

PRELIMINARY STUDY REPORT  
ON  
PROMOTION OF SMALL-MEDIUM SCALE INDUSTRIES  
IN  
THE REPUBLIC OF VENEZUELA

November 1978

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JAPAN INTERNATIONAL COOPERATION AGENCY

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## FOREWORD

In Venezuela, the development of small-medium scale industries is now a pressing need for the country's further industrialization. For the purpose of promoting this development scheme, the Government of the Republic of Venezuela made a formal request for Japan's technical cooperation.

However, as the request was made for the entire expanse of small medium scale industries and consequently made it impossible to plan an appropriate method of cooperation, the Japanese Government undertook to conduct a preliminary study in the area of small-medium scale machinery industry to probe into actual needs for Japanese assistance and chart the course of future cooperation activities, and entrusted the Japan International Cooperation Agency with the execution of the study.

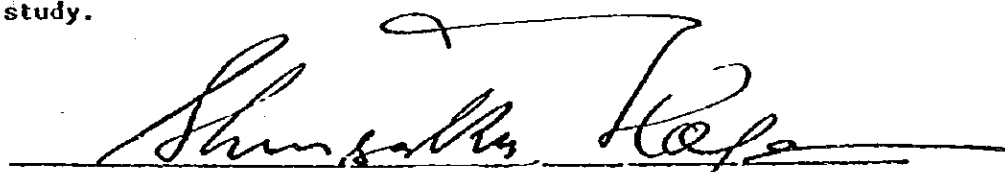
The agency organized a six-member survey team headed by Prof. Shogo Sakakura of Tsukuba University with the cooperation of the authorities concerned, and dispatched it to Venezuela for a period of 17 days from July 23 to August 8, 1978.

During its stay in Venezuela, the team had a series of discussions with the CORPOINDUSTRIA and other Venezuelan authorities concerned and also conducted surveys and data collection in different areas including Caracas, Maracay, Maracaibo and Guayana.

This report contains the findings of the survey as compiled by the team on the basis of careful consolidation and analysis after its return to Japan.

It is my sincere hope that this report will prove useful in promoting the development of small-medium scale machinery industry in Venezuela and serve for the furtherance of friendly relations between Japan and Venezuela.

I avail myself of this opportunity to express my deep gratitude to the Venezuelan authorities concerned, Japanese Embassy in Caracas, Ministry of International Trade and Industry, and Ministry of Foreign Affairs for valuable assistance and cooperation in the study.



Shinsaku Hogen

President

Japan International Cooperation Agency

November, 1978



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## I. Background of Study

1. Venezuela is favoured with abundant mineral resources including petroleum and iron ore, and she also has key industries such as oil refining, petrochemical and iron and steel industries. The country is therefore fairly advanced in industrialization, but her further industrial development is impeded because of the immaturity of processing industry which is to utilize various industrial materials and semimanufactured products turned out by key industries and also because of retarded growth of various basic industries which are to support and accelerate the development of processing industry.

In an effort to improve the prevailing situation, the Venezuelan Government gave high priority to the promotion of such "intermediate" processing industry which includes metal working and machinery industries as well as to basic supporting industries in its Fifth Five Year Plan (1976 ~ 1980), and requested Japan's technical cooperation in promoting the development Venezuelan small-medium scale industries.

2. Upon receipt of the said request, the Japanese Government made a study on the scope and method of cooperation, as the request was made for promotion of small-medium scale industries as a whole without indicating any specific organization as an agency for accelerating the development of small-medium scale industries with Japanese technical aid.

In the Japanese industrial classification, there is no category specifically termed "small-medium scale industries". All enterprises belong to some industrial category or other, and they are classified into large and smaller ones according to operational scale determined by capital, number of employees, etc.

Hence, in coping with any problem relating to small-medium scale industries, the enterprise or enterprises in question are grasped in terms of operational scale within the industrial category to which they belong.

From this point of view, it was determined that the future course of Japan's technical cooperation for Venezuela should be charted on the basis of a preliminary study on metal working and machinery industries which are considered to be most urgently in need of technical improvement in Venezuela and at the same time constitute a basic area of mining and manufacturing industries.

On the strength of this fundamental approach, the Japanese Government entrusted the Japan International Cooperation Agency with the execution of the preliminary

study, and the agency organized a preliminary study team and dispatched it to Venezuela for a period of 17 days from July 23 to August 8, 1978.

o **Formation of Preliminary Study Team**

<u>Name</u>	<u>Assignment</u>	<u>Affiliation</u>
Shogo SAKAKURA	Leader, Overall supervision	Professor at Tsukuba University
Saburo SATO	Machinery industry	<u>Development Department,</u> Toshiba Machine Co., Ltd.
Tadao SHINODA	Metal working industry	<u>Second Foundry Department,</u> Hitachi, Ltd.
Masao TAKADA	Small business policy	Public Relations and Counselling Division, Small & Medium Enter- prises Agency, Ministry of International Trade and Industry
Kazuo KOMORIYA	Economic analysis	Japan Management System, Inc.
Hideo YASUKI	Liaison and coordination	Mining and Industrial Planning and Survey Department, Japan International Cooperation Agency

o **Itinerary of Study Team**

<u>Date</u>	<u>Day</u>	<u>Flight</u>	<u>Overnight Stay</u>	<u>Description</u>
Jul 23	Sun	Tokyo → New York (JFK Airport) by PA 800	New York	
24	Mon	New York → Caracas (Maiquetia Airport) by VA 801	Caracas	p.m. Arrangements and consultation with the staff of Japanese Embassy in Caracas.
25	Tue	Caracas → Maracay by car		a.m. Courtesy call on President Gonzalez of CORPOINDUSTRIA and other officials at CORPOINDUSTRIA, and pre-survey arrangements and consultation with them.  p.m. Survey of small-medium scale industrial estate and local small- medium enterprises (aluminum parts factory and food processing factory) in Maracay area; Consultation with Japanese Embassy; Buffet banqueted by Ambassador Nomura at his official residence

		Caracas	and opinions exchanged with JAVEC members and other persons concerned.
Jul 26 Wed		Caracas	a.m. Visit to Petroleos de Venezuela and Ministerio de Fomento.
		Caracas	p.m. Visit to CORDIPLAN and Mitsui de Venezuela.
27 Thu	Caracas → Maracaibo (Maracaibo airport) by LV 338	Caracas	a.m. Visit to Corporación Venezolana de Fomento (CVF).
		Maracaibo	p.m. Visit to Fondo de Inversiones de Venezuela and Mayorca-Hitachi; Attendance at National Convention for Small Business Promotion, and audience with President of Venezuela; Exchange of views with Maracaibo Japanese Residents Society.
28 Fri	Maracaibo → Caracas (Maiquetia airport) by LV 339	Caracas	a.m. Visit to LAGOVEN.
		Caracas	p.m. Visit to LAGOVEN; Consultation with CORPOINDUSTRIA.
29 Sat		Caracas	a.m. Intra-mission arrangements; Data consolidation, and consultation with Japanese Embassy and JEIRO Caracas Office.
30 Sun		Caracas	a.m. No activities.
		Caracas	p.m. Intra-mission arrangements, and consultation with Japanese Embassy.
Jul 31 Mon	Caracas (Carota Airport) → Ciudad Guayana (Pto.Ordas Airport) by CORPOINDUSTRIA's Plane	Ciudad Guayana	a.m. Visit to the main office of Corporación Venezolana de Guyana (CVG).
		Ciudad Guayana	p.m. Survey of CVG-Ferrominera Orinoco (CVG's factory); Survey of SIDOR.
Aug 1 Tue	Ciudad Guayana → Caracas by CORPOINDUSTRIA's plane	Caracas	a.m. Visit and survey of Industria Venezolana de Aluminio C.A. (VENALUM).
		Caracas	p.m. Observation of CVF-Guri dam and CVF-Edelca power plant.



Aug 2 Wed	Caracas → Valencia by car		a.m. Visit and survey of TORVENCA (Japan-Venezuela joint enter- prise for bolt and nut manufac- ture).
			p.m. Visit and survey of S.H. Funciones (Japan-Venezuela joint venture for production of automobile parts) and LAMICAL (Japan-Venezuela joint venture for galvanized iron sheet production);
	Valencia → Caracas by car	Caracas	Consultation with Japanese Embassy
3 Thu			a.m. Visit to SIEX and Maekawa Selsakusho
			p.m. Visit to INCE and FJITEC; Consultation with JETRO Caracas Office
		Caracas	
4 Fri			a.m. Consultation with Japanese Embassy; Visit to Central Bank of Venezuela.
			p.m. Visit to PETROVEN Materials Committee, Asociacion de Industri- aes y de Minería de Venezuela (AIMI); Final discussion and arrangements with CORPOINDUSTRIA with the attendance of President Gonzalez and staff of Japanese Embassy, Round-table conference held by the team with partici- pation of officials of CORPOINDUSTRIA, Japanese Embassy and JETRO.
		Caracas	
Aug 6 Sat			a.m. Exchange of opinions and views with JICA's experts stationed in Venezuela.
			p.m. Intra-mission arrangements and data consolidation.
		Caracas	
7 Sun	Caracas → New York by PA 218	New York	
8 Mon	New York → Tokyo by by PA 801		

## II. Objectives of Preliminary Study

The Japanese Preliminary Study Team sent by the Japan International Cooperation Agency (hereinafter referred to as "JICA") is to accomplish the following scope of work assigned by exchanging views between JICA and the authorities concerned in the Republic of Venezuela, so as to meet the real need of the Republic of Venezuela:

1. To clarify the contents of request of the Government of the Republic of Venezuela;
2. To identify the major problems held by the factories of metalworking and machinery industries and those organization concerned for the promotion of the small-medium scale industries in Venezuela;
3. To formulate the Scope of Work for the coming detailed study team which will be sent by the Japanese Government; if the necessity is identified;
4. To collect relevant information and data in Venezuela.

Notes: For the purpose of useful idcussion and consultation with competent Venezúelan authorities, the team presented a paper showing the above talking points in advance.

### III. Clarification of the Contents of Request of the Government of the Republic of Venezuela

1. Through the field survey conducted in Venezuela, the team confirmed that CORPOINDUSTRIA was the competent government agency empowered to make a formal request for Japan's technical cooperation.
2. After a series of discussions with CORPOINDUSTRIA, it was confirmed that Japan is expected to extend cooperation in the following three aspects.
  - (1) Cooperation in formulating a integrated programme for promoting small-medium scale enterprises.
  - (2) Cooperation in enforcing industrial decentralization policy
  - (3) Cooperation in the establishment of a small-medium scale enterprises promotion centre.

Further elucidation is given below on the need of Japan's cooperation in these aspects.

- (1) Formulation of a integrated programme for promotion of small-medium scale enterprises

Since its establishment in 1974, CORPINDUSTRIA has enforced various measures for promoting small-medium scale enterprises in Venezuela with emphasis on financing services but has not attained the expected promotional effects. The main cause, it seems, is the absence of a well-planned basic programme. Accordingly, there is growing need for mapping out an effectual plan under which small-medium scale enterprises can be promoted systematically by designating important categories and products as well as the scale and places of their production. On the basis of such a full-scale promotional plan, CORPOINDUSTRIA is hoping to organize and push forward various measures including taxation system and financing services which will contribute to the development of small-medium scale enterprises.

CORPOINDUSTRIA expressed its desire for Japan's assistance and advice in formulating a integrated promotional programme of small-medium scale enterprises.

- (2) Relocation of industries in rural areas

In view of the growing population concentration in urban areas, the Venezuelan Government is trying to disperse population and decentralize industries for balanced development of national economy. Incentive measures taken for this purpose include the establishment of industrial

estates in different localities (7 existing and 5 under planning) and introduction of preferential taxation and financing systems.

Successful decentralization of industries presupposes promotion of regional enterprises, especially labor-intensive smaller enterprises, which are compatible with the characteristics of each local city such as location, population, climate, and existing industrial resources. This in turn calls for formulation of a concrete industrial decentralization policy.

CORPOINDUSTRIA is hoping that Japan will help formulate and enforce such a policy with her knowledge and experience in this field.

(3) Establishment of a Small-Medium Scale Enterprises Promotion Centre

At present, CORPOINDUSTRIA is providing financing services to a total of about 1,600 smaller enterprises belonging to all industrial categories inclusive of textiles, shoes, metals, etc., but a few of such enterprises have recorded successful business achievements due to low technical level, lack of sufficient management technology, and shortage of capable personnel.

The Government is demanded to provide management and technical guidance for small-medium scale enterprises under instructions from President Perez of the Republic of Venezuela. CORPOINDUSTRIA is planning provide such guidance to 1,600 enterprises covered by its financing services.

Dr. Carlos Gonzalez Lopez, the president of CORPOINDUSTRIA, has the intention to institute a Intergrated Small-Medium Scale Enterprises Promotion Centre within CORPOINDUSTRIA in order to provide such guidance services in a most effectual way.

In the absence of technical know-how required for establishment and operation of such an overall guidance centre, CORPOINDUSTRIA hopes to be provided with Japan's assistance in the planning and operation of a centre which will cover all industrial categories inclusive of metal working and machinery.

#### IV. Existing State of Small-Medium Scale Metal Working and Machinery Manufacturing Industries in Venezuela

##### 1. Outline

The following is the outline of small-medium scale metal working and machinery industries in Venezuela (casting, forging, heat treatment, welding, die and mold making, press forming, machining, thin plate working, die cast, etc.) as obtained from the preliminary survey.

(1) Information received in Japan indicated that Venezuela resorts to import for the supply of most of products of metal working and machinery industries. The survey disclosed, however, that the following products are manufactured in Venezuela and manufacturing techniques are generally in some degree on level.

- o Secondary metal products (e.g., galvanized steel sheets, screws, and wires)
- o Steel structures (e.g., steel frames for structures, tanks, and boilers)
- o Metal plates and sheets (e.g., metal plates and sheets for structures, automobile fittings, cooking apparatuses, and office appliances)
- o Forgings (e.g., bolts, nuts, and simple automobile parts)
- o Castings (e.g., construction materials, water hydrants, simple jet pumps, and elevator weights)

(2) Although Venezuelan metal working and machinery industries are in some degree on technical level as a whole, it was found that some categories, especially metal castings, are still a low level. Many of Venezuelan officials and experts interviewed by the team shared the opinion that foundry is the weakest industrial category in the country and added that they would certainly use Venezuelan-made castings if available in improved quality. Some detailed information is therefore given below on the production of foundry in Venezuela.

Simple castings are already manufactured in Venezuela, but the present level of manufacturing techniques cannot satisfy various requirements of final product such as strength, airtightness, wear resistance, pressure resistance, and dimensional accuracy. In the case of elevators, for example, the weights can be manufactured if only the mold is available, but the pulleys and sheaves which call for a high strength and wear resistance are imported. Casings of refrigerator compressors and high pressure pumps, which demand a high degree of airtightness, strength and wear resistance, are supplied from abroad, and so are all iron or steel castings. Thus, the country still depends on import for the supply of nearly all castings which are required to satisfy a high qualitative standard besides dimensional accuracy. Vocational training centres (INCE) provide practical training in various industrial categories, but no sufficient training

is given in casting techniques. Table 1 is a summary of castings procured by business establishments visited by the team during the survey period.

Table 1. Procurement Condition of Castings in Venezuela  
(incl. component parts of imported machinery)

Business/Operational Establishment	Domestic Products	Imported Products	Requirements for Imported Products		Remarks
			Quality	Material	
FUJITEC (Manufacture and sales of elevators)	Elevator weights	Pulleys and sheaves of hoist and reducer, and girddrail supports	Strength Wear resistance	Cast iron (FC 30, FCD 45)	Opinion was advanced FUJITEC staff that domestic products would be procured if they are improved in quality.
MYCOM (Sales of industrial refrigerators)	None	Case covers Valve seats Crank	Airtightness Wear resistance	Cast iron (FC25-30, FCD45)	MYCOM is desirous of domestic production of refrigerators if high quality castings are manufactured in Venezuela
PETROVEN (Committee for Materials of Oil Refining Equipment Parts)	Low pressure valves	Elbows High pressure valves High pressure pumps	Airtightness Pressure resistance Corrosion resistance	Cast iron (FC25, FCD 45) Cast steel (SC)	Opinion was advanced that casting sector is technically poor among all industrial categories.
SIDOR (State Ironworks)		Strip rolls and mandrels Spare parts of rolling mill-100% import, and those of other machines-50% import	Strength Wear resistance	Cast steel Forged steel Cast iron Non-ferrous alloys	Opinion was advanced that casting sector is technically inferior to all other industrial categories
FEROMINERA (Iron ore mining)		Wheels Conveyor rollers	Strength Wear resistance	Cast steel (SC 46)	
Hitsui de Venezuela (Trading firm)	Water hydrants Farming implements (hoes and spades)	Manhole covers Machine tools Presses	Strength Wear resistance	Cast iron Cast steel	
S.H.FUNDICIONES (Joints and cast automobile parts)	Joints (malleable iron castings) Brake drums Carriers (FCD)				Amalgamated with Hitach Metals, Ltd. for technical transfer

VENALUM (Aluminum refining)		Ingot cases Spare parts for repair of conveyors			
AIMM (Association of Mining and Manufacturing Industries)	Cooking utensils (ranges and decks) Valves for water-works and sewage system Cast iron joints, pipes and pumps Building materials and faring equipment				

## 2. Future Prospects

It can be expected that the following products will be manufactured in Venezuela in the near future.

1) **Agricultural machinery and equipment**

Irrigation pumps and tractors

2) **Prime movers**

Gasoline and diesls engines.

Notes: Items 1) and 2) above are given top priority in Venezuela's Fifth Five Year Plan.

3) **General purpose parts**

Spare parts of various machines, especially steel and aluminum parts for which an expanded production is under planning.

4) **Household equipment**

Sewing machines and air conditioners

5) **Cargo handling machinery**

Elevators, cranes, and conveyors

6) **Machine tools and metal working machinery**

7) **Wood working machinery**

Promotion of timber industry is planned in conjunction with the planned promotion of afforestation programme of Guayana area.

8) **Printing machines**

As listed above, there are a great diversity of industrial categories and products to be covered by expanded domestic production plan. There is no difficulty in finding outlets for these products in the domestic market, the only problem being the improvement of technical level.

The following is a rough estimate of market size of castings in Venezuela.

Domestic products: 46,000 t in 1974 (based on data of foundry industry)  
61,000 t in 1977 (based on an estimated annual growth rate of 10%)

Imported products: 42,000 t in 1976 (based on import statistics)

Notes: The import statistics excludes figures for transport equipment and electric machinery.

As automobile industry is the leading industrial category in Venezuela, it is probable that automobile parts castings are imported in large quantities. It is therefore likely that imported castings falling in metal working and machinery categories far exceed domestic production in quantity.



Notes: Import value of items -

$\$1,117 \text{ million} \times \text{¥}270/\$ = \text{¥}301,590 \text{ million (1976)}$

Consumption of castings at 0.14 t per ¥1 million production  
(Japanese base) -

$\text{¥}301,590 \text{ million} \times 0.14 \div = 42,000 \text{ t}$

## V. Significance of Small-Medium Scale Metalworking and Machinery Industries in Venezuela

If domestic production in metal working and machinery sector is limited to processing and assembling of machines using imported basic parts, there is no likelihood of its extending to cover other areas of machinery industry. Manufacturing all important basic parts of machinery in Venezuela is an essential prerequisite of expanded domestic production of machinery industry. It is to be noted, however, that unlike process industry, machinery industry inherently needs to be supported by labor-intensive small-medium scale enterprises with skilled workers. Hence, the development of Venezuelan metal working and machinery industries essentially calls for the promotion of such supporting small-medium scale enterprises (e.g., casting, forging, heat treatment, welding, metal mold making, press forming, machining, thin plate working, die cast, etc.). This holds true with the domestic production of automobiles, tractors and diesel engines which is given top priority in the country's Fifth Five Plan. Specifically, domestic production of these products presupposes promotion of small-medium scale metal working and machinery enterprises in addition to the establishment and operation of large foundries. Promotion of such small-medium scale enterprises is an effectual means of materializing the government policy for enhanced industrialization as it serves the manifold purpose of consolidating the foundation of Venezuelan metal working and machinery industries, providing increased employment opportunities, checking further population inflow into urban areas, and cultivating capable managers, administrative staff and engineers.

### Importance of Castings:

Castings are the most important formed materials of machinery, and they are used in a great diversity of fields as shown in Table 2. It is no exaggeration to say that not a single machine can be manufactured without castings. Development of machinery industry therefore presupposes promotion of foundry industry. The present high level of Japanese machinery industry is assignable, among others, to the accumulation of casting techniques over many years in the past.

In the case of ordinary industrial products, introduction of machines and equipment generally suffices for manufacture of final products, although it is naturally necessary to have relevant technical know-how. In the production of castings, however, mold must be made by molding machine, and casting techniques covering melting method, casting plan and molding procedure are indispensable for manufacture of final products filling various requirements of the machines in which they are to be fitted as component parts. Furthermore, nurturing of skilled workers is the first step to filled for promotion of foundry industry.

As Japan's machinery industry has been supported by small-medium scale foundries in the course of its development, so will Venezuelan machinery industry have to depend on the promotion of her foundry industry (small-medium scale foundries) in order to attain the planned development.

Figs. 1 and 2 illustrate the position of castings in machinery industry.

Fig. 1 Component Parts of General Purpose Lathe

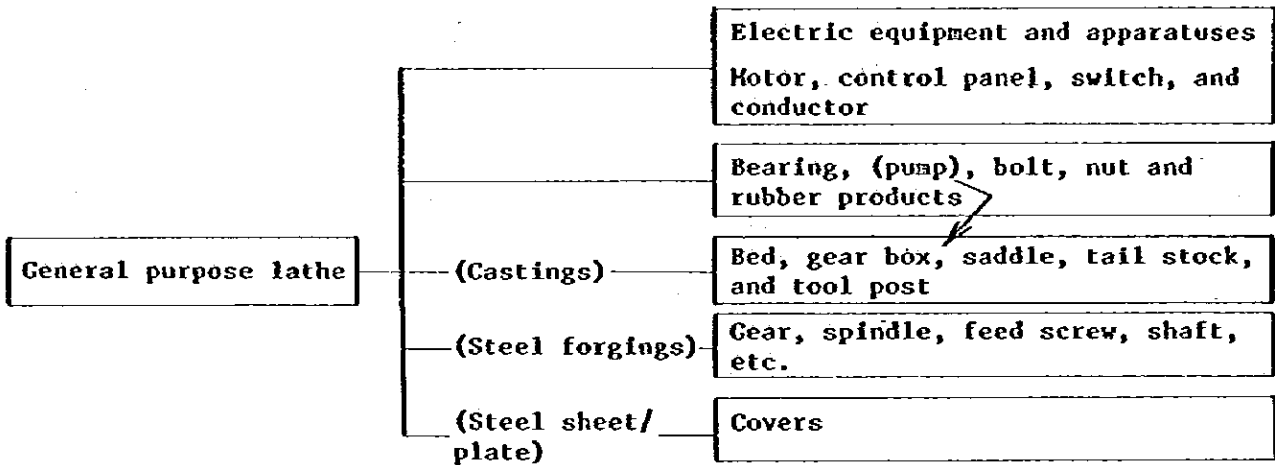
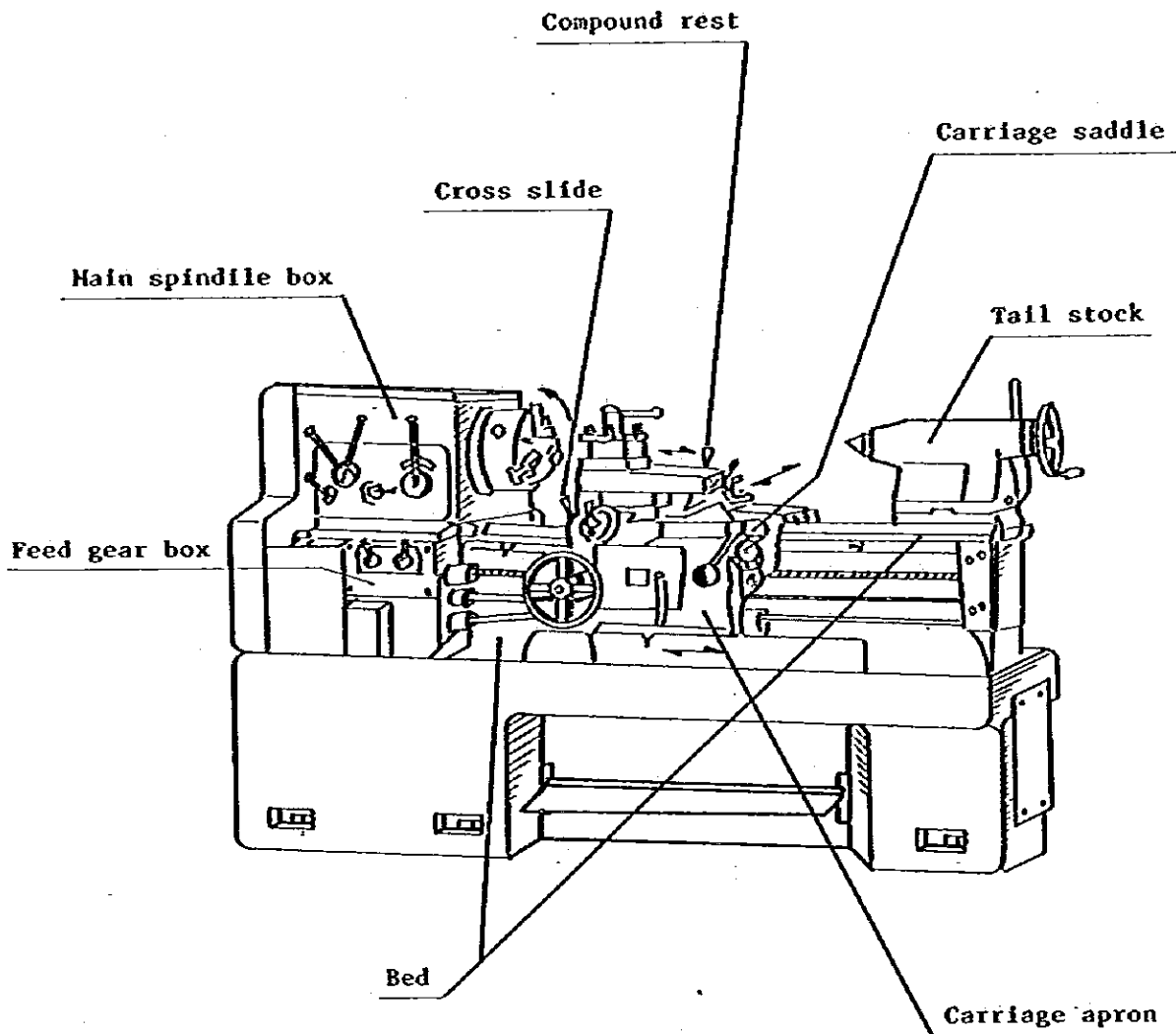


Table 2. Castings Used in Various Machines

Machine/Equipment	Names of Main Casting Parts
Automobile	Cylinder block, cylinder head, cam shaft, pulley, gear, brake drum, transmission case, manifold, clutch, and clutch housing
Ship	Cylinder jacket, cylinder liner, column, bed plate, cylinder head, propeller, turbin casing, and steam tube
Rolling stock	Brake disk, brake cylinder, journal box, brake block, side bearing, belt pulley, and name plate
Machine tool	Surface plate, bed, leg, ram, column, table, apron, tool post, hydraulic cylinder, saddle, handle, sleeve, headstock, V-pulley, gear, clutch, and brake drum
Electric machinery	Terminal box, shield, motor frame, motor case, motor base, motor bracket, resistance unit grid, rotor core, and stator shaft
Hydraulic equipment	Impeller, casing, bracket, base, bearing, bearing cover, packing gland, and casing cover
Oil pressure equipment	Gear case, cover, gear, sleeve, screw, pump casing, bearing casing, cylinder block, valve plate, and piston
Construction machinery	Cylinder block, flywheel housing, transmission case, torque converter case, gear case, flywheel, and drum
Press and forging machine	Housing, plunger, cylinder, piston, and flywheel
Spinning machine	Flat bar, ring plate, cam, locking shaft, frame bracket, spindle rail, and calender roller
Farming machinery	Crankcase, gear case, cover, pulley, bracket, cylinder head, propeller shaft case, and clutch housing
Paper making machine	Dryer and dryer cover
Valves	Valves for water supply, blast furnace, petroleum and petrochemical industry, chemical industry, ships, room heating apparatuses, and general machinery
Sewing machine	Arm, bed, and other smaller parts
Daily necessities	Stove, gas range and heater, bath furnace, and cooking range for commercial purposes
Cast iron tube	Cast iron tubes for city water network, industrial water line, sewage network, gas supply line, cable protection, power generation, sea water cooling in petrochemical industry, and other industrial purposes

Fig. 2 Main Casting Parts of General Purpose Lathe



## VI. Comments and Recommendations on Venezuelan Request

### 1. Comments

In a series of discussions held with CORPOINDUSTRIA, the team made the following comments on the Venezuelan request for Japan's technical cooperation.

As a result of the field survey and visits to a number of business establishments in Venezuela, the team arrived at the conclusion that it is advisable that Japan's cooperation be extended in selected specific areas promising practical development of Venezuelan industries and economy rather than in the vast area embracing all small-medium scale enterprises. Specifically, it is considered reasonable to offer assistance in areas most likely to yield cooperation effect --- metal working and machinery industry for this time --- because it is difficult or not feasible to hope for rapid and phenomenal improvement of management and manufacturing techniques in the entire sphere of small-medium scale enterprises.

- (1) With respect to the formulation a integrated programme for promoting small-medium scale enterprises, the team is fully cognizant of its importance and considers it desirable to formulate the programme especially for metal working and machinery industry to which the team gave priority in its survey activities.

The special loan system adopted in Japan for financing small-medium scale enterprises is introduced in the English brochure presented in advance.

- (2) With respect to the industrial decentralization policy, the team fully appreciates the need of such policy as it is intended to induce or restrict industrial relocation in rural areas according to regional and industrial classification in order to check further population inflow into urban areas and to correct the prevailing income disparity. It may as well be mentioned that an industrial relocation policy is being pushed forward positively in Japan to bring solution for the prevailing problem of overpopulation and underpopulation.

It must be pointed out, however, that there exists an intrinsic difference in the background of decentralization policy between the two countries. To be specific, industrial development in Venezuela has so far been promoted by concentrated location of industries in designated areas, and the planned decentralization is aimed primarily at promoting industries in other areas for balanced industrial development on the national level. In Japan,

however, the decentralization policy is more or less intended to drive spontaneously concentrated industries out of urban areas for environmental conservation and other reasons. Hence, examples and experience in industrial relocation in Japan cannot necessarily be applied directly to Venezuela. In connection with actual implementation of the policy, the team wished to point out that industries cannot be induced to relocate their factories simply by creating industrial estates in rural areas with preferential taxation system as an incentive. The policy should be framed not for mere decentralization but for promotion of new industries.

It follows, therefore, that the decentralization policy should preferably dealt with not as an issue of small-medium scale enterprises but as a problem tackled at the level of the central or local government.

- (3) With respect to the establishment of a Integrated Small-Medium Scale Enterprises Promotion Centre, the team evaluates it as being quite opportune and believes that the Japanese Government will be willing to provide necessary technical and financial aid.

Considering the existing state of national economy of Venezuela, the level of her industrialization, and the Government's development scheme, the team believes that at least for the coming several years, metal working and machinery industries should be given the greatest importance of all industrial categories, and top priority should therefore be given to the improvement of technical level of small-medium scale enterprises which are to manufacture important basic parts by casting, forging, metal mold, etc.

The team exchanged candid opinions and views with the Venezuelan officials on the objective, organization and operation of the centre, while stressing that its comments and opinions are given on a non-committable basis.

## 2. Recommendations Based on Analysis of Survey Data in Japan

As described in Chapter III, CORPOINDUSTRIA's request for Japan's technical cooperation covered the entire expanse of small-medium scale enterprises.

However, the team considered it difficult to expect any rapid improvement of technical level in the whole area of small-medium scale enterprises at one time or to conduct survey activities aiming at such phenomenal technical improvement. Hence, its survey activities were conducted with emphasis on placed metal working and machinery industries, an industrial category having a high feasibility rating

and most likely to produce the cooperation effects.

In its Fifth Five Year Plan (1976 - 1980), the Venezuelan Government attaches high priority to the promotion of key industries like oil refining, iron and steel, and aluminum as well as to the development of "intermediate" industries including metal working and machinery industry. The following are the reasons for giving preference to these industrial sectors over others.

- 1) Processing of raw materials turned out by key industries to increase their added value.
- 2) Broadening of the expanse of Venezuelan industries for accelerated substitution for imported semimanufactured products and capital goods to improve the international balance of payments.

Metal working and machinery industries is an industrial category which turns out products with the highest working factor. It is a basic industrial area producing immense influences on other industries, and should consequently be promoted positively as an important strategic industry of the country.

However, it has a very broad expanse and involves a great disparity between categories. While automobiles and household electric appliances have already been developed to a fairly high level, general machinery is still in initial stage of development, the rate of its domestic production being only 9% in 1976.

Hence, domestic production in the area of general machinery inclusive of metal working and machinery industries is now the supreme requirement for the growth of Venezuela's national economy. Machinery industry is in substance an assembly industry in which final products are manufactured by assembling various component parts. If domestic production remains at the level of assembling parts, then it can never produce technological spill-out effects on other areas of mechanical products. The sphere of domestic production in the area of machinery industry can be expanded only if important basic parts are all manufactured in Venezuela. Unlike the case of mass production process industries, these basic parts are manufactured mostly by labor-intensive small-medium scale enterprises with skilled workers covering versatile technical fields such as casting, forging, mould making, heat treatment, welding, press forming, machining, thin plate working, die cast, etc. (Small-medium scale enterprises having these technical fields are generically called small-medium scale metalworking and machinery industries)

Considering the characteristics of metalworking and machinery industry mentioned above, it leaves no doubt that its development can never be hoped for without the



promotion of small-medium scale machinery industry. Even in areas where mass production system is adopted as in automobile industry, the presence of small-medium scale machinery industry which supports the operation of large-scale foundries is an essential prerequisite to production of finished cars.

Nevertheless, despite the great importance attached to small-medium scale machinery industry in Venezuela, full-scale domestic production in this specific industrial sector is still a matter of remote possibility because manufacturing techniques, management capabilities and quality control are on a low level, though not so poor as estimated at the outset.

Domestic production of machinery is hampered particularly by the poor manufacturing techniques of castings which are the most important formed parts indispensable for production of the greater half of all machines.

Furthermore, compared with general industrial products, the products of metalworking and machinery industry are subject to a far greater quality fluctuation depending on the technical capabilities of engineers and skilled workers. In other words, most of general industrial products can be manufactured with relative ease by the introduction of necessary machines and equipment, but casting machine is nothing but a device for making a mold but not the product itself. Hence, production of castings meeting versatile qualitative requirements of various machines calls for the availability of a high level of casting techniques covering melting method, casting plan and mold making process.

By reason of their being important formed machine parts to be manufactured by highly skilled workers, castings carry a particularly heavy weight in small-medium scale metalworking and machinery industries.

On the basis of the discussion advanced above, the following recommendations are made for promotion of small-medium scale metalworking and machinery industries including, among others, foundry industry.

**(1) Formulation of a Programme for Small-Medium Scale Machinery Industry Promotion**

Promotion of Venezuelan machinery industry calls, as described already, for development and consolidation of small-medium scale enterprises producing important basic parts.

Needless to say, the Government should take shoestring subsidiary measures for the development of such small-medium scale machinery industry, but such

measures will produce no promotional effect if enforced in an all-round manner. To make such measures most effective in the promotion of small-medium scale machinery industry, they should be carried out according to a basic promotional plan. Specifically, it is necessary to map out a plan under which the product items (categories), time of production commencement, place of production, operational scale, etc. are designated for positive and systematic promotion of the industry. Upon formulation of such a plan, it will become feasible to enforce various incentive measures covering techniques, taxation system, financing, foreign investment and so forth.

Framing of promotional strategies for small-medium scale machinery industry should be based on the findings of the following surveys.

- (i) Study of overall national economic development scheme  
Economic background and environment, and trends of industries, regional economy and ANCOM
- (ii) Demand survey of small-medium scale machinery industry  
Present and prospective market size
- (iii) Survey of existing state of small-medium scale machinery industry  
Technical level, labour force, management techniques, etc.
- (iv) Grasping of various Government promotional policies  
Progress of the Fifth Five Year Economic Development Plan, industrial decentralization policy and smaller small promotion policy, and problems entailed therein
- (v) Analysis of locational conditions of small-medium scale machinery industry  
Method of industrial orientation, relationship with infrastructural improvement, etc.

Paying due recognition to the importance of the small-medium scale machinery industry promotion plan, the team analysed the findings of its survey, which led to the conclusion that the Venezuelan Government should assume a positive attitude in accelerating the development of the industry.

- o Since the said promotion plan should be linked with the enforcement of various incentive policies, the follow-up activities should be undertaken by CORPOINDUSTRIA from the outset on its own responsibilities. Specifically, at all stages of survey such as the stage of acquiring a firm grasp of existing condition through market research and field work covering enterprises and the stage of framing promotional strategies, CORPOINDUSTRIA should maintain close contact with the survey team to arrive at common

recognition and understanding of facts.

- o The scope of survey for formulating the promotion plan is quite extensive as enumerated above, and the shortage of production statistics and other data will make it imperative to start the survey with data collection. Hence, the formulation of the promotion plan will call for a considerably long period of services of experts from different specialized fields. A promotion plan truly satisfactory to the Venezuelan Government can be prepared only after such laborious and full-scale survey activities.

To summarize the above discussion, it is of great importance to the Venezuelan Government to map out a integrated promotion plan, but if Japan is to cooperate in the execution of such an extensive preparatory survey as mentioned above as well as in the implementation of the promotion plan based thereon, it would not be possible for the Venezuelan Government to expect effective and concrete results because of the limits presently set on budgetary appropriation by the Japanese Government.

## (2) Upgrading of Technical and Management Levels

(Scheme of a Integrated Small-Medium Scale Enterprises Promotion Centre)

While it is expected that quite a long period of time will be required for the fomulation of the small-medium scale machinery industry promotion plan, there is proposed a practical plan to upgrade the technical and management levels of small-medium scale machinery industry in parallel with the preparation of its promotion plan, i.e., the scheme of a Integrated Small-medium Scale Enterprizes Promotion Centre which is included in the scope of Venezuelan request for Japan's cooperation.

The scheme is given second top priority in Venezuela's Fifth Five Year Plan, and its early materialization was stress in President Perez' announcement not long ago. It is quite an ambitious scheme aiming at improvement of technical and management levels of all small-medium scale enterprisés not necessarily limited to those in the category of metal working and machinery industries. Endeavors for its early materialization are being made by Dr. Carlos Gonzalez, the president of CORPINDUSTRIA, under instructions from President Perez.

As described already, the team holds the view that the development of Venezuelan metalworking and machinery industry presupposes, above all other things, the domestic production of basic and important machine parts in the area of small-medium scale machinery industries. Promotion of Domestic

production of such machines parts is not necessarily paralleled with formulation of the said metalworking and machinery industries promotion plan including the market size or promotion-priority by product type and category.

In the following items, therefore, recommendations are given on the promotion of the scheme with specific reference to the centre's functions in the area of small-medium scale metalworking and machinery industries.

**(i) Basic Concept of the Small-Medium Scale Metalworking and Machinery Industries Promotion Centre**

It is advisable that the centre be established to provide useful guidance services to small-medium scale enterprises of metalworking and machinery industry as well as to promote their development, as the first step towards improvement of technical and management levels in the basic areas of material industry such as casting, forging, moldmaking, heat treatment, plating, machining, welding, press forming, die cast, etc.

As regards the objective, organization and functions of the centre, it is recommended that study be made on the team's scheme proposed below which needs to be improved and made more concrete on the basis of the detailed survey suggested in Item (ii) and in consideration of the Venezuelan Government's own scheme and budget.

**(a) Main objective**

Improvement of technical level in areas constituting the basis of Venezuelan metalworking and machinery industry to promote domestic production of castings, forgings, metal moldmaking of various machines currently imported from abroad and to make possible to manufacture in Venezuela all machines and metal products which resort to 100% import at present.

It is justifiable to start with the improvement of manufacturing techniques of castings to which top priority is given for domestic production.

**(b) Affiliation**

To be placed under the control of CORPOINDUSTRIA.

**(c) Organization and services**

The centre is to be divided into Technical Guidance Section, Management Guidance Section and Administrative Section to offer the services mentioned below.

o **Technical Guidance Section**

Experts specialized in casting, forging, machining, etc. are to be recruited as instructors providing technical guidance in their respective fields.

**Casting:** Casting facilities are to be installed at the centre to offer individual training courses in quality stabilization and molding techniques, with itinerant guidance services also offered to existing foundries.

**Forging:** Forging dies and materials are to be imported as in the past, and itinerant guidance services are to be provided to upgrade the forging techniques.

At the outset of the centre's operation, technical guidance is to be provided in the above two areas, but to be expanded later to cover other areas.

o **Management Guidance Section**

- Experts specialized in marketing, procurement, finance and personnel management are to be recruited as instructors providing management diagnosis and counselling services to enterprises of small-medium scale metalworking and machinery industry.
- Experts specialized in the introduction new production facilities and new technical know-how, plant construction, and planning and establishment of joint venture are to be recruited to provide relevant guidance services as well as agency/intermediation services for overseas and Venezuelan enterprises as need arises.

o **Administrative Section**

Personnel affairs, accounting and general affairs are to be undertaken by this section.

**(ii) Survey for Materializing the Scheme as described in (i)**

**(a) Objective and scope of survey**

Materialization of the scheme of the Small-Medium Scale Metalworking and Machinery Industries Promotion Centre calls for the creation of an organizational setup which is not only based on the facts about management, technical level and production system of enterprises of

small-medium scale metalworking and machinery industries but is also organically integrated with the activities of individual enterprises. For this reason, the team conducted a survey, though not on a full-scale, to cast light on the existing state of small-medium scale machinery enterprises and pointed out main problems. Prior to actual implementation of the scheme, a detailed survey should be conducted to determine the following in order to assure that the centre will provide most effectual guidance services.

- o Centre's activities and organization
- o Number of experts to be recruited, and their specialized fields
- o Method of the centre's management and operation
- o Training programmes and scope of services
- o Centre's building, facilities, and location

**(b) Survey Items**

In order to determine the items listed above, a detailed survey covering the following items should be conducted to clarify the existing state of small machinery industry by visiting pertinent enterprises, users, public organizations, distributive traders, and related industrial associations.

- o Basic machine parts that can be produced in Venezuela by improvement of manufacturing techniques
- o Technical level, and method of technical training
- o Quality control, and occurrence of claims
- o Production control (process and cost)
- o Rate of operation and repair of production facilities
- o Number and qualitative level of workers, and the degree of their commitment to enterprise
- o Method of fund raising
- o Procurement of raw materials
- o Main clients, and terms of business
- o Method of management and administration  
(incl. business achievements, personnel management, and management-mind)

**(iii) Acceptance of Experts, and Dispatch of Trainees**

Upon completion of the survey described in Item (ii) above, experts specialized in the following fields are to be invited from advanced countries according to the need.

**Technical fields:** Casting, forging, metal mold making, press forming, heat treatment, machining, plating, welding, and die cast.

**Management fields:** Finance, procurement and marketing.

Furthermore, Venezuelan technicians and management specialists are to be sent to advanced countries for training.

In Items (i) - (iii) above, the team's basic concept of the centre and preparations necessary for its materialization were presented, together with cooperation areas which are considered to be justifiably in need of Japan's technical assistance.

However, it is desirable that actual areas of Japanese cooperation be determined by competent authorities with account taken of budgetary appropriation and other factors.

### **(3) Proposals for Incentive Administrative Actions**

In addition to the recommendations presented in preceding Items (1) and (2), there are a number of incentive administrative actions to be taken for promoting small-medium scale metalworking and machinery industries, of which major ones are enumerated below.

#### **(i) Protection and Rearing of Small-Medium Scale Industry Enterprises, and Introduction of Foreign Capital**

For the purpose of early domestic production of basic and important machine parts, Venezuelan small-medium scale metalworking and machinery industries should be protected whenever need arises until it reaches a certain predetermined technical level. When such technical level attained, an incentive measure to introduction of foreign capital should be devised to strengthen the industry by exposing it external pressure.

#### **(ii) Incentive Taxation and Financing Measures**

Small-medium scale machinery enterprises should be given incentive taxation measures such as application of reduced rate of corporate tax and special depreciation system as well as financing measures including provision of funds (working funds in particular) at low interest rate to strengthen their management structure and competitiveness.

#### **(iii) Augmentation of Marketing Power**

Small-medium scale enterprises are prone to be conditioned unfavourably

for marketing their products. The Government should therefore assist them in securing stabilized orders by introducing users and at the same time keep a watchful eye on the terms of sales to prevent their products from being sold under unfavourable terms.

(iv) **Measures for Higher Degree of Workers' Commitment to Enterprises**  
Technical improvement of smaller machinery industry calls for a high degree of commitment of skilled workers to enterprise. The Government should reexamine its employment policy to assure long-term service of skilled workers for enterprises.

(v) **Organizing of Small-Medium Scale Enterprises**  
Small-medium scale enterprises should be encouraged to organize themselves so that their technical improvement will be enhanced through mutual exchange of information and the Government will be enabled to take financing and incentive taxation measures for them through their association.

If occasion so demands, they should be organized for each technical field such as casting, forging and mold making, with guidance given to maintain close contact with administration for improvement of their technical and management level.

(vi) **Institutional Consolidation**  
Institutional consolidation such as standardization of quality control method and unification of standards should be effected for the formation and strengthening of a technical ground of small-medium scale metalworking and machinery industries.

(vii) **Language Training**  
Since small-medium scale enterprises experts invited from Japan or other countries will be required to give technical and management guidance in Spanish, a language training course should be organized for them.



