6 Corporate strategy

6. 1 Outline

The grand plan of "the company will be survived as a major player in diesel engine market in the Central Europe with sufficient competitiveness for the market economy " held up by the study team as the future vision of the company is considered to be accomplished in the following stages.

(1) That it finds a way out of the crisis in the present situation and becomes an enterprise that has gained an advantage in the competition of market economy.

(2) That it accomplishes privatization.

(3) That it attains a rapid progress.

The restructuring plan mentioned in Chapter 5 corresponds to one of attaining this first stage. The original objective of the restructuring was considered to attain privatization, but this survey has not made any concrete suggestion up to that stage. Plans for the privatization and the subsequent progress requires strategic considerations. Strategic tie-up is an example. Such a issue became the subject of general discussions with the top management of the Company.

Accordingly, the strategic issues are raised as an open question and as an advice to the Mielec Engines Co.

The purpose and necessity of the corporate strategy which is discussed in this chapter is as follows:

(1) Investigations to create new businesses and new products.

(2) Studies on a future vision and programs beyond 2001, or a10 year vision.

The 3rd generation restructuring following the current program (2nd generation restructuring) The new program covers the re-engineering etc.

(3) Utilizing corporate resources and its core competence effectively to make the mid- and long-term plan viable. The strategic alliance is a part of the study.

A relation between the issues to be studied and strategies is shown below. Fig. 6-1-1 at the next page enumerates issues. These are attained through strategic approaches only, and for this purpose principal strategies necessary for them are shown in the right and connected with arrows showing relevance with the respective issues.

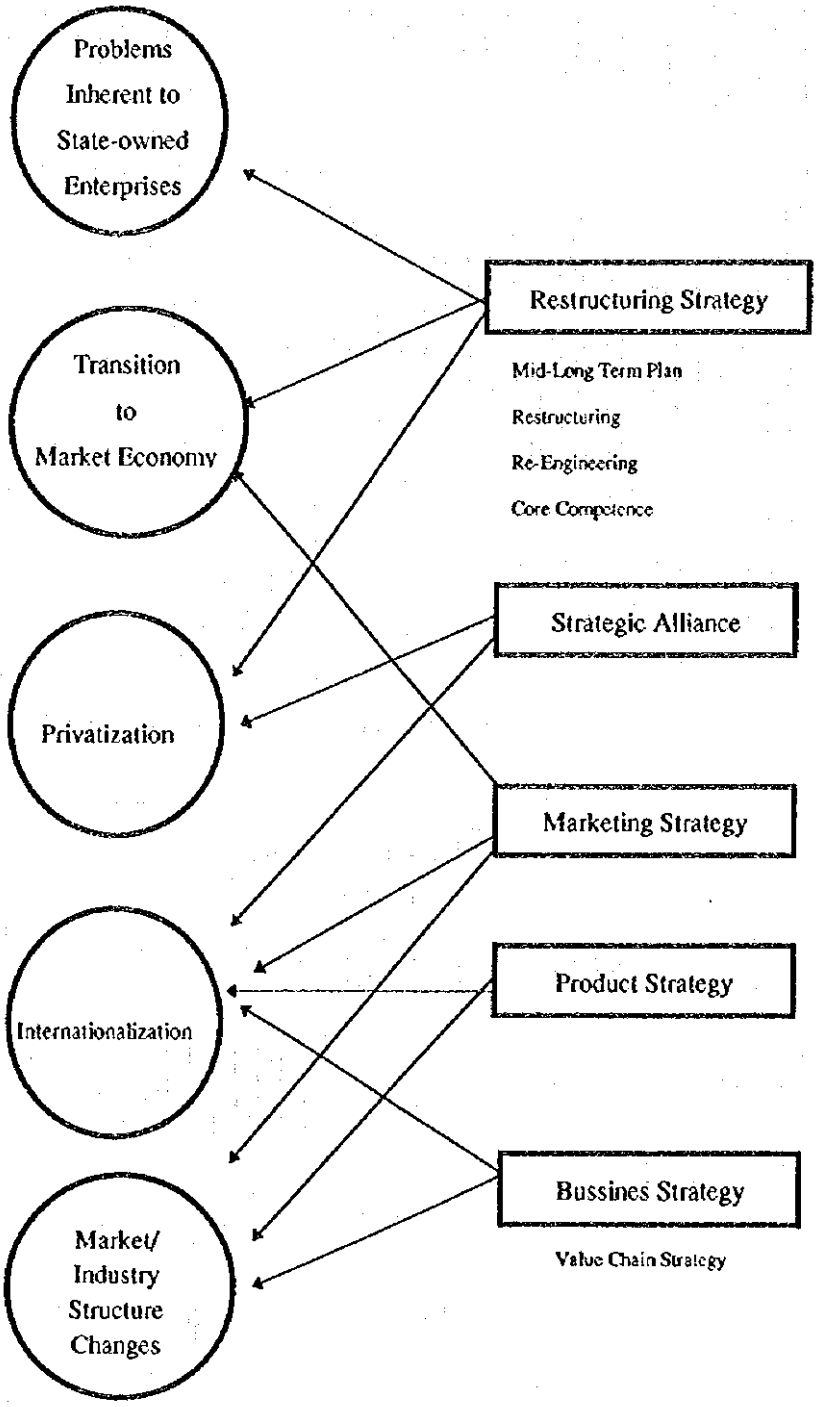

Fig. 6-1-1: Business starategy vs. Issues

6. 2 Restructuring Strategies

Restructuring strategies are divided into 4 items. The items (3) and (4) belong to the future.

(1)Mid- and long-term plans·····strategies of matching environment changes.

Vision of what the company should be

Fields of business: Shaping up, development of new businesses

Adaptation to crisis

(2) Restructuring·····Competition-oriented strategies

Reorganization of business portfolio

Reform of organizational climate

(3) Framing of reengineering (BPR)[1]·····strategies of process reform

Customer Satisfaction (CS), Quality and Function Deployment (QFD)

Attainment of process efficiency, concurrent engineering

Management information control system

(4) Core competence[2] management·····Strategy of resource concentration

(1) and (2) were proposed in the restructuring plan already.

(3) is a task to be tackled next. For this purpose, TQM surpassing ISO 9001, fixing of improvement course and construction of computer information system will be the pressing need.

As for the core competence management of (4), in strengthening the enterprise structure hereafter, it is suggested to focus on the company's own core competence and strengthen this with priority. As elements for forming core competence of the company, the following items can be considered in the process of survey.

* Diesel engine technologies
* Enterprise structure focusing on technologies
* High level of skills through all strata of management, engineers and workers
* Short delivery times
* Flexible posture, organization capable of adapting quickly, quick decision
* Good labor-management relations

As shown in Fig. 6-1-1, the above restructuring strategies are to be concentrated on:

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[1] The re-engineering concept was introduced in the U.S. in early 1990 in order to make the U.S. manufacturing industry competitive with that of Japan. It is a manifesto for the business revolution and more drastic than the restructuring. Its strategy is the Total Quality which is its 3rd stage next to the first stage of cost strategy and the second stage of the market strategy. The re-engineering activities has restored the competitiveness of the US manufacturing industry. The Business Process Restructuring is a method of the Reengineering

[2] It is a set of core skill and technology usually hidden in the firm. When it is explored, the strategically employed the core competence can create a new value for customers or new business which any other firm can not follow.

(1) Outgrowing the old problems of the time of company division of state-owned enterprises into the present company,

(2) Shifting to market economy through strengthening the product-wise competitive power and

(3) Privatization.

6. 3 Business Tie-up Strategy

Restructuring plan of the study team presupposes self-reliance and self-help of the Mielec Engines, co,

Considering the present automotive industry however, it is difficult to expect a continuation and growth of the enterprise with self-reliance and self-help alone. That principal automobile manufacturers in Japan, U.S. and Europe are making a business tie-up in some way or other is the reason. Fig. 6-3-1 gives the results of a comparison of the recent business tie-up in the Japanese automotive industry with that 10 years ago. A tendency to horizontal tie-up by inter-trade cooperation is conspicuous in these 10 years.

This is not limited to Japan, but is a global trend. Globalization and multinationalization of automobiles advanced so far and the industry is now shifting from the age of excessive competition to that of symbiosis.

Source: "Towards the Lean-on-balance System," co-authored by Takahiro Fujimoto / Akira Takeishi, Seisansei-Shuppan, 1994

Trends by type of tie-ups between major Japanese, U.S., and European automakers (1985 and 1994)

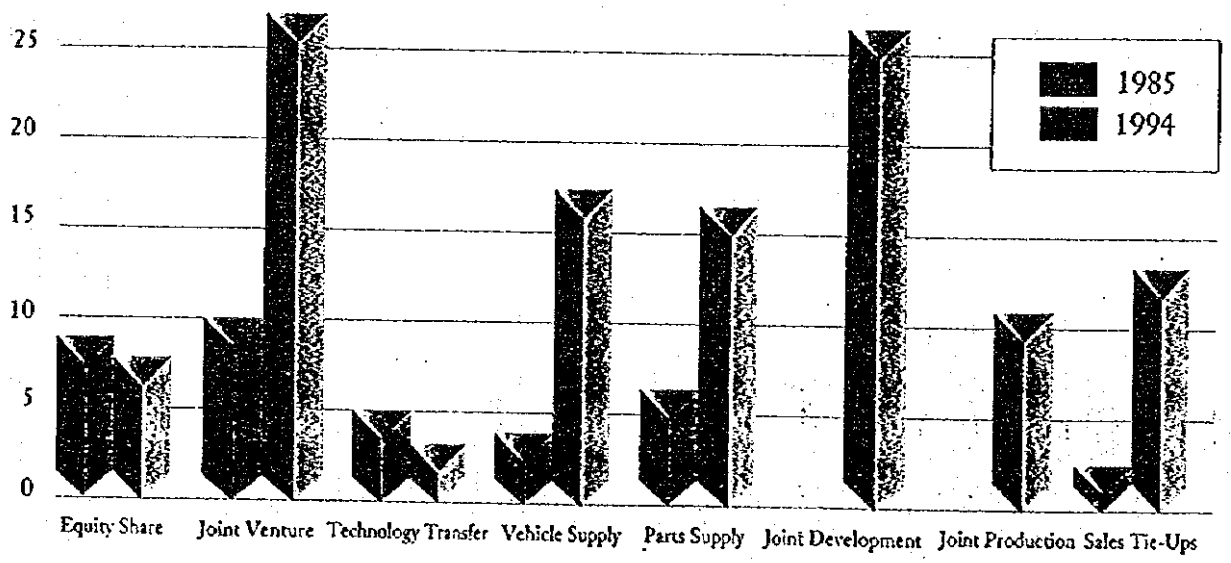


Fig.6-3-1

The study team suggest that Mielec Engines too will strategically plan a favorable tie-up for the development of the company hereafter. For this purpose the first consideration is to:

(1) Become an excellent world-level enterprise and have a competitive power under the market economy

(2) Become an attractive enterprise that can offer products and services having a merit with them.

The following is the items which we discussed with Mielec Engines Co. but this is limited to ways of thinking and does not include thorough arguments nor concrete suggestions on the part of the study team. The team recommend that the Company continuous studying these matters hereafter.

* Horizontal tie-up of engine makers affiliated with Leyland

  The brand Leyland too is an important element.

  Andoria

  This company has applied for contract processing of crank and cam shafts and Mielec Engines co, too has booked orders of contract processing. Though on a small displacement, it is also producing engines and generator sets under the same Leyland license. (for some models not all)

  Fields of tie-up: Selling, and joint development of Euro-2 engines (both firms are receiving support of the Krakow University).

  Ashok Leyland (India)

  This is a Leyland engine manufacturer.

  This firm is in the process of introducing new engines from IVECO

  Tie-up with other Leyland-affiliated companies: DAF (Holland)

  DAF produces basically the same engines with that of Mielec Engines. It somewhat enlarged the cylinder bore, and the latter once had a talk on a tie-up with it, but is planning produce domestically and as competitor.

* Vertical integration of transport vehicles inside Poland in the Zasada group

  Research is underway already. A stable supply is possible under the tie-up with users, but there is a problem also of its being an affiliate with Mercedes-Benz.

* Horizontal integration of parts manufacture inside Poland

  The company has started studying manufacturing other parts of Andoria in other countries.

  Highly added value system products will be preferable.

* Joint R&D in particular, development of Euro-3 engine in collaboration with other diesel engine makers in Poland.

Acceptance of direct investments from foreign makers

Acceptance of direct investments is very advantageous in that they entails technology transfer and introduction of management know-hows. There may be expectations of transfer of new technologies in case of Japan etc., but that depends on the investor's strategic judgment on the beneficiary and there

is a growing dissatisfaction among a part of the Korean enterprises that technologies are not transferred.

6. 4 Marketing Strategy

As a fundamental condition for the mid- and long-term plans proposed by it, the study

(1) Proposal of a Product Portfolio Management (PPM) [3]

The team presented a product combination plan. Fig. 6-4-1 shows the present situation. It proposed the Fig. 6-4-2 as the vision in 2001. This is used as basic data for the restructuring plan proposed by it. Verification of this portfolio is being made in the Company.

For this purpose demand forecasting in particular is important in the future and is being studied in the Company. At the moment, statistic data by product sector, information on other firms, etc. are in short supply in Poland.

In other Polish companies also, there are cases where a special consultant is made use of considering the importance of demand forecasting.

(2) Adaptation to the future changes in enterprise and market structures

The Polish automotive industry is now rapidly developing and is predicted to become a large production base in Europe in future as a small car supplier to the West Europe and the Central Europe and the former Communist bloc are also said to be a large potential automobile market in the future.

The automobile market in advanced countries however has become saturated, and having environmental problems to tackle, they have come to a deadlock in their production. It is under these circumstances that various business tie-ups are under way. The production capacity in large-sized diesel engines as produced by the company particularly is superabundant over the world and competition is getting ever keener. The Study team suggests that Mielec Engines Co. should strategically study the positioning of its business under such circumstances.

There are only two domestic diesel engines makers in Poland. Mielec Engines Co. of large-sized diesel engines and Andoria of small and medium-sized and Star of medium sigrid Fig. 6-4-3 at the next page shows a product influence map for the three makers.

(3) Export strategy

Strategically, recovered COMECON markets such as Central Europe and CIS, etc. and those of developing countries are considered promising. The team suggests that the Company conducts an energetic market research by reopening the relationship with customers of the Eastern countries with

---

[3] It was initiated by Boston Consulting Group in1963. The product Portfolio Management was presented in 1971.The simplest approach is to evaluate a product mix in term of the market growth and the company7s market share. One typical application is an optimum allocation of the company's limited resource.

whom it once had relations and by using the overseas trade offices of the government.

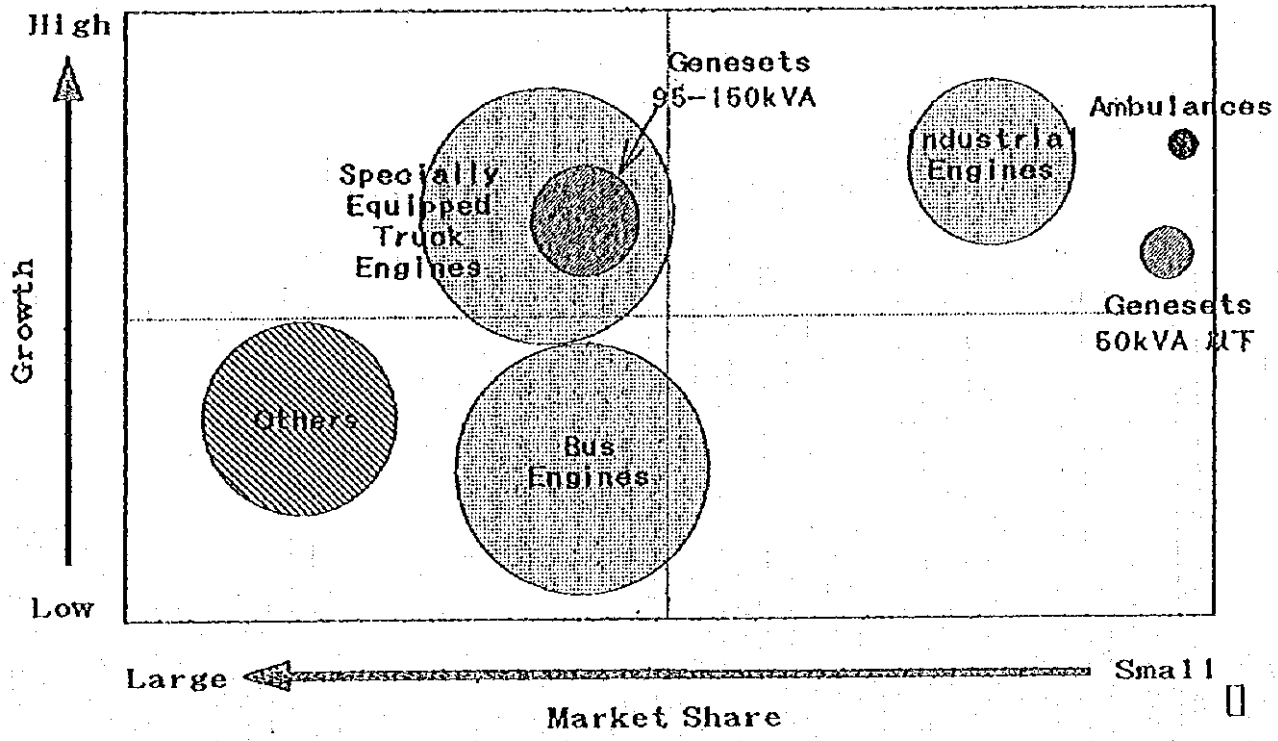


Fig 6-4-1: Product Portfolio - 1996

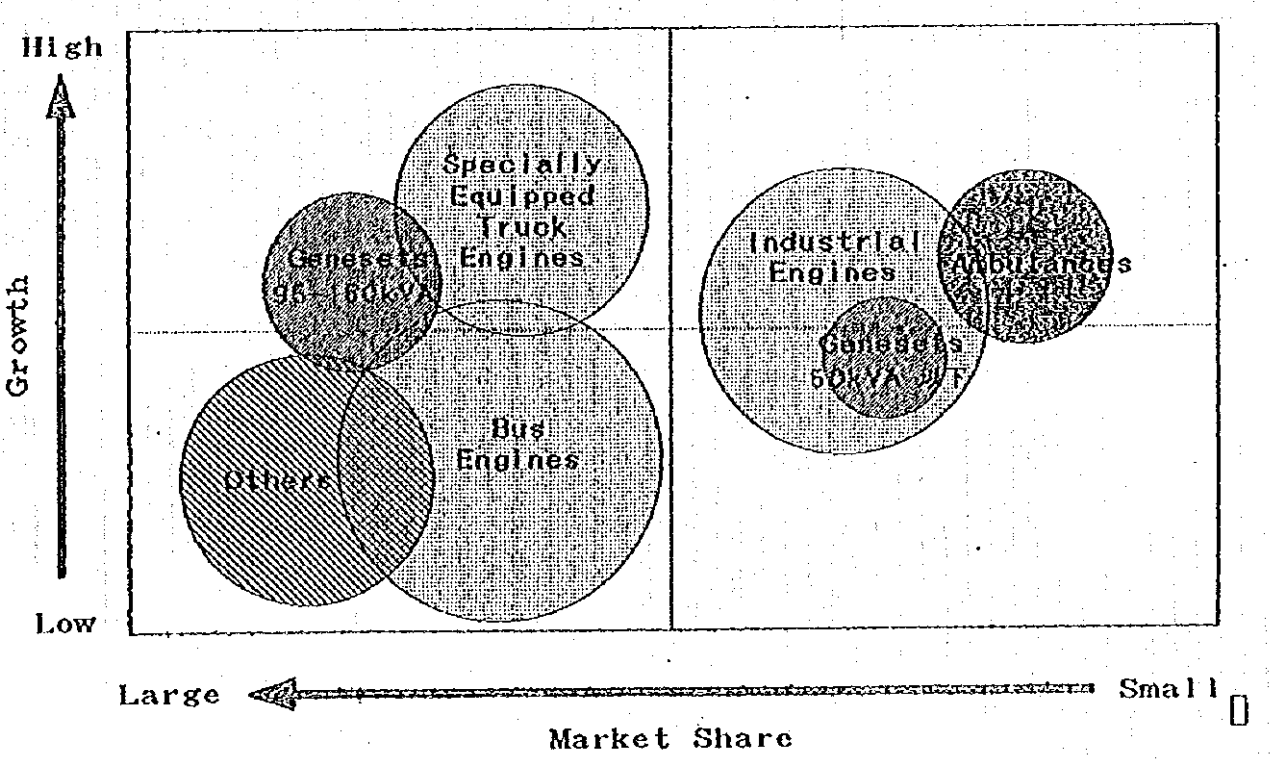


Fig 6-4-2: Product Portfolio - 2001

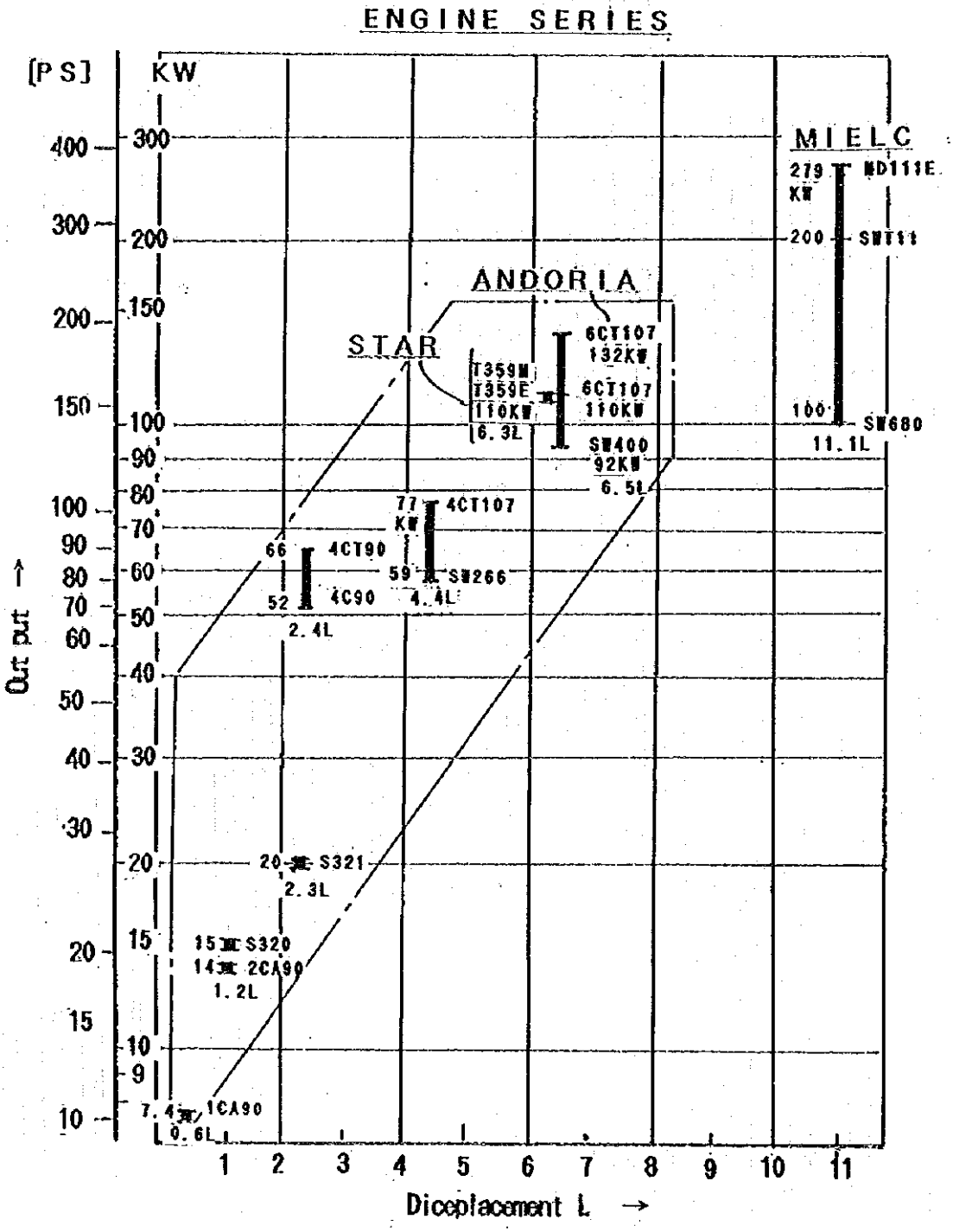


Fig. 6-4-3: Engine Series

(4) Strengthening of marketing function

Strengthening of the company's own marketing function is above all the first consideration. Spheres of marketing activities are shown in the next Fig. 6-4-4. First handle the two spheres, the upstream area of the product concept study down to the product plan, and the downstream area of the marketing plan.

A marketing department was set up in the Company in 1995, but it is not in position to function in practice yet. As a result, the cooperative relationship between the marketing and development departments is not functioning well. It is a pressing need to realize the product developing process the study team proposed in the restructuring plan of the preceding chapter.

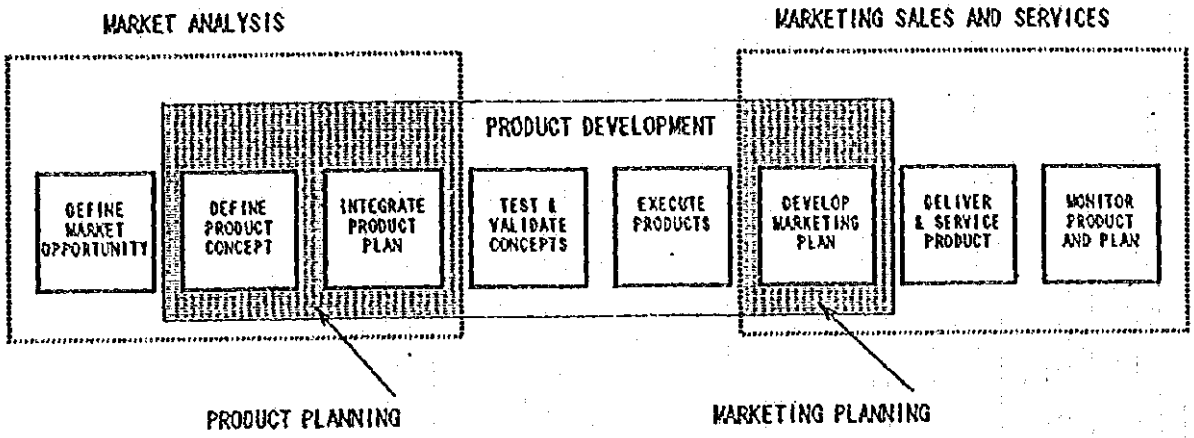


Fig. 6-4-4: Marketing- & Product Planning

6. 5 Product Strategy

6. 5. 1 Product strategy

Products are characterized in two concepts:

(1) Products characterized by the degree of integration

Products have different forms, namely components, sub-systems and systems.

(2) Products characterized by the value added

This concept is discussed in section 6.

These two concepts are related but quite different.(For example, the system is not always of higher value added than components.) In this section the first concept in discussed at the product strategy

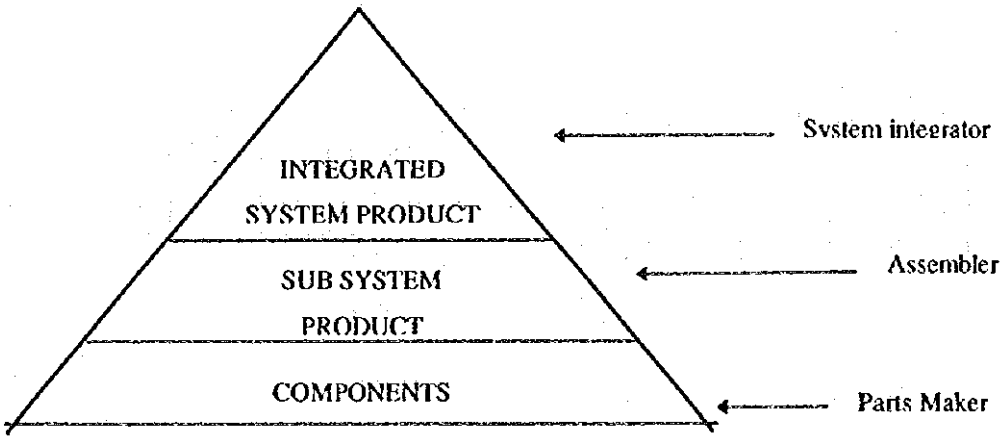


Fig. 6-5-1: shows the product integration concept.

Major products of the Mielec Engines Co. are studied according to this concept

(1) Engine

The 11 liter engine which is a major product of the Company is a well integrated system as an engine. However, when it is installed on a truck or bus, it is a component.

(2) Large Geneset

The Geneset egwpid with the Company's own engine is a more integrated system product than a single engine.

(3) Small Geneset and Ambulance car

These are integrated system products like the large genesets. The difference is their lower value added for the Company than the large geneset. Therefore, higher degree of integration can be obtained from the large geneset.

The study team recommend following product policies to the Company:

(1) The Company can be survived as a system miteyraton. well as a single engine. The large genesets, co-generator system, and the application products as pump, compressor units, gas engines and special purpose trucks etc..

(2) The Company can supply variety of products as like components, sub system and systems. When the Company manufactures components highly integrated system parts [4]are preferable.

[4] The system parts in the context of this concept is a set of components which is a sub-system of a total product but has a specific function. The suspension system of the automobile is a good example.

6. 5. 2 R&D strategy for the Euro-3 engine

The Euro-3 requirements are most stringent in the world bike thor of Japan and the U.S. Even the world leading diesel engine manufactures are concentrating their resources to meet the requirements. The Mielec Engines Co. has to solve this problem by utilizing outside resources strategically.
Followings are some suggestions:

① Cooperative works with key parts manufactures of the world class
② Joint development with the Kzakow Institute of technology.
③ Spending of necessary R&D cost and investment for new facilities..

6. 6 Business Strategy (Value chain strategy)[5]

This is a strategy of the business evaluation and business deployment.
Fig. 6-5-1 represents this concept, but products are completed from materials into such only after various processing stages, sold and their services are made available at the market. Their added value builds up in this process. This process is called. The value chain. Value chain strategy means to consider which part of the value chain to focus on or what new sphere to develop in the value chain, etc., in adapting to the changing outer environment. Principal diesel engines, generator sets, ambulance cars of Mielec Engines occupy entirely different areas of the value chain and can be a suitable object of this approach. This way of thinking is an entirely different concept from what is called the elevation of added value productivity which represents increasing the conventional already defined scope of value added only. The principal business of the Company is composed of diesel engines which are OEM products and end-user products. It manufactures generator sets, ambulance cars, repairing and servicing parts and books contract processing orders (Please refer appendix A 2).

OEM engines
Truck and bus engines
Industrial engines: Loading machine, flip-off fingers, self-propelled lift, fuel locomotive, fishing boat, pump unit drive (water & mud pumper) and combine harvester
Specially-equipped vehicle: Heavy-duty drive road roller, dumping car, fire engine
Gas engine: This is presently a monopoly by Poland and in the limelight so that a lobby group was organized for the passage of an environmental policy.

When these are compared we can see that the value added is entirely different by the type of the

[5] Each firm must be understood in the context of the overall chain of value-creating activities of which it is only a part. Unlike the Value Added, the value chain has links to customers or suppliers.

product.

It should therefore be evaluated using the value chain concept. Fig. 6-5-1 represents a concept for viewing the value added at each stage in the business activities from the handling of materials, production, selling and servicing, and the relation of the transfer of added value between the suppliers as well as customers toward the company.

The original value added in an enterprise can be assessed with this value chain concept and it is possible to establish a business strategy with this.

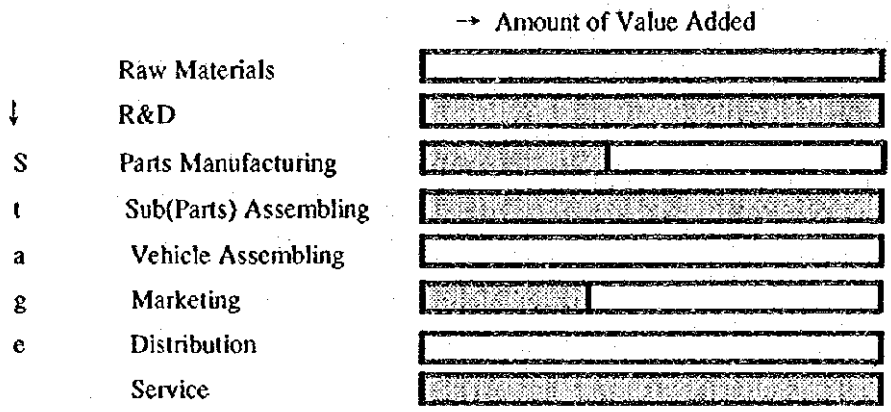


Fig. 6-6-1: Business Value Chain
(An example of the Mielec engine)

	Engines	HD Geneset	Ambulance
Raw Material			
R&D	◎	◎	○
Parts Manufacturing	○	○	
Parts Assembling	◎	◎	
Vehicle Assembling	NA	NA	◎
Marketing		◎	◎
Distribution		◎	◎
Service	◎	◎	◎

◎ High value added ○Medium Value added

Table 6-6-2 is a representation of the principal products of Mielec Engines Co. in terms of value chain concept.

The large-sized generator sets produce the largest in in-house value added and the small-sized generator sets a large value added at selling Stage. The above assessment makes possible a strategic reexamination of the product combination and can furthermore be used for creating or shaping up a new business.

Other businesses of the company are:

(1) Contract parts processing

(2) Repairing of its own and other's products

Periodical inspection and overhaul of diesel engines

Safety check and minor repairing of heavy-duty automobiles

(3) Receipt of contract research orders

Diesel engine, jet pump, peripheral device and engine oil

(4) Barter trade (For example, receipt of considerations in wool instead of payment for conversion into money through dealers)

(5) Transaction of products not related with the production of the company

Contributions to the profit in the above business are as follows:

Engines 46%, supplies 18%, repairing 30%

7 Recommendations to Polish State-Owned Enterprises and Polish Government

The following recommendations have been derived from the study results on Mielec Engines Co. as a model enterprise of Polish states-owned enterprises, and from other macroscopic studies on the government and its related organizations. The recommendations are mostly related to the automotive industry. Since the automotive industry is related to various industries, any recommendations for the automotive industry may be applicable to other industries.

7. 1 Grand Plan and Strategy of Polish Automotive Industry in 2000's

7. 1. 1 Grand plan formulation in collaboration with industry and government

Since the automotive industry is a nation's key industry, the government's industrial policy on the automotive industry sector has a great influence on the national economy.
The Polish automotive industry's share in its manufacturing sector is 3.4%[1] and the employees share is 3.3% (approximately 96,000 people) Since the Poland has just started the auto production, will be doubled as forested in 5 years. It is expected that the auto industry will be a key industry in future

The role of the Polish automotive industry in Europe and its Eastern market including CIS is the most strategic from a global point of view.

The grand plan consists next items.

(1) Annual production/sales goals for next 5 years and beyond
(2) Export strategy
(3) Reconstruction of the Polish automotive industry structure, in particular the parts industry
(4) Modernization of products and manufacturing engineering
(5) Foreign direct investment and strategic alliance
(6) Transportation and distribution
(7) Infra-structures, mostly highways and urban traffic system
(8) Energy and industrial waste
(9) Environmental protection

[1] The figure of Japanese auto industry is 13.6%

7. 1. 2 Establishment of Industrial association and society of engineers

It is most essential for the government to formulate plans and strategies in collaboration with the industry and academy.

Members from industry and from universities are invited to various committee meetings to discuss policy issues with government people.

In order to do that, the study team recommends that establishment of the Automotive Manufacturers Association for the Polish automotive industry.

The Polish Association of Automotive Employers which was founded in 1991 consists 7 final assembly plants,16 sub-assembly plants (engine or similar big parts) and 2 research institutes. The total employees of the member companies are 70,190.

In Poland, such organizations for individual industry sectors are not matured. The Japan Automobile Manufacturers Association consists of 11 auto makers are planning important future activities.

JAMA suggests the industrial policy and strategy for changing environmental situation, governmental rule making, the tax reform, standardization. Its other tasks are collection and analysis of statistical data and the public relations etc. JAMA has its own test facilities (Japan Automobile Research Institute) as a proving ground and other laboratories mainly for the vehicle safety and engine exhaust emission control and alternative engines. The Tokyo Motor Show, one of the largest international auto exhibitions is also organized by JAMA.

7. 2 Strengthening Domestic Parts Industry

Due to a self sufficient economy during the COMECON period, Poland has its own full-set automotive parts industry. Even though it has problems like lack of world class technology and low productivity, the existence of a basic auto parts industry will be a driving force for future growth in the Polish auto industry. Therefore, this is the most crucial issue of the government policies.

In August 1996, the government issued a decree to require foreign auto assemblers to utilize parts manufactured in foreign countries and assembled in Poland for final assembling. This intention of foreign investors is to get the cheaper labor cost of Polish workers, but it does not benefit Polish economy. This government policy works well for the promotion of the parts industry.

Isuzu Motors announced in January 1997 its plan to build a plant in southern Poland to manufacture 300,000 of small diesel engines for European countries

Daewoo plans to introduce modernized technologies into main factories in Lublin and Warszawa and 13 other auto parts factories. They also plan to buy 40% of its passenger car parts and 80% of its commercial vehicle parts from Polish suppliers. Daewoo will export some Polish made components to company factories in Uzbekistan and Romania as well as car makers in Poland other than FSO.

Above two examples are good indication for the future prosperity of Polish parts industry..

7. 3 Export policy

Trade and globalization

Japan, Germany and Korea are successful at growing national economies by increasing the export of cars. However the recent trend in globalization has resulted in local production and local R&D taking the place of the export business. Businesses are becoming multinational and complex by tie-up relationship.

Liberalization of trade in EU region is proceeding by a phase-in process of import duty tax exemption until 2002, consequently, the Polish auto industry has to be competitive in price and quality to compete with foreign competitors,

Poland seems to have an advantage in becoming an auto production center in Europe which supplies products in Europe and mostly the Eastern market. Already Fiat is planning to investing over 10 billion US$ in Central Europe. Daewoo plans to invest I the central Europe and to CIS about 3 billion US$ to produce 700,000 cars, trucks and buses by 2000.

The Ministry of Industry and Trade[2] began to draft the "Industrial Policy Objectives" in the middle of 1991 and was officially approved by the cabinet in September 1993. However some problems are pointed out in the "Industrial Objective Policy as follows.

① Although the Industrial Development Bank and the Export Development Bank exist, they are acting in somewhat similar roles as to commercial banks and fail to play their designed roles as government financial institutions for supporting industrial development and export promoting finances.

② It lacks of a clear emphasis on the strengthening of international competitiveness and export promotion, which seems to be the most important issues but are listed in the "Industrial Policy Objectives "as only one issue of many areas of industrial policies.

In May 1995, Industrial Policy Objectives for 1995-1997: International Competitiveness of Polish Industry" was adopted by the Council of Ministers.

In order to achieve the final goal of "establishing International Competitiveness of the Polish Economy", three important policy directions were selected. They are:

① A policy of export enhancement which promotes a high rate of export expansion as the primary driving force of Poland's economic development.

② At technology policy which aims at increased innovation and improved competitiveness of the industry, and

③ Policy of structural changes which calls for successful adjustments in a market-oriented economy, through adoption of appropriate legal and organizational solutions as well as

[2] Since January 1997 it was transformed as the Ministry of the Economy

economic and program decisions for changing its ownership, financial and technical structure.

The Ministry of Industry and Trade was replaced by the newly established "the ministry of the Economy" in January 1997, The new Ministry takes over the responsibilities for the initiation and implementation of the state's economic policy, and the coordination of the governments role in the economic development of Poland. It is anticipated that the role of the Ministry of the Economy in relation to state-owned enterprises is to be restricted to the minimum, and that it will have no involvement in firms owned by the state treasury.

The new Ministry of the Economy will take over most of the functions currently carried out by the Ministry of Foreign Economic Relations, and the functions relating to foreign capital inflows currently the responsibility of the Ministry of Privatization. The ministry will also assume responsibility for the work of Polish trade counselors attached to Poland's embassies abroad.

In order to create new markets in overseas countries, the role of the Commercial Councilor's Offices to collect information is important. Therefore, such functions and activities as Japan's JETRO(Japan External Trade Organization) could be a good reference worth study by Poland.

7. 4 Technology and Science

Polish economies and industrial technology are by no means underdeveloped. Poland has high cultural and educational tradition and abundant technical human resources. During the COMECON period, Poland's industrialization was successful, but its technological innovation process was isolated from that of developed economies and Newly Industrializing Economics. Now there exist a clear gap between Poland and those economics.

The issue is how to improve the existing less-advanced technological standards. The government's "Industrial Policy Program for 1995-1997" prepared by the Ministry of Industry and Trade deals with this problem in " section II- Technology Policy Measures Aimed at the Improvement of International Competitiveness of Industry". The tasks proposed for implementation under the Program specify the following four areas:

(1) To expand industrial research and development activities.

(2) To strengthen infrastructure required for R&D implementation.

(3) To attain international quality standards and modern production profile.

(4) To improve the information system and to raise staff qualification.

Formation of the Technology Agency was proposed in this program and it was implemented in January 1997.

Many enterprises have not applied research results in industrial practice because of poor financial conditions and obsolete facilities and equipment for R&D activities.

In case of the Euro-2 engine development, Mielec Engines Co. employed the following.

(1) Ask Krakow Institute of Technology to assist R&D.

(2) Utilize test facility at the University.

(3) Utilize KBD fund as its part of R&D cost.

The study team appreciates this as a good example of an industry/academy collaborative program. In Japan, there is no good case like this.

As far as the study team understand the Polish industry is assisted by high quality specialists from Research and Development Centers. The assistance covers the research on the following: Vehicle technical checkup, environmental problems, engine combustion, engine control, alternative fuel for engines, aerodynamics, vehicle and engine dynamics and testing new materials. The leaders in the field are: The Institute of Automotive Industry in Warsaw, Motor car Center in Bielsko-Biala and Motor Car R&D Center in Warsaw, Institute of Aeronautics. There are other universities.

However, Polish universities have no enough fund to conduct R&D and their mission is mostly placed on the education of students.

Even the enterprises can not afford it.

Again the study team recommends the formation of Society of Automobile Engineers in Poland. All of major automotive manufacturing countries have this kind of society generally called SAE.

The SAE's activities are as follows:

To hold technical conference of both domestic and international,
various committee activities for making technical standards, joint research,
publication of technical journals, hand books, statistical information,
technical books, standards for test procedures etc.

In Poland, the Commission of Motorization (Professor Zabrocki as the president) under the Polish Academy of Science was founded as a Krakow sub committee and publishing proceedings of technical papers.

Poland is an active member of international organization of the internal combustion engines called CIMAC.

Under these circumstances, it is assumed that the SAE of Poland can be established. The Society will stimulate Polish automotive engineers to modernize technology and enhance joint R&D program among enterprises as seen in Japan, the US and Western Europe. This may save money and also integrate knowledge .

7.5 Summary

There are many incentives and other measures which are prepared by the government.
Table 7-5-1 summarizes them.

Table 7-5-1 Policy targets and their measures

	Finance Policy	Credit	Tax Incentive	Aid Fund	Human Resource Development	Information Supply
Small- and Mid Business support	○	○			○	○
Promotion of Direct Investment			○			○
R&D Promotion	○		○	○	○	○
Export Promotion	○	○	○			○
Development of Depressed Area			○	○	○	○
Enhancement of Employment			○		○	
Environmental Protection	○					○
Promotion of Privatization	○	○	○			○

○ related

The study team had more findings in its study on the Mielec Engines Co.

(1) The Company takes advantage of the KBD fund and collaborative work with the Krakow Institute of Technology for development of Euro-2 and Euro-3 as a next step.

(2) The Company could employ tax incentives by joining Euro-Park if it accomplishes good revenue performance.

(3) The top management of the Company and of some others which are much in ahead in the restructuring activities have a mind of self reliance.
They do not take advantage of any artificial price mechanism.
However, they are anticipating strategic investors.

In summary, the study team expect the government to take leadership in integrating Polish latent potential in human and technological resources and formulate a vision for the future in collaboration with enterprises and universities.
Also, the government has to review risk factors and take necessary measures for such issues as traffic conditions, environment and energy, which may hinder attainment of the plan.

8 Process of Mutual Understanding

8.1 Company Management Diagnosis and General

The chapters up to and including Chapter 7 have dealt primarily with the results of the study. Now, in this chapter, we would like to report on our ideas concerning how we were able to bridge the cultural gap between us and our Polish counterparts.

1) Continuous Dialog with Mielec Engine Co's Top Management

About every other day during the period of the study the company president devoted about an hour and a half in the morning upon arriving at the company to discussion with the head and deputy head of the study team. Other members of the team also participated depending on the topics discussed. For the first 3 weeks of the first part of the local study all we did was listen. The company president told us how he had been a champion of progressive thinking regarding restructuring since the company was established by split-off from its parent company, and it is clear that that was in fact the case. He first gave a detailed account of the company's efforts and achievements in restructuring by its efforts from the stage of preparations for the split-off, and he said that he intended to use that as a basis for leading the company further along the road to restructuring with our help. Besides that, he talked mostly about the market and sales, a field into which the company is putting the most effort.

2) The Company President's Reaction and Response to the Study Team's Suggestions Concerning Restructuring

On September 10, 1996, the study team held a reporting session attended by all counterparts and the company president, who arranged for one representative each of the company's two labor unions to attend as well in order to see how they would react. The labor unions understood the study team's policy concerning restructuring and the intent of the line improvement teams and assumed a positive attitude in that regard, and the improvement activities received the endorsement of the whole company. That was a decisive day for the study. Because of that at the meeting with the company president the next morning we requested preparation of medium- and long-term restructuring plans and also strongly recommended establishment of a restructuring promotional committee consisting of top management figures in the company. Up to then we had only listened to the other side's views, but then we decided to change to an active stance because of fears that otherwise we might not have enough time before the end of the study to present our suggestions and proposals and have them implemented.

Since the study team had already heard detailed explanations of why the company was not able to have mid- and long-term planning, the study team was not surprised that they were not a little disconcerted at that. Anyway, the company president's reaction was to state the opinion that such activities might be useful in educational terms, and since he had already made it clear that the main emphasis in introduction of ISO 9001 was on the educational effect, we were able to perceive how much importance he attached to changing attitudes in the company for the sake of the restructuring that he was aiming at.

Just before termination of the first field survey, the first meeting of the restructuring committee was held, at which the study team explained the results of simulations, but at that stage the study team received the impression that they were not yet aware of the urgency of the matter.

Later, in the second field survey, that committee met three times, and its attitude had changed to a positive posture. The reason for the change in attitude appears to have been abrupt change to severer conditions in the environment which the company finds itself in.

(3) The Company President's Leadership

At the last meeting for reporting to the company and the steering committee on the first field survey the company president clearly stated that he intended to have all of the study team's proposals implemented, and when we went back for the second field study, the study team learned that they had, in fact, been implemented. Furthermore, changes had been made in company organization and in personnel assignments, with promotion of executives with a positive attitude toward restructuring as proposed by the study team.

Undertakings provided by the Company were almost perfect. One can even say that the favorable attitude of the company's top management was the biggest single factor in the success of the study.

(4) Communication at Lunch time

Team members were provided lunch in the plant restaurant for visitors, the production department chief usually serving as the host. By the second field survey he had been promoted to vice president of the company. Every time team members had lunch with him, he asked each of members to describe study activities that day and what impressions were. That was his idea, but the team, too, appreciated the chance that it gave to exchange information on a daily basis.

It is important on occasions such as that for the consultant to show confidence and provide concrete answers to questions in order to win trust. Also, it was necessary, when talking with Polish people, to bear in mind that Europeans in general put great stock in logic and rationality and are proud as individuals.

Another thing that the team noticed is that they do not take many notes. It is not that they do not listen seriously, but only that, apparently, their training has taught them to take notes only of the most important points. Although they have good documentation of the work itself, the team did not see any minutes of meetings, memoranda for passing on and other such minor documents.

8. 2 Line Improvement Activities

At the outstart the study team certainty did not have any unrealistic ideas that it would be easy to form line improvement teams in a Polish state enterprise and achieve results by that means. The following is an account of how the members of the study team went about their duties and what happened:

* We dressed casually, i.e. without business suits or ties, so as not to seem different from them in terms of attire and thereby to have better rapport.

* We undertook measurement of data, including time studies- We tried to get the officials in charge and department chiefs to understand what we were driving at by providing them with thorough explanations.
* We held meetings with the personnel on the model lines and meetings with the representatives of the two labor unions as well to provide them, too, with explanations.
* We answered doubts that the team leader had concerning reduction of the in-process volume from 20 to 10 units on each of the three sublines.
* We provided the team leader with specific advice and suggestions for improvement of his leadership on the line when he visited us at our hotel for a heart-to-heart talk.
* The comprehension of what it was all about on the part of of the members of the improvement teams gradually improved.
* We asked them to analyze past equipment downtime data for the period from February 1995 to September 1996 and set future goals concerning that.
* They implemented "3S" on the lines during our absence after the first part of the local study.
* They implemented reduction of in-process volume to 10 units on each subline on November 19, at the start of the second part of the local study.
* That was followed by commencement of improvement of maintenance activities, the factors behind the good results that were achieved being considered by the study team to be

as follows:

(1) We always treated the line workers in a gentlemanly manner and strived to consider the problems together with them and to implement them jointly from a common standpoint.

(2) The content of our suggestions and proposals was appropriate, and in almost all cases they led to good results, which enhanced their trust in us.

(3) We gave them an overall picture (blueprint) of what we were trying to do and what kind of technology transfer we were aiming at, setting goals and showing them where they presently stood and thus obtaining their understanding and awareness of what was happening as they made headway.

(4) Besides formal meetings, we endeavored to have as much personal contact as possible with all of the line workers and made a lot of friends.

(5) Whenever the occasion presented itself, we mentioned to others what the improvement team members were doing and gave them the praise that they deserved.

(6) We worked for an atmosphere of friendship and close relations at parties and on other similar occasions.

8. 3 Communication

How to minimize the communications gap due to the fact that we spoke different languages was an important consideration in our study activities at Mielec Engine. In the case of that company, only a few of the employees were able to speak English, and therefore we did not count on that. It was therefore necessary to engage the services of capable interpreters in the same number as the number of members of the study group. By detailed management of the daily work of the interpreters it was possible to keep them busy at all times. The interpreters were also asked to translate documents that we obtained and our presentation materials as well as economic and other pertinent information in the daily press.

There is not a very large number of capable interpreters between Japanese and Polish. Most of them majored in Japanese in college, and there are more women than men. They are specialized in the humanities but are also able to handle interpretation and translation in the field of science and engineering thanks to extra study and effort in that regard. In the case of interpreters between English and Polish, there are some who are very capable in the field of economics and business, and even in the case of interpreters between Japanese and Polish, some have a high level of English as well and have no trouble understanding materials in English.

For the present study a 200-page Japanese-and-English dictionary of specialized terms concerning motor vehicles and engines was specially prepared and proved to be a great help.

Needless to say, briefing of interpreters is very important, and we also made sure to have the same interpreter assigned to the same study team member throughout the study period.

Polish interpreters have a professional attitude and are very enthusiastic about their work as well as being proud of their country, particularly, no doubt, because of their high level of education. They are enthusiastic about their country's acquisition of foreign technology as if it were their own personal affair.

The inception report and the interim report that we submitted to Mielec Engine Co. were not completely translated to Polish in time. The person who undertook the task is a technician who had left the company. He is capable, but the volume (more than 200 pages) was too much for him to be able to complete in just one month. That being the case, a Polish translation of a digest of those two reports (about 20 pages) was made as material for the study team's presentations. That was the only document that we were able to furnish the other side in Polish. In that connection, one cannot overemphasize the importance of providing all pertinent documents in translation in studies such as this.

The most important interpreter of all to the study team was the Japanese national interpreter who constituted one of the members of the team, serving throughout the project period. He also made a big contribution in terms of translation work during the work in Japan concerning the study.

9 Conclusion

The study team proposed mid- and long- term business strategies for PZL-Mielec Engines Co. The Company made a good start by two reasons. Firstly the Company's top management committed to formulate its own mid- and long-term plan. Secondly the successful results of improvement circle teams of the plant elevated the mind of the all employee involvement in the restructuring program.

Toward 2001, the remaining state-owned enterprises in Poland will be privatized. This will elevate productivity levels and technical sophistication of products, making competitive power in the market economy. The Company must however, overcome its difficulties by restructuring as other state-owned enterprises are currently doing.

As the results of the activities made this time, the restructuring plan will work correspondingly, but it is necessary to work up implementation plans and promptly construct a managerial and controlling structure and systems hereafter. The study team judges that Mielec Engines Co. can put this into practice by its own ability.

The major objective of the study is making recommendations with regard to the restructuring of the state-owned enterprises to the Polish government and the industry based on study team's experiences obtained during the restructuring program for PZL-Mielec Engines Co. The Ministry of Economy organized the corporate management seminar in order to attain this objective. At the seminar which took place on March 3 1997, the study team presented the results of the model company's restructuring effort as a template for a wide range of other Polish enterprises. Exchange of opinions and comments among participants was constructive.

The study team has received requests from the Company and the government to follow-up on the success and progress of the restructuring hereafter.

APPENDICES

POLAND ECONOMIC DATA

Warsaw 21, 10. 1996

	1994	1995	1996	I - IX 1996
GDP per Capita	2,404 $	3,083 $	3,252 $	
GDP	92.58 bln $	119.1 bln $	125.5 bln $	
GDP increase	5.2%	7.0%	5.5%	
Consumption	3.9%	4.1%	4.1%	
Investments	9.2%	18.5%	20%	23.7
Private Sector Employment	60.5%	63.0%	66.0%	
Private Sector Share in GDP	46.4%	55.0%	59.0%	
Real Output Industry	11.9%	10.0%	8.5%	8.8%
Agriculture Output	-9.8%	13.0%	4.0%	
Exchange Rate - Depreciation		1.5%	12.0%	13.9%
Inflation (Dec. / Dec.)	29.5%	21.6%	17.0%	14.0%
Refinancing Interest Rate (Jan.)	35.0%	33.0%	26.0%	
Export	16.95 bln $	22.9 bln $	26.0 bln $	15.628 bln $
Export Volume	18.3%	21.4%	13.0%	9.0%
Export Growth	24.8%	35.0%	13.8%	6.0%
Import	17.78 bln $	24.7 bln $	31.1 bln $	20.117 bln $
Import Volume	13.4%	20.8%	15.5%	25.9%
Import Growth	12.0%	38.9%	26.0%	30.2%
Trade Balance	-836 mln $	-1.8 bln $	-5.1 bln $	-4.489 bln $
Current Account	-944 mln $	-2.1 bln $	-5.8 bln $	-4.771 bln $
Trade Balance/GDP	-0.9%	-1.8%	-4.1%	
Unclassified Transactions CA		7.754 bln $	7.574 bln $	4.821 bln $
Foreign Visitors in Poland (FRG)	74.3 mln (47.8 mln)	82.2 mln (47.3 mln)		
Current Account Adjusted		5.455 bln $	1.4 bln $	0.04 bln $
Export/Import (share in total)				
-- OECD	75.3% 75.3%	73.9% 74.3 %		72.4% 73.4%
-- European Union	69.1% 65.5%	68.7% 64.6%		67.8% 63.8%
-- LDC	10.4$ 10.7%	9.8% 10.2%		7.8% 10.5%
-- Former CMEA	14.3% 14.0%	16.3% 15.5%		19.8% 16.1%
Export growth : OECD		35.9%		2.9%
-- European Union		37.7%		3.8%
-- Former CMEA		58.5%		33.8%
-- LDC		29.6%		21.7%
Total Money	38.2%	34.8%	22.8%	18.2%
Domestic Money	38.7%	50.1%	25.8%	21.6%
Net foreign Assets	47.2%	81.1%	30.3%	20.2%

Net Foreign Assets bln $	11.289	20.436	22.598	21.572
Net Domestic Assets	33.7%	7.9%	15.8%	16.3%
Foreign Reserves bln $	6.028	14.963	16.921	17.554
Increase of Foreign Exchange Reserves	1.7 bln $	8.934 bln $	3.1 bln $	2.591 bln $
Foreign Reserves/Import	4.07	7.3	7.5	7.3
Human Resources	38.5 mln	38.6 mln	38.8 mln	38.6 mln
– Urban	62.0%			
– Under 39 years old	60.8%			
– Employed	15 mln	15 mln	15 mln	
Unemployment Rate	16.0%	14.9%	13.9%	13.5%
Unemployment	2.84 mln	2.6 mln	2.5 mln	2.401 mln
Average Gross Monthly Wage	231 $	278 $	294 $	342 $
Budget Deficit/GDP	2.7%	2.75%	2.8%	
Budget Spending/GDP	32.7%	32.9%	32.4%	
Investment Machinery	14.0%	13.8%		
Foreign Direct Investments	1,621 bln $	2.512 bln $	3 - 4 bln $	3.2 bln $
Foreign Direct Investments Total	4.5 bln $	6.9 bln $		10.1 bln $
Foreign Direct Investments Committed	5 bln $	5.3 bln $		8.1 bln $
Foreign Debt	39 bln $	43.8 bln $		40.3 bln $
Domestic Debt	499 trl zl	609.6 trl zl		673.99 trl zl
Foreign Debt Service/Export	12.7%	12.0%	8.8%	
Net Interest/Export & Services	3.9%	4.1%	3.7%	
Foreign Debt/Export	223.0%	159.0%	144.0%	
Foreign Debt NBT/Export & Services	132.4%	81.5%	54.9%	
Foreign Debt/GDP	46.0%	39.1%		35.0%
Public Debt	1,462 trl zl	1,689 trl zl		1,764.3 trl zl
Public Debt/GDP	69.5%	58.0%	55.1%	51.6%
Value Added Tax	0% 7% 22%	0% 7% 22%	0% 7% 22%	0% 7% 22%
Income Tax for Foreigners	20.0%	20.0%	20.0%	20.0%
Corporate Income Tax	40.0%	40.0%	40.0%	40.0%
Turnover Tax on the Stock Exchange	0.20%	0%	0%	0%
Number of FDI	19,737	23,100		
Number of Investors > 1 mln $	267	350		429
Major Investors by Countries				
– Germany	20.0%	10.0%		13.2%
– USA	19.0%	24.9%		23.7%
– International		16.1%		14.5%
– France	7.6%	8.4%		6.5$
– Italy		6.7%		9.4%
– Austria	7.3%	4.4$		3.1%
Average Pension Average Wage	63%	64%¡		

SHORT PRESENTATION OF THE COMPANY

1.1. Address, location and contacts for sites/offices.

Head office	- Wytwórnia Silników „PZL-Mielec" Spółka z o.o. „PZL-Mielec" Engines Company, Ltd.
Legal status	- Limited Liability Company
Address	- 3 Wojska Polskiego St., 39-300 Mielec
Telephone	- (48-196) 887070, 887118
Fax	- (48-196) 887963
Contact Person	- Marketing and Export Department - Ryszard Kępka, - Kazimierz Podolski - tel. (48-196) 887912,
Registration No.	- 690228007

1.2. Brief history.

In the middle of the sixties rised in Poland high demand for vehicles of heavy transportation. The Government of these days, decided to buy British Leyland licence for production of Diesel engines. The decision was taken in 1965 and serial production was started in 1967 in existing enterprise in Mielec - WSK „PZL-Mielec".
From the beginning up to today, have been produced 200 000 engines, 78% of them were sold in Poland and 22% abroad of Poland.
The Company is situated in industrial part of Mielec, and was created from the Division dependent from WSK „PZL-Mielec".
The Company started its activity on April 1st, 1993.

The Shareholders of the Company

1. Bank Depozytwo-Kredytowy S.A. w Lublinie	- 40,00 %
2. WSK „PZL-Mielec" S.A.	- 29,00 %
3. Agencja Rozwoju Przemysłu	- 18,00 %
4. Others	- 13,00 %

1.3. Nature of Business.

a) major business activity	- Diesel engines, spare parts, generating sets, overhauls of Diesel engines,
b) type of operations	- manufacturing, assembly, distribution.

2. Products and Markets.

2.1. Major Products Groups, Contribution to sales.	Value or %	Major competitors today	Estimated share of the market held by competitors in %
a) engines	74,6%	Mercedes, Volvo, Scania,MAN, Reno,	30%
b) spare parts	15,6%		5%
c) overhauls	6,8%	Zakłady Remontowe w Iławie	90%

2.2. Major Products Groups, Contribution to Gross Profit.

a) engines	46%
b) spare parts	16%
c) overhauls	30%

2.3. Markets for each Product Group	Description of Market	Percentage
POLAND		
a) engines	Processing	66%
b) spare parts		12%
c) overhauls		6%
EXPORT		
a) engines	Processing	6,5%
b) spare parts		3,0%
c) overhauls		0,5%

2.4. Product position in product life cycle for key products	State
a) engine	mature (old product, falling sales)
b) spare parts	mature (old product, steady sales)
c) overhauls	mature (old product, steady sales)
d) generating sets	new product (sales growth)

2.5. Major products group, sales by customer	Customer location
a) engines	POLAND
b) spare parts	POLAND
c) overhauls	POLAND

2.6. New products	Introduction date
a) generating sets	80-150 kVA - 1993
generating sets	15-30 kVA - 1995
generating sets	1,5-10 kVA - 1996
b) ambulance	- 1996

3. Sites and facilities

3.1. General description of the site (plant and equipment „P&E")	Average age of „P&E"
a) MIELEC - production and assembly plant	28 years (small improvements)

3.2. Site utilization

a) total area	- 69 452 m^2
b) covered area	- 30 618 m^2
c) open area	- 38 834 m^2
d) productive area	- 17 418 m^2
e) nonproductive area	- 46 929 m^2
f) store	- 5 105 m^2

4. Human resources

a) total	- 724
b) direct operations	- 455
c) support functions	- 269
d) full time employees	- 722
e) part time employees	- 2

5. Board members (appointed in March 1995)	Age	Degree	Years with the Company
Director Jan Studnicki	49	engineer	25
Finance Director Halina Kazimierczak	43	economist	20
Research and Commercial Director Julian Wilk	46	engineer	21
Production Director Janusz Mądry	39	engineer	12

6. Number of suppliers

a) domestic - 98

b) international - 9

A3 Management Indicators of Mielce Engines Co. Ltd.

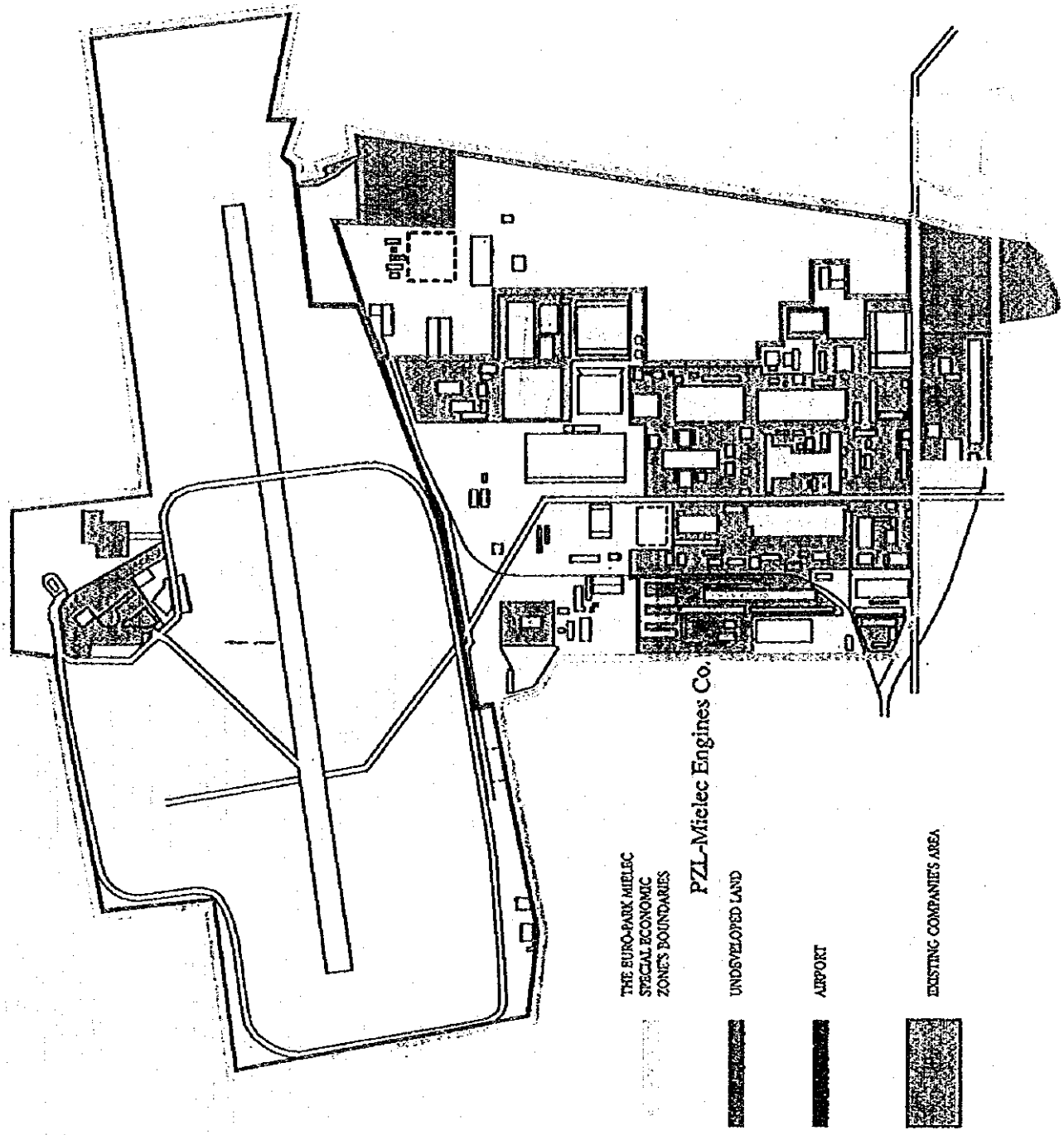
Courtesy of Mielec Engines Co.

Management Indicators

		1993 (9 months)	1944	1955
I	Productivity			
1	Value added per employee (Gross)	6,963.3	12,845.6	16,396.3
2	Employee' income	4,405.1	9,507.7	13,057.4
3	Tangible fixed assets per employee	9,276.4	10,187.9	11,093.9
4	Production facilities per employee	950.7	1,624.6	1,358.0
5	Net sales per employee	21,655.0	39,997.0	56,133.8
6	Value added ratio, %	32.2	32.1	29.2
II	Profitability and Stability			
1	Operating capital profit ratio, %	7.2	10.4	8.8
2	Operating capital turnover ratio, times/yr	0.85	1.51	1.91
3	Operating profit to sales ratio, %	8.5	6.9	4.6
4	Return on equity (ROE), %	9.6	13.6	13.5
5	Return on total capital (ROC), %	7.2	10.8	11.3
6	Breakeven point ratio, %	82.5	86.4	87.7
7	Stockholder's equity ratio, %	74.7	81.8	76.8
III	Growth (Company totals)			
1	Net sales, %	NA	185.7	140.5
2	Number of employees, %	NA	100.6	100.1
3	Value added, %	NA	185.5	127.8
4	Operating profit, %	NA	150.6	93.9
5	Cash flow, %	NA	122.5	122.8
Ref.	Inflation rate, %	135.3	132.2	121.6

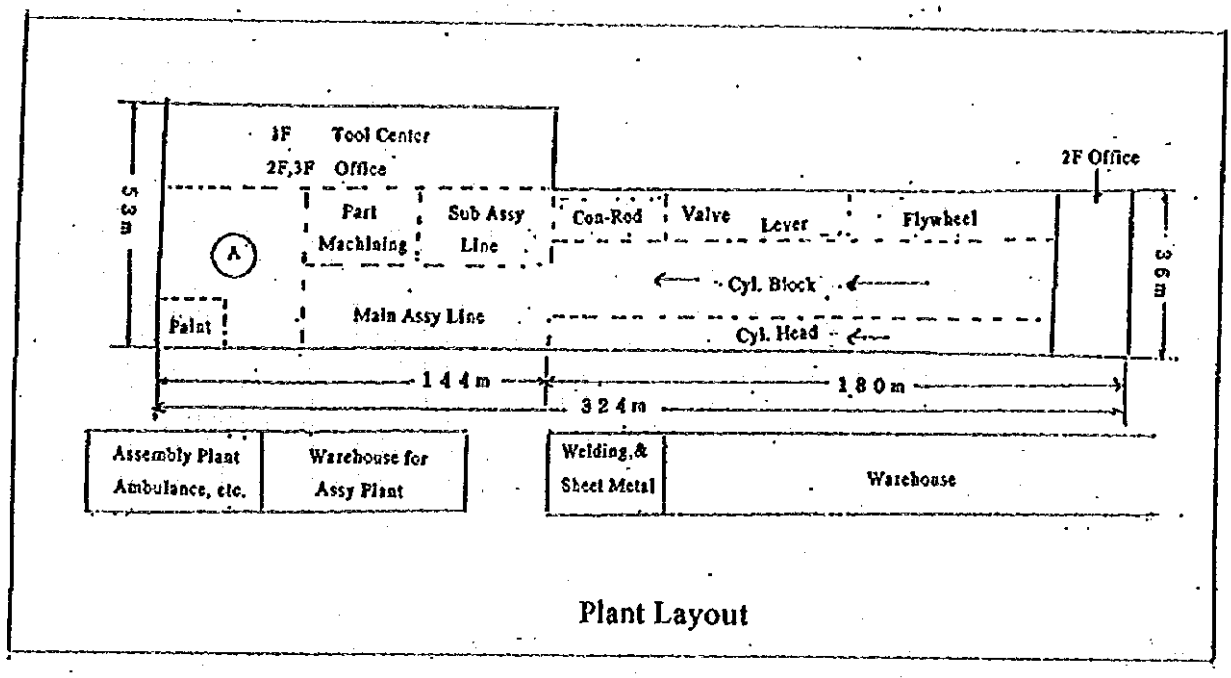
A4 Mielec Area

Source: Euro-Park Mielec



A5 Plant Layout of Mielec Engines Co. Ltd.

Courtesy of Mielec Engines Co.



Plant Layout

A6 Organization Chart of Mielec Engines Co. Ltd.

Courtesy of Mielec Engines Co.

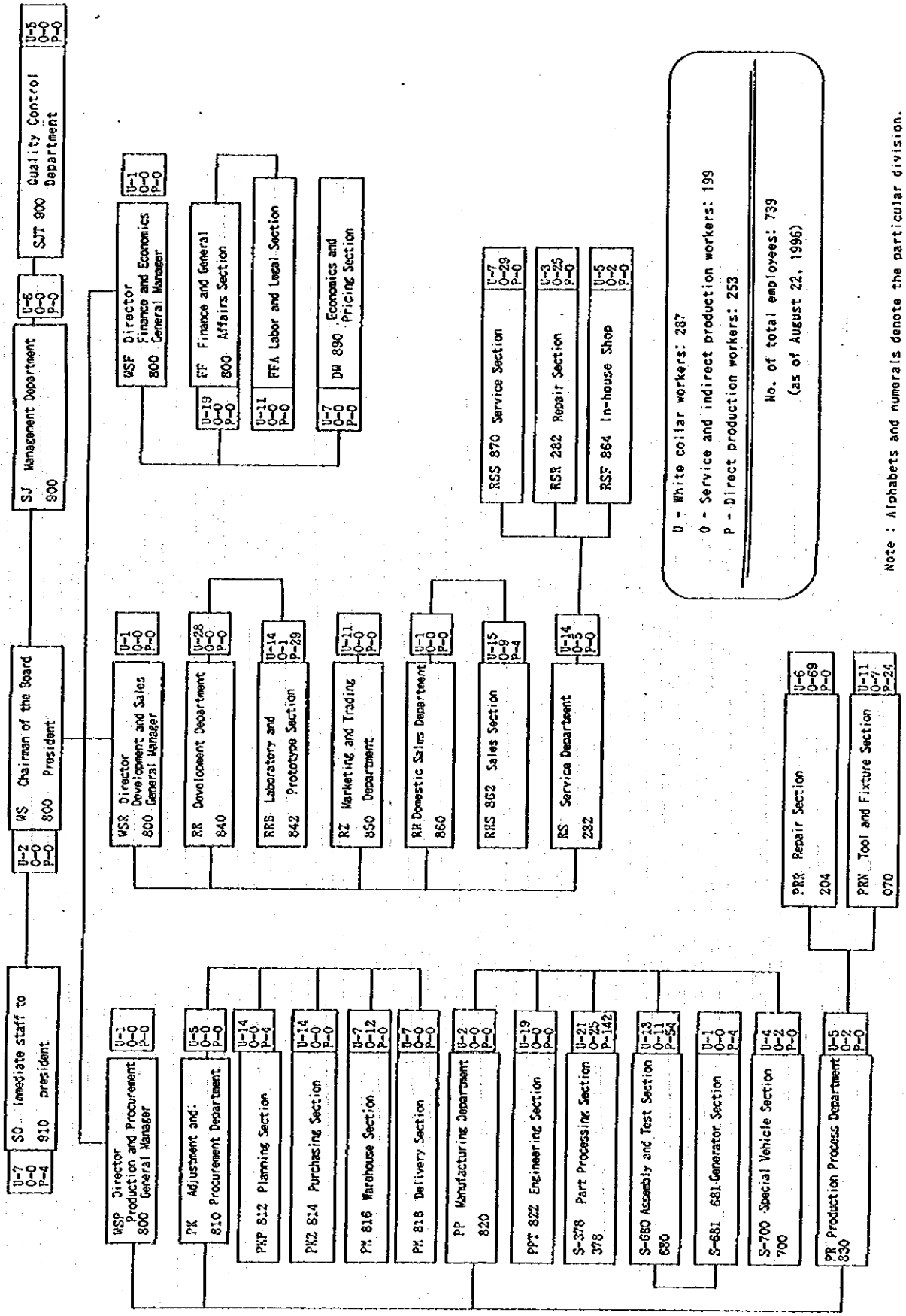
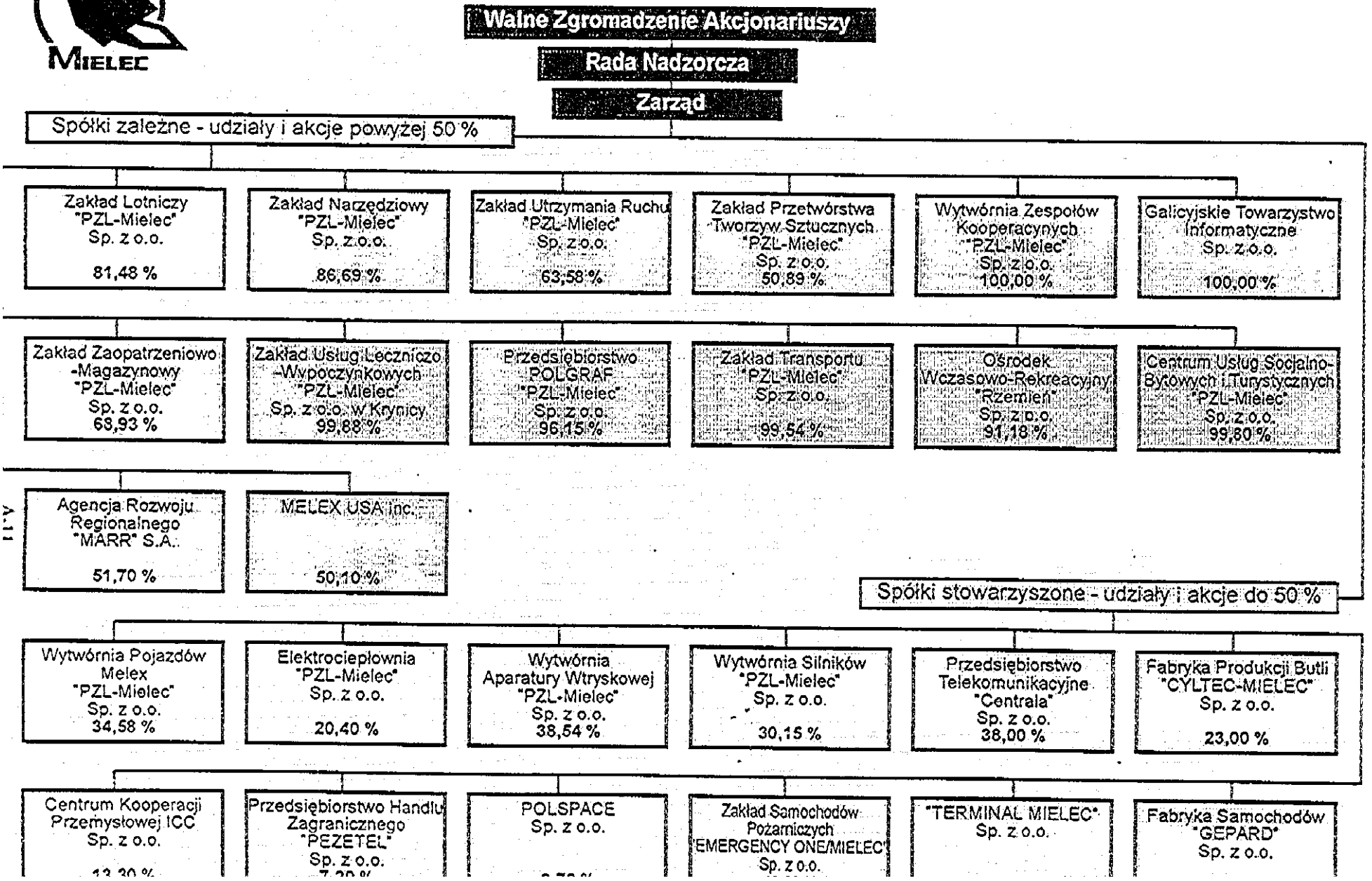


Figure 4-2-8: Organization of the Company

Struktura holdingu WSK "PZL-Mielec" S.A. - posiadana wielkość akcji i udziałów w %

(Stan na dzień 31.12.1995 r.)



A-11

A7 Organization Chart of WSK-PZL Mielec Co. Ltd. Courtesy of Mielec Engines Co.

str. 7

A8 Mielec Family Companies

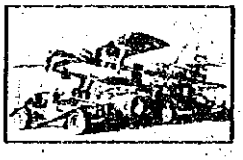
Source: Euro-Park Mielec, The Industrial Development Agency

TRANSPORT EQUIPMENT CORPORATION "PZL-MIELEC" JOINT STOCK COMPANY

39-300 Mielec
ul. Wojska Polskiego 3
tel. (196) 872-43 lub (196) 877-59
fax (14) 21-47-85
komertel 39120989

SPECIAL ECONOMIC ZONE /AREA./





THE HOLDING CONSISTS OF THE FOLLOWING COMPANIES:

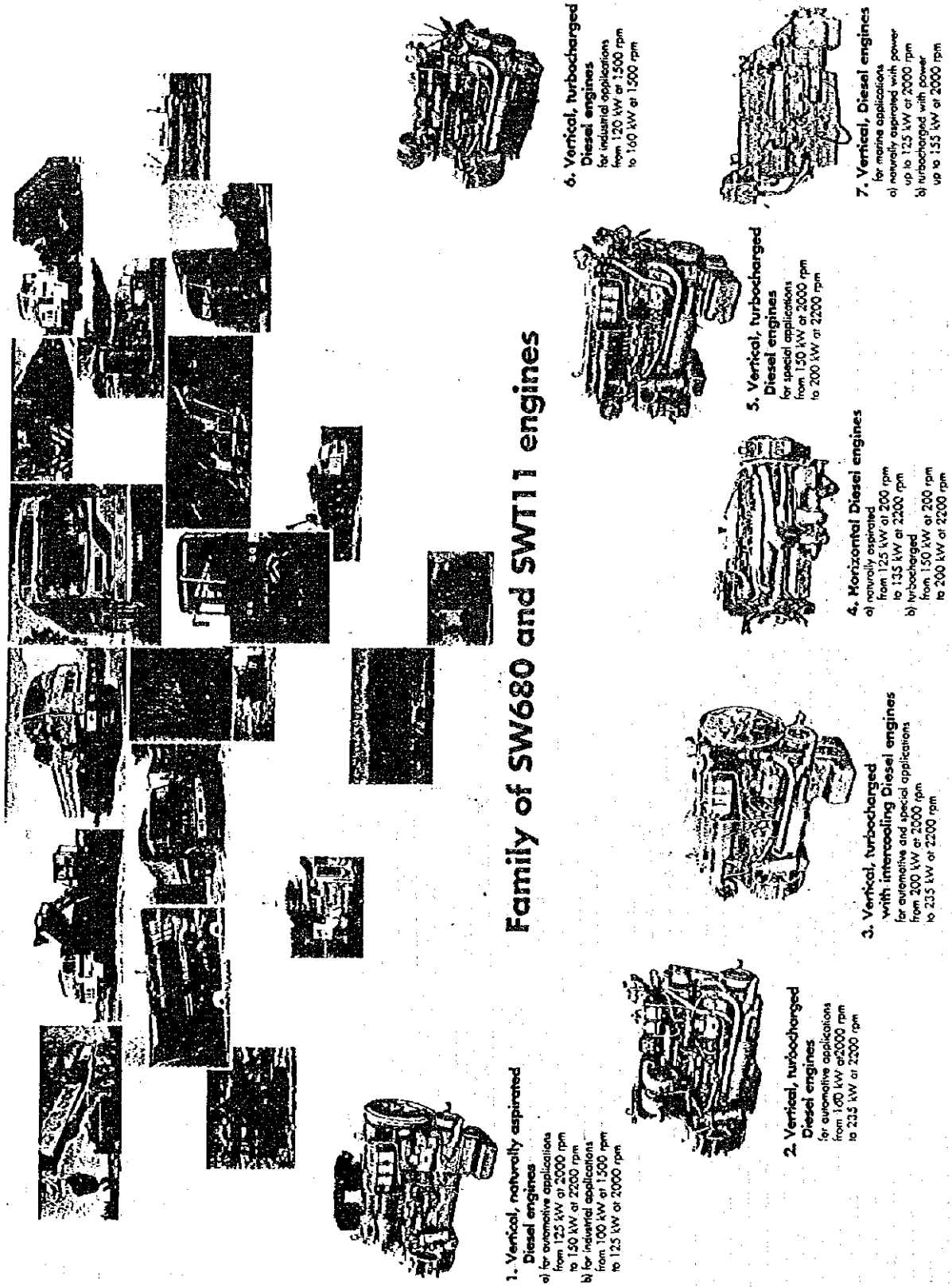
1. „PZL-MIELEC" AIRCRAFT CO. LTD.
2. „PZL-MIELEC" TOOLING CO. LTD.
3. „PZL-MIELEC" PLASTIC PROCESSING CO. LTD.
4. „PZL-MIELEC" MAINTENANCE CO. LTD.
5. „PZL-MIELEC" FUEL INJECTION EQUIPMENT CO. LTD.
6. „PZL-MIELEC" ENGINES CO. LTD.
7. „PZL-MIELEC" VEHICLE PRODUCTION PLANT „MELEX" CO. LTD.
8. „PZL-MIELEC" ELECTROHEATING CO. LTD.
9. GALICIAN SOFTWARE SOCIETY CO. LTD.
10. CARS MANUFACTURING „GEPARD" CO. LTD.
11. EMERGENCY-ONE/MIELEC CO. LTD.
12. MARINO-MIELEC CO. LTD.
13. „PZL-MIELEC" AIRCRAFT ASSEMBLIES CO. LTD.
14. CYLTEC-MIELEC CO. LTD.

EURO PARK - MIELEC

SPECIAL ECONOMIC ZONE - CHANCE FOR FUTURE INVESTORS

A9 Products of Mielec Engines Co. Ltd.

Courtesy of Mielec Engines Co.



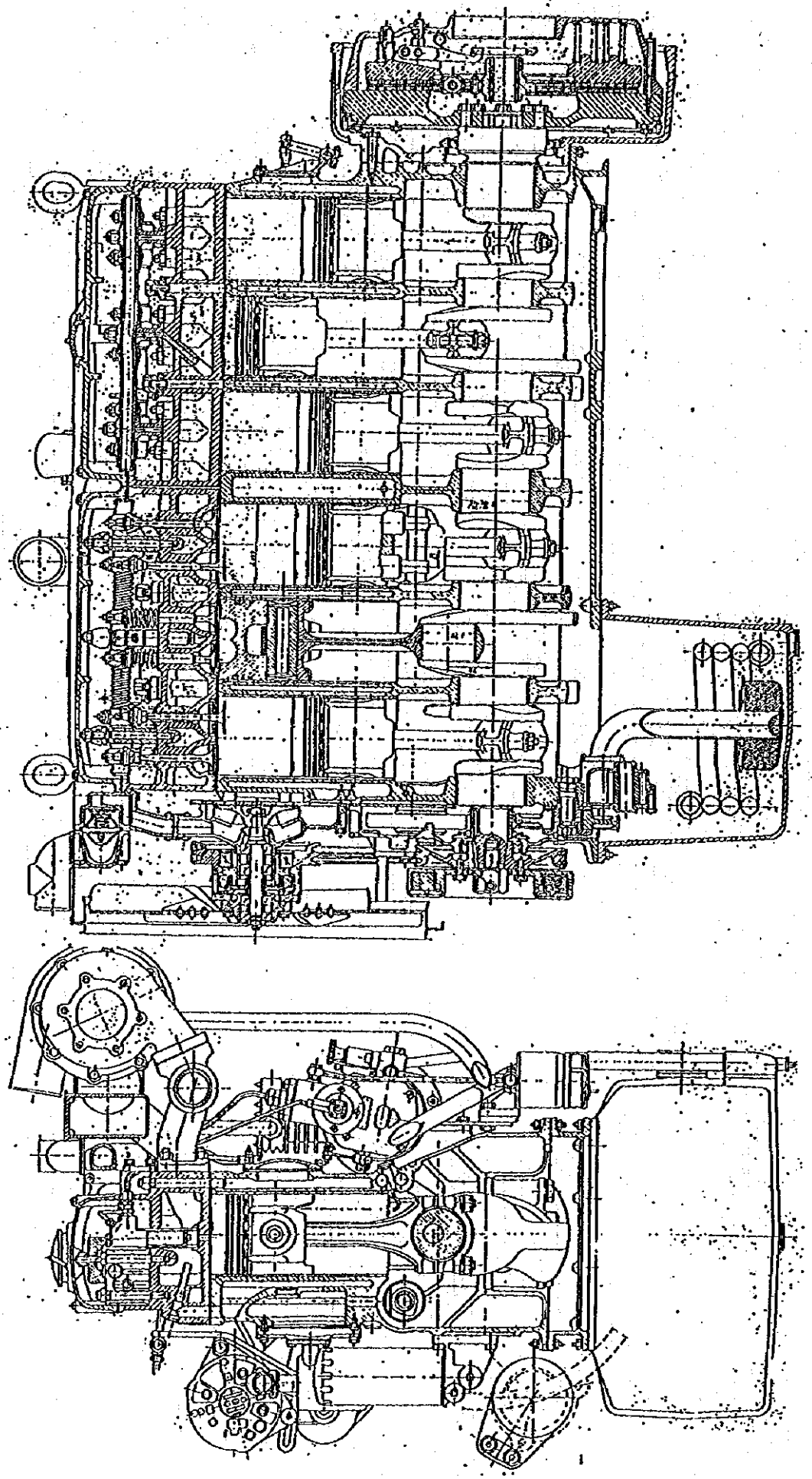


Fig.5-1-A SWT11 Engine

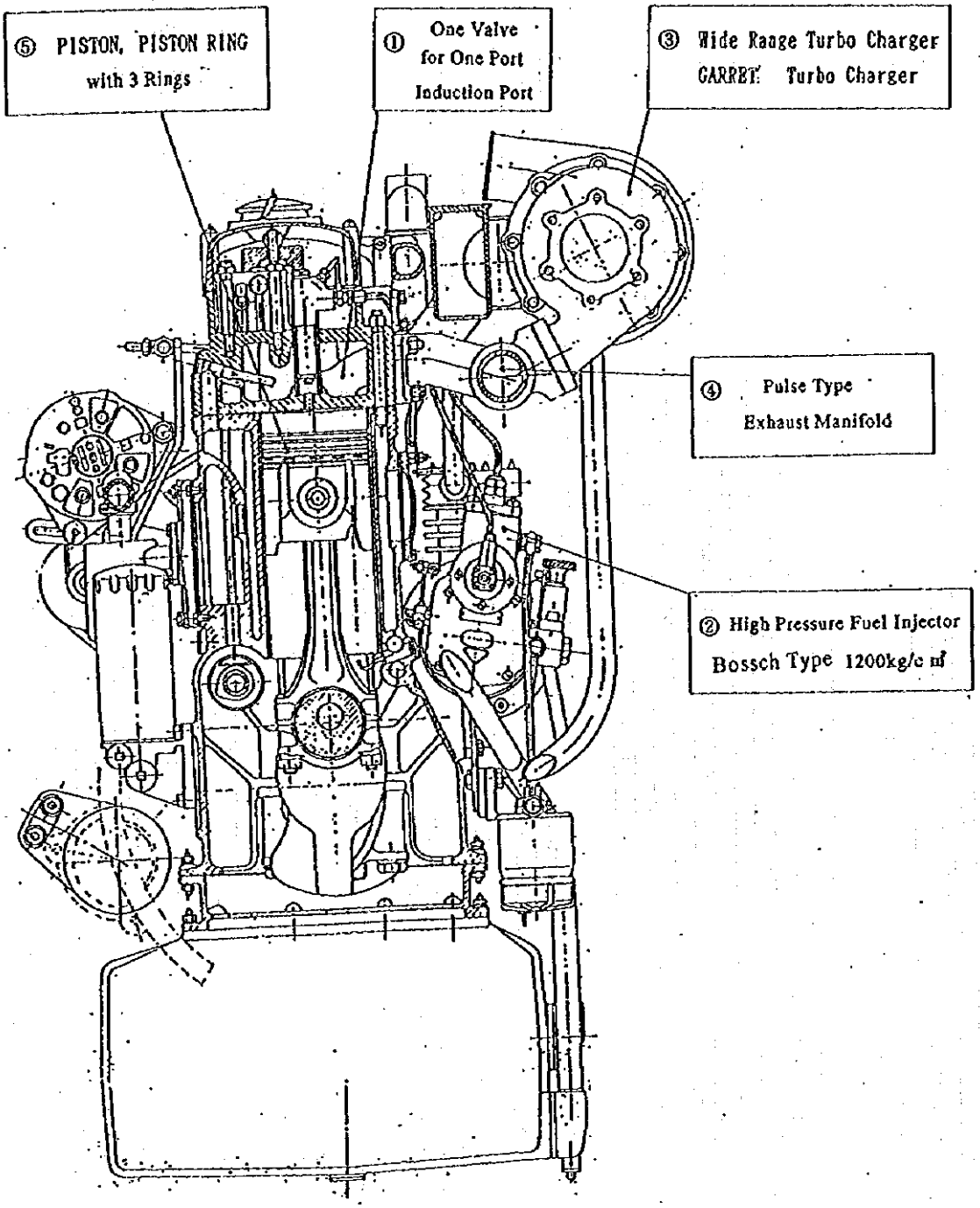


Fig.5-1-D MD111E Engine

3-3 Check List—Situation of ME's Production Process and Quality Control

Points

Evaluation:	
	* Being fully implemented 10
	* Being implemented or known 8
	* Being implemented or known to a certain extent 6
	* Being implemented partially 4
	* There are indications of implementation but insufficient . . 2

Date of survey implementation : December, 1996

Evaluation by : Survey Team / ME Company

	Check Item	Evaluation: 10	8	6	4	2	0	Condition for evaluation (10 points)	Measure to be taken
Policy control	A long-term (3 to 5 years) management plan has been established.			•			✓	Clearly indicated in the plan	Establish basic policy
	Provided has established an annual (short-term) management plan			•	✓			Clearly indicated in the plan	Establish basic policy
	The policy has penetrated to every department and section.				•	✓		Clearly indicated in each plan established by department and by section	Establish annual plan
	The policy established in this term is based on that of the previous term.		•			✓		The results in the previous term and the target are clear.	Establish profit plan in this terms
	The progress of the plan is examined every month.	•					✓	Implemented	Progress Committee, etc.
	The target is too optimistic.		•			✓		By 3 percent over compared to that of the previous term	Establish concrete development plan
	Preparation of new product development system	•			✓			Coordination among each department	Development Committee, etc
	Preparation of quality control system		•	✓				Ditto	Quality Assurance Committee, etc.
	Preparation for passing the standards ISO-9001		•	✓				Ditto	ISO Committee
	System for guiding outside suppliers				•	✓		Whole QCD	Guidance standards
	Implementation of in-house education (quality control, safety, executive positions, staff, etc.)		• ✓					Education manuals and policy	Education Committee, etc.
	Preparation of cost control and daily maintenance			•	✓			Individual cost and follow-up system	Control graphs, Cost Committee
	Program of cost reduction activities				✓			Material cost, primary factor, fixed cost, etc.	Control graphs, Cost Committee
	SURVEY TEAM		9	12	20	6		46/130 = 35.4 %	
	ME	20	16	18	8			86/120 = 71.7 %	
Quality control	Important component parts are controlled.			✓				Observation of rules	Establish control standards.
	Sampling inspection is clearly distinguished from 100% inspection.	•	✓					Indicate clearly the requirements for every inspection, including work standards.	Establish inspection standards.
	In-process inspection is autonomous.			✓					Clearly indicate work standards.
	Defects occurred until the previous day have been caught and necessary countermeasures have been taken.	•			✓			Show defects by line, and detailed measures to be taken.	Statistical data
	Process capacity has been exactly measured.				•	✓		Control charts and cost performance values	Daily control
	Outside supplier control system on the occurrence of defects.			•	✓			Implementation of countermeasures	Monthly report of defects and report system
	Control of measuring instruments is proper.		✓					Observation of rules	Control ledger and details
	SURVEY TEAM		16	12	8	2		38/70 = 54.3 %	
	ME	20	9	12	4			44/60 = 73.3 %	
Control of actual articles	Materials, component parts and unfinished products have each indication known to everybody.		• ✓					Clear indication	Item, quantity and delivery time
	It is daily known where and how much materials and how many component parts and unfinished products are present daily.				• ✓			Notification of actual articles and records of changes	Dismantling and disposition of component parts
	Unnecessary materials and stock are known to everybody.				• ✓			Sorting and tagging to unnecessary materials and stock	Sorting and tagging to unnecessary materials and stock
	There are materials and component parts without work instructions.				✓			Within two days	
	The quantity of materials and component parts are under control.		✓					Control of arrangement	Standardized boxes and pallets
	The amount of stock is proper.				•	✓		Standard amount of stock	Lot size
	SURVEY TEAM		16	18	4			38/60 = 63.3 %	
	ME		16	18				34/50 = 68.0 %	
Process control	Products are shipped in proportion to standard time x productions.			•		✓		Standard production quantity	Necessary disposition of workers and number of production machines
	Daily efficiency is caught and known.			•		✓		Data indication	Take necessary measures to indicate productions as well as the occurrence of trouble.
	Restoration from the occurrence of product nonconformity is quick and mighty.				• ✓			Restoration before assembling	Take necessary countermeasures for the trouble occurred in production processes.
	Production lines are able to maintain balanced process control.	•			✓			Multi-functional disposition of workers	Table of planned multi-functional operation
	Production lines stop operation if any defect arises in products.	•			✓			Interruption of operation is automatically controlled in multiple.	Change production system so that plural machines run in one line.
	Operators serve also for inspection.				•	✓		Operators are responsible for the work including the entry into control charts.	Quality control education (from statistical point of view)
	Capacity and productions are clearly caught by line.	•			✓			Indication by line	Control graphs
	Time for making arrangements is clearly comprised.			•	✓			Indication by machine	Establish standard cycle time of operation.
	SURVEY TEAM				30	12		42/80 = 52.5 %	
	ME	20	24	12				66/80 = 82.5 %	
Facility control	Facility Operation Rate				•	✓		Operation Rate/Daily Control	Control Graph
	Practice of preventive maintenance and repair				• ✓			PM and repair records	Planning control table
	Interaction with plant work			•		✓		Obedience of standard time	Standard time table
	Automation Status			• ✓				Interaction of machines and handling	Automation rate Multi task operation
	Improvement of the jig and fixture		✓					Specify exchange intervals	Control of standard time
	Safety measures		•	✓				Safety education, exhibition	Provition of foolproof
	SURVEY TEAM		8	18	8			34/60 = 56.7 %	
	ME		32	12				44/60 = 73.3 %	
Coordination	Roads and workshops are separated.	•	✓					Detailed indication	Divide roads and workshops clearly using yellow lines.
	Storage places are clearly distinguished between unfinished products and defects.		•	✓				Observation of rules	Divide unfinished products and defects clearly using white lines and red lines as well as a standard sheets.
	Unnecessary component parts and tools are not placed on work tables.			✓	•			According to field observation	Indicate clearly each storage place. (using shadow pictures)
	Pallets are placed in a satisfactory manner.		✓		✓	•		Placement of pallets within each section	Divide places by drawing lines and using standard sheets.
	Machine accessories, tools and measuring instruments are put in order.		✓			•		Dirt, stains and fixed positions	Apply rules including 5-minute cleaning.
	Items put on shelves and accessory tables are in order.				✓	•		Condition of component parts and accessories placed inside and outside	Establish applicable standards
	SURVEY TEAM			16	24			40/60 = 66.7 %	
	ME	10	8		16			34/60 = 56.7 %	
Total	Survey Team			64	114	52	8	238/460 = 51.7 %	
	ME	80	128	72	28			308/430 = 71.6 %	

A12 Comparisan of Methods of Calculation of Profit / Loss Statement and Balance Sheet

Methods of Calculation of Profit/Loss Statement

ME (Poland)	Japan
I Sales	I Sales
II Sales cost	II Cost of goods sold
Operating profit	Gross profit on sales
III Activity earnings *	III Administrative and sales costs
IV Activity loss *	Operating profit
Operating activity earnings	IV Nonoperating earnings (incl. interest)
V Financial earnings	V Nonoperating expenses (incl. interest)
VI Financial expenditures	
Operating activity profit	Ordinary profit
VII Extraordinary profit	VI Extraordinary profit
VIII Extraordinary loss	VII Extraordinary loss
Total profit	Net profit before tax
Income tax	Reserves for corporate income tax
Net profit	Net profit

* Profit and loss from government subsidies, sale of fixed assets, etc.

Comparison of Method of Calculation of Balance Sheet

ME (Poland)	Japan
Assets	Assets
I Fixed assets	I Current assets
1. Intangible fixed assets	1. Cash on hand and in banks
2. Tangible fixed assets	2. Notes and accounts receivable
3. Financial fixed assets	3. Inventories
II Current assets	4. Other current assets
1. Inventories	II Fixed assets
2. Notes and accounts receivable	1. Tangible fixed assets
3. Short-term securities	2. Intangible fixed assets
4. Cash on hand and in banks	3. Other fixed assets
III Closing of books at end of period	
Total assets	Total assets
Net worth and liabilities	Liabilities and net worth Liabilities
I Net worth	I Short-term liabilities
Basic funds (capital), etc., including change in funds based on revaluation of assets	II Long-term liabilities
	Stockowners' equity
II Reserves, etc.	I Capital
III Long-term liabilities	II Capital reserves
IV Short-term liabilities	III Profit reserves
V Closing of accounts during period (earnings received in advance, etc.)	IV Other unappropriated profit
Total net worth and liabilities	Total liabilities and Stockowners' equity

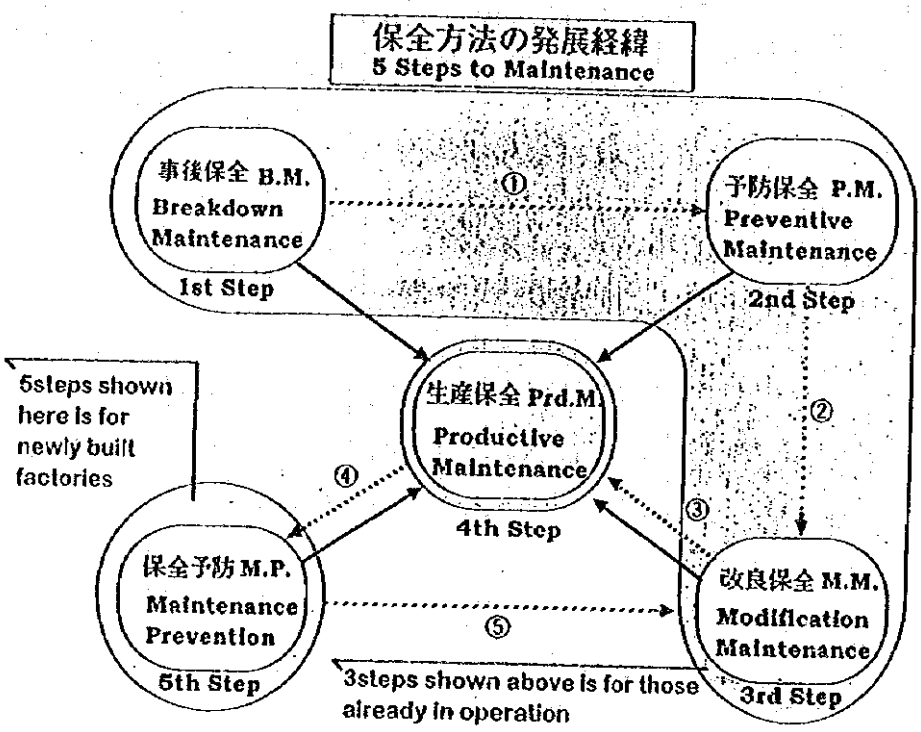
A13 PROPOSED PROGRAM MANAGEMENT PROCESS OF PRODUCT DEVELOPMENT

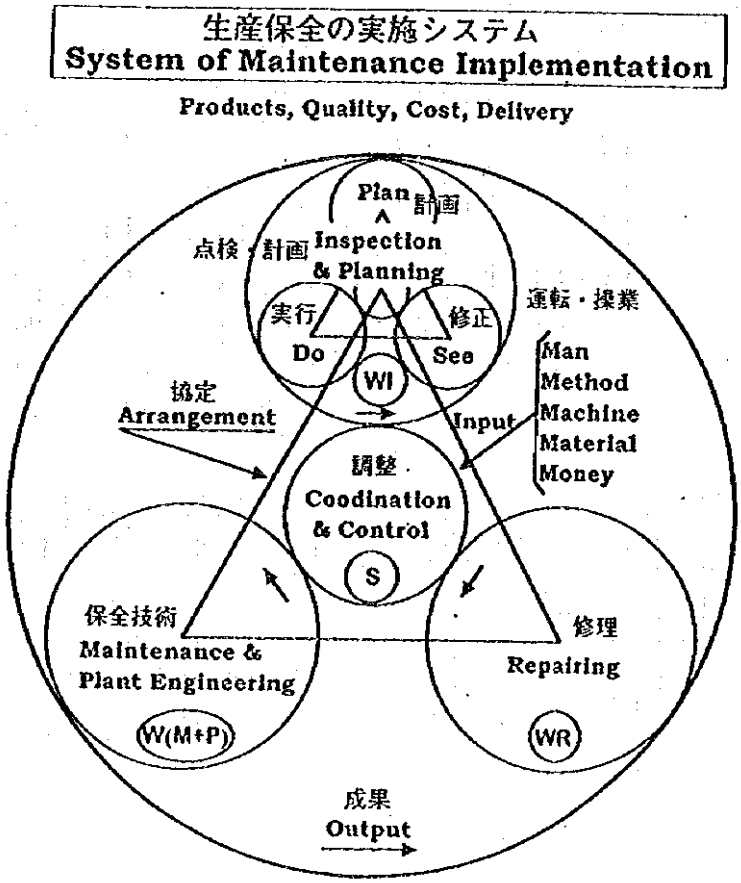
PROGRAM PHASE			ISSUES TO BE COMPLETED ◎MANAGEMENT REVIEW SUBMISSION	DECISIONS AT EXIT OF PHASE
P 0		BUSINESS DEFINITION	· BUSINESS OPPORTUNITY DEFINITION: TARGET MARKET, COMPETITION, STRENGTH & WEAKNESS, TARGET PRICE AND VOLUME FORECAST. · DEFINITION OF PRODUCT, MARKETING AND REQUIRED RESOURCES(KSF). ◎ PRODUCT DEVELOPMENT PROPOSAL	① CONCEPT DIRECTION
		PRODUCT DEFINITION AND DEVELOPMENT	· PRODUCT CONCEPT & CUSTOMER REQUIREMENTS. ② PRODUCT SPEC BOOK · MANUFACTURING & PROCUREMENT STRATEGY. BUDGET ESTIMATIONS. · DESIGN CONCEPT, ENG'G SPECS & DEFINITION OF DEVELOPMENT PROGRAM. ③ PROGRAM & PROD DESIGN PROPOSAL ◎ PRODN & MARKTG STRATEGIES.	② COCEPT APPROVAL ③ DESIGN START DIRECTION
P I	PRODUCT DEVELOPMENT LEADTIME	PRODUCT & PROCESS DESIGN	· PROTOTYPE DESIGN & DRAWINGS, AND VALIDATION PLANING. · PROVISIONAL SALES PROMOTION. · PROVISISNAL FACILITY AND PRODUCTON PROCESS DESIGN. ◎ DR, ◎ PRODCT DESIGN SPECS, ◎ RPODN & MAKTG PLANS	④ DESIGN PLAN APPROVAL, VARIDATION DIRECTION
P II		PRODUCT & PROCESS ASSURAMCE	· DRWG ISSUANCE(START OF CONFIGURATION CONTROL). VARIDATION TESTS. · TOOLING & PROCESS DESIGN, AND BUDGET INCLUDING PROCUREMENT. · NEGOTIATION WITH OEMs & DEALERS. VOLUME VERIFICATION. ◎ DR, ◎ VARIDATION REPORT, ◎ RPODN & MAKTG REPORT	⑤ FINAL DESIGN AND BUDGET APPROVAL
P III		FACILITY, PROCESS AND TOOLINNG	· PRODN DRAWING ISSUEANCE. SERVICE MATERIAL. · FACILITY & TOOLING COMPLETION. · HOMOLOGATION. SUPPLY CONTRACT. ◎ MARKTG REPORT ◎ PRODN READYNESS REPORT,	OEM VARIDATION: · CUSOMIZED DESIGN. SUPPLY OF SAMPLES. JOINT TEST PROGRAM. SUPPLY OF PRODUCT INFO & MATERIAL. · FACILITY & TOOLING MODIFICATION. · SUPPLY AGREEMENT. ◎ REPORT	⑥ FINAL PROCESS APPROVAL PILOT PRODUCN DIRECTION
P IV		FINAL VALIDATION	· PILOT PRODN & EVALUATN/CORRECTIVE ACTION. · MARKTG PROMOTION. DISUTRIBUTION PLAN. · FINAL DESIGN CHANGES. REPROT ◎ START OF PRODUCTION & MARKETING READI		⑦ PRODUCTION APPROVAL. START OF PRODUCTION
=		START OF PRODUCTION	REPEAT PRODN: · PARCHASING, PRODUCTION AND/OR PROVIDING OF SERVICE, VERIFICATION, PACKAGING AND STORAGE, SALES AND DISTRIBUTION. · PREVENTIVE ACTIONS AND CORRECTION OF FAILURE(CHANGE OF DESIGN, FACILITY/PROCESS AND MARKETING). ◎ EVALUATION REPORT		⑧ FINAL PROGRAM APPROVAL
P 0		OPERATION	· PRODUCTION QUALITY CONTROL · CUSTOMER INFORMATION FEEDBACK AND RESPONSE/CORRECTIVE ACTIONS. · COMPONENT, CONCEPT, TECHNOLOGY AND SYSTEMS DEVELOPMENT ◎ AUDIT & DESIGN REVIEW REPORT		◎ PRODUCTION QUALITY APPROVAL

PRODUCTIVE MAINTENANCE
(SEMINAR MATERIAL)

December 3,1996

Hideo Tashiro
Syes Co.,Ltd.


保全方法の発展経緯
5 Steps to Maintenance
事後保全 B.M.
Breakdown
Maintenance
1st Step
①
予防保全 P.M.
Preventive
Maintenance
2nd Step
②
生産保全 Prd.M.
Productive
Maintenance
4th Step
③
④
5steps shown here is for newly built factories
保全予防 M.P.
Maintenance
Prevention
5th Step
⑤
改良保全 M.M.
Modification
Maintenance
3rd Step
3steps shown above is for those already in operation


生産保全の実施システム
System of Maintenance Implementation
Products, Quality, Cost, Delivery
Plan 計画
点検・計画 Inspection & Planning
実行 Do
修正 See
WI
運転・操業
Man
Method
Machine
Material
Money
協定 Arrangement
Input
調整 Coodination & Control
S
保全技術 Maintenance & Plant Engineering
W(M+P)
修理 Repairing
WR
成果 Output

Points of Difference in Maintenance Method

The roller conveyer of cylinder block line is taken as example.

1. B.M. (Breakdown Maintenance).

   When the roller d oes not rotate easily, it is replaced only after it has broken down. This causes a downtime for the line.

2. P.M. (Preventive Maintenance).

   Set the time of replacement and have an inspection engineer make a routine daily inspection and replace the roller before it becomes unable to rotate or breaks.

   Effect a regular shutdown periodically.

3. M.M.(Modificative Maintenance).

   Prepare a roller having a smaller weight, a bore enlarged to permit easier rotation and a structure permitting easy replacement.

4. M.P.(maintenance Prevention).

   Design so that no maintenance is required at the stages of factory construction and equipment renewal.

   (a)adoption of M.M.method

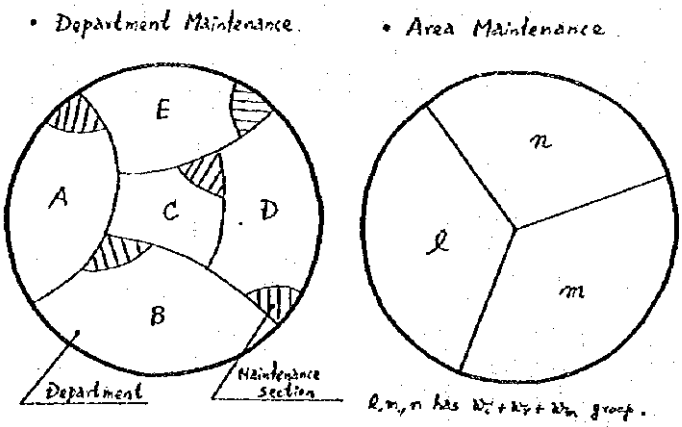
   (b)Consider driving the roller with a chain and a motor, using a limit switch enabling automatic stoppage.

   (c)Consider automatic lubrication to the chain also.

5. T.P.M.(total Productive Maintenance).

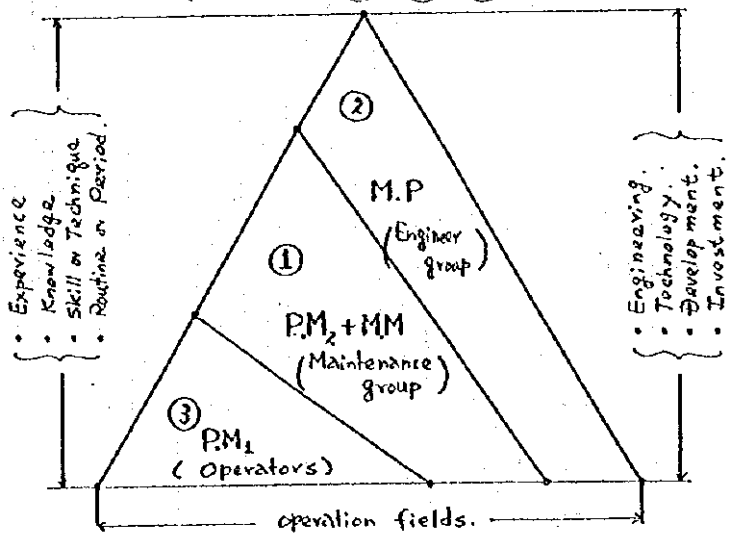
   Have all the staff as operators and maintenance men devise a method of minimizing the losses occurring in the factory and implement it.

Development step of Maintenance Organization.



Idea of Total Productive Maintenance.

(TPM ≡ ① + ② + ③)



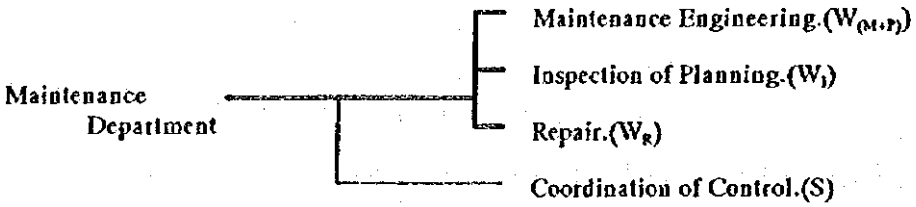
Maintenance organization of Member

1.Development of Method and Organization.

Method	B.M	P.M	M.M	M.P	Prd·M	T·P·M
step	1	2	3	4	5	6
type	D.M	A.M	C.M	C.M	Comb·M	Comb·M

D.M : Department Maintenance
A.M : Area Maintenance
C.M : Central Maintenance
Comb·M : Combined Maintenance

2.Organization functions.

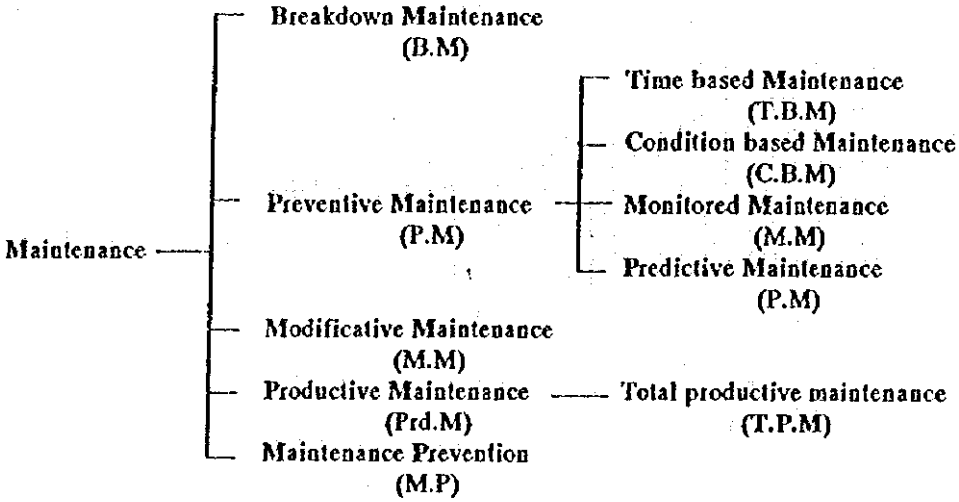


3.Methods and Member

Methods	P/A(%)	Q/B(%)
Prd.M.	20 ~ 23	19 ~ 21
M.M.	11 ~ 17	10 ~ 15
P.M.	5 ~ 10	4 ~ 8
B.M.	3<	2<

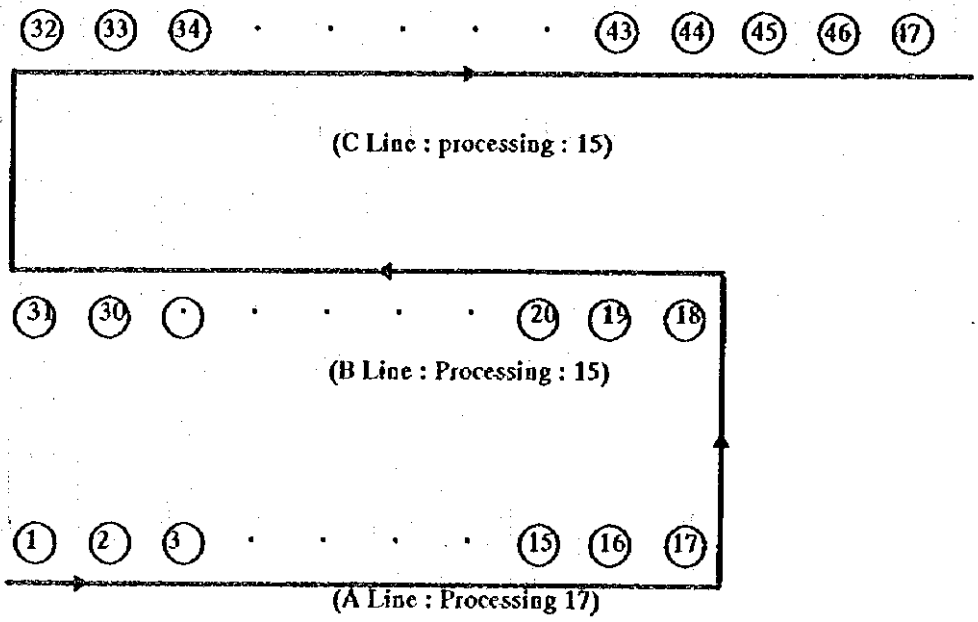
A : Total member of Company
P : Total member of Maintenance Department.
B : White color of Company
Q : White color of Company Department

Definition and Relation of Maintenance



Layout of Cylinder block Line

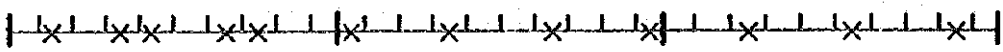
(Continuous Processing line)



Change of Repair method

1.Breakdown Maintenance (B.M)

X : Breakdown → Repair

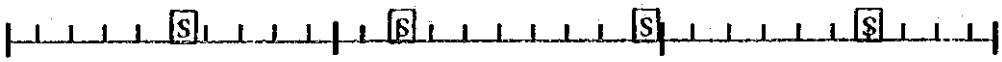


(Monthly operating schedule)

※Breakdown ratio ~ 10(%)

2.Preentive Maintenance (P.M)

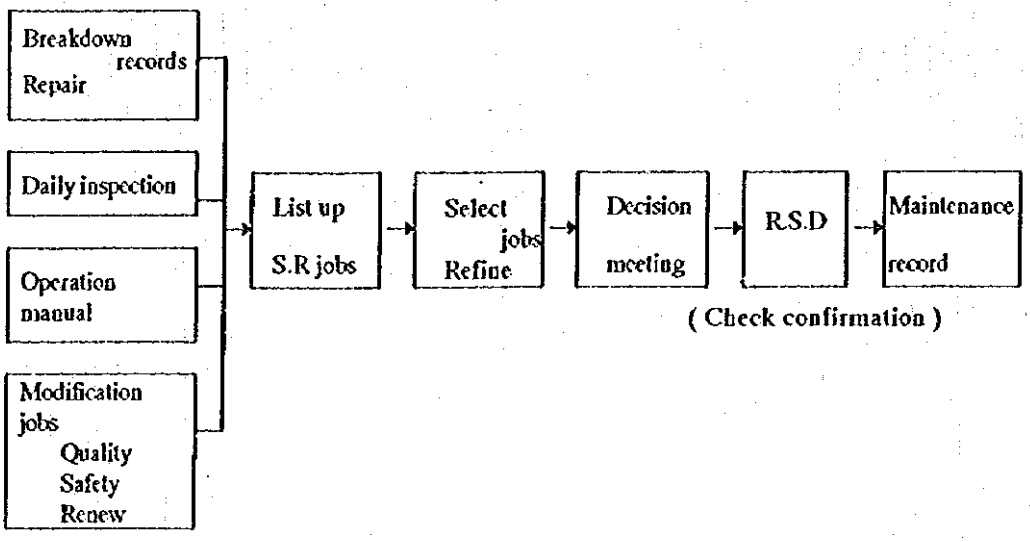
S : Regular shutdown → Repair



(Monthly operating schedule)

※Breakdown ratio、 2 ~ 0(%)

Regular shutdown Activities



Method of Preventive Repair

1. Change of planned units (Pump motor accumulator etc).

   by time, period and production.

2. Change of inspection result.(element, part etc).

   by 5senses, diagnosis, condition monitoring.

3. Overhaul inspection. (Reduction gear etc).
4. Repair of leakage points (Oil and air).
5. Supply of Lubrication oil or grease.
6. Blowing and Adjustment.(Switch board).
7. Condition Adjustment.(Brake lining etc.)

Inspection Methods

1. Daily inspection.(Every day or 3 days).
   - Five senses from Inspection Standards.
   - Operating information from operators.
   - Others data.(exp. breakdown records).
2. Overhaul inspection.
   - regular shutdown.(one week or 10 days). Or annual shutdown. with
   - tools, non-destructive inspection(NDI).
3. Diagnostic inspection.
   - on line or off line monitoring
   - instruments.(vibration, temperature, pressure etc).

Five senses for Inspection

1. Watch by Eye.

   Rotation, slide, oil leakage, wear, crak, oil gauge, meters.

2. Listen by Ear.

   Impact, rotation, slip, air leakage, looseness, corrosion.

3. Touch by Hand. Leg and body. vibration, temperatire, roughness, crak, air leakage, dust.

4. smell bu Nose.

   Rot, burn-out, exhaust gas or oil.

5. Taste by Tongue.

   Sweet, salt, acid.

(N.B)

Inspection tools
- Listening bar
- Hammer
- Color tape

Task of Manager

1. to make decision for Maintenance Engineer, and Inspector's proposal
2. to discuss with spare part supplier for life improvement.
3. to control of Repair, Inspection, Maintenaoce Engineering activities.
4. to contact and discuss with production and purchasing manager.
5. to judge monthly maintenance result and to suggest for member

Inspector's routine work

1. Daily jobs (Weekly schedule)

   (M). A line inspection, interview for operator.

   (T). B line inspection, interview for operator.

   (W). C line inspection, interview for operator.

   (Th). Regular shutdown planning.

   (F). R.S.meeting with operation. (S-378)

   (S). Regular shutdown day.

2. Records

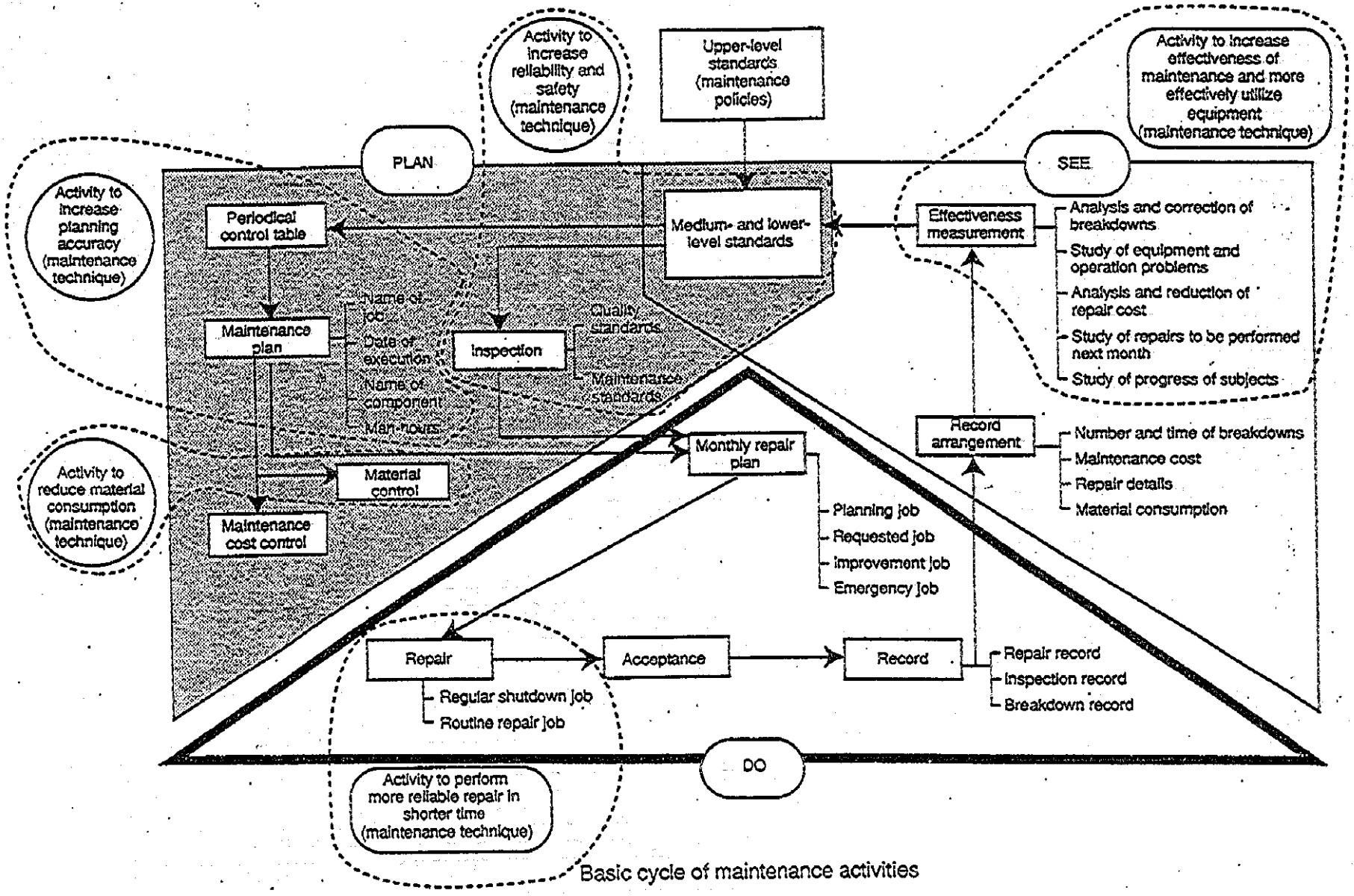
   - inspection check list.
   - repair of overhaul record, breakdown
   - Inspection dialy, record.

3. Meeting and Reporting

   - Maintenance manager.
   - Operation manager.

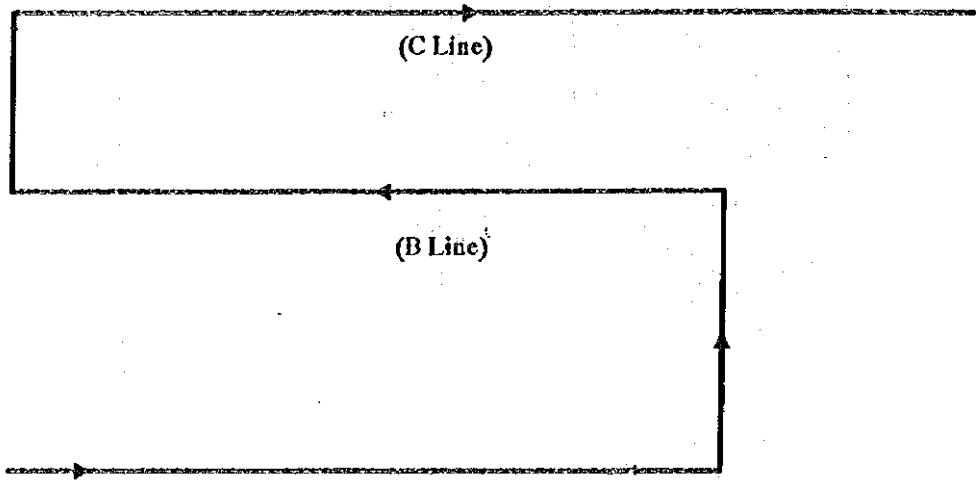
Task of Maintenance Engineer

1. to investigate breakdown cause and to modify.
2. to reduce of wear point for dust.
3. to modify of dust collector's suction inlet and suction capacity.
4. to investigate of part interchangeability (for example : pump, motor, accumulator etc).
5. to make idea for setting, dismounting Jig.



Basic cycle of maintenance activities

5S of Cylinder block line



- *3S* (SEISOU, SEIRI, SEITON)
- *2S* (SEOLETSU, SHITSUKE)

  color conditioning (frame, guide, support, stopper)

  regular shutdown (3S + repair)

  Air leakage, dust collector, Lubrication unit.

Seminar Material for Polish Counterparts Training

Theme: How to solve and tackle restructuring in

Date:January 30, 1997

Place: Tokyo International Center, JICA

Lecturer: K. OHNO, Managing director. SYES CO. LTD.,

I. Introduction of SYES Co., LTD, as management doctors attempting to activate small and medium-sized enterprises and to grow them:

1. SYES is the abbreviation of SIS which is again abbreviation of strategic innovation supporter.
2. Growing small and medium-sized enterprises to those of middle standing
3. The key words are growth and development, improved results and the pursuit of happiness.
4. Management doctors for the enterprises suffering from deteriorating physical strength
5. Taking great strides in Japan as the consultants of middle standing

II. Basic conditions necessary for company management (presuppositions to understand):

1. Every enterprise is destined to reconstruct the management. (severe selection and metabolism among enterprises)
   (1) Every enterprise is justified for existence by creating and offering the value required.
   (2) Such value is relatively lowered by structural changes caused by competition, customers, age, development and other conditions.
2. Every enterprise is destined to gain a full understanding of strategies, tactics and battles indispensable for management.
3. Examine and define the real substance of an enterprise. (Or catch the meaning and elements of market creation.)
4. Examine and understand the present situation where the worldwide enterprises are positioned.
5. Know-how of SYES Co., LTD Using SIS.

	Strategy	Tactics	Battle
Visual field	Medium and long-term	Short-term	Present
Period of time	3 to 5 years later	This fiscal	today or this month
Result	Growth and development	Increase in profit	Increase in sales
Calculation	Balance Sheet	Profit & Loss	Turnover, etc.
Person in charge	Top management	Leading members and mainstay	Mainstay and general staff
Objective	Structural reformation and development	Improved productivity	Collation and distinction
Program	Medium-term	Fiscal year	Monthly
Relation 1	Purpose	Measure	
Relation 2		Purpose	Measure
Relation 3	Major purpose	medium purpose	minor purpose

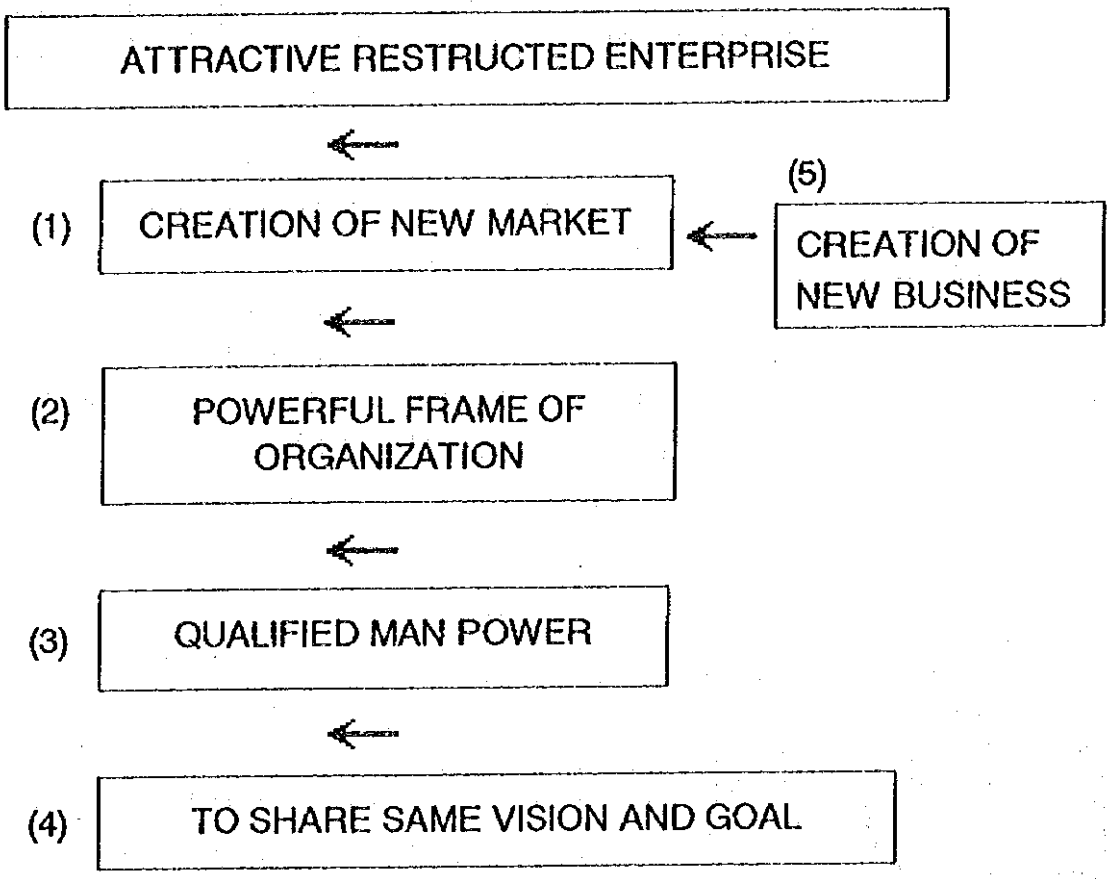
(telescope) (microscope)

III. Gaining a full understanding of restructuring, or what is restructuring:

1. What is restructuring?
2. Overall picture of management, verses
3. Important but difficult to shake ourselves free from common sense syndrome for innovation
4. The key is management reformation linked with enhanced reason for existence.

IV. PROCESS TO SUCCESFUL RESTRUCTURING

PARTIAL IMPROVEMEN	INOVATION	RESTRUCTURE
NEW BUSINESS / OLD BUSINESS	NEW / OLD	NEW / OLD



ABOVE (1) TO (5) SHALL WORK EFECTIVELY EACH OTHER TO ACHIEVE ATTRACTIVE RESTRUCTED ENTERPRISE.

V. Summary, or reformation in way of thinking and tackling:

1. Consider and establish business strategies, or draw up necessary plans.
2. Try reformation, or constantly prepare and polish new ideas for challenging your future.
3. Enhance the quality of the way you walk on. (The pinch is an opportunity for your success. Create such opportunities.)