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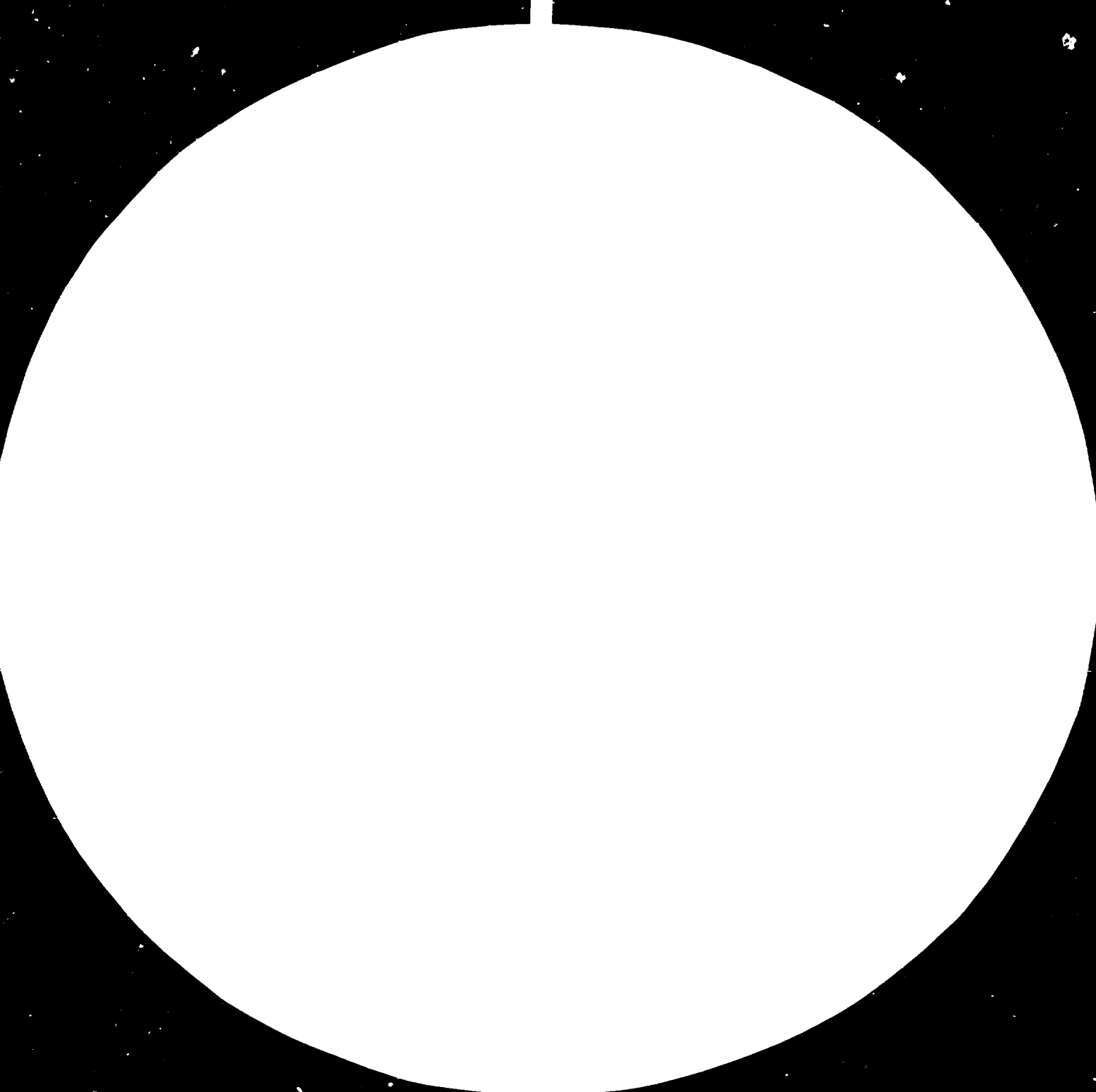
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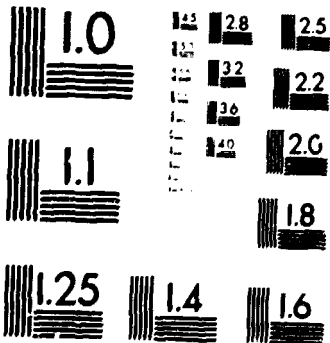
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Mission Report

Industrial Development and Renovation Organization
(IDRO)

Teheran, November, 25, 1989 to December, 9, 1989

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Abstract:

Industrial Development and Renovation Organisation "IDRO" is the biggest industrial organisation in Iran. It is under ministry of Heavy industries. The organisation produces and sales very wide sortiment of industrial goods. The technical progress in the world and in Iran is fast and the demands of the consumers too. The organisation itself should develop as the demands. To manage such a huge organisation is very complex activity. The team of managers should have "tools" to guide the organisation. One of the successful methods is to use strategic planning as such a tool in the organization. It was the consultant's task to find out if the strategic planning introduction might be useful for IDRO and to gain and collect the basic data of IDRO organization for preparing of relevant recommendations.

The cooperation with the managing staff was very good. It was necessary to pay attention to the effective development of IDRO.

1. Introduction

Industrial Development and Renovation Organisation of Iran (I.D.R.O.) was established in 1967 with the aim of developing and renovating industrial and mining organisations within the country.

There were gradually implementation of industrial organisation production of basic raw materials, aluminium, research and development of mines, manufacture of capital equipment like machine tools, some consumer goods industries like cement factories, paper mills and food processing plants.

With the victory of the Islamic revolution and with the new Constitution which established Ministry of Heavy Industry, the extend of IDRO's activities changed.

At present Industrial Development and Renovation Organization of Iran has 160 companies. Production programme is very wide. It consists of manufacturing and production of light and heavy vehicles, heavy equipment and machine tools, agricultural machines, marine industries, industrial structures, rolling mills, foundries, engineering, financing and research services. IDRO is the largest industrial organization in the Iran Islamic Republic.

IDRO has about 14 plants for manufacture of industrial equipment and structures, 9 mostly modern plants for industrial equipment and machine tools.

Rolling and foundry industries for sheets, pipes, profiles, copper profiles, foundry products, rolls etc. are produced in about 12 companies, heavy vehicles, gear boxes, engines, foundry parts in 7 companies, marine industries in 5 companies.

Machines and heavy equipment like steam boilers for power plants, industrial steam boilers, cooling towers, sugar and cement plants, wagons road building machines etc. about 10 companies.

Agriculture machines like tractors, combines, pumps, agriculture equipment in 7 companies.

Light vehicle and parts and components in 10 companies Semi heavy vehicles in 10 companies.

Industrial development and renovation organization of Iran has about 60 000 employees and annual sales achieve about 300 billions Rials.

IDRO in an organisation comparable with big industrial European concerns. The production assortment is highly diversified and broad.

This is a present state.

It is necessary to take into account future development of IDRO.

The world development of science and industries goes very quickly ahead and also the requirements of customers and consumer's industries are growing up.

There exists a basic rule on industrial products saying that every similar organisation has to have its products on a high technical level and at an acceptable price. It is a basic rule of an industrial organisation. This can be completed by the necessity of delivering these products on the market in time.

Industrial development and renovation organisation, similarly as other organisations is awaiting further great development. It will be quantitative as well as qualitative development of production and services in accordance with the development of science, technology and market. Production assortment will expand and further new products and especially IDRO services required by market will be further developed. It will be above all engineering services, which have been started at IDRO.

Commodity structure of IDRO is changing and this process of changes will continue even faster. It seems useful to expand the activities above all of complete plants deliveries incl. engineering activities.

As an example it is possible to set forth the following. IDRO built-up in ARAK AB new modern plant for production of boilers for power stations. It means that IDRO is able to deliver appr. 40 % of the technological equipment of thermal power stations and together with other existing production capacities in operation for electric power equipment it is even more.

It is therefore advantageous and it would make this activity more valuable and effective when the existing capacities would be expanded by introduction of production of steam turbines, generators, pumps, condensing equipment, regenerative equipment, high pressure piping for high temperatures and pressures and above all if a new engineering organisation for process design of the complete power station would be set-up. In such a way the IDRO will be able to design and to deliver most of the equipment for the power stations. The rest of equipment would be purchased, all the equipment assembled and the whole power station put into operation incl. training of customer's personnel i.e. to deliver the complete power station on turn-key basis.

In the same way would be useful to produce and deliver also other complete industrial plants as e.g. refineries, petrochemical plants, cement works, sugar plants etc.

It follows from the existing state and expected development of IDRO, which represent the complex management problem, that one of the main issues is the management of such a unit and its improvement.

The objective of the mission was above all to appreciate existing state and expected development and to propose the way to the management and planning improvement. The possibility of suitable and effective implementation of strategic planning in IDRO was evaluated. For this reason some important activities were analysed during the 14 days visit with the aim to propose the implementation of strategic planning. Both the existing sta-

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te and achieved development of IDRO and above all its expected future development. The further expected development is suitable and useful to manage in the best possible way.

The existing problems of IDRO were compared with the ŠKODA Concern. It has also very wide assortment and appr. 70 000 employees.

The ŠKODA Concern began with the implementation of modern strategic planning some 18 years ago. It is now realized as a regular planning activity which makes possible to manage the big engineering organisation not only with regard to present state but above all to the future development. There exists many years experience and achievements with the strategic planning. I took personally part in introduction of the strategic planning in the ŠKODA Concern and many years I managed these activities.

2. Activities

2.0. Introductory meeting

The first meeting after my arrival to Teheran took place on the same day, November, 26, 1989 at the Headquarters of IDRO at the vicepresident for development and training Mr. Malayeri. Some other top managers of IDRO were present. Mr. B. Paydar and Mr. Kamal H. Heduyat were appointed my permanent partners. I was in daily contacts with them and discussed the agenda. At some of the meetings participated representant of the Ministry of Industries. At this introductory meeting the draft program was agreed. This was continuously precisized. The meetings with Mr. vice-president Malayeri were included in the program.

Program covered three spheres:

1. Collecting of needed information and data for the assesment and feasibility of implementation of strategic planning in IDRO and preparation of the first proposal for implementation of strategic planning in IDRO.
2. Visit and discussions of the four of IDRO plants
 - a) KHAVAR INDUSTRIAL GROUP
 - b) SADID EX. PROFIL
NIMEH SABOK CO.
 - c) MACHINE SAZI ARAK
 - d) AZARAB INDUSTRIES ARAK
3. Giving of two Lectures
 - a) Problems of construction and introduction of production in the big industrial plant BHEL - Hyderabad India.
(for 20 listeners, 3 hours)
 - b) Training of personnel in ŠKODA Pilsen
(for 10 listeners, 2 hours)

2.1. Strategic planning

2.1.1. The role of strategic planning was discussed and relevant questions answered

There occurred questions if the strategic planning used in the ŠKODA Concern is useful for implementation in IDRO. It was made clear, that the planning methods used for strategic planning in the ŠKODA Concern correspond to the methods used in big industrial organizations in the world. The methods were of course adapted to the needs and conditions in the ŠKODA Concern.

The method used in the ŠKODA Concern and other industrial organizations can be used for conditions of IDRO after adaptation to the specific features of the organization. Indexes and factors, which are being considered as decisive and the organization will decide to follow them, can be chosen optionally and used for strategic planning. It is possible to choose the depth and scope of the strategic planning from the very simple one to the most complex and complicated. After its introduction and implementation the strategic planning can be used for influencing and managing the results of the organization not only at present time but above all for the timely influencing and managing of the activities. The process of preparation and introduction of the strategic planning was discussed.

It consists of four stages:

- a) preparation and collection of needed data and information
(5 months)
- b) working up of the strategic plan
(5 months)
- c) implementation of the strategic planning in IDRO
(5 months)
- c) evaluation and adaptation of the method
(3 months)

There was apprehension, that after the method would be

introduced by the consulting organization, implemented and given over for use, the results and variances would be let on the responsibility of the user.

It was made clear, that the representatives of IDRO as a future user will be the cooperators during preparation and implementation. Only in the period of data preparation and implementation the assistance of the group of experts for a comparatively short time is planned.

It was agreed that the best way of how to instruct on the function (role) and practice of strategic planning is to realize the visit of some IDRO representatives in the ŠKODA Pilsen to study use of strategic planning.

It was agreed that after the visit and based on the first proposal on introduction of the strategic planning in IDRO the final process of preparation and implementation of the strategic planning in IDRO will be jointly elaborated.

- 2.1.2. For assuring and collection of needed data and conditions for the first proposal of introduction of strategic planning the questionnaire was elaborated and handed over to the IDRO as follows:

Questionnaire

The Status of the I.D.R.O. and its activities

Background and history

- Name, adress, structure, ownership and control of the Group
- Objective of the Group within the economic, industrial, financial and social environments in Iran
- International, regional, national and local relationships
- Group's organizational structure
- Main competitors, brief description

Market and Group's Capacity

Existing market for products and by-products and its historic and expected development

Sales of products

- existing sales volume, domestic, regional foreign and its historical development
- Market segments by sectors or subsectors
- Prices and sales incomes and costs

Production programme

- quantities produced, quality specification
 - scope of deliveries, complete investment plants, technological lines, individual machines
 - scope of services offered
 - emissions (air and water pollution)
- Plant capacity
- installed nominal (maximum) capacity
 - feasible capacity by individual production lines (branches), enterprises, departments and its utilisation

Material and inputs

- Characteristics of main materials, components, factory supplies and energy (utilities)
- Supply programme, organization of supplies
- Annual cost of supplies
- Imported materials and components

Location and site

Location of individual enterprises on map, interconnection and transport, local important conditions

Project engineering

Basic characteristics of plants

Technologies, their sources (incl. foreign) and niveau

Equipment, sources, average age, type etc.

Group's organization and structure

Manpower

Labour, number, skill, availability

Staff, number, structure

Training

Financial standing of the Group

Bankers, Creditors, customers

Capital structure

Production costs

Annual reports (income statements, balance sheets)

The data and information were partly collected by the partners from IDRO and discussed with me on common meetings. Some other data were evaluated as well. Principally I got information and data needed for preparation of the proposal (formulation) of strategic planning implementation project.

Strategic planning is a basic tool for the organization's development.

It was therefore necessary to discuss the expected development of IDRO in the near future of 5 to 10 years. The opinions regarding this development were mutually discussed. The further extension of the existing and innovated products was taken into account. The number of new products according to the consumer's needs will be introduced. According to the common opinion the new services of IDRO should be expanded. Above all the engineering connected with the deliveries of complete industrial plants on turn-key basis for many industries should be expanded. IDRO wants to work in the field of refineries and some other industrial sectors.

Accordingly to these ideas I recommended to close the process of production, deliveries, assembly and putting into opera-

tion of power stations.

At present the IDRO is equipped for production of big boilers for power stations, which represent up to 40 % of a power station. It is useful to take into account the introduction of production of the other equipment as steam turbines, turbogenerators, power pumps, condensing equipment, regeneration equipment, pressure steam piping and in such a way to produce 70 - 80 % of the technological (engineering) equipment of a power station. To build-up strong process engineering department, capable to design the whole, complete power station.

In such a way IDRO will have capability to design the whole power station, to produce 70 - 80 % of the power station equipment, to purchase the rest at subcontractors, to assemble the completed equipment, to put the power station into operation and to train the power station personal for the customer. I gave over to IDRO the study of preparation and establishing process design department for thermal power stations and the study of the engineering plant for production of electric power equipment (steam turbines, turbogenerators etc.).

After realization of such projects IDRO will be able to assure the process design and turn-key deliveries of refineries and petrochemical plants as well as other industrial plants as e.g. cement plants, sugar plants and others.

It seems very useful to construct in a short time a heavy steel foundry and a forge shop for heavy forgings for IDRO's needs as well as of the whole Iranian industries.

I suppose, that also some other types of machine tools will be introduced. Lot of machine tools are successfully produced in IDRO.

It is obvious that the number of new industries is not final. There will be a lot of new ones introduced according to effectiveness for IDRO and consumer needs.

1.3. It would be useful even in a short time to realize "cheap" rationalization measures making possible the part increase of results.

The list of such measures should be elaborated by a group of IDRO employees from relevant departments and organizations together with the consultants during the survey period of their work on preparation of strategic plan. It would be comparatively cheap measures with very low investment costs. Some of these measures are mentioned in my proposed measures.

1.4. It was stated, that high sums are and will be given to R&D and technological preparation (design) with the objective to introduce into production new products of own design.

2.2. Visits in production plants

The visit of some production plants was very useful.
4 units were visited:

2.2.1. Visit to KHAVAR INDUSTRIAL GROUP in Teheran

The Group of IDRO workers and me were received by the management of the company. The production program, history and present state of company were discussed.

It is a smaller, comparatively good equipped plant for production of heavy trucks type Mercedes from 7 up to 28 tons. The plant is well managed. It concentrates on production of mechanical parts of trucks and mostly uses presses for production and on complete assembly of trucks. The engines and gear boxes and other equipment are produced outside and purchased for the plant. Technical control is consistently applied and the quality assurance is on a high level. The surface treatment is also on a high level both for parts and the whole truck.

On a comparatively fair level is the truck testing. The used technologies correspond to the chosen plant capacities. The used

technology assures the quality of products. Also management is on a good level. The plant has its own R&D department which prepared some new types.

2.2.2. Visit to SADID EX PROFIL NIMEH SABOK CO

After reception by the company's management we were acquainted with the production program and history of the company.

At present they produce welded pipes up to the diameter 26 cm for industrial use. The production base is elder but fair. Most of the machines and equipment were produced by the plant itself. It helped to increase the technical niveau of the personnel. The plant is now able to prepare and produce equipment for pipes with higher parameters. The production program consists also from mechanical transport conveyors for rolling mills. These are of own design and thoroughly tested. They delivered a number of complete sets. It is the own product of the plant.

Gear boxes for rolling mills. It is half serial production, well managed from the point of view of design and production quality is assured.

Production of components for sugar plants, sugar cane mills. The possibility of cooperation with a foreign company was discussed.

Machining of parts is well equipped with good machine tools. Components for different equipment and various industries. Fair quality.

The plant has its own foundry, which produces good quality castings in spite of the old equipment. Rolls for Rolling mills are produced there. The rolls need high technology. The surface has to be hard, the core elastic and flexible. The production is inclusive heat treatment and machining.

The company has a strong design group, technological group

and production of jigs and fixtures. It has also qualified technical workers.

They took fair care for training and hiring of qualified workers and staff. The plant is prepared to produce complicated engineering products after extension and adding of equipment. It would be useful to realize innovation of foundries. The existing is capable to produce complicated castings but only up to certain weight.

2.2.3. Visit to MACHINE SAZI ARAK

It is a plant with a stable production program. It prepares in a wide extend training of workers for industrial plants.

Some hours were paid to visit and acquaintance with training programs of workers, where not only labour but also technical personal is trained.

The visit showed very good training equipment, attention is paid to object lessons. There we visited workshops for apprentices and classrooms for technicians and a number of laboratories e.g. mechanical, physical and chemical ones. The workers who underdid the training are well prepared.

The plant itself has good niveau of workers, technology corresponds the time of construction of the plant. Only partly innovation was done. Tradition is obvious not only on workers but on technicians as well.

The plant is able to manage new complicated products which will be needed in the future. Industrial boilers on a good level, transport (moveable) tanks for various materials and liquids, travelling cranes, steel structures as e.g. bridges etc. Number of other engineering products and components on a good level is produced.

There is a steel foundry and forge-shop, i.e. metallurgical workshops.

Produced castings have good niveau and they give evidence of qualified foundrymen. The foundry equipment needs progressive renovation.

MACHINE SAZI ARAK can be considered as one of the good basic companies of IDRO.

2.2.4. Visit to AZAR AB Industries

It is a newly constructed plant. It consists of some workshops. One of the new parts is equipped for production of big boilers for power stations produced under use of modern technology. This part of the plant begins to work and will be very soon put into operation. It is on a high level.

The possibility and later using of IDRO's capacities for cooperation for power stations delivered to Iran by a foreign company were discussed. Azar AB Industries is able based on deliveries of documentation and material to produce significant part of boilers for power stations. It was agreed to use the possibility of joint tenders for power station offers.

There is a big workshop equipped for machining of heavy components. It is partly used and it can be used for expansion of production in the future. The welding shop for production of heavy weldings is very well equipped.

In the plant some other engineering products and components are produced.

After implementation of the main production it will be one of the best plants of the IDRO heavy engineering.

2.3. Giving lectures

2.3.1. Construction and putting into operation of the big industrial plant Bharat Heavy Electricals in India - Hyderabad.

I was asked to give a lecture and participate in discussion on the topic. Together with the translation into persian the lecture lasted 3 hours.

The negotiation with the above mentioned company on process design, participation in construction, deliveries of technological equipment, training of personnel, transfer of technology, components and introduction of production in the plant began in the year 1960.

Specification of the production program, location and capacities of the plant were the main task.

After first studies it was decided to build-up the plant for production of steam turbines, turbogenerators, pumps, condensing equipment, regeneration equipment, pressure steam piping for power stations.

The plant for production of big boilers also for BHEL had been built-up in Tiruchipalli in South India 3 years ago. After construction of the new plant the BHEL was able to produce the majority of equipment for big power stations and industrial power plants. It was decided to build-up complex plant with its own welding shop, turbine workshop, turbogenerator workshop, production of pumps, condensing and regeneration equipment, grey-iron foundry, non-ferous foundry, pattern shop, shop for maintenance and repair of machines and equipment, big tool making shop, industrial power plant both for the achievement of the independence on unreliable public electricity supply and for testing of steam turbines by steam. After decision on basic parameters (annual capacity 800 MW of electric power equipment for units

with the output 60 to 110 MW and further for industrial turbo-sets up to 60 MW), the planning and process design activities were commenced. The documentation was elaborated in Czechoslovakia with participation of indian specialists. All the parts and stages of the project preparation were coordinated with the indian partner up to the phase of feasibility study in accordance with the desire of indian side. The needed technology transfer was assured by the ŠKODA Concern mostly based on its own know-how and documentation, so that the data for process design were given over and also the specialists from production of the ŠKODA directly participated, so that the quality of the project was assured.

Negotiations and approvals of the feasibility report and of all the parts of the project design were realized in India.

Subsequently the schedule of introduction and implementation of production of the plant was set up and agreed as well as components needed at the commence of production in the plant. Also the preparation of design documentation for the new plant started in ŠKODA together with the Indian specialists. It was part of their training; it lasted 2-3 years. All the types of documentation were prepared, i.e. design, technology and production jigs and fixtures.

Indian workers participated in production of the components and worked in the ŠKODA workshops for 2 years. At the same time the indian process designers for complete power stations were trained in the ŠKODA in all the needed professions - civil works, engineering and automation. The strong team of the process designers for power stations made possible for BHEL to deliver the complete power station on turn-key basis. Also the workers for the equipment assembly on site were trained and prepared. Altogether some 250 indian workers were trained in the ŠKODA Concern.

The main source for training of labor for the plant with the expected number of 10 000 employees after putting into operation was the training school (centre). It was very well equipped with

experienced trainers. Some 700 different professional workers for production were trained annually. Later also workers from other Indian plants were being hired but in a smaller extent.

Some of our consultants and experts participated during the construction with the aim to respond quickly to the necessary changes in project documentation, to make operating decisions and to take measures to overcome the obstacles.

There were daily mutual consultations directly on site and immediate measures were taken. The individual workshops were built up according to the production process in the plant. At first the workshops as e.g. cost making shop and foundry were put into operation before the main workshops.

Two years after the commencement of the construction the first components were delivered, material for production and the main production started.

To accelerate the construction the climate conditions in India were utilized. The machine foundations were built in workshops without roofs in dry season.

The machines and equipment were delivered from Czechoslovakia, India and "third countries". The construction and simultaneous production, which started only in partly finished workshops continued well and the first turbines and generators 60 MW and pumps were produced after one and a half year i.e. in the year 1967. These were completely tested on testing stands and gave over to the customer. The complete management system proposed by the ŠKODA for the plant management in Indian conditions was introduced and tested.

The putting into operation process proved, that the chosen method was good and leads to the expected results. After production of some 60 MW turbosets, the production of 110 MW sets commenced.

After certain time the process design of complete machine rooms for power stations was assured, esp. for those in which the equipment from the plant was delivered and assembled.

The first equipment was used in the power station Enore - Madras, 2 x 60 MW.

During the introduction of production in Hyderabad the specialists from the ŠKODA and other Czechoslovak producers were present. It was the last part of the complex training of Indian workers. The number grew up continuously and gradually. The auxiliary workshop as the tool-making shop and foundry achieved the full planned capacity. The quality assurance and control was strictly followed and evaluated. The production program was expanded by turbocompressors for blast furnaces and

for fertilizer plants. The hydrogenerators were produced in the turbogenerator workshop. The overhauls of the electric power equipment, delivered to India, sooner by different deliverers were provided in the plant as well.

The production of the equipment for 110 MW units progressed very quickly and in the year 1969 the first turbines, generators, pumps and other equipment were produced. The 60 MW units was produced in a large numbers. The industrial turbines of the smaller outputs for various industries as e.g. sugar plants.

The qualification and skill of employees grew up.

The project was practically finished in the year 1970 and the planned results achieved. Some of the advisers participated in introduction of new programs.

The present relations are as follows:
According to the agreement (contract) Czechoslovakia was obliged to give over new technologies for only 10 years, the giving over and cooperation still continue. At least once a year there are

common sessions of the BHEL and the ŠKODA management, where the future cooperatin is discussed and prepared.

Last time such problems as the common efforts in overhalls of the produced equipment for power generation, extension of its lifetime, new programs, cooperation on third markets etc. are mutually prepared.

Present chairman of the BHEL Mr. Gupta was one of the many technicians trained in the ŠKODA.

The success of the whole project consists above all in very good human relations between both partners.

2.3.2. Training of people in ŠKODA

The lecture was given in the Institute where the managers are trained. We can speak about 5 ways of training in the ŠKODA:

1. Training of new young labor.
2. Training of new young labor with high school education with leaving examination.
3. Technical high schools for all kinds of technical professions
4. University educated technicians (Bsc., Msc.)
5. Special preparation of technicians, mostly Bsc, Msc in the ŠKODA.

2.3.2.1.

There is our own training school of all the apprentices for many professions in the ŠKODA.

Main factories and head-quarters are located in Pilsen town. The ŠKODA has in Pilsen, in one place, some 40 000 employes. It is natural, that the education of apprentices is common. Factories

which are located out of pilsen have their own training centers. In Pilsen, there is the biggest education centre, built up 40 years ago. This training school and workshops for appr. 4 000 - 5 000 of apprentices are very well equipped with the variety of training facilities. The facilities are gradually innovated and renovated.

This training center is very large and the capacity is about 4 000 - 5 000 apprentices. The basic time of training is 3 years.

In the centre there are schools and classes for education, workshops for practical training. In charge of the centre there is a team of very qualified specialists for individual professions.

There is educational and training program which was developed during the time to suit the best preparation of skilled people. In process of training there are regular examinations and tests, after finishing the leaving examination. The young people live in the factory houses with full maintenance (boarding school). Also the culture and sports facilities are at disposal of apprentices. ŠKODA helps in this area also in education of apprentices for other companies. Number of professions in the training center is very high.

2.3.2.2. Training of labor with the high school education

Present equipment in production shops is mostly with electronic programming. The technology is changing very quickly last time. This was the main reason for the decision to connect the education and training of qualified labor with high school education. The number of these qualified apprentices is very high. The training lasts 4 to 5 years. The main objective is to increase the level of the theoretical education. The theoretical education is comparable with high schools, the same teachers are giving the lectures.

On the other hand in comparison with the high schools, the

practical preparation for the professions is more developed.

2.3.2.3. Technical high schools

High school studies are organized only at the State High schools, which are mostly located in the same town - Pilsen as the ŠKODA. The ŠKODA itself employs some 40 - 50 % of the students. The professional training program is partly prepared in agreement with the ŠKODA. Some professors were employees of the ŠKODA. There are good connections between these schools and the ŠKODA.

The practical training arranges the ŠKODA for these schools. During the studies the possibility of future employment of the students in the ŠKODA is discussed with them.

2.3.2.4. University educated technicians (MSc., BSc.)

University educated employees are prepared only in the State universities. It is an advantage that the universities are located in the same place as the ŠKODA. There are very close ties between the University and the ŠKODA. Some of the professors were or are employees of the ŠKODA.

Specialized studies in the last classes (4, 5) are often prepared together with the specialists from the ŠKODA. There are some various faculties as e.g. power incl. nuclear engineering, electrotechnical, management and organization etc.

From the third class up some chosen students are acquired by the ŠKODA and they get certain allowances against their engagement to work in the ŠKODA after their studies. The ŠKODA also makes possible to the students to practice in its facilities. A significant part of the students comes to the ŠKODA after finishing their studies.

2.3.2.5. Special preparation of the university graduates in the ŠKODA

The ŠKODA similarly as other companies in Czechoslovakia prepares the graduates after finishing their studies for both the technical as well as managerial professions. The graduate has its own program and consultants. The preparation lasts mostly 2 years. The graduate gets acquainted with various specializations as e.g. design, technological processes, planning, management etc. The program is prepared in accordance with the employment (profession) he is supposed to achieve.

The ŠKODA, similarly as IDRO pays a great attention to the education, training and preparation of all the employees.

3. Recommendation

- To introduce in Industrial Development and Renovation Organization the Strategic planning as a tool and a continuous system for the effective development of IDRO. It should create a part of the overall "Corporate planning".
- Market research of the expected development of the consumer's industries based on the national development (incl. regional and foreign trade aspects).
- Survey of the existing production program from the point of view of market research and fulfillment of the consumer's needs.
- Comparison of the production program and individual products with the world's niveau and R & D achievements.
- Setting up possible alternatives for achieving the objectives of the strategic plan, i.e. for:
 - production mix and products development based either on own R & D and/or technology transfer
 - production capacities and manpower development incl. training
 - development of engineering capacities (R & D, process design, design of products, services etc.)
- Use of further good experience with the increasing qualification and skill of labour and staff
- Preparation of programs based on results of survey and marketing research aimed to the rationalization and improvements which can be implemented in a short time and at low costs
- Training of chosen Iranian specialists abroad in institutions and industries
- Overall improvement of long range ability to meet the world competition

- To develop in IDRO engineering activities making possible to deliver on turn-key basis of the individual engineering industries above all for power stations. The existing production of big boilers should be completed by other products for power generation as e.g. turbines, generators, pumps etc. and in such a way to produce majority of equipment. To establish process design organization able to design the whole power plant. To deliver complete equipment for power stations, to assemble the equipment and to put the power station into operation incl. training of customer's personnel.

- To take similar measures in other engineering industries as eg. petrochemical industries, cement plants, sugar plants etc.

- To build-up new or reconstruct and extend the existing foundry and forging shop for production of heavy castings and forgings needed for IDRO and Iranian industries.

- To continue in introduction of other types of machine tools as one of the most important engineering industries.

United Nations Development Programme

Project of the Government of Iran - Ministry of Heavy Industries

Industrial Development and Renovation Organization (I.D.R.O.)

The Project Formulation

Part I - The Project

Part IA - Development Objective

The Engineering Industries form the core of the economy in all countries. They constitute a motive force in development and an engine for technological growth. They create the conditions not only for operating the industrial system, but also for the self-reproduction of this system. In such a way they increase the national economic independence and therefore their development has to be based on a long-range strategic planning respecting all the complexities and interconnections of all the consumer industries and the national economy as a whole.

The development objectives of the Project will be as follows:

Industrial Development and Renovation Organization of Iran (I.D.R.O.) under Ministry of Heavy Industries was established in 1967. Presently I.D.R.O. consists of 160 companies with some 60 000 employees. Its supplying function encompasses: Investment (Capital) Goods as a major part of production programme (machinery equipment) and intermediate Products (semi-finished products and components) for different consumer industries as e.g. for electric power generation, engineering plants, marine industries, transportation both for road railroad, agriculture, textile industry etc.

Its growth and development directly influence the development of the whole economy oriented on growing Iranian industrial independence, profitability of I.D.R.O. final consumers industries (sectors) and of the I.D.R.O. itself.

The Project aims on basis of comprehensive strategic plan at:

1. Expanding and increasing of existing production capacities, and improvement (innovation) of existing products and services towards the growing needs of core Iranian consumer's industries.
2. Expanding of existing domestic and subsequently foreign markets .
3. Assuring of further growth by diversification based on new to the world's niveau corresponding production lines and activities / services (e.g. petrochemical industry, power generation equipment) and on new markets corresponding to the future projected needs of domestic industries and new foreign markets.
4. Overall human resources development in Iran both labour and staff by introduction of own comprehensive training and by contribution towards the State institutions and schools.
5. Human resources training abroad in institutions and factories.
6. Extension and development of existing engineering capacities and building up of new ones with the aim to achieve higher degree of technological independence.
7. Building - up of process design activities and delivering services incl. assembly and putting into operation of (complete plants as e.g. power stations as a main contractor or subcontractor.
8. Implementation of systematic and continuous strategic planning as a tool for effective development of the I.D.R.O.
9. Overall improvement of Long-range ability to meet the competition

Part IB Immediate Objectives

The immediate Objectives of the Project will be:

1. Strengthening and improving the performance and productivity of existing production capacities through the introduction of relevant rationalization measures esp. by:
 - Cooperation, specialization and concentration of production lines according to the most suitable conditions in individual plants and workshops
 - increased utilization of plant and machinery through the maintenance systems for preventive, operational and capital repairs
 - training of the personnel in specialized courses organized above all in Iran and for some middle and top managers in foreign countries
 - removing the bottlenecks in the technological processes and in supplies
2. Introduction of a new to the above proposed measures corresponding system of management and organizational structures.
3. Improvements in marketing both in supply and sales part.

Part I.C Special considerations

Through the completion of Project Objective the following by - effects will be achieved:

- increase of employment in engineering industries (I.D.R.O.) as well as in consumer's industries
- reduction of imports of plant and machinery
- higher independence of the Iranian industrialization process, lower foreign exchange costs for spare parts and main

Part I.D Outputs

Operational programme of strategic plan and rationalization measures containing both immediate and long range development objectives of I.D.R.O. and necessary relevant programme for the implementation of both in the context of the development objectives of national economy and exports.

Part I.E Functional services to be performed

- Surveying the existing capacities (buildings, equipment, machinery, auxiliaries etc.) and determination of strengths and weaknesses, economy of scale etc.
- market research of the expected development of the consumer's industries based on national economy development (inc. regional and foreign trade aspects) and on their sectors i.e.:
 - expected volumes of sales
 - expected innovation of products and their development
- market research of the possible suppliers and analysis of imports
- surveying the existing production programme from the point of view of market research and:
 - fulfillment of consumer's needs
 - comparison with the world's technological niveau and R D achievements
 - determination of the threats and opportunities
 - qualification and skills of labour and staff
- setting up possible alternatives for achieving the objectives of the strategic plan i.e. for:
 - production mix development and products development based either on own R D and/or technology transfer
 - production capacities and manpower development incl. training
 - organizational structure and possibilities of acquiring new capacities
 - development of engineering capacities (R D, process design, products design, services etc.)
- preparation of operational programme based on results of survey and marketing research aimed to the improvements which can be implemented in a short time and at a comparatively low costs.

- evaluation of possible alternatives both from the point of view of the national economy development and of the IDRO's long term return of investment optimization
- completion of the IDRO's comprehensive strategic plan its presentation to the IDRO's management and to the Central Authorities, its justification incl. detailed programme for the implementation of the strategic plan
- introduction of continuous strategic planning as a part of "Corporate planning"

Part II Activities

Output: Working out of a long - range strategic plan of I.D.R.O. and implementation of strategic planning

Preparation of an operational (rationalization) programme aimed to the improvements which can be reached in a short time and low costs

N ₀	Activities	To be completed MM
1.	Recruitment of the national experts in their respective field of specialization (one industrial planner - economist, one market analyst, one accountant, one general lay - out designer, one technologist mechanical engineer, one technologist electrical engineer, one computer systems engineer, one programme assistant, one stenotypist, one typist, two drivers, one messenger)	(3) prior to starting the project
2.	Selection of national counterparts engineers	1
3.	Procurement of the office equipment	2
4.	Survey of the existing companies of I.D.R.O.	6
5.	Survey and evaluation of the existing production programme	6
6.	Market research of the consumer's industries	6
7.	Preparation of an operational programme	4
8.	Setting up of the strategic plan objectives and working out of possible alternatives	4
9.	Evaluation of possible alternatives according to the achievement of objectives and ROI	

10.	Completion of the strategic plan and its presentation	12
11.	Preparation of data for individual projects for bilateral negotiations	6
12.	Introduction of continuous strategic planning as a part of IDRO corporate planning	6

Part II. B: Inputs

I. Government (IDRO) Inputs

- a) Offices for international experts
Each expert should be provided with separate office in I.D.R.O.

b) National Staffs (Counterparts)	MM
- one industrial planner - general experience in engineering company (15 years experience)	18
- one market analyst - experience in market research and general knowledge of consumer industries (10 years)	15
- one accountant - 10-15 years experience in accounting and financing	12
- one general lay-out process designer 10-15 years experience	15
- one technologist (mechanical engineer, 10-15 years experience)	12
- one technologist (electrical engineer, 10-15 years experience)	12
- one computersystems engineer, 10 years experience	12
c) Administrative support personnel	
- one programme assistant	18
- one stenotypist	13
- one typist	18
- two drivers	18/12
- one messenger	18

d) Equipment and supplies

- office equipment (telephone, typewriters, PC computer, telex etc)
- Office furniture
- Office consumables

e) Travel

2. UNDP Inputs

Assistance of international experts will be settled by IDRO

Complementary remarks to the Project Formulation

Complementary remarks to the Project Formulation

I.D.R.O. Group is one of the organizations where the preparation, introduction and utilization of the strategic planning is highly advisable. The implementation of complex strategic planning in conditions prevailing at I.D.R.O. is fully realizable.

It is advantageous to use strategic planning as a basic method of planning. It allows to make timely decisions and to take as well timely measures for achieving desirable results not only at present but in a far future as well. It assures the needed confidence and safety in the whole technological process.

IDRO consists of a number of organizational units with the different technological lines and to maintain the world niveau of products and technological processes is of the utmost necessity.

One of the main objectives is to deliver products on a high world niveau at a reasonable price.

The individual organizations of I.D.R.O., especially those with a longer period of their operation have sufficient experience in their field of activities.

Training of both, labour and managers is taken care of. Management training is centralized and provided by I.D.R.O. for the whole Group. There is also possibility to achieve by comparatively low costs a significant increase of production effectiveness and profitability. It will be of advantage, if the Group of experienced experts with the different background and broad experience in engineering industries prepared the operational program of rationalization measures as a part of its activities aimed to preparation of strategic planning. Realization of such a program might bring positive results very soon.

It seems very useful at I.D.R.O. to undertake further steps to diversify its production program and above all its delivering programs. These steps are justified by existing experience and achieved results of IDRO.

The following alternatives might be of great advantage for I.D.R.O. and therefore should be taken into account during preparation of the strategic plan:

1. To extend (diversify) the existing production of the electric power equipment, the boiler manufacturing exists at IDRO in Arak. It might be useful to establish the production of steam turbines, generators, pumps and heat exchange equipment incl. condensing equipment in such an extend that most of the power station equipment would be produced in IDRO.
2. To constitute an engineering organization able to design and deliver complete power stations and to put them into operation (as a main contractor).
3. To deliver "turn-key" petrochemical plants, i. e. to manage the process design, delivering and assembly of equipment and putting the plant into operation.
4. To deliver in a similar way other "turn-key" projects, e. g. engineering and metallurgical plants.
5. To cover the own needs of IDRO as well as of other Iranian industries to build-up and to put into operation heavy castings foundry and heavy forging shop. The imports of such metallurgical products would decrease significantly.
6. To expand the own existing engineering and R a D capacities in IDRO
7. To introduce specialized training in foreign companies for promising Iranian specialists to increase the independence in engineering and R a D activities.

These alternatives together with other proposals creating the content of strategic plan should be prepared (incl. international cooperation) by the assigned Group of experts to such an extent, that these could be taken as a basis for bilateral negotiations.

