carried out in operating conditions that provide high productivity, leading to reduced investment when compared to traditional manufacturing process. The product obtained is a high ZnO content, low cost and high absorption capacity material, that provides low cost sulfur absorption.

MAIN APPLICATIONS

The product is used for desulfurization of hydrocarbon feed stock reforming reactors and sulfur removal of ethylene make-up to EO plants.

DEGREE OF DEVELOPMENT

The manufacturing process is established in a production unit in Brazil (OXITENO) and the product is already commercially proven, being on-stream in several reforming units (CONGAS, ULTRAFERTIL, PETROBRAS)

ECONOMIC DATA AVAILABLE

Data can be supplied upon request

COMMERCIAL OFFER

Manufacturing license (know-how), process design and the necessary technical assistance.

CONTACT

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Romeo Bulla
Oxitenio
Av. Brig. Luiz Antonio, 1343, 7th floor
01350-900 São Paulo, S.P., Brazil

Tel.: 55 11 285-2722
Fax: 55 11 288-0725

Technology Offer. Ref. 17

TITLE: Acetaldehyde from Ethanol

DESCRIPTION

See attached brochure

MAIN ADVANTAGES

See process data in attached brochure

MAIN APPLICATIONS

DEGREE OF DEVELOPMENT

Commercial use

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license (know-how), process design and the necessary technical assistance.

CONTACT

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Tel.: 55 11 285-2722
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TITLE: Acetic Acid from Acetaldehyde

DESCRIPTION

See attached brochure

MAIN ADVANTAGES

See process data in attached brochure

MAIN APPLICATIONS

DEGREE OF DEVELOPMENT

Commercial use

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license (know-how), process design and the necessary technical assistance.

CONTACT

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TITLE: n-Butanol from Acetaldehyde

DESCRIPTION

See attached brochure

MAIN ADVANTAGES

See process data in attached brochure

MAIN APPLICATIONS

DEGREE OF DEVELOPMENT

Commercial use

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license (know-how), process design and the necessary technical assistance.

CONTACT

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TITLE: Glycol Ether Acetates

DESCRIPTION

See attached brochure

MAIN ADVANTAGES

See process data in attached brochure

MAIN APPLICATIONS

DEGREE OF DEVELOPMENT

Commercial use

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license (know-how), process design and the necessary technical assistance.

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TITLE: Acetates

DESCRIPTION

See attached brochure

MAIN ADVANTAGES

See process data in attached brochure

MAIN APPLICATIONS

DEGREE OF DEVELOPMENT

Commercial use

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license (know-how), process design and the necessary technical assistance.

CONTACT

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TITLE: Glycol Ethers

DESCRIPTION

See attached brochure

MAIN ADVANTAGES

See process data in attached brochure

MAIN APPLICATIONS

DEGREE OF DEVELOPMENT

Commercial use

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license (know-how), process design and the necessary technical assistance.

CONTACT

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TITLE: Alcanolaminas

DESCRIPTION

See attached brochure

MAIN ADVANTAGES

See process data in attached brochure

MAIN APPLICATIONS

DEGREE OF DEVELOPMENT

Commercial use

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Manufacturing license (know-how), process design and the necessary technical assistance.

CONTACT

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TITLE: Computational Package for Estimation of Parameters and Design of Experiments.

DESCRIPTION

ESTIMA is a group of routines that estimates parameters in non-linear systems. A set of experimental input variables are related to a set of output variables through a known mathematical model. The software calculates the parameters.

MAIN ADVANTAGES

Further to the calculation of the parameters ESTIMA designs the experimental conditions for maximum information, therefore reducing the amount of experimental work.

MAIN APPLICATIONS

The package finds uses in engineering and other areas. Typical examples are the estimation of chemical kinetic and phase equilibrium parameters

DEGREE OF DEVELOPMENT

Final phase of the development of graphic interface with user. Main routines are concluded.

ECONOMIC DATA AVAILABLE

Not available

COMMERCIAL OFFER

Distribution contract and licensing of copies.

CONTACT

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Fax: 55 21 280-8832 Ext. 447
FAX 290-6626

TITLE: Measurements of Structural Movements

DESCRIPTION

Structural movements are measured by means of digital image processing. System is composed of a TV camera, a microcomputer, specific hardware, and computer software for acquisition and processing of image.

MAIN ADVANTAGES

No direct interaction with the structure to be analyzed, therefor preserving the structural dynamic characteristics. This is very important when one is dealing with reduced models and simulation.

MAIN APPLICATIONS

Measurements of dynamic characteristics of structures.

DEGREE OF DEVELOPMENT

Fully developed

ECONOMIC DATA AVAILABLE

Not available

COMMERCIAL OFFER

Licensing of copies and consulting services.

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FAX 290-662

TITLE: Work Station for Software Development - TABA

DESCRIPTION

TABA is a Work Station for Software Development fitted with the necessary tools for several applications such as scientific programming, educational programming, etc.

MAIN ADVANTAGES

Flexibility is the main advantage. Contrarily to most systems, it offers tools for a large variety of applications, presenting differentiated programming environment.

MAIN APPLICATIONS

Software development in areas such as: Civil Engineering, Geophysics, Ocean Engineering, High Energy Physics, Tutorial Systems, CASE Tools, etc.

DEGREE OF DEVELOPMENT

Fully developed

ECONOMIC DATA AVAILABLE

Not available

COMMERCIAL OFFER

Distribution contract and licensing of copies.

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TITLE: Digital Stored Program Control Multiapplication Platform

DESCRIPTION

TRÓPICO RA is a Digital Stored Program Control - SPC Multiapplication Platform, developed by the TELEBRÁS Research and Development Center jointly with Brazilian manufacturers.

MAIN ADVANTAGES

- Hardware and software standardized interfaces to follow the fast evolution of technology;
- SPC functions are distributed among processors (up to 1,024) of the internal network, where each processor executed functions with the same complexity level.
- Chargeable program and data, written in CHILL, giving flexibility in the addition of new features.
- The communication between processors is performed by means of dedicated signaling structure, separated from switching structure used for the connections between subscriber terminals, avoiding overload in the internal signaling when the subscriber traffic increases.
- Essential functions are installed in n+1 basis, giving to the system graceful degradation performance in the case of failures. It provides low cost and good reliability level to the equipment.

MAIN APPLICATIONS

In addition to telephony, other network services are being introduced into the Multiapplication Platform:

- Signaling Transfer Point for CCITT #7 Signaling;
- ISDN Basic and Primary accesses;
- Digital Cellular Mobile services;
- Intelligent Network Service Access Point.

DEGREE OF DEVELOPMENT

In commercial use

ECONOMIC DATA AVAILABLE

Upon request

Technology Offer. Ref. 27

COMMERCIAL OFFER

Licensing of know-how and patents and the necessary technical support to transfer the technology.

CONTACT

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Caixa Postal 1579
13088-061 Campinas, S.P., Brazil

Tel.: 55 192 39-6200
FAX: 55 192 39-2179

TITLE: Inductive Card Based Payphones System

DESCRIPTION

System consists of a payphone, the Automatic Management Center and the card itself. A patent protect the card technology which is disposable and very low cost. .

MAIN ADVANTAGES

- The payphone is micro-processor based, line-powered, has self diagnosis and automatic report of failures
- The CSA optimizes the maintenance and operation routines by receiving the payphone data and allowing the generation of reports containing statistics of failures, maintenance, traffic and others.
- The card is inductive, disposable but recyclable and is not affected by magnetism of humidity.
- The card system is fully protected against adulteration of data.

MAIN APPLICATIONS

Payphone System

DEGREE OF DEVELOPMENT

Commercial operation in Rio de Janeiro begun in June 1992. Now it is being implemented in the whole country

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Licensing of know-how and patents and the necessary technical support to transfer the technology

CONTACT

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TITLE: Antenna Technology

DESCRIPTION

Antenna designs for satellite ground stations compliant with the latest FCC and CCIR recommendations. Designs include 4.5m Cassegrain, a 6m Gregorian and 9.1m ADE (Axially Displace Ellipse).

MAIN ADVANTAGES

All design have been optimized for high efficiencies in both C and Ku bands, with minimum change in reflector configuration.

MAIN APPLICATIONS

Satellite ground stations.

DEGREE OF DEVELOPMENT

In commercial use.

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Licensing of know-how and the necessary technical support to transfer the technology

CONTACT

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TITLE: Dual Channel Digital Radio

DESCRIPTION

This is a UHF dual-channel digital radio for point-to-point duplex operation, intended for expansion of rural communication together with the digitalization of rural network.

MAIN ADVANTAGES

- It operates at the same bands (450 MHz and others) of the current analog FM single-channel solutions, using the same 25 KHz bandwidth.
- Low cost advanced telecommunication; due to the use of recent technologies for radio design and extensive application of DSP integrated circuits.
- Increased transmission capacity. Uses VLSI ICs available for cellular radios.
- Data and FAX transmission capability, remote monitoring and supervision and full coin-telephone support.

MAIN APPLICATIONS

- Substitution of the analog system;
- Community services in low population or isolated areas such as villages, small towns and farms;
- Private service with 2 total accessibility trunks, such as 2 subscribers or 2-trunk KS/PABX;
- Multishared service for n users with two trunks and mixed applications

DEGREE OF DEVELOPMENT

In commercial use

ECONOMIC DATA AVAILABLE

Upon request

COMMERCIAL OFFER

Licensing of know-how and the necessary technical support to transfer the technology

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