

1. Objective

The objective of the Japanese technical cooperation is to transfer appropriate technology to Hong Kong's counterpart personnel in the fields of tool design, tool manufacture and parts manufacture necessary for the operation of the training facilities, so as to enable them to carry out the activities of the facilities.

2. Dispatch of Japanese experts in the following fields of :

- a. Leader
- b. Design technology
- c. Tool manufacturing technology
- d. Parts manufacturing technology

The intention is that the leader would reside in Hong Kong for a period of not less than one year, while the experts under (b), (c) and (d) would reside in Hong Kong for shorter periods, consistent with the need to maintain the continuity and effectiveness of the training courses.

3. Acceptance of Hong Kong's counterpart personnel in Japan for training

The training fields are the same as described in item 2 above.

4. Provision of machinery and equipment

Subject to further and more detailed examination of the type and cost of machinery and equipment as set out in Annex I, the intention is that both sides would contribute towards the cost of the agreed machinery and equipment.

5. Running costs of the Facility

The Japanese Team explained that it expects that all necessary costs would be met by Hong Kong, except for the salaries of the Japanese experts.

6. Implementation and Procedures

The Japanese side explained to the Hong Kong side its procedures for technical cooperation under its project type system and the Japanese budgetary system. The Japanese side noted that the applicability of the project type technical cooperation system to the present proposal would need to be further discussed by the two sides. The duration of the technical cooperation would be for three (3) years and six (6) months.

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Participants of the
Joint Consultative Meetings with the
 Japanese Study Mission

Japanese Study Mission

<u>NAME</u>	<u>FIELD</u>	<u>POSITION</u>
1. SHIGEO IWATANI	Leader	Deputy Director, Aid Policy Division, Economic Cooperation Bureau, Ministry of Foreign Affairs
2. TOSHIO OKAZAKI	Technical Cooperation Programme	Deputy Head, Technical Cooperation Division, Mining and Industrial Development Department, Japan International Cooperation Agency
3. TOSHIO SANO	Technical Cooperation Programme of Metal Molds	Director, Plastic and Forming Division, Material Engineering Department, Mechanical Engineering Laboratory, Ministry of International Trade and Industry
4. HIROYUKI OCHIAI	Machinery of Metal Molds	Manager, Development Project Department, Ishikawajima-Harima Heavy Industries
5. SHUNTA HAYASHI	Technology of Metal Molds	Managing Director, Materials Process Technology Center of Japan
6. IWAO MATSUMOTO	Technology of Metal Molds	President, Matsumoto Kanagata Giken Co. Ltd.
7. TAKANORI KITAMURA	Observer	Consulate-General of Japan, Hong Kong
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Industry Department

Mr. K.Y. Yeung, Director of Industry
Mr. A.K.P. Leung, Deputy Director of Industry
Mr. M.J. Arnold, Assistant Director of Industry
Mr. E.A. Johnson, Principal Trade Officer (Resources)
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Mr. H. Knight, Executive Director
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Trade and Industry Branch, Government Secretariat

Mr. Vincent Chui

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Mr. R.N. Peirce, Deputy Political Adviser

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Mr. S.K. Chan, Executive Director
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Dr. S.W. Lui, Senior Consultant, Metals Development Division

Response to the Japanese Study Mission's
Questionnaire on the
Proposed Sheet Metal Processing Training Facilities in Hong Kong

I. Background

1. Present position of the Sheet Metal Processing Technology Centre Project (hereinafter referred to as "the Project") in the current National Development Plan.

The need for Hong Kong to upgrade its manufacturing technology and facilities was noted at the plenary session of the Hong Kong-Japan Business Co-operation Committee (HKJBCC) in May 1985, from which the proposal to seek Japanese cooperation to set up training facilities in Hong Kong evolved.

The present proposal to provide improved manpower training facilities in sheet metal processing would enable local engineering-based manufacturers to upgrade the quality of their products, and encourage them to invest in a more sophisticated range of processing machinery for making high precision components.

The proposal has undergone detailed examination by all parties concerned, in particular, by the Committee on Precision Tooling Training of the Hong Kong Vocational Training Council (VTC). It has been agreed that, rather than creating an entirely new training centre, Japanese cooperation should be sought to enhance the present facilities in the Precision Tooling Training Centre at Kowloon Bay to enable it to provide training in the latest techniques in the design, manufacture and operational testing

of high precision progressive blanking and forming tools. By building upon the present facilities at Kowloon Bay, where craftsman-level training is carried out using a range of machinery sourced from around the world and typical of the types currently used in local factories, heavy capital expenditure on constructing a totally new facility would be avoided.

The proposal was endorsed by the Industry Development Board at its meeting on 26 August 1987. It also has the support of the Trade and Industry Branch and the Finance Branch of the Government Secretariat. Funds of HK\$2 million for fitting out the accommodation for the proposed facilities at the Precision Tooling Training Centre, and additional funds of HK\$5.8 million per annum have been included in the Government's forecast of expenditure.

2. Government policy for development of die manufacturing and sheet metal processing technology.

Die manufacturing and sheet metal processing represent an important linkage industry which is essential to upgrade Hong Kong's manufacturing in electronics, electrical appliances, plastics, watches and clocks etc. A number of consultancy studies have identified a lack of manpower training as a major weakness in the die manufacturing and sheet metal processing industries. Hence it is Government's industrial policy to improve training facilities in this area.

3. Present situation for die manufacturing and sheet metal processing technology in Hong Kong (restriction, technical difficulties, etc.), and for Governmental assistance to die manufacturing and sheet metal processing industries.

Most manufacturers in this area employ outdated techniques using simple dies, single operation presses and manual handling for low value-added products.

Restrictions include a shortage of skills and inadequate floor loading and head room in flatted factories for accommodating modern machines. These limit the ability to produce high precision metal components required by other manufacturing sectors which include Japanese interests.

The VTC offers training in the Precision Tooling Training Centre and the Machine Shop and Metal Working Industry Training Centre, but only at the craftsman and junior technician levels.

4. Justification and priority of the Project.

Justifications

- (a) To upgrade Hong Kong's sheet metal processing as a linkage industry through manpower training;
- (b) To promote industrial automation in sheet metal processing;

- (c) To enhance Hong Kong's capabilities in sheet metal processing to better service local and foreign industrial operations in Hong Kong, including Japanese manufacturers; and
- (d) To achieve better product quality and innovation in both the metals and other industries.

Priority

The project is given the highest priority by the Hong Kong Government as funds for implementation have been included in the Government's forecast of expenditure. (See response to Question 1 above.)

- 5. Present situation of die manufacturing and sheet metal processing enterprises in Hong Kong. (Number and activities by classification and scale.)

See comprehensive data in Hong Kong Productivity Council's Mould and Tool Making Directory 1987 enclosed at Annex I.

- 6. Present situation of die manufacturing technology (technical level of CAD/CAM, N/C programming, accuracy, ratio of progressive die, material, research and development, etc.)

The Committee on Precision Tooling Training has, through the manpower surveys conducted by relevant VTC industry training boards, collected information on the degree of precision in terms of dimensional tolerances claimed to be achieved by existing die and mould makers, and on the number of advanced machine tools being used, planned or considered by employers, in the machine shop and metal working industry (1986), the electrical industry (1987) and the plastics industry (1987). Details are summarised in Annex II. A similar survey will be conducted on the electronics industry in May this year.

Supplementary information

- (a) Proportion of progressive dies - very low, estimated to be less than 20%, but no exact details are available;
- (b) Tool materials - majority use conventional steel, very few applications involve advanced materials, e.g. carbide.
- (c) Research and development - both the University of Hong Kong and the Hong Kong Polytechnic carry out limited basic research on sheet metal processing.

Trend of die industry (brief history, production by type, ratio of in-house manufacturing, import and export demand forecast, etc.)

The industry initially evolved from the metals and plastics industries and has now expanded to service the manufacture of electronic and electrical products. The trend now is to service the manufacture of more sophisticated, miniaturized, higher precision, and higher performance products.

For production by type, please refer to Annex I. As regards the proportion of in-house manufacturing, the majority of manufacturers tend to rely on sub-contracting for the making of die parts. There are some manufacturers who make their dies in-house, but no exact number is available. Those precision dies involving the use of carbides are mostly imported from Japan. Hong Kong exports some tooling parts, mostly to China. As Hong Kong's sheet metal industry upgrades, the level of Hong Kong's exports of tooling parts is likely to increase. However, the import of precision dies involving the use of carbides is likely to continue in the absence of carbide production technology in Hong Kong.

II. Outline of the Establishment of the Sheet Metal Processing Training Facilities

8. Objective, activities and necessity of the Centre.

The proposal as outlined in more detail at Annex III envisages cooperation between the appropriate Japanese and Hong Kong agencies. Japanese cooperation would be sought to provide machinery and equipment and to supply technical manpower support to train local staff to take over

the running of the training courses. The VTC would manage and run the scheme and meet all necessary recurrent costs except the salaries of the Japanese experts.

A summary of the proposal is as follows:

(a) <u>Costs to be borne by Japan</u>	<u>HK\$M</u>
(i) 6 Japanese experts to train local instructors (required for 2 years)	To be determined
(ii) supply of all equipment and machinery	28
Total	<u>28 + (i)</u>
(b) <u>Costs to be borne by Hong Kong</u>	<u>HK\$M</u>
(i) <u>Capital Costs</u>	
fitting out the accommodation for the proposed facilities	<u>2.0</u>
Total capital	<u>2.0</u>
(ii) <u>Recurrent Costs</u>	
furnished accommodation for Japanese staff (for 2 years)	1.8

HK\$M

local staff salaries, materials, 4.0
electricity, trainee allowance,
repair and maintenance of
equipment

Total, annually recurrent 5.8

The proposed facilities are intended to accommodate the following :

- (a) 10 full time trainees per year on the design of tools;
- (b) 10 -12 full time trainees per year on the manufacture of tools; and
- (c) 50 - 60 trainees per year on four week courses on the manufacture of parts.

The facilities would also provide for a number of short part-time modular courses. The proposed machinery and CAD/CAM equipment would also enhance the quality of training currently given to the 150 full-time and part-time mould and die making trainees of the existing Precision Tooling Training Centre. Trainees are not required to pay fees for attendance at Training Centre courses.

It would also be possible to use the proposed facilities as a demonstration centre, as a means of showing local manufacturers the advantages of using modern equipment to upgrade their existing metal stamping processes, and to satisfy them that trained manpower would be available to operate new machinery.

9. Institution structure and organization of the Centre (function, duties of each section and organization chart.)

See organization chart at Annex IV. For more detailed description of duties, please refer to the outline proposal at Annex III.

10. Responsibility of the Project implementation (a responsible person.)

Mr. Horace Knight, Executive Director of the VTC.

11. Present conditions of existing site, building and facilities necessary for the Project. (location map, drawing.)

The proposal is to set up sheet metal processing training facilities in the Precision Tooling Training Centre. Space of approximately 235 sq. metres on the ground floor and 450 sq. metres on the sixth floor of the Centre has already been earmarked.

The Kowloon Bay Training Centre Complex, a 7-storey building completed in 1985, is one of two industrial training centre complexes operated by the VTC. At present, it accommodates the Plastics Industry Training Centre (2/F), the Precision Tooling Training Centre (2/F), the Printing Industry Training Centre (3/F), the Machine Shop and Metal Working Industry

Training Centre (4/F and 5/F), the Electronics Industry Training Centre (6/F part) and the Hotel Industry Training Centre (7/F).

A location map and a floor plan of the Complex are at Annexes V and VI.

12. Present situation of qualified manpower as lecturer and instructor for training in the field of die manufacturing and sheet metal processing technology.

There are qualified lecturers and instructors in production and industrial engineering in the universities and the polytechnics some of whom have knowledge of die manufacturing and sheet metal processing. There are also qualified technologists at the Hong Kong Productivity Council who provide consultancy services in die manufacturing and sheet metal processing.

13. Assignment plan of the engineers and technical personnel required for the operation of the Centre.

See Annex III.

14. Budgetary allocation plan required for the operation of the Centre.

See Annex III.

III. Request for Technical Cooperation

15. Details of training course plan (field, training target, course duration, frequency-number of times/month/year, number of participant and potential participants, etc.)

See response to Question 8 above. Potential participants will be those already in the industry.

16. Scope of technology transfer through technical cooperation from Japan.

See response to Question 8 above.

17. Duration of technical cooperation required for the Project.

A bar chart of the timing and type of Japanese technical cooperation is at Annex VII.

18. Japanese experts necessary for the technology transfer :

(a) Long-term experts (specific field with term and number)

(b) Short-term experts (" ")

See Annex III. To ensure the effectiveness of the training provided, the Japanese experts are expected to reside continuously in Hong Kong for the entire period of technical cooperation.

19. Training of counterpart personnel in Japan (specific field with term and number).

It would be desirable for all of the trainee instructors from Hong Kong to familiarise themselves in Japan with the use of the sheet metal processing machinery and equipment before the commencement of the technical cooperation programme, so that they could assist in the setting up of the sheet metal processing facilities.

20. Machinery and equipment necessary for the technology transfer:

(a) Proposed equipment to be provided by Japanese Government.

(b) Equipment available for the Project by Hong Kong Government.

(a) See the list of machinery and equipment required in Annex III.

(b) A list of machinery and equipment available at the Precision Tooling Training Centre is at Annex VIII. However all of this machinery and equipment is fully committed for existing courses at the Precision Tooling Training Centre.

IV. Others

21. Government research or training institution concerned in the field of die manufacturing and sheet metal processing, and their functions.

There is virtually no applied research and development in die manufacturing and sheet metal processing in Hong Kong. There is a limited amount of basic research in this area in the universities and polytechnics. However, funds (HK\$9.6 million) have been allocated to the Hong Kong Productivity

Council to develop its sheet metal processing capabilities in providing consultancy services and training at the technologist level.

22. Past record on receiving any technical cooperation in the field of die manufacturing and sheet metal processing from other country of international organization.

Nil.

23. Other data and document related to the Project.

A summary of annexes and related documents is given below for reference :

Annex I Hong Kong Productivity Council's Mould and Tool Making Directory 1987

Annex II Dimensional tolerances claimed to be achieved by certain industries in Hong Kong and the number of advanced machine tools installed

Annex III Proposal to establish sheet metal processing training facilities at the Precision Tooling Training Centre

Annex IV Organization chart of the proposed sheet metal processing training facility

- Annex V Location map of the Kowloon Bay Training Centre
Complex
- Annex VI Floor plan of the area earmarked for the proposed
facilities
- Annex VII Implementation chart
- Annex VIII Equipment installed in the VTC Precision
Tooling Training Centre
- Annex IX Letter d.d. 3.10.86 from Mr. James Wu (Chairman
of the Industrial Development Working Committee
of the Hong Kong/Japan Business Cooperation
Committee) which initiated the project

Dimensional Tolerances Claimed to be Achieved by Certain
Industries in Hong Kong and the Number of Advanced
Machine Tools Installed

I. Tolerance Range claimed to be achieved by
Tool and Die Makers and Mould and Die Makers

No. of Workers Employment Size (where available)	Tolerance Range					Unspecified	Total
	+0.0025mm or less	+0.0025mm - to +0.01mm	+0.01mm - to +0.05mm	More than +0.05mm			
1. Machine Shop and Metal Working Industry (Sept. 1986)							
a. Tool and die makers	37	1 076	1 238	1 769	410	4 530	
b. Mould and die makers	31	360	1 425	1 859	623	4 298	
2. Electrical Industry (March 1987)							
a. Tool and die makers							
1 - 9	-	-	-	20	-	20	
10 - 49	-	2	87	4	6	99	
50 - 99	-	7	-	35	-	42	
100 & over	-	73	60	8	23	164	
Sub-total	-	82	147	67	29	325	
b. Mould and die makers							
1 - 9	-	-	-	-	-	-	
10 - 49	-	12	-	4	2	18	
50 - 99	-	-	29	16	9	54	
100 & over	-	61	51	11	42	165	
Sub-total	-	73	80	31	53	237	

No. of Workers Employment Size (where available)	Tolerance Range						
		+0.0025mm or less	+0.0025mm to +0.01mm	+0.01mm to +0.05mm	More than +0.05mm	Unspecified	Total
3. Plastics Industry (June 1987)							
a. Tool and die makers							
1 - 9	-	-	-	-	-	-	-
10 - 49	-	-	10	3	-	-	13
50 - 99	-	-	-	-	3	-	3
100 & over	-	13	9	11	-	-	33
Sub-total	-	13	19	14	3	-	49
b. Mould and die makers							
1 - 9	-	-	53	-	104	-	157
10 - 49	-	181	160	76	335	-	752
50 - 99	-	39	21	65	221	-	346
100 & over	25	165	127	114	174	-	605
Sub-total	25	385	361	255	834	-	1 860

II. Utilisation of Advanced Equipment in Certain Industries

Equipment	Existing		Planning		Considering	
	No. of Firms	No. of Machines	No. of Firms	No. of Machines	No. of Firms	No. of Machines
1. Machine Shop and Metal Working Industry (Sept. 1986)						
CNC-Milling Machine	42	66	33	35	26	26
CNC-Machining Centre	23	37	7	13	9	14
CNC-Lathe	14	24	21	22	15	7
CNC-Grinding Machine	6	14	1	1	3	3
EDM-Diesinking	330	456	49	55	136	137
EDM-Wirecut	125	160	13	13	68	68
Jig Grinding/Boring Machine	52	63	2	3	27	27
CNC Programming System	26	27	4	4	13	13
CAD/CAM System	15	16	4	4	7	7
Sub-total	475	863	107	150	254	312
2. Electrical Industry (March 1987)						
CNC-Milling Machine	8	14	-	-	4	4
CNC-Machining Centre	2	2	1	1	2	2
CNC-Lathe	2	5	-	-	2	2
CNC-Grinding Machine	1	2	-	-	1	1
EDM-Diesinking	10	19	1	1	2	2
EDM-Wirecut	3	6	1	1	2	2
Jig Grinding/Boring Machine	5	9	-	-	-	-
CNC Programming System	3	3	1	1	1	1
CAD/CAM System	2	2	2	2	2	2
Sub-total	24	62	5	6	7	16

Equipment	Existing		Planning		Considering	
	No. of Firms	No. of Machines	No. of Firms	No. of Machines	No. of Firms	No. of Machines
3. <u>Plastics Industry (June 1987)</u>						
CNC-Milling Machine	18	22	5	5	41	44
CNC-Machining Centre	5	7	2	4	3	3
CNC-Lathe	4	7	-	-	35	35
CNC-Grinding Machine	1	1	-	-	5	5
EDM-Diesinking	105	193	12	19	35	36
EMD-Wirecut	4	7	3	4	30	30
Jig Grinding/Boring Machine	10	14	-	-	1	1
CNC Programming System	3	3	2	2	3	3
CAD System	2	2	3	3	4	4
Sub-total	119	256	16	37	79	161

Source: VTC Committee on Precision Tooling Training

Proposal to establish sheet metal
processing training facilities at
the Precision Tooling Training Centre

Design of Tools

A CAD system will be installed which is suitable for training students on the design of high speed progressive stamping dies and on communicating with other machinery in the Centre for tool manufacture. A five work stations system is envisaged with a master terminal and possibly direct line control system to the machines via cable.

(i) Estimated Cost

HK\$5 million

(ii) Manpower Required

Two Japanese experts with long experience in designing progressive dies as well as CAD, CAM and their integration.

Two local Senior Instructors to understudy the Japanese experts with the view to taking over eventually.

(iii) Training Capacity

Ten full-time equivalent trainees per year i.e. two per work station, concentrating on CAD and CAM. Plus possibly short part-time courses on CAD.

Manufacture of Tools

2. A number of machines with a direct link to the CAD Centre will be required for the manufacture of progressive dies. Training will concentrate on manufacturing of press tools using conventional tool steels and other materials (including carbides).

(i) Machinery and Equipment Required

To include at least one of each of the following :-

Full CNC contour jig grinder.

Horizontal machining centre with CNC control.

CNC EDM diesinker with automatic tool change.

CNC wire cut machine.

CNC optical profile grinder.

CNC surface grinding machine.

Upgrading and development of existing metrology laboratory with particular emphasis on in-process instrumentation.

Additional heat treatment furnaces including vacuum furnaces and high temperature furnaces.

(ii) Estimated Cost

HK\$13 million

(iii) Manpower Required

Two Japanese experts in the manufacture of cemented carbide tooling. Two local Senior Instructors to be trained in CNC machining, tool assembly and metrology. They will eventually take over from the Japanese.

(iv) Training Capacity

Ten to twelve full-time equivalent trainees per year. Training will mainly be the manufacture of various types of metal forming tools. In addition to the machines and equipment mentioned in 2(i) above, the trainees will have an opportunity to work on the machines and equipment already installed in the Precision Tooling Training Centre. Those in 2(i) will also enhance the quality of training given to the 150 full-time and part-time mould and tool making trainees of the PPTC's original set-up.

Manufacture of Parts

3. There will be a production workshop with machinery and associated equipment to test and prove the tools made.

(i) Machinery Required

One automatic fine blanking press.

One high speed press for progressive dies.

One long stroke press for deep drawing and forming.

One underdrive type 4 pillar press for progressive drawing, bending and blanking.

One transfer press.

Adequate numbers of feeders and uncoilers.

(ii) Estimated Cost

HK\$10 million

(iii) Manpower Required

Two Japanese experts in the setting and operation of high speed presses.

Two local Senior Instructors to understudy the Japanese experts with the view to taking over eventually.

(iv) Training Capacity

Short courses for five to six trainees per course of 4 weeks duration. Trainees to spend approximately one week on the setting and operating techniques of each type of press.

Summary of Resources Required

4. (i) Manpower

6 Japanese staff - to be supplied.

6 Senior Instructors - to be recruited.

1 Maintenance Mechanic - to be recruited.

1 Workman - to be recruited.

(ii)	<u>Materials</u>	<u>Recurrent Cost</u>
	CAD Centre	\$10,000
	Manufacturing Workshop (metal/consumables)	\$200,000
	Production Workshop (consumable material, metal strip) (The possibility of doing outside contract work will be reviewed)	\$1,500,000-) equivalent to \$2,000,000) use of machines) for 1 hr/day,) 5 days per week
(iii)	<u>Fitting Out</u>	
	Floor reinforcement, walls, lighting, air conditioning system, sprinklers, small reference library etc.	\$2,000,000
(iv)	<u>Fuel, Light and Power</u>	
	Air conditioning, light and power	\$150,000
(v)	<u>Trainee Allowance</u>	
	22 1-year full-time trainees at \$1,500 per month.	\$330,000
	Short course trainees	(to be worked out)
(vi)	<u>Repair & Maintenance</u>	
	For the repair and maintenance of machines and equipment.	\$250,000
(vii)	<u>Staff Costs</u>	
	Staff emoluments and on-cost for local staff.	\$1,035,000
(viii)	<u>Insurance</u>	
	Premium to be paid to insure the CAD system.	\$7,000
(ix)	<u>Accommodation for Japanese Experts</u>	
	Rents for quarters provided for the six Japanese experts.	\$1,800,000

Recurrent Cost

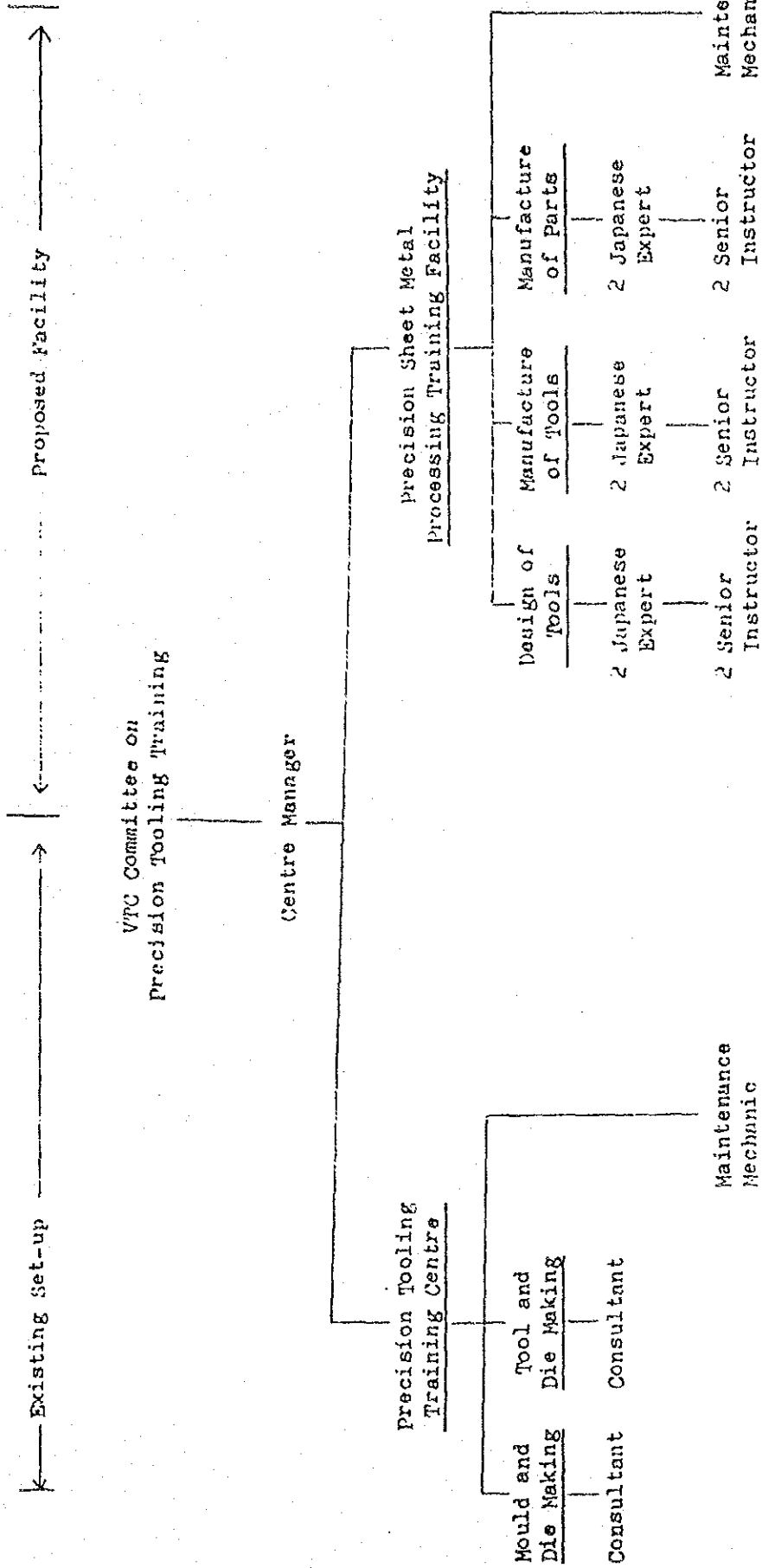
(x) Capital Cost of
Machinery and other
equipment

Total of paragraphs 1-3 \$28,000,000

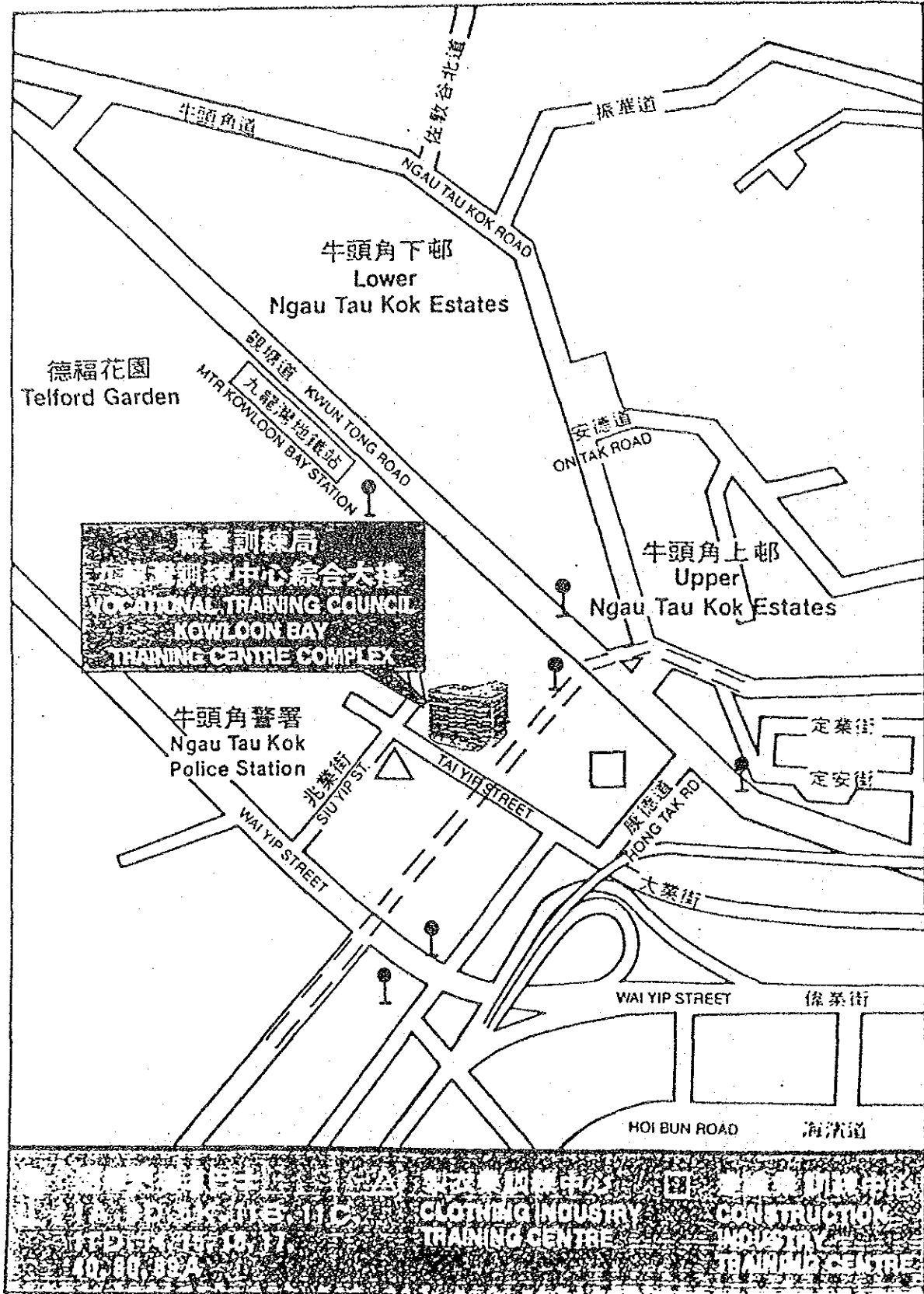
(xi) Technical Library

An initial amount of
\$500,000 for acquiring
reference materials in
tool design and tool
making technology

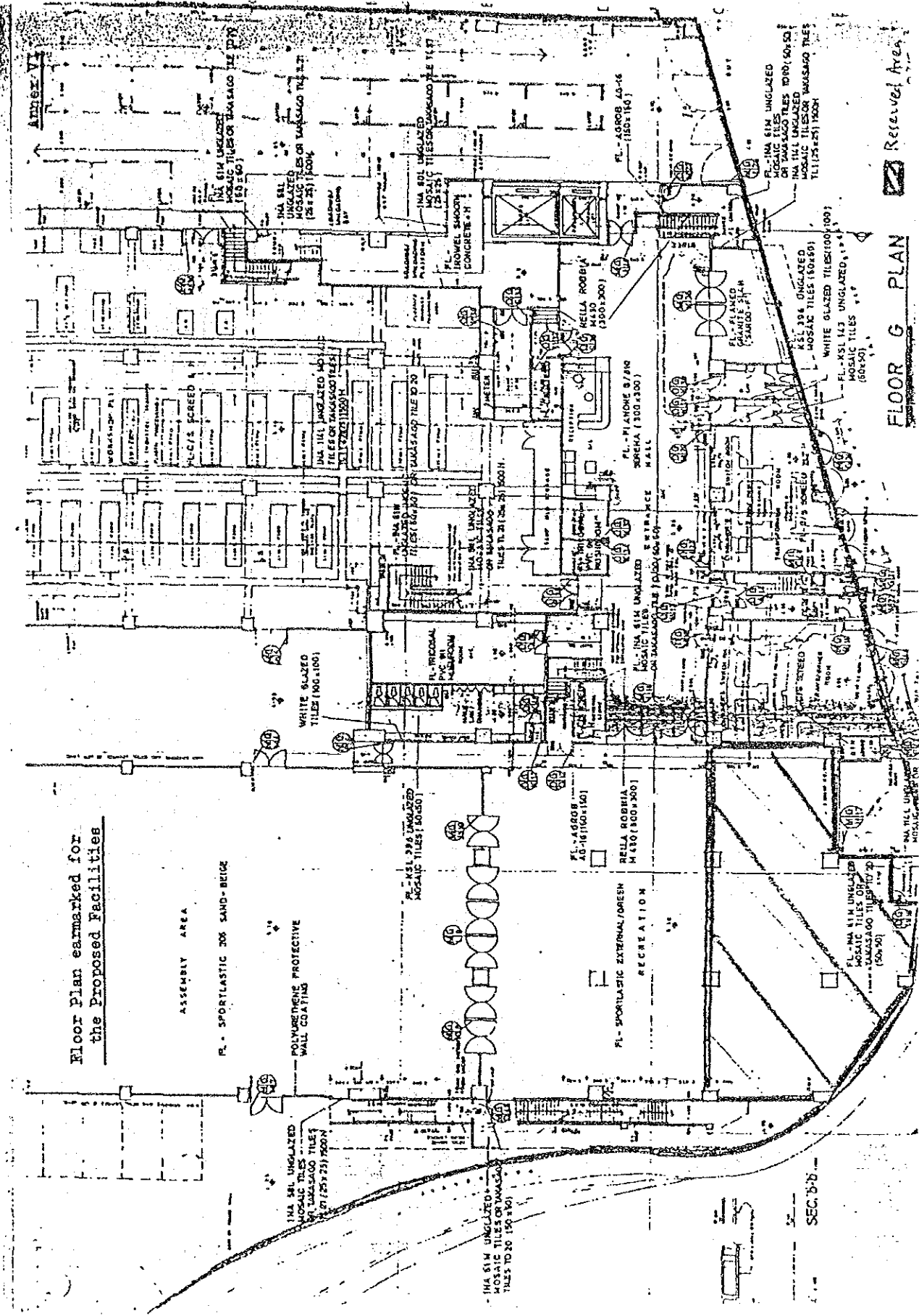
Organization Chart of the Proposed
Precision Sheet Metal Processing Training Facility



Location map of the Kowloon Bay Training Centre Complex

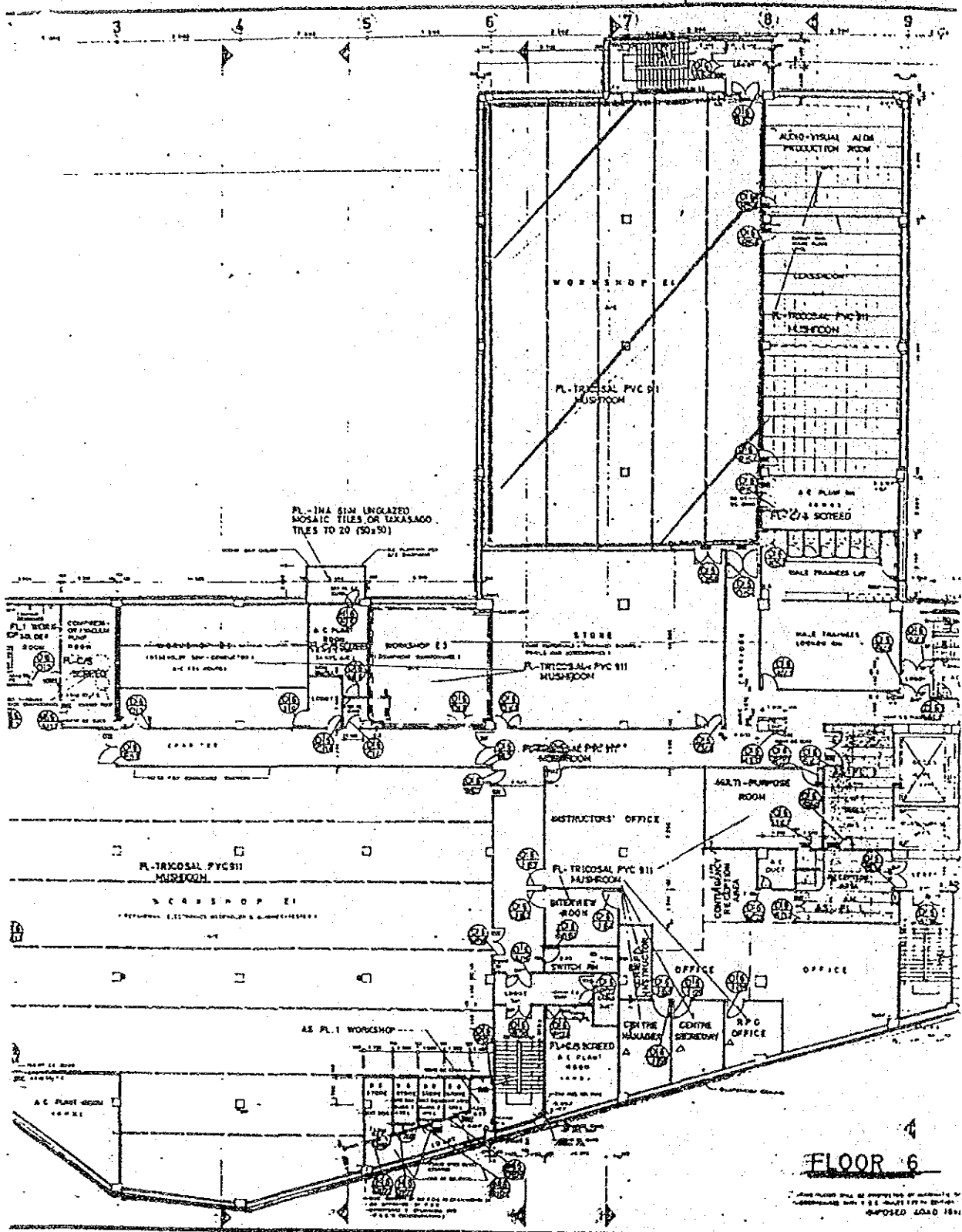


Floor Plan earmarked for
the Proposed Facilities



FLOOR G PLAN

SEC. 3-B

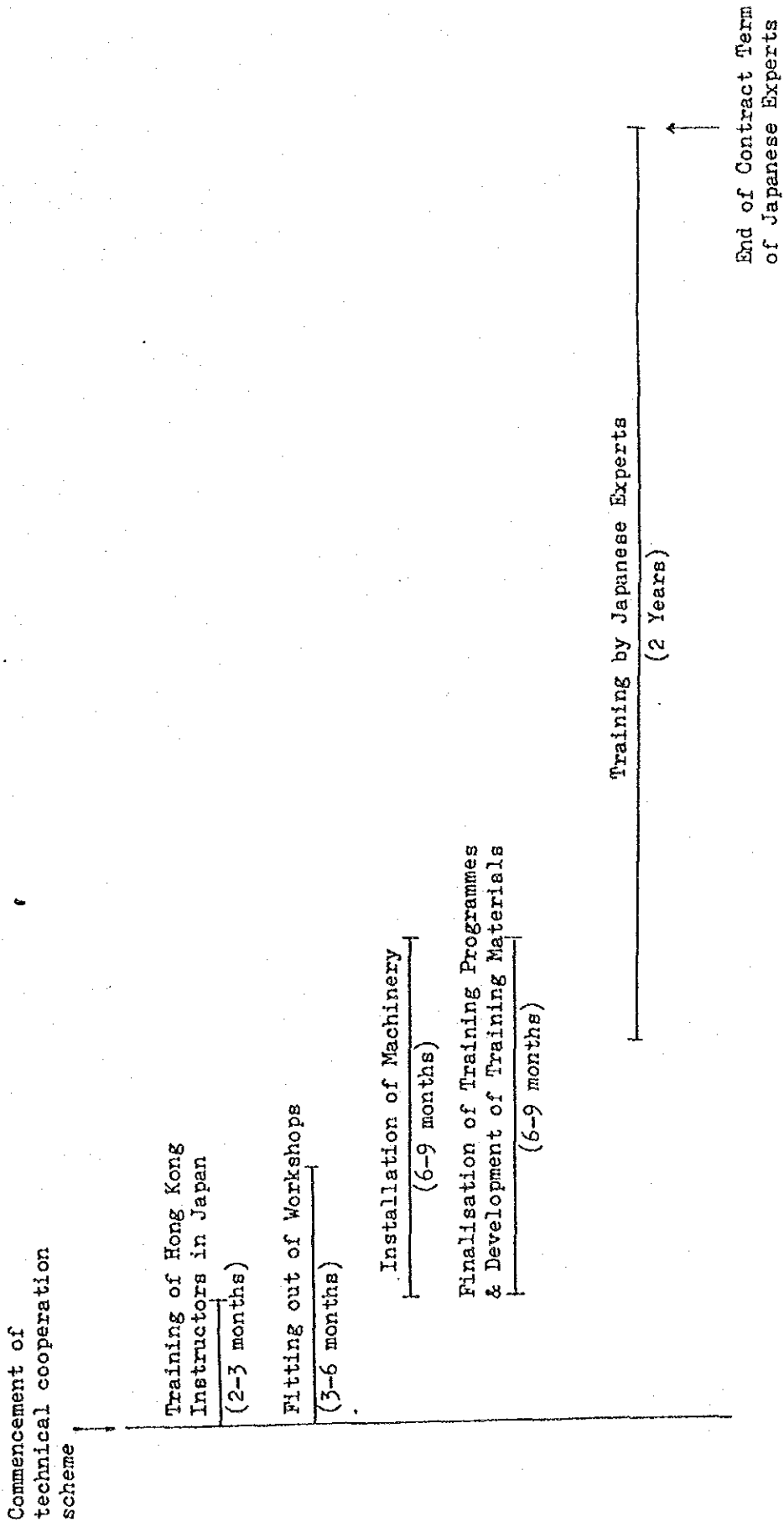


FLOOR 6

THIS FLOOR SHALL BE SUPPORTED BY STRUCTURE OF SUBFLOOR WITH 1.5 TONNAGE PER SQ. METRE IMPOSED LOAD 1800

Reserved Area 450m²

Implementation Chart



Equipment installed in the VTC Precision Tooling Training Centre

<u>Major Equipment</u>	<u>Quantity</u>
CNC EDM	2
CNC Wire-cut EDM	2
CNC Machining Centre with tool changer	1
CNC Machining Centre without tool changer	1
CNC Lathe	1
CNC Automatic Programming System	2
Precision Lathe	8
Precision Milling Machine	10
Precision Grinding Machine	10
Precision Grinding Machine, large capacity	1
Jig Grinding Machine	1
Precision Tool and Cutter Grinder	2
Precision Single Flute Grinding Machine	2
Precision Cylindrical Grinding Machine	2
Engraving Machine	2
Co-ordinate Jig-boring Machine	1
EDM	4
Projection Profile Grinder	1
Copy Milling Machine	2
Drilling Machine - Pedestal Type	2
Drilling Machine - Bench Type	4
Heat-treatment Furnace	1
Hardness Tester	1
Power Press	1
Plastic Injection Moulding Machine (Battenfeld)	1
Work Bench	60
Power Lackhaw	1
Toolroom Bandsaw	1
Small Lathe	1
Radial Drilling Machine	1
Monorail	2 sets
<u>On Order</u>	
Portable Surface Roughness Tester	1
Micro Plotter	1
Precision Radius & Tangent Wheel Dressing Unit	1

HONGKONG | JAPAN
 BUSINESS CO-OPERATION
 COMMITTEE

3rd October, 1986

Letter dd. 3.10.86 from Mr. James Wu (Chairman of the Industrial
 Development Working Committee of the Hong Kong/Japan Business
 Cooperation Committee) which initiated the project

A PROPOSED INTENSIVE TRAINING CENTRE, HKJBCC

In the Plenary Session of the HongKong-Japan, and Japan-HongKong Business Co-operation Committee in HongKong in May 1985, Mr. H. Yoshiyama, Co-chairman of the meeting advised, in general, that HongKong needed to upgrade its manufacturing technology and facilities to achieve better quality and efficiency so as to increase its exports to Japan and other world markets. Sir S.Y. Chung, Co-chairman, expressed concurrence, and Mr. James M.H. Wu, Chairman of Industrial Development Committee, HKJBCC, thanked Mr. Yoshiyama for his advice and offer of assistance in providing production technology for HongKong manufacturers, Mr. Wu also said HongKong would continue to organise further machinery purchasing, technology transfer and equipment and material sourcing missions to Japan. In the Plenary Session in Tokyo in May this year, it was also agreed that, in order to alleviate to some extent the imbalance in trade that has for years continued to be at about 10 to 1 in Japan's favour, we should seek solutions in industrial investment and technology transfer.

In a subsequent dinner hosted by Sir S.Y. in honour of the Consul-General, and where Mr. Kato of JETRO and other Japanese dignitaries were present, Mr. Wu advised the party of the activities of the study and buying mission for equipment and technology in Japan, and proposed that it would be to the benefit of all concerned if a Centre for Intensive Training in Industrial Technology could be set up in HongKong, where-by:

- (1) The H.K. Government would provide suitable premises and for administration and operation costs, subject to government approval, and perhaps involving the Productivity Centre,

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HONGKONG JAPAN BUSINESS CO-OPERATION COMMITTEE

- 2 -

- (2) Members from H.K. Industry would set up a management committee for organisation and liasion.
- (3) Japanese manufacturers would provide the machine-tools and technology for training in the first instance, later to be taken over by the local lecturers and instructors.
- (4) H.K. Industry will pay for partial cost of the training.

It is thought that in this way (principally because of the specialised INTENSIVE TRAINING nature, as it has been done in Japanese organisations assisting small to medium-size industries):

- (A) HongKong factories and technicians would really benefit by adequately familiarising with latest machines and techniques, thereafter prepared to invest for same and reap full benefits of use of such machines and techniques. (This is by far the best way, not found nor possible in other technical institutions.
- (B) Japanese manufacturers would become the main sellers, and beneficiaries of industrial machinery and equipment to HongKong. This benefit will extend to Japanese suppliers of secondary industrial materials, as HongKong manufactures and exports more because of improved technology and products.
- (C) Since the recent substantial appreciation of the Yen, more Japanese industrialists are finding HongKong more attractive for industrial investment. Improved facilities and techniques in H.K. factories would play a more desirable and effective part as vendors and suppliers of OEM components to these new investors at even lower costs.

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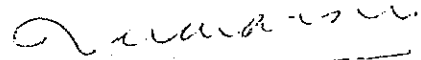
**HONGKONG JAPAN
BUSINESS CO-OPERATION
COMMITTEE**

- 3 -

(D) Considering the huge annual imports by HongKong of consumer durables and industrial materials and equipment from Japan, an estimated US\$2 - 3 million (or so), would be small cost to invest by interested parties in Japan for the immense goodwill and lasting publicity, as also for the free demonstration and showroom facility.

We trust that the matter will be of interest to you, and look forward to receiving your favourable response, kind support, and valued advice.

Yours sincerely,



James M.H. Wu, O.B.E., J.P.
Chairman
Industrial Development Working
Committee
HKJBCC

To:

Mr. K. Matsuura
Consul-General
Consulate-General of Japan

Mr. A. Odake
President
Japanese Chamber of Commerce and Industry

Mr. T. Kato
Director-General
JETRO, Hong Kong

c.c. The Hon. Sir S.Y. Chung,
Chairman HKJBCC.

✓ Mr. K.Y. Yeung, J.P.
Director of Industry, H.K.

Mr. S.K. Chan, J.P.
Executive Director, H.K.P.C.

Preliminary List of Hongkong Industries Requiring
Modernisation and Intensive Training on Latest Equipment

(1) METAL WORKING

(A) Tool & Die making, (CNC and Tracer machining, Laser & EDM, progressive dies, fine-blanking, and CAD/CAM techniques).

(B) Production repetition-machining (incl. CNC and special machines).

(C) Metal Fabrication, (Hi-speed, & CNC Turret Punching, bending and welding)

(D) Heat treatment and metal finishing.

(2) PLASTICS & TOYS

(A) Moulds and dies, for plastics and die-casting, see 1(A).

(B) Injection moulding machines and techniques for various engineering plastics, structural foams, GRP. Beryllium-copper moulds.

(3) ELECTRICAL APPLIANCES AND ELECTRONICS INDUSTRIES

(Using techniques and methods as in (1) and (2), plus additional components - manufacture techniques.)

(4) WATCHES AND CLOCKS

See 1(A), (B) and 3.

(5) PRODUCTION AUTOMATION, including hydraulics, pneumatics

and robotics. Low cost automation system techniques, CNC and FMS.

(6) OFFICE AUTOMATION SYSTEMS

(7) TEXTILE AND GARMENT MACHINERY

Weaving-knitting-finishing-tailoring-sewing, etc.

Will be glad to provide names of Japanese manufacturers.

Qualifications of Senior Instructors

<u>Senior Instructor</u>	<u>Qualification</u>	<u>Experience</u>
Mr. TOO Heng-tien	Raffles Institution 'O' Level Craftsman Certificate in tool & die making (Singapore) National Trade Certificate Level 2	4-yr. apprenticeship + 10 years' experience in tool making
Mr. ANG Swee-hock	GCE 'O' Level National Trade Certificate in tool & die making (Singapore) City & Guilds full tech.cert. (UK) National Trade Certificate Level 2	4-yr. apprenticeship + 5½ years' experience in tool making
Mr. KWONG Bau-to	Craft Certificate in tool and die making (MHTI) Certificate in mech.eng. (HKP) City & Guilds full tech.cert. (UK)	5-yr. apprenticeship + 10 years' experience in tool making
Mr. KWAN Shing-tat	Craft Certificate in mech.eng. (MHTI) General Certificate (MHTI)	3-yr. apprenticeship + 14 years' experience in tool making/precision machining fields
Mr. HO Man-sum	Craft Certificate in mech.eng. (MHTI) Higher Certificate in mech.eng. (HKP)	3-yr. apprenticeship + 9 years' experience in tool making
Mr. PANG Fu-ying	Matriculation Higher Diploma in productive eng. (HKP)	9 years' experience in productive eng. field
Mr. CHENG Fan-yeung	Diploma in mech.eng. (China)	20 years' experience in scientific work/manufacturi field + 7 years' instructi experience
Mr. CHAN Tat-tong	Higher Certificate in mech.eng. (HKP)	3-yr. apprenticeship + 3 years' experience in mould making + 9 years instructing experience

QUESTIONNAIRE FOR THE PROPOSED TECHNICAL COOPERATION PROJECT
ON THE SHEET METAL PROCESSING TECHNOLOGY CENTER IN HONG KONG

7

I. BACKGROUND OF THE PROJECT

1. Present position of the Sheet Metal Processing Technology Center Project (hereinafter referred to as "the Project") in the current National Development Plan
2. Government policy for development of die manufacturing and sheet metal processing technology
3. Present situation for die manufacturing and sheet metal processing technology in Hong Kong (restriction, technical difficulties, etc.), and for Governmental assistance to die manufacturing and sheet metal processing industries
4. Justification and priority of the Project
5. Present situation of die manufacturing and sheet metal processing enterprises in Hong Kong (Number and activities by classification and scale)
6. Present situation of die manufacturing technology (technical level of CAD/CAM, N/C programing, accuracy, ratio of progressive die, material, research and development, etc.)
7. Trend of die industry (brief history, production by type, ratio of in-house manufacturing, import and export demand forecast, etc.)

II. OUTLINE OF THE ESTABLISHMENT OF THE SHEET METAL PROCESSING TECHNOLOGY CENTER PROJECT

8. Objective, activities and necessity of the center
9. Institution structure and organization of the center
(function, duties of each sections and organization chart)
10. Responsibility of the Project implementation
(a responsible person)
11. Present conditions of existing site, building and facilities necessary for the Project (Location map, drawing)

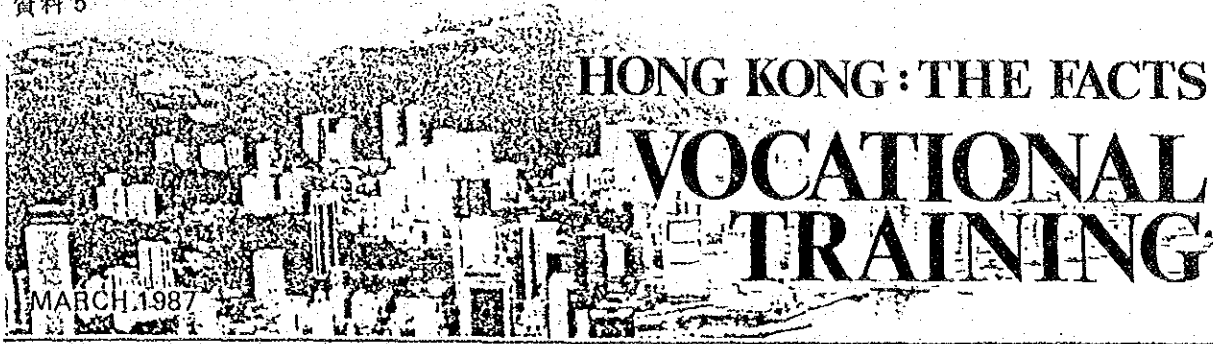
12. Present situation of qualified manpower as lecturer and instructor for training in the field of die manufacturing and sheet metal processing technology
13. Assignment plan of the engineers and technical personnel required for the operation of the center
14. Budgetary allocation plan required for the operation of the center

III. REQUEST ON TECHNICAL COOPERATION BY HONG KONG GOVERNMENT

15. Details of training course plan
(field, training target, course duration, frequency-number of times/month/year-, number of participant and potential participant, etc.)
16. Scope of technology transfer through technical cooperation from Japan
17. Duration of technical cooperation required for the Project
18. Japanese expert necessary for the technology transfer
 - a. Long-term expert (specific field with term and number)
 - b. Sort-term expert(")
19. Training of counterpart personnel in Japan
(specific field with term and number)
20. Machinery and equipment necessary for the technology transfer
 - a. Proposed equipment to be provided by Japanese Government
 - b. Equipment available for the Project by Hong Kong Government

IV. OTHERS

21. Governmental research or training institution concerned in the field of die manufacturing and sheet metal processing, and their functions
22. Past record on receiving any technical cooperation in the field of die manufacturing and sheet metal processing from other country or international organization
23. Other data and document related to the Project



A developing manufacturing and financial centre such as Hong Kong requires a steady stream of trained manpower. Providing better and increased opportunities for vocational training is the only effective way to meet this demand.

With this in mind, the Government in 1982 set up the Vocational Training Council (VTC). Its prime aim is to ensure that Hong Kong has the educated and trained manpower it will require as it continues to move up-market and its economy continues to diversify.

The scope is vast. Surveys in 1986 showed about 870 000 people working in manufacturing industries, 615 000 in wholesale/retail, import/export and restaurant/hotel trades, 191 000 in finance, insurance, real estate and business services, and 69 000 in construction. Increasing use of modern technology in all spheres of work means that workers need more sophisticated skills.

Vocational Training Council: The Vocational Training Council (VTC), established by the Governor under the Vocational Training Council Ordinance, has both advisory and executive functions and duties. It not only advises the Government on the measures required to ensure a comprehensive system of technical education and industrial training suited to the developing needs of Hong Kong but also institutes and develops schemes for training operatives, craftsmen, technicians and technologists to improve industry, commerce and services. Furthermore, the VTC establishes, operates and monitors technical institutes and industrial training centres.

The Council is composed of 18 non-government members who are leading figures in industry, commerce and the service sector, educationists and representatives of workers; and four government officials, namely, the Secretary for Economic Services, the Director of Education, the Commissioner for Labour, and the Director of Technical Education and Industrial Training who is also its Executive Director.

Training Boards/Committees: On the advice of the Council, the Governor has set up 19 training boards and seven general committees to assist it.

The training boards determine manpower needs, prepare job specifications and design training programmes and guidelines for trade tests for their industries or commercial sectors. They cover all the major economic activities including accountancy; automobile; banking; building and civil engineering; clothing; electrical; electronics; hotel, catering and tourism; insurance; jewellery; journalism; machine shop and metal working; merchant shipping; plastics; printing; shipbuilding and ship repair; textile; transport and physical distribution; and wholesale/retail and import/export trades.

The general committees are responsible for specific training areas common to more than one sector of the economy. These areas are apprenticeship and trade

testing, electronic data processing training, management and supervisory training, precision tooling training, training of technologists, translation and technical education.

Technical Institutes: There are seven technical institutes, which are operated and maintained by the VTC—Morrison Hill Technical Institute in Wan Chai, Kwai Chung Technical Institute in Kwai Chung, Kwun Tong Technical Institute in Kwun Tong, Haking Wong Technical Institute in Cheung Sha Wan, and Lee Wai Lee Technical Institute in Kowloon Tong, Tuen Mun Technical Institute in Tuen Mun and Sha Tin Technical Institute in Sha Tin. The eighth institute, which is at Chai Wan, is under construction and will begin enrolling students in September 1987. An academic and management structure has been introduced to involve prominent members of industry and commerce in the planning and organisation of academic activities in the technical institutes, which continue to provide an increasing range of courses.

The technical institutes offer courses at two distinct levels, namely craft or post-Form 3 level and technician or post-Form 5 level. Attendance modes of the courses fall into three main categories: full-time, part-time day-release and part-time evening. Short courses are also run. The main disciplines include electrical engineering, mechanical engineering, motor vehicle and marine engineering, applied science, industrial technology, construction, computing, textiles, clothing, design, printing, hotel-keeping and tourism as well as commercial and general studies. Many of the post-Form 5 level courses are validated by the Business and Technician Education Council of the United Kingdom for their diploma or certificate awards.

In the 1986/87 academic year, the seven technical institutes enrolled a total of about 8 000 full-time, 13 500 part-time day-release and 28 200 part-time evening students.

There is a computer centre each at the Lee Wai Lee, Tuen Mun and Sha Tin Technical Institutes and there will also be one in the Chai Wan Technical Institute. Each computer centre will serve two technical institutes. In addition to having terminals linked to the computer centre, every institute is also equipped with microcomputers. Plans are also in hand to purchase equipment for the teaching of computer-aided design and draughting and for the further enhancement of the computing facilities. This is to cope with the demand arising from larger student numbers and increasing emphasis on computing studies.

The Chai Wan Technical Institute presently under construction has an Applied Science Department, the first to be established in the technical institutes. It plans to offer courses in chemical technology, food technology, environmental studies, dispensing and laboratory technician studies. For disciplines which already exist in other technical institutes, Chai Wan Technical Institute will also offer courses in industrial

engineering, import/export studies, supervisory management, office receptionist studies and stores supervision.

Upon full development of the Chai Wan Technical Institute, the eight technical institutes together will have places for 12 500 full-time, 20 000 part-time day-release and 32 000 part-time evening students.

Training Centres: The VTC has set up 11 industrial training centres in two large complexes located in Kowloon Bay and Kwai Chung to provide basic off-the-job training and up-grading training in a number of trades relating to the automobile, electrical, electronics, gas, hotel, machine shop and metal working, welding, plastics, printing, textile and precision tooling industries. The level of courses ranges from operative to technologist. Each year about 9 000 workers will be trained in these centres.

To cater to the needs of the commercial and service sectors, the VTC has set up an insurance training centre and an electronic data processing training centre. The centres provide both basic courses as well as upgrading courses for employees at all levels in their respective sectors.

The Seamen's Training Temporary Centre was set up at Little Sai Wan to provide training to serving local seamen to enable them to meet the mandatory standards required by the International Convention on Standard of Training, Certification and Watchkeeping for Seafarers. Government has approved the establishment of a permanent centre for the training of seafarers to be located at Tai Lam Chung. Construction work for this permanent centre was started in late 1986 and it is anticipated that it will be completed in Autumn 1987.

The VTC is in the process of setting up training centres for the jewellery and banking industries.

The Management Development Centre of Hong Kong has been established to improve the quality and quantity of management in Hong Kong. To this end, the Centre undertakes and co-ordinates management research to meet the changing needs of management in all sectors of Hong Kong industry and trade, and develops programmes, materials and other activities to meet those needs. The Centre also co-ordinates and promotes management development and training activities at all levels and in all sectors. The Centre operates an information centre to offer support to management trainers and the business and academic communities.

To ensure that Hong Kong has an adequate supply of well trained engineers, the Council operates a training scheme, the Engineering Graduate Training Scheme, to assist engineering graduates in obtaining the practical training which is needed for them to complete their training as engineers and attain professional status. As an incentive to employers to participate in the scheme, the VTC currently subsidises the monthly salaries of the graduates. Employers taking part in the scheme are required to provide their engineering graduates with 18 months of supervised practical training to a standard acceptable for the corporate membership of the major professional engineering institutions. The VTC has set up a Technologist Training Unit which assists employers taking part in the scheme. The unit operates a placement service to help employers recruit graduates for training and also assist

graduates in finding training opportunities. With effect from April 1985, the scheme has been extended to cover sandwich course students receiving approved training in industry.

Apprenticeship Scheme: The Apprenticeship Ordinance, which came into force in 1976, requires a young person to enter into a contract of apprenticeship if he is aged under 19 and engaged in a designated trade.

The contract must be registered with the Director of Technical Education and Industrial Training. Contracts of apprentices engaged in non-designated trades may also be registered voluntarily with the Director. There are currently 42 designated trades. The range is wide; among the jobs for which an apprentice could be trained are tool maker, fitter, machinist, electrician, clothing and knitting machine mechanic, printing machine operator, construction plant mechanic, motor mechanic, furniture maker or hotel cook (Western-style).

The Apprenticeship Section of the Technical Education and Industrial Training Department is responsible for administering the Ordinance. Its duties include advising and assisting employers in the employment and training of apprentices, ensuring that training is properly carried out, helping to resolve disputes arising out of registered contracts, and co-operating with the technical institutes to ensure that apprentices receive the necessary complementary technical education. The number of apprenticeship contracts registered in 1986 totalled 4 505.

Courses of instruction for apprentices, normally on a part-time day-release basis, are provided at either the technical institutes or the Hong Kong Polytechnic.

Vocational Training for the Disabled: The Technical Education and Industrial Training Department administers two government and three subvented vocational training centres for disabled persons. The centres provide a total of 756 training places with a wide variety of vocational training programmes. There are plans to increase this figure to 1 400 training places (including 500 with residential facilities) by 1991. The International Labour Organization training concept of Modules of Employable Skills is used in these training programmes whereby job skills are broken down into basic skill units and each unit is further divided into learning elements. This enables the trainees to progress at their own individual pace.

In addition to following training courses in the skills centres many disabled have successfully completed technical institute courses at both technician and craft level. There are some 120 disabled students currently attending these courses. During their studies, the department provides them with counselling and other special services.

The department also provides additional supporting services through its Vocational Assessment Section and Technical Aids and Resource Centre. The former evaluates a disabled person's aptitude, potential and abilities before developing a vocational training plan to suit him. The latter designs and produces work adaptations and technical aids for the disabled with the aim of improving their job prospects and training achievements.





Vocational Training Council

Industrial Training Centres

(Housed in the Kowloon Bay Training Centre Complex)

9/1987

The Vocational Training Council operates a number of training centres to provide basic training facilities for the industry, commerce and services sectors of Hong Kong. Its Kowloon Bay Training Centre Complex, located at 46 Tai Yip Street, Kowloon Bay, accommodates the following six training centres:-

Plastics Industry Training Centre	(2nd Floor)
Precision Tooling Training Centre	(2nd Floor)
Printing Industry Training Centre	(3rd Floor)
Machine Shop and Metal Working Industry Training Centre	(5th Floor)
Electronics Industry Training Centre	(6th Floor)
Hotel Industry Training Centre	(7th Floor)

The training centres are designed to simulate real-life industrial conditions. The aim is to enable trainees to receive practical training in a working environment similar to that which they will encounter in their working life. The curricula are prepared in accordance with the needs of industry and commerce. Upon completion of training, trainees will be able to enter relevant trades or become apprentices and receive further training on the job.

The training centres provide courses of different levels ranging from technician (or post-Form Five level), craft (or post-Form Three level) to operative. Evening courses designed for those in employment who wish to upgrade or update their skills are also conducted. The six training centres offer some 40 full-time and part-time courses of various durations.

The following courses are currently conducted by the training centres:-

Course Title	Duration	Number of Trainees Per Year
Electronics Industry Training Centre		
Repairman (Electronics Manufacturing)	44 weeks	60
Course for Line Leader (Electronics Manufacturing)	18 weeks	20
Extension Course on Radio Repair	12 Sat AMs	30
Extension Course on Cassette Recorder Repair	8 Sat AMs	30
Assembler (Semi-Conductors)	6 weeks	20
Assembler (General Electronics)	6 weeks	380
AI Tester	4 weeks	80
QC/QA Inspector	4 weeks	40
Extension Course on Incoming Quality Control	6 Sat AMs	30
Extension Course on Final Quality Control of Radio/Cassette Recorder Leader (Electronics Manufacturing)	6 Sat AMs	30
Basic QC/QA Course	15 evenings	140
	15 evenings	200
Hotel Industry Training Centre		
Basic Front Office Service	16 weeks	150
Basic Food and Beverage Service	12 weeks	520
Basic Housekeeping Service	9 weeks	450
Plastics Industry Training Centre		
Basic Plastics Technician Course	44 weeks	5
Mould and Die Maker	44 weeks	40
Pattern and Model Maker	44 weeks	35
Plastics Injection Moulding Machine Setter	8 weeks	70
Plastics Injection Moulding Machine Operator	4 weeks	300

Machine Shop and Metal Working Industry Training Centre

Basic Mechanical Engineering Craft Course	44 weeks	290
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Precision Tooling Training Centre

Precision Tooling Course in Plastic Mould and Die Making	44 weeks	10
Precision Tooling Course in Tool and Die Making	44 weeks	10
Precision Tooling Course for Engineering Graduates	13 weeks	10
Precision Tooling Course in Plastic Mould and Die Making (evening)	88 weeks	20
Precision Tooling Course in Tool and Die Making (evening)	88 weeks	30
Short Courses in Selective Areas of Precision Tooling and CNC Machine Programming and Operation	4 weeks	132
Plastic Mould Design Course	36 weeks (1 day/week)	10
Tool and Die Design Course	36 weeks (1 day/week)	10

Printing Industry Training Centre

Basic Technician Course	44 weeks	20
Computerized Letter-Assembly (Craft)	22 weeks	40
Graphic Reproduction (Craft)	22 weeks	40
Offset Printing (Craft)	22 weeks	80
Print Finishing (Operative)	6 weeks	120
Certificate in Print Production (Technician) (evening)	40 weeks	15
Certificate in Offset Printing (Small Offset) (Craft) (evening)	30 weeks	15
Certificate in Computerized Letter Assembly (Craft) (evening)	40 weeks	30
Certificate in Graphic Reproduction (Lithography) (Craft) (evening)	40 weeks	15
Certificate in Film Assembly and Offset Lithographic Platemaking (Craft) (evening)	10 weeks	15
Certificate in Offset Printing (Craft) (evening)	40 weeks	15
Certificate in Print Finishing (Operative) (evening)	10 weeks	15

Full-time trainees are not required to pay any fees but they are given a training allowance to help defray their living expenses. Upon completion of training, career counselling and job placement services are made available for those needing them. Evening trainees are required to pay a deposit which is refunded after successful completion of training.

The Kowloon Bay Training Centre Complex, located on a site of 5700 m², is a nine-storey building with a total floor area of 25000 m². The cost of building and equipping the complex was over HK\$130 million. The complex has some common facilities for the use of all the six training centres. These include a canteen, an assembly hall, a library, conference rooms and a first-aid room. In addition, sports and recreational facilities are also provided for the use of trainees.

For further information on courses offered by the training centres, please contact:-

Kowloon Bay Training Centre Complex,
46 Tai Yip Street, Kowloon,
Hong Kong
Tel.: 3-7506818



Vocational Training Council

Industrial Training Centres

(Housed in the Kwai Chung Training Centre Complex)

9/1987

The Vocational Training Council operates a number of training centres to provide basic training facilities for the industry, commerce and services sectors of Hong Kong. Its Kwai Chung Training Centre Complex, located at 13-19 San Kwai Street, Kwai Chung, accommodates the following eight training centres:-

- Electronics Industry Training Centre (Level 1)
- Automobile Industry Training Centre (Level 2)
- Electrical Industry Training Centre (Level 4)
- Machine Shop and Metal Working Industry Training Centre (Level 6)
- Textile Industry Training Centre (Level 7)
- Welding and Related Trades Training Centre (Level 7)
- Jewellery Industry Training Centre (Level 8)
- Gas Industry Training Centre (Level 9)

The training centres are designed to simulate real-life industrial conditions. The aim is to enable trainees to receive practical training in a working environment similar to that which they will encounter in their working life. The curricula are prepared in accordance with the needs of industry and commerce; both theory and practice are equally emphasized. Upon completion of training, trainees will be able to enter relevant trades or become apprentices and receive further training on the job.

The training centres provide courses of different levels ranging from technician (or post-Form Five level), craft (or post-Form Three level) to operative. Evening courses designed for those in employment who wish to raise the standard of their techniques or to acquire new skills are also conducted. The eight training centres offer some 30 full-time and part-time courses of various durations, from four days to 44 weeks.

The following courses are currently conducted by the training centres:-

Course Title	Duration	Number of Trainees Per Year
Electronics Industry Training Centre		
Repairman (Electronics Manufacturing)	44 weeks	60
Line Leader (Electronics Manufacturing)	18 weeks	20
Short Course in Radio Repair	6 days	30
Short Course in Cassette Recorder Repair	4 days	30
Electronics Assembler	6 weeks	300
Aligner/Tester	4 weeks	80
QC/QA Inspector	4 weeks	40
Short Course in Incoming Quality Control	6 Sat AMs	40
Short Course in Final Quality Control of Radio/Cassette Recorder	6 Sat AMs	20
Leader (Electronics Manufacturing)	8 weeks (evening)	140
Basic QC/QA	8 weeks (evening)	200
Automobile Industry Training Centre		
Vehicle Technician (Body Repair and Refinishing)	44 weeks	16
Vehicle Technician (Automobile Engineering)	44 weeks	16
Vehicle Mechanics	44 weeks	180
Vehicle Electrician	44 weeks	20
Vehicle Body Repairer	44 weeks	45
Vehicle Painter	22 weeks	60

Electrical Industry Training Centre		
Electrician/Electrical Fitter	44 weeks	120
Refrigeration/Air-conditioning Mechanic	44 weeks	48
Lift Mechanic/Lift Electrician	44 weeks	32
Part-time Electrician/Electrical Fitter Upgrading Course	20 evenings	960
Part-time Lift Mechanic/Lift Electrician Upgrading Course	20 evenings	160
Part-time Air-conditioning Course	20 evenings	200

Machine Shop and Metal Working Industry Training Centre		
Basic Mechanical Engineering Craft	44 weeks	290

Textile Industry Training Centre		
Basic Textile Technician (Fabric Production)	44 weeks	24
Textile Mechanic (Weaving)	22 weeks	120
Textile Mechanic (Knitting)	22 weeks	60
Weaver	8 weeks	192
Fabric Repairer	8 weeks	144
Drawing-in Worker	8 weeks	60
Maintenance of Computerized Knitting Machine	15 weeks (evening)	36

Welding and Related Trades Training Centre		
Basic Welding Craft Course	44 weeks	30
Basic Welding Course	15 weeks	210

Jewellery Industry Training Centre		
Goldsmith (K-gold)	44 weeks	45
Goldsmith (Fine Gold)	44 weeks	30
Precious Stone Setter	44 weeks	30

Gas Industry Training Centre		
Gas Utilization Fitter	44 weeks	36
Advanced Module Course for LPG Permitted Fitter	9 days	30
Gas Pipe Installer	5 days	150
Basic Module Course for LPG Permitted Fitter	4 days	30

Full-time trainees are not required to pay any fees but are given a training allowance to help defray their living expenses. Upon completion of training, career counselling and job placement services are made available for those needing them. Evening trainees are required to pay a deposit which is refunded after successful completion of training.

The Kwai Chung Training Centre Complex, located on a site of 6700 m², has a total floor area of 29000 m². The cost of building and equipping the complex was over HK\$140 million. The complex has some common facilities for the use of all eight training centres. These includes a canteen, an assembly hall, a library, conference rooms and a first-aid room. In addition, sports and recreational facilities are provided for the use of trainees.

For further information on courses offered by the training centres, please contact:-

Kwai Chung Training Centre Complex,
13-19 San Kwai Street,
Kwai Chung,
New Territories
Hong Kong
Tel.: 0-204253

HONG KONG PRODUCTIVITY COUNCIL

The Hong Kong Productivity Council, a statutory organization established in 1967, is responsible for promoting the increased productivity of industry in Hong Kong. The Council comprises a Chairman and 20 members all appointed by the Government representing management, labour, academic and professional interests as well as government departments closely associated with productivity matters. It is financed by an annual government subvention and by fees earned from its services.

The Council offers a wide range of consultancy services covering industrial technologies, feasibility studies, production management, personnel recruitment, market research, EDP and environmental control. HKPC conducts some 500 training courses a year ranging from various technologies, computer training to management and supervisory skills. In addition to organizing industrial exhibitions and overseas study missions, HKPC also offers a technical information service.

The role and functions of HKPC have undergone substantial changes since its formative years. It has evolved from a training and consultancy organization into a major organizational focus for providing industry support services with the implementation of the recommendations of the Advisory Committee on Diversification. The revised "HKPC Ordinance" in August 1985 provides for the enlargement of the powers and functions of the Council to meet the changing industrial development needs of Hong Kong with greater flexibility and effectiveness.

To develop and apply technologies identified to be necessary for Hong Kong's industrial development, HKPC was requested by the Government to implement the "Unified Approach" in technology transfer for industry. The implementation plan entails HKPC's capability enhancement in the expansion of relevant technical branches to provide an integrated industrial automation support service, and the improvement of precision tooling capability.

OUR OBJECTIVES

At the enterprise level, we provide an integrated range of training, consultancy, technical and laboratory based services in areas critical to the development of industry.

At the industry level, we aim to identify innovative development opportunities and to undertake development work designed to serve multiple users' requirements.

At the Government level, HKPC undertakes major techno-economic studies and advises the Government on major factors affecting the productivity of industry in Hong Kong.



In addition, HKPC undertakes to consult with, coordinate and assist the activities of persons or organizations, either in Hong Kong or elsewhere, engaged in the study, development or dissemination of programmes, methods or techniques for productivity enhancement, as well as to conduct productivity related assignments both within and outside Hong Kong.

OUR RESOURCES

HKPC has a total staff establishment of about 300. Its team of professional consultants possess expert knowledge and substantial practical experience in engineering, science, economics, business administration, electronic data processing and metallurgy.

An important strength of HKPC is its ability to dynamically mix and blend skills for a large variety of industry support activities. Inter-divisional expertise and resources are deployed and integrated in handling client assignments and in productivity improvement systems developed for industry. HKPC's consultants assist clients to identify management and technical problems, formulate cost-effective recommendations and implement solutions. To help you improve your technology level and production efficiency, or solve your technical and managerial problems, HKPC's consultancy strength is reinforced by well-equipped and up-to-date facilities. These include electronic data processing facilities, a microprocessor laboratory, a CAD/CAM centre, an industrial chemistry laboratory, a metal finishing laboratory, a heat treatment unit, a die-casting unit, an environmental control laboratory, a technical reference library, an on-line information retrieval service and twelve classrooms.

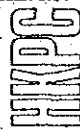
To keep up-to-date with technological developments and the introduction of new techniques, HKPC maintains effective liaison and cooperation with local and international organizations which provide training opportunities, technical information and expert services to the industrial needs of Hong Kong.

HKPC is linked to international organizations such as the Asian Productivity Organization (APO), the Asian Network for Industrial Information and Extension (Technonet Asia), and the United Nations Development Programme (UNDP).

CONTACT HKPC

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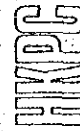


HKPC: STRUCTURE & SCOPE OF SERVICES

Council
Executive Committee
Central Administration
Council & Executive Committee Secretaries
Hong Kong Government Liaison
International Cooperation
Public Relations, Publicity & Publications
Industry Liaison
Accounting & Management
Project Control
Personnel Administration
Audio Visual Support
CORE ACTIVITIES
Technical Information
Client Information Search
Information Packaging
Information Networking
Technical Subjects
General Management
Industrial Consultancy
Product Management
Marketing Services
Technical Services
Product Evaluation & Test
Quality Control & Assurance
Advanced Engineering
Advanced Manufacturing
System Automation
Application Software Development
Robotics
Productivity Control
Productivity Improvement
Productivity Measurement
Productivity Research
Productivity Training
Productivity Promotion
Productivity Research & Education
INDUSTRY SUPPORT ACTIVITIES
Survey Management & Fieldwork
Process Mapping
On Call
Quality Control & Assurance
Product Development
Project Control
Product Evaluation & Test
Quality Control & Assurance
Advanced Engineering
Advanced Manufacturing
System Automation
Application Software Development
Robotics
Productivity Control
Productivity Improvement
Productivity Measurement
Productivity Research
Productivity Training
Productivity Promotion
Productivity Research & Education
COMPLIANCE SERVICES
Advanced Engineering
Advanced Manufacturing
System Automation
Application Software Development
Robotics
Productivity Control
Productivity Improvement
Productivity Measurement
Productivity Research
Productivity Training
Productivity Promotion
Productivity Research & Education
TRAINING
Advanced Engineering
Advanced Manufacturing
System Automation
Application Software Development
Robotics
Productivity Control
Productivity Improvement
Productivity Measurement
Productivity Research
Productivity Training
Productivity Promotion
Productivity Research & Education

ENQUIRIES

Hong Kong Productivity Council
12/F, World Commerce Centre
Harbour City, 11 Canton Road
Hong Kong
Tsimshatsui, Kowloon
Tel.: 3-7235656
Telex: 322842 HKPC HX
Fax: 3-7217229



HONG KONG PRODUCTIVITY COUNCIL

The Hong Kong Productivity Council, a statutory organization established in 1967, is responsible for promoting the increased productivity of industry in Hong Kong. The Council comprises a Chairman and 20 members, all appointed by the Governor, representing management, labour, academic and professional interests as well as government departments closely associated with productivity matters. It is financed by an annual government subvention and by fees earned from its services.

The Council offers a wide range of consultancy services covering industrial technologies, feasibility studies, production management, personnel recruitment, market research, EDP and environmental control. HKPC conducts some 500 training courses a year ranging from various technologies, computer training to management and supervisory skills. In addition to organizing industrial exhibitions and overseas study missions, HKPC also offers a technical information service.

The role and functions of HKPC have undergone substantial changes since its formative years. It has evolved from a training and consultancy organization into a major organizational focus for providing industry support services with the implementation of the recommendations of the Advisory Committee on Diversification. The revised HKPC Ordinance in August 1985 provides for the re-organization of the powers and functions of the Council to meet the changing industrial development needs of Hong Kong with greater flexibility and effectiveness.

To develop and apply technologies identified to be necessary for Hong Kong's industrial development, HKPC was requested by the Government to implement the "United Approach" in technology transfer for industry. The implementation plan entails HKPC's capability enhancement in the expansion of relevant technical branches to provide an integrated industrial automation support service, and the improvement of precision tooling capability.

OUR OBJECTIVES

At the enterprise level, we provide an integrated range of training, consultancy, technical and laboratory based services in areas critical to the development of industry.

At the industry level, we aim to identify innovative development opportunities and to undertake development work designed to serve multiple users' requirements.

At the Government level, HKPC undertakes major techno-economic studies and advises the Government on major factors affecting the productivity of industry in Hong Kong.

In addition, HKPC undertakes to consult with, coordinate and assess the activities of persons or organizations, both in Hong Kong or elsewhere, engaged in the study, development or dissemination of programmes, methods or techniques for productivity enhancement, as well as to conduct productivity related assignments both within and outside Hong Kong.

OUR RESOURCES

HKPC has a total staff establishment of about 300. Its team of professional consultants possesses expert knowledge and substantial practical experience in engineering, science, academics, business administration, electronic data processing and metallurgy.

An important strength of HKPC is its ability to dynamically mix and blend skills for a large variety of industry support activities. Inter-divisional expertise and resources are deployed and integrated in handling client assignments and in productively improving systems developed for industry. HKPC's consultants assist clients to identify management and technical problems, formulate cost-effective recommendations and implement solutions, to help you improve your technology level and production efficiency, or solve your technical and managerial problems. HKPC's consultancy strength is reinforced by well-equipped and up-to-date facilities. These include electronic data processing facilities, a microprocessor laboratory, a CAD/CAM centre, an industrial chemistry laboratory, a metal finishing laboratory, a heat treatment unit, a die-casting unit, an environmental control laboratory, a technical reference library, an on-line information retrieval service and twelve classrooms.

To keep up-to-date with technological developments and the introduction of new techniques, HKPC maintains effective liaison and cooperation with local and international organizations which provide training opportunities, technical information and expert services to the industrial needs of Hong Kong.

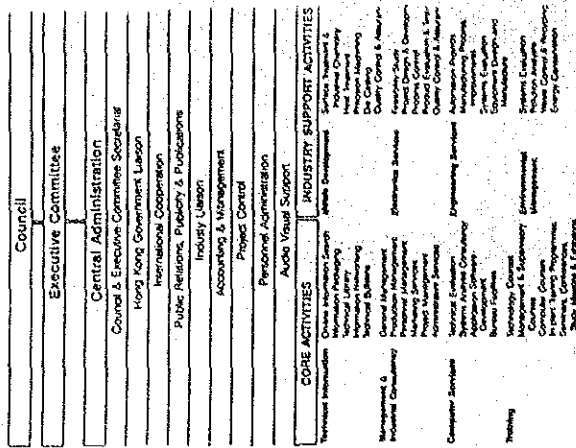
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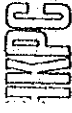
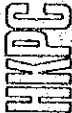
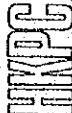
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HKPC: STRUCTURE & SCOPE OF SERVICES



ENQUIRIES

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Tel: 3728665
Telex: 328942 HKPC HX
Fax: 3727223



EXECUTIVE SUMMARY

I. INTRODUCTION

1.1 Background

Following the report of the Advisory Committee on Diversification (1979) and the subsequent HKPC/Atkins Report (1982) on the metal and light engineering industries in Hong Kong, HKPC identified an urgent need for enhanced capability in sheet metal processing and machining technologies in order to complete the logical sequence of support for the proper development of those activities. The present Study was commissioned by the Industry Development Board to examine the current application and likely future role in Hong Kong industry of sheet metal processing.

1.2 Terms of Reference

- 1.2.1 To identify the existing and anticipated needs of local users of parts and components requiring an enhanced capability in sheet metal processing, in terms of the characteristics and quality requirements of the products.
- 1.2.2 To identify the nature of existing sheet metal processing technologies generally, and local limitations in terms of meeting the specified user requirements.
- 1.2.3 To identify the sheet metal and related processing techniques which, if available locally, would satisfy the local user-requirements.
- 1.2.4 To determine alternative methods which would, in Hong Kong, improve the quality and widen the scope of down-stream activities.
- 1.2.5 To identify and assess the capability of facilities to support sheet metal processing in Hong Kong, and to suggest how those facilities can be more effectively applied. Due account to be taken of the resources available in the tertiary education sector.
- 1.2.6 To specify the nature and cost of equipment, manning and other facilities required to provide an effective support capability as identified in 1.2.5, and to consider how this support can best be given to local industry.

1.3 Methodology

The HKPC/Atkins Report provided the initial data base, which was augmented by :-

- a) Desk Study : Collating of Hong Kong statistical information.
- b) Field survey of selected local engineering companies and the tertiary education institutions.
- c) Overseas visits to industry support organizations in Singapore, Taiwan and South Korea.

An external consultant, Mr. Roger Pearce of Cranfield Institute of Technology in the United Kingdom, was appointed to inject ideas on the advanced technologies available worldwide and to examine the possibility of their application in Hong Kong. However, the observations accumulated through HKPC's extensive contacts with local industry constituted the major source of information for the Study, the field survey only serving to consolidate our prior view of the industry, and to provide the External Consultant with some insight into the local situation.

II. OBSERVATIONS AND DATA

2.1 The General Situation

Sheet metal processes have been practiced by local industry for many years. In the sixties and seventies, deep drawing techniques were extensively applied in the production of kitchen utensils, tableware and decorative products in aluminium, brass and stainless steel, these being some of the major metal products at that time. Another popular process, sheet metal stamping (including blanking, piercing, bending and forming), was used for the production of cutlery, metal parts for toys and general metal products. Equipment was either imported from China or produced locally.

In more recent years, the demand for precision stampings has grown in direct proportion to the rise in demand for accuracy in a number of upmarket products such as electrical and electronic parts, tape deck mechanisms, computer chassis, watches, cameras, micro-motors, etc. The manufacture of such products in Hong Kong has usually been initiated as an assembly-based operation, the precision sheet metal components being sourced from overseas suppliers. Although import substitution potential is thus created, the pattern of demand has tended to be fragmented and ill-defined. Advanced sheet metal processing machinery and tooling is considerably more expensive than conventional equipment. So, understandably, very few local sheet metal working subcontractors have been confident enough to make the substantial investments required to upgrade their technology level in the absence of some clear indication of the likely profitability of such investments, or the promise of long production runs.

2.2 Application Groups

In terms of the nature of the processes, the sheet metal forming industries of Hong Kong can be classified in three categories :-

2.2.1 Traditional Forming Group

In sheet metal forming* terms, the deformation produced by these processes is quite large, but dimensional tolerances are fairly slack, sometimes being measured in millimetres. This group includes deep drawing for the manufacture of tableware, kitchen utensils, containers, etc. and impact extrusion of cans, electronic torches and battery casings. (But for the nature of the product, the latter should not, strictly speaking, be classified as a sheet metal working process). Some traditional problems e.g. wrinkling, scoring, shock lines, etc. frequently plague this group, but can generally be solved using traditional methods. Assistance may sometimes be required with troubleshooting of persistent problems, and this can be obtained locally.

* See Appendix 12

2.2.2 Traditional Stamping Group

The majority of sheet metal parts made in Hong Kong at present probably stem from this group, which includes blanking*, piercing*, bending and forming* operations. The deformation of the metal is quite small and the dimensional tolerances are not very stringent. Such articles as cutlery, brackets, parts for toys, etc. are currently produced in Hong Kong using these traditional stamping techniques. The dies employed by the local manufacturers may be of a simple or compound nature, but are invariably of traditional design. The presses, too, are of conventional design, single-stroke or automatic, and are usually manufactured locally or in China. (Manually actuated single-stroke presses are particularly labour-intensive). In this category, no major assistance is required to maintain the current situation for the low end market demand, and forming problems do not arise.

2.2.3 Precision Stamping Group

In this group, although the basic processes employed are similar to those found in the traditional stamping group, the use of more refined production techniques and equipment allows the attainment of greater degrees of precision in the sheet metal products. The overall metal deformation is still limited, but very tight tolerances, of the order of a few microns or a few minutes of arc, can be met. The efficient manufacture of component parts for the more sophisticated and upmarket products such as tapedeck mechanisms, computer chassis, cameras, watches, electronic devices, micro-electric motors, etc. implies the use of these modern precision stamping processes. Very few local companies have any capability in this kind of precision sheet metalworking technology, and most components of this nature continue to be sourced from overseas. Those companies who have developed some capability in the manufacture of such components as lead frames, rotor/stator laminations, electronic parts, etc. have done so either by progressive empirical refinement of their techniques, or by importing the technology. Many of them still experience difficulties in designing dies for new or unusual applications, and require assistance with die design logic and the use of appropriate international standard specifications. At the moment, they often have to source their dies from overseas. The development of local capability in precision die design and manufacture will be an essential prerequisite for the enhancement of our ability to supply precision sheet metal parts for technology-intensive products.

2.3 Import Substitution

The Hong Kong Trade Statistics were surveyed for imported parts and goods involving sheet metal processing. Sizeable amounts of precision sheet metal parts are imported for the assembly of office machines, telecommunication and sound recording equipment, photographic equipment, watches and clocks, etc. Import substitution of these precision parts would be possible if high standards of precision sheet metal processing capability were to be developed in Hong Kong.

2.4 Overseas Visits

The visits to industry support organizations in Taiwan, Singapore and South Korea highlighted the emphasis that the governments of those

* See Appendix 12

territories have placed on the development of the metals and mechanical engineering industries. Most of the supporting institutions were established more than ten years ago and the nature of their role varied to suit the specific requirements of each territory. In Singapore, emphasis was placed on human resource development, whereas in Taiwan and Korea the individual support organizations provided a more comprehensive range of services, including consultancy and development work. In every case, the financial commitment of the respective government was fairly heavy, though, surprisingly, not much emphasis was placed on advanced sheet metal processing techniques, except for manpower training in precision die design and manufacture. Computer Aided Design and Manufacturing (CAD/CAM) systems have been installed in several institutions in the past two years, and strong efforts are being made to integrate the systems with advanced machine tools, often with special interest in tooling applications.

Based on information obtained during a previous visit to Japan, and on published statistics, the production of precision sheet metal stamping dies has now outstripped the production of plastic injection moulds in the Japanese tool-making industry, both in terms of the value of the tools and the number of tool companies involved in the respective manufacturing activities.

2.5 Institutional Resources in Hong Kong

Only limited equipment in respect of sheet metal processing technology is to be found in the local technical institutions such as Hong Kong University, Hong Kong Polytechnic, the technical institutes of the Vocational Training Council and Hong Kong Productivity Centre. Such equipment as does exist is mainly hydraulic or mechanical presses produced in China or local factories. Details of this equipment can be found in Appendix 2.

A Vocational Training Council proposal for the establishment of a Precision Tooling Training Centre is presently under consideration by Government. It is assumed that the Training Centre would provide equipment and training for designers and craftsmen on sheet metal processing dies. However, few details have been made available as yet.

III. ADVANCED TECHNOLOGY AVAILABLE WORLDWIDE

The basic features of sheet metal blanking and forming processes, which stem from the invention of the power press (Bliss, 1851), have remained virtually unchanged over the years. What has happened has been gradual refinement of certain aspects of the processes, each refinement contributing towards the ultimate goal of trouble-free, high speed mass production of high precision sheet metal parts. In recent years, significant improvements in the technology have generally concentrated on three areas :-

- a. Refinement of the power press in design and performance e.g. high speed, quick die change (QDC), noise reduction, etc.
- b. Advancements in tooling technology, especially those related to design, manufacture and materials e.g. CAD/CAM, EDM wire cutting, special surface coatings for life enhancement, etc.
- c. Development of other Advanced Processes, e.g. NC nibbling, laser cutting, jet cutting, plasma cutting, fine-blanking, fluid forming, superplastic sheet forming, high energy rate forming, non-ambient temperature forming, etc.

In Hong Kong, the demand for precision stamped parts produced by power pressing is likely to continue as the local finished goods industries diversify and move upmarket. Therefore, the transfer and promotion of those technological advances classified under (a) and (b) above will contribute most to the local sheet metal industries i.e. adoption of modern die design and manufacturing techniques, and wider employment of advanced stamping equipment. Few of the sheet metal processing techniques classified under (c) are considered particularly relevant to the local situation at the present time, with the notable exception of fine blanking which offers efficient production of smooth-edged, high precision stampings.

IV. STRATEGY FOR ENHANCING SHEET METAL PROCESSING CAPABILITY

To survive, an export-dependent industrial society must continually review and upgrade its capability to work to the highest (internationally accepted) standards of quality. The supply of precision sheet metal components is an essential ingredient of that capability, yet Hong Kong presently lacks strength in this important technology.

In the present sheet metal processing industry of Hong Kong, the traditional stamping group is the dominant sector, employing conventional technologies based on simple dies, cheap labour and low cost presses (from China, or local manufacturers) to produce products and parts for the lower end of the market. In this category, no major assistance is needed to maintain the current situation. What is vital, though, is to make manufacturers aware of the potential of new technology and new processes and inspire them to move forward into a more precise area of sheet metal forming, eventually to join the precision stamping group.

The traditional forming group, though once an important sector of the local metals industry, is gradually losing its competitive edge to other territories with cheaper labour. This group is plagued by problems which arise regularly, but which can usually be solved by traditional methods. However, attempts to bring products from high-tech areas into Hong Kong succeed, this group may have substantial growth potential and thus should not be neglected.

Currently, comparatively few companies in Hong Kong succeed in manufacturing precise sheet metal components. However, there is still too much reliance on conventional technology and a 'trial and error' approach, which is a major drawback in generating an output that can meet the requirements of the upper end of the market. The development of this capability in Hong Kong would not only permit substitution of some precision sheet metal parts imported from overseas, but would also offer diversification opportunities to the finished product industries.

Advanced technology offers precision, and superior quality parts as well as high volume production. However, the relatively small local market, and the fragmented nature of the demand, causes local entrepreneurs to view the capital investment required to upgrade their technology level as being over-speculative at present. The introduction of new processes such as fine blanking encounters similar resistance. This is a chicken and egg situation, as some imported parts from Japan incorporating advanced technologies can be

cheaper than parts produced locally using conventional methods. ✓

4.1 Existing Capability and Industrial Needs

There are at present only relatively few advanced sheet metal processing equipment installations in Hong Kong, and most precision sheet metal stamped parts are imported. This lack of local capability may considerably slow down the diversification process in the finished goods industries, and the up-market movement towards high-technology products, and may seriously curtail the competitiveness of locally manufactured goods on the world markets. Thus the existing and anticipated needs of Hong Kong industry in respect of sheet metal processing are :-

- i) To promote the adoption of advanced equipment in precision sheet metal stamping, and thus improve the local capability to produce precision sheet metal components.
- ii) To create and continuously improve its capability to produce better quality sheet metal stamping dies.

4.2 Barriers

There are two types of barrier to the development of the precision stamping group :-

i) Market Barriers

Since a diversity of precision sheet metal parts has been supplied by overseas sources to a wide range of finished goods industries, the market is not readily identified by or sufficiently accessible to local sub-contractors to justify additional investment in high quality equipment, especially when this equipment is much more expensive than conventional presses supplied from China or local manufacturers. The very few companies who are using advanced high speed presses employ them exclusively for in-house operations, or high volume production of parts incorporating imported, narrowly specialised technology for which the market is clearly defined (e.g. lead frames).

ii) Technology Barriers

The technology barriers which exist are more people-related than hardware-related problems. The sheet metal stamping industry is founded on conventional technology, and the current pool of human experience has been gained through application of that technology. The design, manufacture and application of advanced, high quality, high precision dies, and the operation of sophisticated modern equipment requires competent, well-trained technical personnel, of which there is a chronic shortage in Hong Kong at present.

Of the two, the market barriers probably exert the primary influence, and to a large extent are responsible for the existence of the technology barriers. It is unlikely that the latter will be successfully overcome without substantial eradication of the market barriers in the first place.

資料 8

香 港

(HONG KONG)

1 9 8 8 年 1 月
在香港日本国総領事館

I. 概 観

1. 地理的位置

香港は、香港島、九龍並びに新界及び約235の島からなる。中国大陸の東南岸、広東省の南部に隣接し(広州から約140km)、中国の珠江の河口近くに位置する。

2. 気 候

亜熱帯に属す。気候の変化に富み、モンスーン性気候。

3. 面 積

1,068km²。東京都(2,023km²)の半分。

(1842年南京条約により「割譲」されていた地域)

香港島(含近隣諸島) 77.45km²

(1860年北京条約により「割譲」されていた地域)

九龍(Boundary St.以南) 8.25km²

Stone Cutter 島 0.75km²

計86.45km²

(1898年租借条約により「租借」した地域)

新九龍(B.St.以北) 26.35km²

新 界(本 土) 714.10km²

新 界(離 島) 218.85km²

計959.30km²

4. 人 口

約553万人、男285万人、女268万人(1986年6月末)

(香港島 118万人、九龍 231万人、新界 189万人、その他外国人、水上生活者等)

5. 民 族

香港在住者の約98%が中国人で、広東人が最も多く、上海出身者も多い(現在は約57%が香港生れ)。残り2%の中では、フィリピン人、英国人、インド人、米国人の順。日本人は約1万人。

II. 政治

1. 地位

英国女王を元首とする英国王領植民地(British Crown Colony)。
完全な自治権は持たない。

2. 総督及び統治機構

(1) 総督

デイビット・ウイルソン卿。1987年4月就任。英国女王が任命。
女王の代理として香港施政の最高責任者。

(2) 行政評議会

総督が主宰する諮問機関。議員16名。一定の政庁高官(行政長官、
英軍指令官、財務長官、法務長官)と委任議員12名(政庁高官2名
民間人10名)より成る。

(3) 立法評議会

立法事項に関し、総督に助言し同意を与える。但し、重要法案等
はまず行政評議会が討議。議長は総督自身。1985年9月、間
接選挙の導入による24名の議員が誕生。議員総数は、政庁高官
10名及び民間人22名を加えて計56名。

(4) 行政機構

行政長官を頂点とし、各部、局が存在。

(5) 司法機構

- 司法権は女王または総督の任命する判事が行使し、終審裁判は英
国枢密院裁判委員会が行う。裁判機関としては、上告裁判所
(Court of Appeal)、高等裁判所(High Court)、地方裁判所
(District Court)など。

3. 参政権

香港政庁は一步一步代議制を導入しつつある。立法評議会は
1985年9月初めて一部議員を間接選挙で選出した(上記2.(3)
参照)。

直接選挙は市政評議会(議員数30名。内15名が直接選挙議員。保
健衛生・公共施設、文化事業等を担当)では1983年に、19の

区議会(議員総数の約2/3が直接選挙議員)では1982年に導入された。

4. 軍

(1)香港の安全と治安維持及び中国からの非合法入境者に備えた境界が任務。

(2)英国の陸・海・空軍が駐留。

(約8,500名。因みに警官数は約26,000名)

(イ)陸軍 歩兵5個大隊(うちグルカ兵大隊)、グルカ兵施設連隊、同通信連隊、輸送連隊、ヘリコプター中隊(10隊)

(ロ)海軍 哨海艇5隻

(ハ)空軍 ヘリコプター中隊(8機)

5. 対外関係

(1)香港にある外国領事機関

総領事館35、英連邦諸国のコミッショナー8、名誉総領事・領事29。ソ連、越、北朝鮮の総領事館はなし。東側諸国の中ではキューバのみ。

(2)国際機関への加盟状況

関税貿易一般協定(GATT)、世界気象機関(WMO)、アジア開発銀行(ADB)、アジア生産性機構(APO)、ほか。

III. 経 済

1. 主要経済指標

	1982	1983	1984	1985	1986
GDP(億米ドル)	307.8	286.5	319.3	340.8	378.5
1人当りGDP(米ドル)	5,881	5,393	5,953	6,285	6,841
実質経済成長率(%)	3.0	6.5	9.5	Δ0.1	11.0
消費者物価上昇率(%)	11.7	10.3	9.1	4.0	5.3
失業率(%)	3.6	4.5	3.9	3.2	2.8

(注)1.1986年は実績値。 2.1987年のGDP伸び率12.0%(予測)。

3.消費者物価上昇率は、ハンセン消費者物価指数。

2. 対外経済関係の動向

(1) 貿易動向

(単位：億米ドル)(注)

	1982	1983	1984	1985	1986	1987.1-10
地場輸出	136.7	143.6	176.4	166.7	197.3	204.3
再輸出	73.1	77.4	106.8	135.1	157.1	187.4
輸出計	209.8	221.0	283.2	301.8	354.4	391.7
輸入	235.3	241.2	285.7	297.0	353.7	390.9
貿易収支	△25.5	△20.3	△2.5	4.8	0.7	0.8

(2) 主要貿易相手先

(単位：億米ドル)(注)

① 地場輸出

国名	1986年		1987年1月-10月		
	金額	シェア	金額	シェア	伸率
米国	82.3	(41.7%)	78.0	(38.2%)	+16%
中国	23.1	(11.7%)	28.6	(14.0%)	+56%
西独	14.1	(7.1%)	15.3	(7.5%)	+39%
英国	12.7	(6.4%)	13.1	(6.4%)	+28%
日本	8.0	(4.1%)	10.0	(4.9%)	+62%

② 再輸出

国名	1986年		1987年1月-6月		
	金額	シェア	金額	シェア	伸率
中国	52.4	(33.3%)	60.7	(32.4%)	+47%
米国	28.7	(18.3%)	34.6	(18.5%)	+50%
台湾	7.6	(4.8%)	10.0	(5.3%)	+62%
日本	8.6	(5.5%)	9.5	(5.1%)	+43%
韓国	7.5	(4.8%)	9.4	(5.0%)	+56%

③ 輸 入

国名	1986年		1987年1月-10月		
	金額	シェア	金額	シェア	伸率
中国	104.6	(29.6%)	121.0	(31.0%)	+46%
日本	72.3	(20.4%)	75.0	(19.2%)	+27%
台湾	30.7	(8.7%)	34.6	(8.8%)	+42%
米国	29.7	(8.4%)	33.2	(8.5%)	+34%
韓国	14.1	(4.0%)	17.2	(4.4%)	+54%

(注) 出典：香港政庁発表のHKドル建て統計を各年の平均レート
 ('82:1米ドル=6.072HKドル, '83:7.273, '84:7.818,
 '85:7.791, '86:7.803, '87(1-10):7.801)で換算。

(3)主要貿易品目(1987年1~10月)

(単位:%)

輸 出				輸 入	
地場輸出		再輸出			
品 目	シェア	品 目	シェア	品 目	シェア
衣料品	33.7	糸・織物	15.8	原材料・半製品	44.1
玩具宝石等雑貨	15.8	衣料品	10.5	消費財	31.7
糸・織物	8.1	雑貨	10.0	資本財	14.9
カメラ・時計等	7.9	電気・電子機器	8.6	食料品	6.9
通信・音響機器	7.6	通信・音響機器	6.5	燃料	2.4
電気・電子機器	7.5	カメラ・時計等	4.5		

出典:香港政庁統計

(4)対日貿易

(百万HKドル)

	86年	前年比	87年1月-10月	前年比
地場輸出	6,212	+39%	7,818	+62%
再輸出	6,676	+20%	7,397	+40%
輸出計	12,888	+29%	15,215	+52%
輸入	56,398	+6%	58,517	+27%
(うち再輸出)	(18,579)	(Δ17%)	(19,717)	(+32%)

(5)対日主要貿易品目

(イ)輸出 衣類(毛皮製品を含む)、宝石類、時計、魚介類、
非鉄金属スクラップ、玩具、電算機部品

(ロ)輸入 電気機器、糸・織物、通信・音響機器、自動車、
時計、事務用機器、一般機械、鉄鋼

3. 海外からの製造業への直接投資残額(1986年末現在)

国名	百万HKドル	(シェア)
米 国	8,053	(41.2%)
日 本	4,009	(20.5%)
中 国	2,981	(15.2%)
英 国	1,082	(5.5%)
オランダ	719	(3.7%)
世 界	19,554	(100.0)

出典:香港政庁統計

4. 通貨

香港ドル。1974年11月、対米ドル固定相場を廃止し、
変動相場制に移行。83年10月、1米ドル=7.8HKドルを
標準交換比率とする安定策を採用。

IV. 文化・社会

1. 概 観

中国文化が基調で西欧文化が浸透。香港の将来問題はあるが社会情勢は安定。

2. 宗 教

人々の大多数が仏教ないし道教を信ずる傾向。明確な信教者にカソリック(約5%)、プロテスタント(約4%)あり、その他回教徒(0.6%)、ヒンズー教(0.2%)、少数のシーク教徒、ユダヤ教徒等。

3. 言 語

英語・中国語が共に公用語。街では英語より中国語(広東語)が通じる。他に北京語、上海語、客家語、潮州語等。北京語は年々普及。

4. マス・メディア

(1) 主要新聞・雑誌

香港は出版物が非常に多く、アジアで日本に次ぐ。日刊紙は71紙(英字紙15紙)、定期刊行雑誌482誌(1987年5月現在)。英字週刊誌「ファーイースタン・エコノミック・レビュー」と「アジアウオール・ストリート・ジャーナル」は東南アジアにおいても知識層に読まれており、広範な影響力を有する。

(2) ラジオ・テレビ

ラジオ・テレビ共に極めて発達。テレビは、TVB、ATVの2局が共に英語・中国語(広東語)の2チャンネル、計4チャンネルで放送。テレビは殆ど完全普及。

(3) 教 育

初等教育及び中等教育は極めて普及。但し大学は僅か2校と少ない(他に高等専門学校がある)。他方、商業上の需要、文化的欲求等に支えられ、実業・技術学校が多数存在。

V. わが国との関係

1. 概況

経済・貿易面はもとより、人的交流、文化交流の面でも益々密接。

2. 人的交流(86年末)

在留邦人は約1万人。その他約73万人(年間)の邦人旅客が香港訪問。15万人(年間)の香港人が訪日。

3. 文化交流

政府・国際交流基金によるものの他、民間による芸術・スポーツ交流も盛ん。特に若い世代を中心に日本文化への関心が高い。日本語学習熱も一つの表れ。ジャパン・ソサエティ、留日学友会、総領事館日本語講座同窓会などわが国に関する組織も多い。

4. 経済交流

わが国は香港にとって重要な貿易相手(輸入先として第2位、輸出先として第5位)。直接投資でもわが国は米国に次ぎ第2位(但し、製造業に対する投資)。

日本・香港経済委員会(日本側組織)及び香港・日本経済委員会(香港側組織)が1979年1月成立。本年6月第10回合同総会を開催。

5. 当面の問題及び重要案件

- (1) 対日貿易インバランスの改善(対日輸出の拡大)
- (2) わが国の対香港製造業直接投資の促進

Sampling Framework Of Mould & Tool Making Establishments
問卷調查公司之分佈情況

僱員人數	製造產品				公司總數
	注塑模	五金模	壓鑄模	工具	
1-5	31	13	9	8	40
6-10	36	8	15	10	43
11-50	45	19	14	8	57
51-100	8	5	2	2	8
100人以上	6	4	2	2	7
公司總數	126	49	42	30	155

Principal Machinery Installed By Surveyed Establishments
問卷調查公司使用製模機械情況

機械名稱	製造產品				總數
	注塑模	五金模	壓鑄模	工具	
仿形銑床	8(8)	3(3)	4(4)	1(1)	10(10)
彫刻機	89(33)	27(9)	61(17)	21(7)	90(35)
座標鏜床/磨床	16(14)	12(8)	7(6)	4(4)	21(16)
平面磨床	189(99)	112(37)	60(33)	53(21)	238(121)
電腦輔助設計/製造系統	12(10)	6(5)	4(3)	2(2)	13(11)
電腦數控機床	59(23)	37(8)	35(5)	21(3)	61(25)
火花電蝕機	123(73)	28(15)	48(25)	11(6)	120(75)
火花線割機	25(10)	33(16)	17(7)	1(1)	40(21)

註：(i)括弧內數字為問卷調查公司中有裝置該類機械之公司總數。
(ii)左邊數字為該類機械被問卷調查公司所裝置之總數。

Production Process Subcontracted By Surveyed Establishments
問卷調查公司外發加工情況

加工工序	製造產品				總數
	注塑模	五金模	壓鑄模	工具	
熱處理	107	43	41	25	134
鍍硬鉻	95	28	35	23	110
研磨	42	12	18	11	50
火花電蝕/線割	71	25	22	22	85
彫刻	88	26	27	16	100

Import Figures Of Mould Steel

香港工模及工具鋼材入口數量及價值：(1984-86年)

入口國家	入口數量 (噸)			入口價值 (港元)		
	1984	1985	1986	1984	1985	1986
瑞典	1,056	1,234	1,119	14,183,206	17,444,269	19,158,586
日本	890	1,480	1,059	7,450,415	11,220,797	10,407,325
西德	251	472	557	2,388,587	4,397,566	7,782,058
奧地利	263	337	364	3,069,909	4,253,360	6,213,747
英國	194	178	199	2,216,888	2,113,346	1,457,265
台灣	35	49	67	258,596	607,000	588,754
美國	19	6	9	707,941	284,788	269,515
巴西	—	—	12	—	—	145,700
中國	13	6	10	148,707	65,373	124,283
新加坡	10	2	12	241,152	25,439	147,891
其他	5	13	10	84,000	86,911	156,996
總數	2,736	3,777	3,418	30,749,401	40,498,849	46,452,120

註：

1、撰自香港政府統計處出入口貿易統計月報。

Export Figures Of Moulding Boxes

香港工模出口數量及價值：(1984-86)

出口國家	工模出口數量			工模出口價值(港元)		
	1984	1985	1986	1984	1985	1986
中國	88,979	38,957	47,010	70,989,363	147,350,754	248,660,952
美國	49,228	93,481	58,974	28,837,987	28,525,619	45,462,222
馬來西亞	1,487	2,371	1,212	21,742,517	16,225,198	25,846,900
澳門	1,796	1,724	2,817	13,123,905	12,366,733	21,417,539
泰國	1,214	1,398	1,365	5,390,568	12,514,280	15,505,121
台灣	18,622	23,827	26,530	12,771,377	8,132,341	15,074,632
新加坡	49,392	28,692	25,863	8,033,807	16,591,980	13,454,557
印尼	539	582	475	5,695,156	8,052,568	9,894,516
印度	474	177	335	2,815,173	6,539,067	8,833,491
墨西哥	725	3,221	727	5,724,945	9,456,200	6,846,151
菲律賓	1,005	875	769	6,453,173	5,976,285	6,650,837
尼日利亞	376	201	444	2,577,758	3,722,064	4,507,600
韓國	139	29	74	1,594,577	1,617,442	4,160,711
巴西	125	80	467	806,257	2,748,346	4,035,199
法國	121	237	289	2,209,433	7,690,296	3,831,380
西班牙	150	69	173	3,572,609	1,292,234	3,440,656
委內瑞拉	67	259	371	1,139,833	2,472,384	3,400,785
加拿大	74	61	99	1,453,909	2,257,015	2,621,535
西德	91	42	63	1,279,231	875,643	2,144,391
英國	103	231	100	2,279,626	3,427,043	2,033,314
埃及	136	373	234	1,575,694	2,121,914	1,805,788
巴基斯坦	279	407	583	2,559,634	3,398,198	1,619,216
阿爾及尼亞	20	42	119	268,663	226,600	1,612,600
斯里蘭卡	231	320	211	782,709	1,296,125	1,486,136
澳洲	23	47	99	819,022	1,056,025	1,427,826
約旦	55	155	128	467,998	1,129,011	1,357,199
危瓜多爾	77	114	147	227,615	648,863	1,240,169
秘魯	7	80	95	37,564	282,652	1,217,232
日本	198	205	25,281	3,546,556	1,708,353	1,150,853
以色列		25	62		56,275	1,109,497
意大利	49	36	40	770,742	1,896,716	946,963
希臘	36	88	172	332,621	646,807	915,028
南非	63	102	15	1,657,433	745,417	712,499
象牙海岸	39	238	72	301,420	1,024,984	594,128
其他	762	574	407	5,650,792	6,175,466	4,488,770
總數	216,682	199,322	195,832	217,479,667	320,246,898	469,506,393

註：

1. 撰自香港政府統計處出入口貿易統計月報。

JICA