

## **V-2. Comprehensive Promotion Programmes for the Computers & Computer Peripherals Industry**

### **V-2-1. Basic Strategy**

Based on the analysis and evaluation of the computers & computer peripherals industry in Malaysia and the international environment surrounding them, and in view of the feasibility of and potential for their quick development, it has been concluded that the promotion of foreign investment is the most important element for the development of the industry. Measures to promote foreign investment are expected to have a beneficial impact on the existing industry as well as related industries.

The basic strategy for the development of the industries can be summarized as follows.

#### **Basic Strategy for the Development of the Computers & Computer Peripherals Industry**

1. In light of the current situation of the computers & computer peripherals market and technology therein, the invitation of foreign investment is crucial if Malaysia's computers & computer peripherals industry are to be developed at a rapid pace. Thus the first priority of a development policy should be measures to promote foreign investment.
2. Specifically, measures should be considered to (1) strengthen activities to promote foreign investment and (2) improve the production environment. In view of the broader possibilities for investment in Malaysia and the far-reaching impact it would have on industry as a whole, a wide range of manufacturers, including related parts manufacturers, should be covered by measures for the promotion of foreign investment.
3. In terms of the improvement of the production environment, targets should include (1) development of human resources and (2) a higher ratio of local sourcing of components. In the area of human resource development, it is necessary to improve training of supervisors, skilled workers and engineers, particularly in design. For the development of the components industry, efforts must be made to improve technology, marketing and quality control.
4. It is necessary to create a more encouraging environment for R&D to reverse the current trend toward insufficient R&D activities at the level of domestic private firms, to accumulate original technologies and to develop human resources through the strengthening of R&D activities by government organizations.

## **V-2-2. Proposed Comprehensive Promotion Programmes**

Based on the outcome of the study and what is assumed to be the most realistic scenario for development, a series of measures to realise the development of the computers & computer peripherals industry in Malaysia are proposed. The process of formulation of the comprehensive programmes is shown in Fig. V. 2-1. Summaries of the measures are presented below in the outline of each programme.

The proposed execution measures and implementation schedules of these programmes are summarized and shown in Table V. 2-1.

### **Programme 1. Intensification of the Investment Promotion Organization's Activities**

(Objective)

- \* To intensify investment promotion activities aimed at foreign computers & computer peripherals manufacturers and related components manufacturers, the organisation will make recommendations to each of the other government organisations concerned with regard to the improvement of the domestic investment environment.

(Contents)

- \* Dispatch of investment promotion missions to overseas computers & computer peripherals manufacturers, holding of seminars and invitation of missions comprising potential investors
- \* Preparation and supply of specific information regarding the industry and related areas
- \* Collection of industrial information and implementation of surveys to discover promising potential investors
- \* Matching of domestic firms which are interested in entering the industry with foreign firms which are interested in technical tie-up agreements or OEM contracts
- \* Identification of the present status and needs of industries and planning for more effective industry support, human resource development, and so forth through the establishment of an industry association concerning electronics.

## **Programme 2. Strengthening of Measures for the Development of Small and Medium Scale Manufacturing Enterprises**

(Objective)

- \* Strengthening of the competitiveness of domestically produced products and improvement of the investment environment through the development of supporting industries

(Contents)

- 1) Establishment of a policy making committee in relation to the development of supporting industries
  - \* Identification of the present status of supporting industries and clarification of areas to be developed and measures for development
  - \* Adjustment of supporting measures implemented by Ministries and organisations
- 2) Strengthening of support for development and improvement of products/production processes
  - \* Establishment of an assistance fund for the development and improvement of products/production processes
  - \* Implementation of services to dispatch experts and consultants
- 3) Strengthening of support for higher quality
  - \* Formulation of incentives for guidance and other supports for parts suppliers from assembly manufacturers (contractors)
  - \* Establishment of an inspection system for quality improvement of domestically produced components
- 4) Strengthening of support for market expansion
  - \* Expansion of MTI's subcontracting schemes and strengthening of public relations activities
  - \* Strengthening of incentives for the promotion of use of domestically produced components

## **Programme 3. Intensification of Export Promotion Activities**

(Objective)

- \* Strengthening of support for market expansion for local part manufacturers to promote supporting industries.

(Contents)

- \* Intensification of business through preparation of a directory of Malaysia's supporting manufacturers  
Or, integration of the directory and MTT's subcontracting schemes. In this case, the directory will be prepared and updated every year using a database prepared under the subcontracting scheme
- \* Financial support for participation in overseas electronics shows or other exhibitions, or, supply of exhibition booths free of charge
- \* Invitation of overseas purchasing missions and sponsorship of exhibitions
- \* Re-energizing of inquiry services handled by MEXPO

**Programme 4. Promotion of QC Activities**

(Objective)

- \* To strengthen the competitiveness of domestically produced products and to improve the level of supporting industries through the widespread use of concepts and tools for quality control. Targets should not be limited to specific companies and industries. Through public relations activities, the programme should be made available to any firm wishing to introduce QC activities

(Contents)

- \* Preparation and supply of QC manuals by NPC and industrial associations
- \* Increasing of the number of QC seminars and QC classes by NPC
- \* Training of management staff overseas through NPC, which functions as a liaison
- \* Guidance through visits to factories in small & medium-scale industries

**Programme 5. Strengthening of Training of Skilled Workers**

(Objective)

- \* To improve the level of supporting industries and the investment environment through solutions to the lack of skilled workers, one of the serious problems facing the entire electronics industry

(Contents)

1) Expansion of vocational training schools

- \* Increasing the supply of skilled workers through the expansion of training courses in metal processing, an area which has a far-reaching impact on

industry as a whole and which is now suffering from a serious shortage of skilled workers

- \* Renewal of curricula and expansion of training courses in the areas of electronics engineering and electrical engineering where the supply of skilled workers is insufficient
- 2) Establishment of government-industry technical training institutions
- \* Examination of the possibility of establishing government-industry technical training institutions for employees in several regions where many electronics manufacturers are located with the aim of establishing a system to more effectively respond to the industry's needs with regard to human resources. The following two types of technical centres may be considered.
    - i) Expansion of manufacturers' in-house training programmes and reception of employees from other manufacturers. The government would offer incentives for this type of training center. The programme would be worked out based on similar programmes which have already been undertaken by several manufacturers in Singapore
    - ii) The government would supply land, buildings and operating funds while companies would be responsible for the supply of equipment and experts. The specific operations would be examined by a committee including representatives of the both the government and private sector
- 3) Opening of short-term training centers for employees by NPC and CIAST
- \* Opening of seminars for supervisor class people at NPC. The seminars would involve general curricula relating to production process management and training  
In some cases, organization of overseas study missions
  - \* Facilitation of a technically high level of training through the expansion of CIAST
- 4) Establishment of seminars and consulting services for managers of medium and small-scale firms
- \* Holding of seminars for managers of medium and small-scale firms by NPC for the purpose of convincing them of the necessity of training employees
  - \* Provision of consulting services for firms which require planning or creation of a system for the introduction of training courses
- 5) Review of incentives for in-house training programmes
- \* Review and clarification of standards in response to comments that it is difficult to meet the standards under the current incentive measures

## **Programme 6. Training of Electronics-related Engineers and Intensification of R&D Activities**

### **(Objective)**

- \* To invigorate R&D activities which are currently not very widespread in Malaysia. In addition, to train engineers to meet the expected needs of the computer industry

### **(Contents)**

#### **1) Expansion of electronics curricula at universities**

- \* Increasing of the number of graduates from electronics courses and information processing departments
- \* Review of curricula of electronics departments

#### **2) Strengthening of MIMOS activities**

- \* Setting up of schemes to dispatch staff to related organizations overseas or to universities overseas for study
- \* Establishment of a system to invite foreign experts for R&D project under MIMOS.
- \* Reception of technical trainees from private firms
- \* Formulation of a medium and long-term plan by MIMOS with regard to the creation of a framework and development objectives, taking into consideration industries which Malaysia will promote in the coming years. In addition, increasing of the number of staff members and budget.

#### **3) Widespread computer-related education**

- \* Promotion of installation of P/Cs at junior high schools and high schools (under implementation)
- \* Setting up of INTAN computer training center with training courses for teachers engaged in computer education

#### **4) Realization of the transfer of Technology Park and expansion of incentives for firms to locate in the park**

- \* Realization pending transfer plan and improvement of environment of the park
- \* Examination of expansion of incentives for firms to locate in the park  
Creation of opportunities for people in charge to visit similar kinds of facilities overseas and to exchange views with foreign counterparts

#### **5) Review of current R&D incentives**

- \* Review and clarification of the standards, taking into consideration comments that it is difficult to meet the standards under the current incentive measures

- \* Examination of a more intensive incentive scheme including provision of subsidies to industries which specifically require development measures
- \* Encouraging firms experiencing bottlenecks in terms of facilities, equipment and human resources to launch joint studies with universities and MIMOS
- Offering of financing for joint studies to universities and MIMOS
- 6) Expansion of scholarship scheme for study at foreign universities or institutes
- \* Increasing the number of students in universities' electronics-related departments under the current Look-East Scholarship Scheme

**Programme 7. Expansion of Low Interest Rate Loan Scheme to Promote Supporting Industries**

**(Objective)**

- \* The promotion of the computer industry requires the augmentation of the supporting industries. In particular, development of the metalworking and plastic injection molding industries would be desirable. In these industrial fields, there has already been some degree of growth of local companies and domestic demand may be expected to increase, so these are fields in which growth should be possible centered on the local companies.
- In these industries, a major decisive factor in whether production is possible or not is the introduction of equipment, in the same way as knowhow. The small and medium sized companies, in particular local companies which cannot expect any support from a parent company, often have trouble in raising funds. Development can be promoted by providing loans to these companies under more advantageous terms of interest and repayment periods than usual for their initial investment and introduction of equipment.

**(Contents)**

The following two cases may be considered as methods of use of the existing schemes for low interest rate loans:

- 1) Projects in supporting industries where local capital is involved should be covered by the AJDF loans without setting any limits as to size of capital.
- 2) The long-term low interest rate industrial loans such as the New Investment Fund (NIF) offered in the past and of excellent reputation should be resumed for small and medium sized companies.

Further, consideration is given to the establishment of a new fund for promotion of supporting industries.

Fig. V. 2-1 Process of Formulation of Comprehensive Programmes for Development of Computers and Computer Peripherals Industry

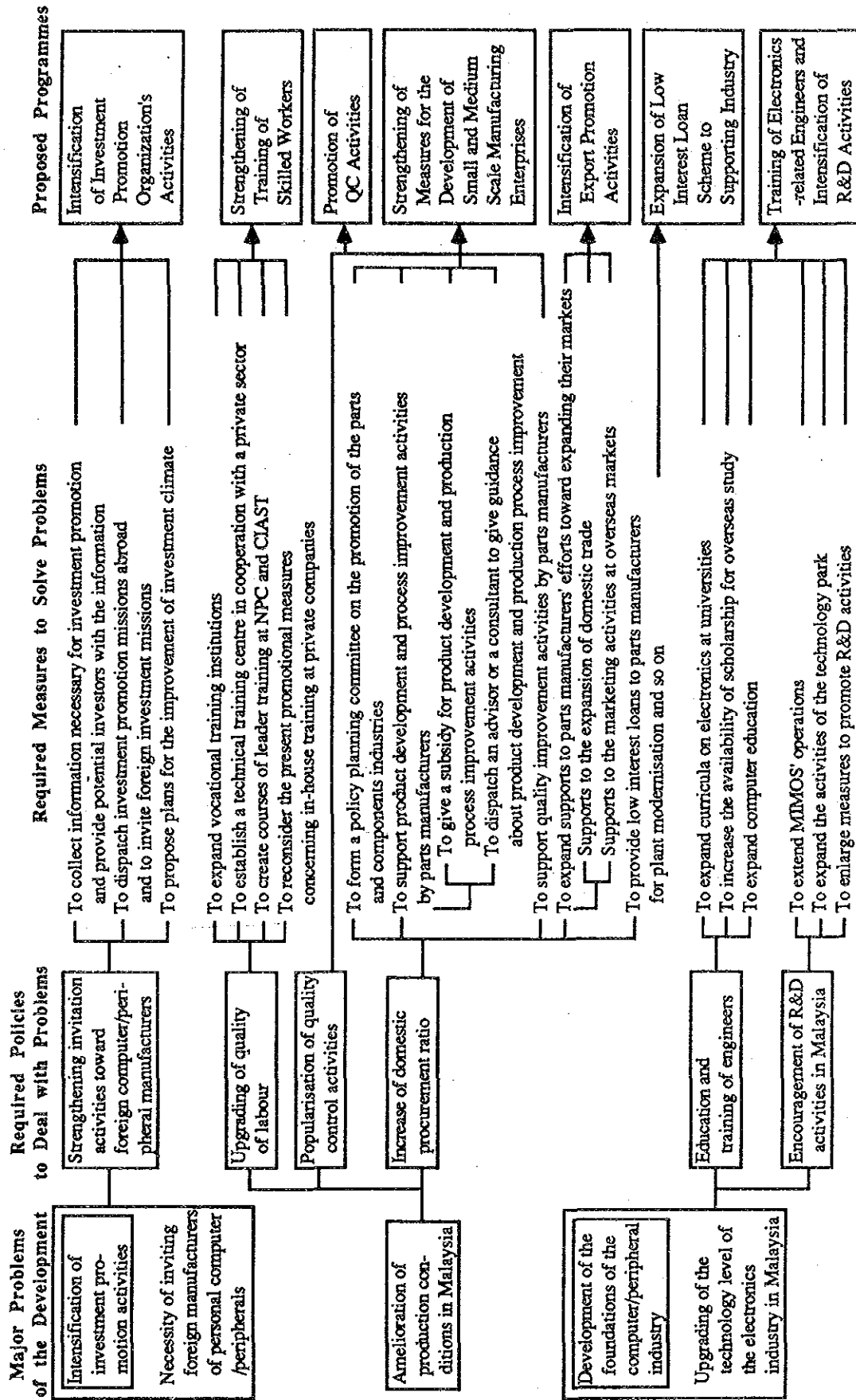




Table V. 2-1 Execution Measures and Schedules of the Proposed Programmes (Computers and Computer Peripherals Industry)

Name of the programme and its objectives	Contents of the programme	Measures to be taken by Malaysian side	Execution measures and their schedules		
			Measures	Immediately	At an early date
<p>1. Intensification of Investment Promotion Activities (Expansion of MIDA Activities)</p> <p>&lt;Objectives&gt;</p> <ul style="list-style-type: none"> <li>- Promotion of foreign investment in Malaysia</li> <li>- Promotion of technical tie-ups between foreign and Malaysian manufacturers</li> </ul>	<p>1) Information service for invitation of foreign investment</p> <ul style="list-style-type: none"> <li>- Compilation of guidebooks for each industry sector</li> <li>- Preparation of a directory of domestic parts suppliers</li> </ul> <p>2) Dispatch of investment invitation missions</p> <p>3) Strengthening of accommodation facilities for receiving investment missions</p> <p>4) Matching of firms desiring tie-ups</p>	<ul style="list-style-type: none"> <li>- Collection of industry-specific information</li> <li>- Strengthening of linkages between MIDA and the MTI Small and Medium Industry Division</li> <li>- Creation of PDT teams for dispatch overseas</li> <li>- Strengthening of receiving facilities by industry and country</li> <li>- Listing of firms desiring tie-ups</li> </ul>	<p>○</p> <p>○</p> <p>○</p> <p>○</p>		
<p>2. Development Programme for Small and Medium-scale Manufacturers</p> <p>&lt;Objectives&gt;</p> <ul style="list-style-type: none"> <li>- Formulation of policies for the development of supporting industries and the coordination of activities at related organizations for that purpose</li> <li>- Visits to SMIs by experts for guidance in the areas of production technology, management, and marketing skills</li> </ul>	<p>1) Help for individual SMIs in improving production technology with the cooperation of foreign experts and staff from the MTI Small and Medium Scale Enterprises Unit, SIRIM, and other related organizations</p> <p>2) Help for individual SMIs in improving management and marketing skills with the cooperation of foreign experts and staff from the MTI Small and Medium Industry Division, NPC, and</p>	<ul style="list-style-type: none"> <li>- Expansion of the MTI Small and Medium Scale Enterprises Unit</li> <li>- Appointment of instructors at SIRIM, etc. for touring guidance to individual companies</li> <li>- Appointment of instructors at NPC, MEXPO, etc. for touring guidance to individual companies</li> </ul>	<p>○</p> <p>○</p> <p>○</p>		

Name of the programme and its objectives	Contents of the programme	Measures to be taken by Malaysian side	Execution measures and their schedules		
			Measures	Execution schedules	
				Immediately	At an early date
	MEXPO 3) Creation of a policy and coordination section within the MTI Small and Medium Industry Division for coordination of the above activities and formulation of comprehensive policies for the development of SMIs				
3. Intensification of Export Promotion Activities (Expansion of MEXPO Activities) <Objective> - Support for the domestic and overseas marketing efforts of local parts manufacturers as part of the activities for development of supporting industries	1) Strengthening of MEXPO capabilities for the collection and distribution of marketing-related information - Strengthening of the inquiry service - Preparation of a directory of local parts manufacturers - Timely distribution of information to local companies 2) Invitation of foreign purchasing missions and sponsoring of exhibitions 3) Participation in overseas trade fairs	- Expansion of MEXPO staff and budget	Information collection	○	
			Reception of missions from abroad	○	
			Dispatch of missions	○	
4. Promotion of Quality Control Activities <Objectives> - Raising quality awareness	1) Invitation of quality control experts under the sponsorship of NPC and industry associations for the following activities:	- Greater support for NPC activities - Greater support for industry association activities	Invitation of foreign quality control experts Overseas training	○ ○	

Name of the programme and its objectives	Contents of the programme	Measures to be taken by Malaysian side	Execution measures and their schedules		
			Measures	Execution schedules	
				Immediately	At an early date
<p>among these firms for the development of the local parts industry</p> <ul style="list-style-type: none"> <li>- Improving quality and productivity of exports by more active quality control efforts at plants</li> </ul>	<ul style="list-style-type: none"> <li>- Holding of seminars on quality control</li> <li>- Holding of quality control workshops at individual companies</li> </ul> <p>2) Compilation of quality control manuals and distribution to local companies</p>				
<p>5. Strengthening of Training of Skilled workers</p> <p>&lt;Objectives&gt;</p> <ul style="list-style-type: none"> <li>- Resolution of the shortage of skilled labourers plaguing the electronics industry, improved standards in peripheral industries, and improvements in the quality of the investment environment</li> </ul>	<p>1) Expansion of vocational training schools, MARA, etc.</p> <ul style="list-style-type: none"> <li>- Enlargement of metal machining courses at the above institutions</li> <li>- Enlargement of electronics and electrical machinery engineering courses at the same</li> </ul> <p>2) Creation of a joint public-private technical training center</p> <ul style="list-style-type: none"> <li>- Investigation of a joint technical training center such as the ones in Singapore and Thailand</li> </ul> <p>3) More active in-house training in the private sector</p>	<ul style="list-style-type: none"> <li>- Preparation of estimates of current curriculae, instructors, and facilities together with plans for expansion</li> <li>- Creation of a committee to investigate related matters</li> <li>- Observation of similar facilities in other countries</li> <li>- Reexamination of existing incentives</li> </ul>	<ul style="list-style-type: none"> <li>○ Invitation of foreign experts</li> <li>○ Overseas training</li> <li>○ Invitation of foreign experts</li> <li>○ Overseas training</li> </ul>		

Name of the programme and its objectives	Contents of the programme	Measures to be taken by Malaysian side	Execution measures and their schedules		
			Measures	Execution schedules	
				Immediately	At an early date
<p>6. Human Resources Development and R&amp;D Expansion in the Field of Electronics &lt;Objectives&gt;</p> <ul style="list-style-type: none"> <li>- Training of engineers required by the electronics industry</li> <li>- Promotion of R&amp;D activities by national research institutes</li> </ul>	<p>1) Support for private-sector R&amp;D through electronics-related education at the university level and greater cooperation between industry and academia</p> <ul style="list-style-type: none"> <li>- Promotion of the USM Design Laboratory for Information Technology Scheme</li> <li>- Promotion of the UKM Engineering Application Centre Scheme</li> </ul> <p>2) Expansion of MIMOS activities and accumulation of personnel and experience</p>	<ul style="list-style-type: none"> <li>- Promotion of the USM Design Laboratory for Information Technology Scheme</li> <li>- Promotion of the UKM Engineering Application Centre Scheme</li> <li>- Enlargement of the MIMOS staff and budget</li> <li>- Creation of a system for the overseas training of staff and the invitation of foreign experts</li> </ul>	<ul style="list-style-type: none"> <li>Invitation of foreign experts</li> <li>Introduction of facilities</li> <li>Invitation of foreign experts</li> <li>Introduction of facilities</li> <li>Invitation of foreign experts</li> <li>Overseas training</li> </ul>	<ul style="list-style-type: none"> <li>○</li> <li>○</li> <li>○</li> <li>○</li> <li>○</li> <li>○</li> </ul>	
<p>7. Expansion of Financing Schemes for the Development of Supporting Industries &lt;Objective&gt;</p> <ul style="list-style-type: none"> <li>- Provision of financial assistance to small and medium-scale parts manufacturers as part of the activities for development of supporting industries</li> </ul>	<p>1) Consideration of low-interest loan schemes for capital investment by small and medium-scale parts manufacturers via the utilization of existing credit programmes or the establishment of new funds for this purpose, drawing on the experiences of other nations</p>	<ul style="list-style-type: none"> <li>- Investigation and study on a new investment/financing system</li> </ul>	<ul style="list-style-type: none"> <li>Overseas training</li> <li>Invitation of foreign experts</li> </ul>	<ul style="list-style-type: none"> <li>○</li> <li>○</li> </ul>	

### **V-2-3. Review of Priority Programmes**

To develop the selected industries, it would be ideal if all of the comprehensive programmes proposed for the industry were quickly implemented with full effort. However, given the reality of the very tight limitations on both financial and human resources, it is necessary to give a rough priority ranking to each proposed programme.

Because sufficient feasibility studies were not possible for all of the programmes proposed in this study, a priority ranking of each programme could not be given using strict criteria such as IRR (Internal Rate of Return) figures for each programme. As an alternative, a priority ranking for each programme was determined through the rather subjective judgement of the Study Team which considered the same basic criteria as used in section V-1-3. The results of an examination of priorities are shown in Table V. 2-2.

The selected priority programmes for the computers and computer peripherals industry, described in Table V.2-2, were integrated into the programmes for the electronics-related industries, and then final priority projects were proposed as the result of compiling Three Years' Comprehensive Programmes covering all the industries.

Among them priority projects related to the computers and computer peripherals industry are as follows.

- 1) Intensification of Investment Promotion Activities in MIDA
- 2) Programme for Reinforcement of Human Resources Development
- 3) Technical Support Project for Small and Medium Scale Manufacturers

Details regarding the above 3 priority projects are given in the Section III-5. of the separate Report, "Total Review of the Three Years' Studies".

Table V. 2-2 Results of Priority Programme Identification (Computers and Computer Peripherals Industry)

	Intensification of Investment Promotion Activities (Expansion of MIDA Activities)	Development Programme for Small and Medium Scale Manufacturing Enterprises	Intensification of Export Promotion Activities	Promotion of Quality Control Activities	Strengthening of Training of Skilled Workers	Human Resources Development and R&D Expansion in the Field of Electronics	Financing Scheme for Development of Supporting Industries
1. Existence of established organizations in charge of the programme	Yes (MIDA)	Yes (MITI)	Yes (MEXPO)	Yes (NPC)	Yes (Vocational training school, MARA, etc.)	Yes (MIMOS, USM, UKM and others)	No
2. Maturity level of the programme	High (presently being supported)	High (plan already exist)	High (presently being supported)	Low	Moderate	Moderate (in planning stage)	Low
3. Urgency of the needs of the programme	High	High	Moderate	Low	High	Moderate	Moderate
4. Scale of investment in the programme	Medium	Medium	Medium	Small	Medium	Large	Large
5. Level of direct impact	Great	Great	Moderate	Moderate	Moderate	Moderate	Moderate
6. Necessity of outside assistance	Moderate	Strong	Moderate	Weak	Strong	Moderate	Moderate
Priority selection	A	A	B	B	A	B	B

Note: A: The programme is selected as a priority programme

B: The programme is given a secondary importance

## **ANNEX**





**I Member Lists of Steering Committee and  
Technical Committee**



Member List of the Steering Committee (November 3, 1989)

Attendance from the Malaysian Side

Dr. Abdullah Mohd Tahir (Chairman)	Director of Industry Section Economic Planning Unit (EPU) Prime Minister's Department
Mr. Abdul Malek Abdul Khalid	Ministry of Trade and Industry (MTI)
Mr. Ramli Mahmud	MTI
Mrs. Rusiah Mohamed	MEXPO, MTI
Mr. Wee Ton Wang	Malaysian Industrial Development Authority (MIDA)
Mrs. Foong Jit Cheng	MIDA
Mr. Abdul Halim Abdul Rahman	Standard and Industrial Research Institute of Malaysia (SIRIM)
Mr. Mohamad Rafee Yusoff	Malaysian Institute of Micro- electronics System (MIMOS)
Miss Yap Kim Lian	EPU (Manpower Section)
Mr. Fakhrurazi Abdul Majid	EPU (Industry Section)
Mrs. Zawiah Chik	EPU (Macro Section)
Mr. Allauddin Hj. Anuar (Secretary)	EPU (Industry Section)

Attendance from the Japanese Side

Mr. Heihachiro AOKI	Leader of the Study Team
Mr. Toshio ASAKURA	Deputy Leader of the Study Team
Mr. Takashi NOBEHARA	Deputy Leader of the Study Team
Mr. Shunichi HAMADA	Embassy of Japan
Mr. Sadahiro SUGITA	Embassy of Japan
Mr. Kuniaki NAGATA	JICA Malaysia Office
Mr. Koichi HAYASE	JICA Expert (MIDA)

Member List of the Technical Committee (December 11, 1989)

Attendance from the Malaysian Side

Mr. J. Jegathesan (Chairman)	Director, Industrial Promotion Division, MIDA
Mr. Abdul Halim Abdul Rahman	SIRIM
Mrs. Rusiah Mohamed	MEXPO
Mr. Zulkifli Rauf	MTI
Mr. Megat Ahmad Zaki	SIRIM
Dr. Arif Nun	MIMOS
Mr. Chua Eng Seng	MIDA
Mr. Wee Ton Wang	MIDA
Mr. N. Parameswaran	MIDA
Mr. Kamarulzaman Othman	MIDA

Attendance from the Japanese Side

Mr. Heihachiro Aoki	Leader of the Study Team
Mr. Toshio Asakura	Deputy Leader of the Study Team
Mr. Takashi Nobehara	Deputy Leader of the Study Team
Mr. Yoshitsugu Matsumoto	JICA Study Team
Mr. Toshiaki Endo	JICA Study Team
Miss Junko Sekiguchi	JICA Study Team
Mr. Koichi Hayase	JICA Expert (MIDA)

## **II Castings**



## **II-1 List of Companies and Organizations Visited**





## II Castings

### II-1 List of Companies and Organizations Visited

#### (1) Factories

<u>Name of Company</u>	<u>Address</u>	<u>Tel.</u>
1. See Seng Foundry Works	Section 92 & 92A Lot No. 3 3 1/2 Miles, Jalan Sungai Besi 57100 Kuala Lumpur	7821350
2. Kwan Cheong Engineering (1976) Sdn Bhd	312 Jalan Sungai Besi 57100 Kuala Lumpur	2215612
3. Dah Yung Steel (M) Sdn Bhd	19 Jalan Empat Off Jalan Chan Sow Lin 55200 Kuala Lumpur	2213166
4. Hung Chang Machine Moulding Sdn Bhd	134B Jalan Chan Sow Lin 55200 Kuala Lumpur	2215514
5. Lianyeu Manufacturing Sdn Bhd	62 Jalan Kilang Midah Jalan Ceras 56000 Kuala Lumpur	9719064
6. Alloy Art Sdn Bhd	No. 56E, Jalan Enam Off Jalan Chan Sow Lin 55200 Kuala Lumpur	2211154
7. United Casting Sdn Bhd	Lot 27 Jalan 3A Kawasan Perusahaan Balakong Taman Ceras Jaya 43200 Ceras, Selangor	9052136
8. Automated Engineering Products Sdn Bhd	No. 33 1st Floor (A) Jalan 4/47 46050 Petaling Jaya	7924300

9. Soon Fatt Engineering Works	194A 17th Miles Jalan Ipoh 48000 Rawang, Selangor	6916901
10. Gah Hup Seng Sdn Bhd	Batu 6 Jalan Tg Karang 45500 Tg Karang Selangor Darul Ehsan	8795812
11. Anshin Casting Industries Sdn Bhd	Jalan Gergaji 15/14 40000 Shah Alam Selangor	5502888
12. Sin Soon Hoe Foundry Engineering Works	3 3/4 Miles Jalan Kapar 41400 Klang, Selangor	3911645
13. Yodoshi Malleable (M) Sdn Bhd	Lot 97 Ayer Keroh Industrial Estate, Ayer Keroh 75450 Melaka	3252000
14. Kinko Steel Mill Bhd	Tanjong Agas Industrial Area P.O. Box 24 84007 Muar, Johor	922473
15. Sapura Automotive Industries Sdn Bhd	Lot 98 Kawasan Perindustrian Air Keroh, Jalan Usaha 7 75450 Melaka	324092
16. Matsushita Electric Co (M) Bhd	Shah Alam Industrial Site 40000 Shah Alam	5591010
17. Matsushita Industrial Corp Sdn Bhd	No. 2 Jalan SS 8/1 Sungei Way Free Trade Zone P.O. Box 1012 Jalan Semangat 46766 Petaling Jaya	7761788

18. Hicom Diecastings Sdn Bhd	Tingkat 19, Menara Dato' Onn Kompleks UMNO 45 Jalan Tun Ismail Peti Surat 10707 50722 Kuala Lumpur	2935688
19. International Diecastings Sdn Bhd	No. 14 Jalan Tandang 46050 Petaling Jaya	7912180
20. Yoonsteel (Malaysia) Sdn Bhd	Site 14 Tasek Road Tasek Industrial Estate 31400 Ipoh	551700
21. Tasek Iron & Steel Foundry Sdn Bhd	Lot 24 Tasek Industrial Estate 31400 Ipoh	551264
22. Yau Fong Foundry Sdn Bhd	Lahat Road Falim, 30200 Ipoh	545477
23. Sin Tong Fatt Foundry	465 Bemban New Village 31000 Batu Gajah Perak	381358
24. Sun Kong Luen Cheong Foundry Sdn Bhd	Siputeh Road Pusing, Perak	381177
25. Menglembu Wahcheong Foundry Sdn Bhd	2 3/4 Miles, Ipoh Road 31450 Menglembu Ipoh	542745
26. Teak Heng Foundry Sdn Bhd	Lot 39A, 2nd Mile, Ipoh Rd 31450 Menglembu, Perak	547262

27. Hup Ngai Loong Foundry Sdn Bhd	1408 Lahat Road 31450 Menlembu Perak	542406
28. Butterworth Foundry	29762 Siram Road Butterworth Province Wellesley	346345
29. Chin Wool Foundry	342 Jalan Semagagah 13500 Permatang, Pauh	301085
30. Selangor Pewter Marketing Sdn Bhd	4 Jalan Usahawan Enam Setapak Jaya 53200 Kuala Lumpur	4238136
31. Selberan Co Sdn Bhd	6 Jalan Perusahaan Kiri Setapak, 53200 Kuala Lumpur	4231158
32. Lien Yaik Hardware (M) Sdn Bhd	411-W, Batu 4 Jalan Ipoh 51200 Kuala Lumpur	2215550
(2) Pattern maker		
1. Chan Wei Wooden Ware Factory	310 Jalan Sungai Besi 57100 Kuala Lumpur	2214235
(3) Material dealers		
1. Lian Aik	411W Batu 4 Jalan Ipoh 51200 Kuala Lumpur	2215550
2. Lim Kow & Sons Sdn Bhd	75-1B Main Street Kipong 52000 Kuala Lumpur	6342773

(4) Trading Company

- |                              |  |         |
|------------------------------|--|---------|
| 1. Sumitomo Corporation      | 15th Floor, UBN Tower<br>10 Jalan P Tamlee<br>50710 Kuala Lumpur | 2308133 |
| 2. Yah Chew Services Pte Ltd | 3B Jalan Foo Yet Kai<br>30300 Ipoh, Perak                        | 531786  |

(5) Users

- |  |   |         |
|--|---|---------|
| 1. Perusahaan Otomobil<br>National Sdn Bhd | Hicom Industrial Estate<br>Baru 3, Locked Bag No. 12<br>40990 Shah Alam | 5111055 |
| 2. Hicom-Yamaha Mfr.<br>Malaysia Sdn Bhd   | Hicom Industrial Estate<br>Batu Tiga, 40000 Shah Alam                   | 5111355 |

(6) Related organizations

- |  |  |         |
|--|--|---------|
| 1. Malaysian Industrial<br>Development Authority<br>(MIDA)             | Wisma Damansara<br>Damansara Heights<br>P.O. Box 10618<br>50720 Kuala Lumpur | 2553633 |
| 2. Standards & Industrial<br>Research Institute<br>of Malaysia (SIRIM) | Section 2, P.O. Box 35<br>40700 Shah Alam                                    | 5591630 |
| 3. Centre for<br>Instructor and Advanced<br>Skill Training (CIAST)     | Section 19, P.O. Box 12<br>40700 Shah Alam                                   | 5415736 |

4. Perak State Development Corporation	Bahagian Industri Tingkat 2, Wisma Wan Mohd Jalan Kelab 30904 Ipoh	503666
5. Institut Kemahiran MARA	Jalan Belangkas Kampong Pandan 55100 Kuala Lumpur	9844455
6. Selangor Foundry & Engineering Industries Association	8 (1st Floor) Jalan 1-77B Off Jalan Changkat Thambi Dollah, Kuala Lumpur	2483461
7. Perak Foundry & Engineering Industries Association	No. 79 (1st Floor) Jalan Sultan Idris Shah 30000 Ipoh	549824
8. Penang Foundry & Engineering Industries Association	No. 229-B Jalan Jelutong 11600 Penang	375736

## **II-2 Questionnaire Sheet for Survey in Malaysia**





# QUESTIONNAIRE SHEET

THE STUDY ON SELECTED INDUSTRIAL  
PRODUCT DEVELOPMENT IN MALAYSIA

(FOR FOUNDRY INDUSTRY)

OCTOBER, 1989

PREPARED BY:

JAPAN INTERNATIONAL COOPERATION AGENCY  
IN COOPERATION WITH  
MALAYSIAN INDUSTRIAL DEVELOPMENT AUTHORITY

## DIRECTION FOR USE

1. Please tick in  wherever is appropriate.
2. Please fill in as much informations as possible.
3. Only approx. volumes and values are needed.
4. Questionnaire completed and returned to us are used only for our survey and are not made public.
5. Please photostat one set of the completed questionnaire for your own keeping.
6. Please return the completed questionnaire to "MIDA Office" .

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## A. COMPANY OUTLINE

1. Name of Company : \_\_\_\_\_  
 & Address : \_\_\_\_\_  
 : \_\_\_\_\_  
 : \_\_\_\_\_  
 Tel : \_\_\_\_\_ Fax : \_\_\_\_\_
2. Name of Chief Executive : \_\_\_\_\_
3. Name of Responsible : Name \_\_\_\_\_  
 Person for Contact : Designation \_\_\_\_\_
4. Year of Establishment : \_\_\_\_\_
5. Paid-up Capital : M\$ \_\_\_\_\_  
 Shareholders: Malaysian : M\$ \_\_\_\_\_  
 : Foreign : M\$ \_\_\_\_\_ (Investor: \_\_\_\_\_)
6. Main Bank : \_\_\_\_\_
7. Legal status  Family business/single proprietorship  
 Partnership  
 Company  
 Cooperative  
 Joint venture with foreign firms  
 Government company  
 Foreign owned
8. Land & Factory Area  
 (1) Foundry : Land \_\_\_\_\_ m<sup>2</sup> Factory \_\_\_\_\_ m<sup>2</sup>  
 (2) Total : Land \_\_\_\_\_ m<sup>2</sup> Factory \_\_\_\_\_ m<sup>2</sup>
9. Main Production Items  
 (1) Foundry : \_\_\_\_\_  
 (2) Others : \_\_\_\_\_
10. Annual Sales Turnover (1988) & Number of Employees (at the end of the year)

	Annual sales (M\$1,000)	Number of Employees
(1) Foundry		
(2) Others		
Total		

## B. PRODUCTION

### 1. Products

#### (1) Production Volume & Capacity

Type of casting	1988 (tons/year)		Main Products
	Production volume	Capacity	
• Gray iron			
• Ductile iron			
• Malleable iron			
• Carbon steel			
• Alloy steel			
• Copper alloy			
• Aluminum alloy			
• Die casting			
• Lost wax casting			
• Others			
T o t a l			

#### (2) Production ratio by User Industry

User Industry	ratio(%)
1. Rubber Industry	
2. Tin Industry	
3. Palm Oil Industry	
4. Timber Industry	
5. Building Material Industry	
6. Automobile Industry	
7. Motorcycle Industry	
8. Railway Industry	
9. Agriculture Machinery Industry	
10. Marine Industry	
11. Electrical Equipment Industry	
12. Other Machinery Industry	
13. Other	
T o t a l	100%

(3) Maximum weight of one piece and number of lot

Weight	Number of lot
<input type="checkbox"/> Less than 10 kgs <input type="checkbox"/> 11- 100 kgs <input type="checkbox"/> 101 - 500 kgs <input type="checkbox"/> 501 - 1000 kgs <input type="checkbox"/> More than 1 tons (max. _____ tons)	<input type="checkbox"/> Less than 10 pieces <input type="checkbox"/> 11- 50 <input type="checkbox"/> More than 51

(4) Tolerance of main products

- 100 mm or rough estimate
- 10 mm
- 1 mm
- 1/10 mm
- 1/100 mm
- Less than 1/100 mm

2. Machinery

(1) Manufacturing Equipment & Machinery (only estimate of years of use)

Name of Machinery & Equipment	Numbers in use (unit)			Planning to (unit) install within			
	Total	under 3years	3-10 years	over 10year	under 1 year	1-3 years	over 3years
1) Patterning Machines							
Lathe, Wood works							
Planer, Wood works							
Sawing Machine, Band saw/Cir.							
Drilling Machine							
Router							
Sander							
Surface Plate							
2) Melting Furnace							
Cupola							
Low Frequency Furnace							
High Frequency Furnace							
Arc Furnace							
Crucible Furnace							

3) Sand Treatment							
Simpson type Sand Mill							
Sand Mixer, Screw/Rotter Type							
Sand Blender							
Sand Recycling Equipment							
4) Moulding							
Jolt Moulding Machine							
Jolt Squeeze Moulding Machine							
Core Blowing Machine							
Shell Moulding Machine							
Shell Core Blowing Machine							
Sand Slinger Stationary/Motive							
Die Casting Machine							
Centrifugal Moulding Machine							
5) Fettling Machine							
Shake out Machine							
Shot Blasting Machine							
Turn Blasting Machine							
Swing Grinder							
Grinding Machine							
6) Welding Machine							
Welding Machine							
Carbon Arc Blasting							
7) Heat Treatment							
Furnace							
8) Testing and analyzer							
Chemical Analysis Equipment							
Tensile Strength Tester							
Brinell Hardness Tester							
Shore Hardness Tester							
Optical Pyrometer							
Temperature Record Meter							
Carbon Equivalent Meter							
Total							

(2) Main Facility (Melting)

1) Cupola

a) Type	<u>Type A Cupola</u>	<u>Type B Cupola</u>
• Simple design type, without wind box	<input type="checkbox"/>	<input type="checkbox"/>
• Conventional standard type	<input type="checkbox"/>	<input type="checkbox"/>
• Hot blast type	<input type="checkbox"/>	<input type="checkbox"/>
• Oxygen rich type	<input type="checkbox"/>	<input type="checkbox"/>
• Others (please specify) _____	<input type="checkbox"/>	<input type="checkbox"/>
b) Capacity	_____ t/h	_____ t/h
c) Unit	_____	_____

2) High or Low Frequency Induction Furnace

a) Power	<u>Type A Fce.</u>	<u>Type B Fce.</u>
• Electric Power :	_____ kw	_____ kw
• Transformer :	_____ kva	_____ kva
b) Caspacity	_____ t/batch	_____ t/batch
c) Unit	_____	_____

3) Crucible Furnace

	<u>Type A Fce.</u>	<u>Type B Fce.</u>
a) Capacity	_____ kg	_____ kg
b) Unit	_____	_____

3. Manufacturing

(1) Sand Casting Process

1) Pattern shop

None  
 Have (How many workers : \_\_\_\_\_)

2) Who plans the gating system (casting plan)

Worker themselves  
 Engineer / Manager  
 Pattern maker  
 Supply from customers

3) Who plans the charging materials mixture ratio for melting

Worker themselves  
 Engineer / Manager  
 Others (please specify) : \_\_\_\_\_

4) Moulding Sand

a) Kinds	mould	core
• Natural	<input type="checkbox"/>	<input type="checkbox"/>
• Natural synthetic	<input type="checkbox"/>	<input type="checkbox"/>
• Synthetic	<input type="checkbox"/>	<input type="checkbox"/>
• Others (please specify)	<input type="checkbox"/>	<input type="checkbox"/> (_____)

b) Reclaimed sand

• Dust control method  
 Using  
 Not using

5) Moulding process

	mould	core
• Green sand process	<input type="checkbox"/>	<input type="checkbox"/>
• CO <sub>2</sub> process	<input type="checkbox"/>	<input type="checkbox"/>
• Shell mould process	<input type="checkbox"/>	<input type="checkbox"/>
• Cement process	<input type="checkbox"/>	<input type="checkbox"/>
• Others (please specify)	<input type="checkbox"/>	<input type="checkbox"/> (_____)



- 6) Moulding method
- Hand moulding
  - Machine moulding
  - Flask moulding
  - Flaskless moulding
  - Pit moulding

(2) Die Casting Process

- 1) Production of mould
- In-House
  - Outsource
- 2) Melting Furnace
- Reverberatory (Capacity) \_\_\_\_\_ t X \_\_\_\_\_ (number)
  - Others (Capacity) \_\_\_\_\_ t X \_\_\_\_\_ (number)
- 3) Holding Furnace
- Electric
  - Others
- 4) Pouring Equipment
- Manual
  - Mechanical
- 5) Die Cast Machine (number)
- 30t X \_\_\_\_\_
  - 31-50t X \_\_\_\_\_
  - 51-100t X \_\_\_\_\_
  - 101-300t X \_\_\_\_\_
  - Over 300t X \_\_\_\_\_
- 6) Pick up method of product
- Manual
  - Mechanical

(3) Lost Wax Process

- 1) Pressure injected into mould
- 7 to 14 kgf/cm<sup>2</sup>
  - 50 kgf/cm<sup>2</sup>
  - 140 kgf/cm<sup>2</sup>
- 2) Wax material
- Pure wax
  - Mixed wax with plastics
- 3) Ceramic shell mould
- a) Binder for slurry
- Coloidal silica
  - Ethylsilicate
  - Hybrid
- b) Slurry and stucco
- Zircon
  - Soluble silica
  - Soluble alumina
- c) Coating operation
- Number of coating : number \_\_\_\_\_
  - Thickness of coating : thickness \_\_\_\_\_ mm
- d) Dewax process
- Thermal shock
  - Autoclave
  - Hot water
- e) Baking
- Temperature \_\_\_\_\_ ° C
  - Time \_\_\_\_\_ min

4) Pouring

- Gravity
- Pressure
- Vacuum
- Centrifugal
- C L A
- C L V

5) Finishing

- Caustic soda soluble heated by \_\_\_\_\_ ° C
- Autoclave

(4) Sources of technical information

- |   |  |
|---|--|
| <input type="checkbox"/> Newspaper                    | <input type="checkbox"/> SIRIM (MIDEC)           |
| <input type="checkbox"/> Magazine (Local)             | <input type="checkbox"/> MEXPO                   |
| <input type="checkbox"/> Magazine (Foreign)           | <input type="checkbox"/> NPC                     |
| <input type="checkbox"/> Seminar                      | <input type="checkbox"/> CIAST                   |
| <input type="checkbox"/> Workshop                     | <input type="checkbox"/> MISIF                   |
| <input type="checkbox"/> Exhibition                   | <input type="checkbox"/> FOMFEIA                 |
| <input type="checkbox"/> Consultant                   |  |
| <input type="checkbox"/> Extension officer            | <input type="checkbox"/> Others (Please specify) |
| <input type="checkbox"/> Circular                     | (: _____)  |
| <input type="checkbox"/> Corporative                  |  |
| <input type="checkbox"/> Industrial Service Institute |  |
| <input type="checkbox"/> Human network                |  |
| <input type="checkbox"/> Subcontractor                |  |
| <input type="checkbox"/> Other firms                  |  |
| <input type="checkbox"/> University/college           |  |

(5) Casting defects

1) Defects phenomenum

- Blow hole
- Pin hole
- Sand inclusion
- Slag inclusion
- Misrun
- Shrinkage
- Crack
- Chill
- Others (please specify) (: \_\_\_\_\_)

2) Reject percentage

- Iron casting \_\_\_\_\_ %
- Malleable casting \_\_\_\_\_ %
- Steel casting \_\_\_\_\_ %
- Cu alloy casting \_\_\_\_\_ %
- Al alloy casting \_\_\_\_\_ %
- Die casting \_\_\_\_\_ %
- Lost wax casting \_\_\_\_\_ %
- Others \_\_\_\_\_ %

#### 4. Materials

##### (1) Procurement & Price Level

Materials	Supplied by			Major import country	Price Level	
	Self	Local	Import		1988	1989
Pig iron	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		M\$/t	M\$/t
Iron scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Steel scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Cu ingot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Cu scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Al ingot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Al scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Zn ingot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Zn scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Fe - Si	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Fe - Mn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Fe - Mo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Fe - Cr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Fe - Ni	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Cokes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Silica sand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Bentonite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Sodium Silicate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Cement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		M\$/kg	M\$/kg
Resin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Coal powder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Starch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

##### (2) Import Procurement Ratio to Total Materials Procurement (1988)

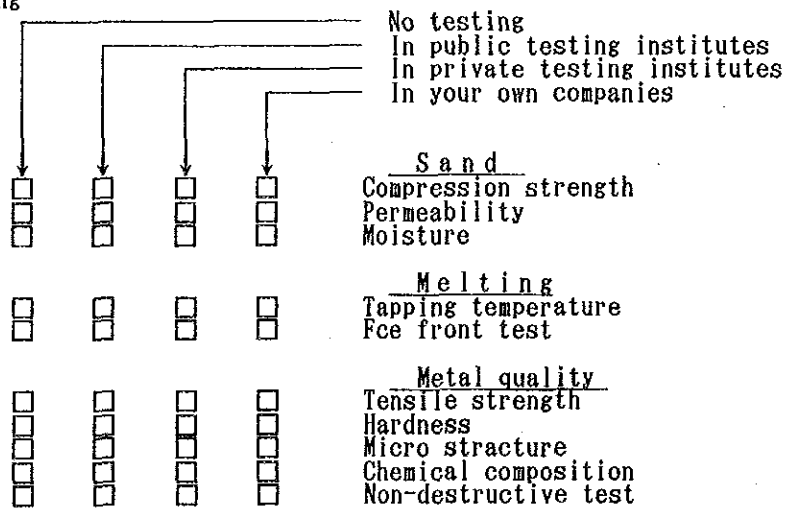
Import values / Total values : \_\_\_\_\_ %

(3) Materials quality & Procurement availability

Materials	Quality			Procurement		
	Good	Fair	Bad	Easy	Normal	Difficult
Pig iron	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Iron scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steel scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cu ingot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cu scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Al ingot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Al scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zn ingot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zn scrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fe-Si	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fe-Mn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fe-Mo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fe-Cr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fe-Ni	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cokes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Silica sand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bentonite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sodium Silicate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coal powder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Starch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Quality Control

(i) Testing



(2) Industrial standards in use

1) International Std.

- B S - British Standards
- A N S I - American National Standards Institute
- A S T M - American Society for Testing and Materials
- S A E - Society of Automotive Engineers
- J I S - Japanese Industrial Standards
- N F - Normes Francaise
- I S O - International Organization for Standardization
- D I N - Deutshes Institut für Normung

2) Country's Std.

- M S - Malaysian Std.
- T I S - Thai Industrial Std.
- S S - Singapore Std.
- N I S - Normes Indonesia Std.
- P S - Philippines Std.

3) Others

- Customer's Std. : \_\_\_\_\_
- Own Std. : \_\_\_\_\_

(3) Your quality control system

1) The inspection system

- No inspection system
- Systematic inspections are not available, "when trouble occurs check "
- First articles inspection
- Single sampling inspection
- Multiple sampling inspection
- Sequential sampling inspection
- Total (100%) inspection
- Without acceptance or purchasing inspection
- With acceptance or purchasing inspection by standard inspection documents

2) Whom is it inspected by?

- None
- Workers themselves
- Manager or the owner
- Professional staff, patrol
- Professional staff, stationary

3) Checking methods and items

- Visual check
- Sensory check
- Dimensional check
- Clearance check for moving parts
- Hardness check
- Surface roughness check
- Colour check
- X-ray check
- Magna flux check
- Noise check
- Vibration check
- Life test/running test

4) Feedback of the results of inspection

- Only in file, no feed back
- Notice on the board
- Circulating notice or inspection record to workers/managers
- Establishing counter measures by workers/managers
- Establishing counter measures by professional staff, statistical quality control system

6. Local sub-contracting

(1) Major products or services made by local sub-contractors according to your specifications.

Products or Services	Values(M\$1,000)/yr	Number of sub-contractors
Total		

(2) General evaluation of local sub-contracting companies:

- a) Quality :  Good  Fair  Bad
- b) Quantity :  Enough  Sometimes short  Always short
- c) Delivery :  Punctual  Sometimes late  Always late
- d) Technical Level :  High  Middle  Low
- e) Management :  Good  Fair  Bad

C. SALES

1. Marketing

(1) Sales department  
 Have                       Do not have

(2) How many staffs on sales activities?

For local : \_\_\_\_\_

For export : \_\_\_\_\_

(3) Where to sell mainly your products locally?

- Government
- Private company
- Others (please specify) : \_\_\_\_\_

(4) From where do your main competitors' products come?

- Local
- Foreign

(5) Local sale expansion

What kind of items to be expected?

Please specify : \_\_\_\_\_

2. Export

(1) Exporting at present  
 If no, What reasons?

- No more capacity
- Less profit
- Less competitive in price
- Less competitive in technology
- Complicated procedures
- No overseas market information
- Others (please specify)

: \_\_\_\_\_

(2) Export ratio & products

Export ratio = Export/whole sales (1988)

Export ratio Value %	Major export products	Major export country
%		

(3) Export promotional activities by

- 1) Overseas branch offices  Yes  No
- 2) Overseas sales agents  Yes  No
- 3) Importers  Yes  No
- 4) Business visits to overseas buyers  Yes  No
- 5) Participations in international trade fairs overseas  Yes  No
- 6) Attendances at international trade fairs for negotiations or market survey  Yes  No
- 7) Overseas advertisement on Magazines & Papers  Yes  No

(4) Source of overseas market information

- 1) MEXPO  Sufficient  Acceptable  Insufficient
- 2) MISIF  Sufficient  Acceptable  Insufficient
- 3) FOMFEIA  Sufficient  Acceptable  Insufficient
- 4) Local trading houses  Sufficient  Acceptable  Insufficient
- 5) Tied-up overseas companies  Sufficient  Acceptable  Insufficient
- 6) Overseas sales agents  Sufficient  Acceptable  Insufficient
- 7) Overseas buyers  Sufficient  Acceptable  Insufficient
- 8) Overseas staffs  Sufficient  Acceptable  Insufficient
- 9) Others(please specify)  Sufficient  Acceptable  Insufficient

: \_\_\_\_\_

(5) Which country's market informations to be needed ?

Country : \_\_\_\_\_  
\_\_\_\_\_

(6) What kind of overseas market informations to be needed ?

- 1) Demand trends      2) Import trends      3) Distribution channels
- 4) Business behaviour      5) Import regulations & restrictions

Please put only Serial Number in next column in order of importance.

(i)	(ii)	(iii)	(iv)	(v)
-----	------	-------	------	-----

(7) Export expansion

- 1) What kind of items to be exported in overseas market ?  
Please specify :

\_\_\_\_\_

- 2) Which country's market to be aimed ?  
Please specify :

\_\_\_\_\_



## D. LABOUR MANAGEMENT

### 1. Employees

(1) Man power composition (present) & Average wage of employees (1988)

Employees		Staffs	Factory Workers		
			* 1 Skilled workers	Semi / Unskilled workers	Total
1) Number	Male				
	Female				
	Total				
2) Average employed years					
3) Average age					
4) Educational level					
• Primary School					
• Lower Secondary School					
• Upper Secondary School					
• University / college					
5) Average wage (M\$ / year)					

\* 1 Including Supervisors

(2) Number of factory workers by casting type

	Cast iron	Malleable cast iron	Cast steel	Al,Cu alloy c.	Lost wax casting	Others	Total
Male							
Female							
Total							

### 2. Operations

(1) Operation days : \_\_\_\_\_ days/year (1988)

(2) Operation hours : \_\_\_\_\_ hrs/day

1 shift : \_\_\_\_\_ ~ \_\_\_\_\_

2 shift : \_\_\_\_\_ ~ \_\_\_\_\_

3 shift : \_\_\_\_\_ ~ \_\_\_\_\_

### 3. Training

(1) In-house training

- Do not do
- Man to man (OJT)
- Whenever necessary
- Periodically according to planned scheme
- Others (please specify) : \_\_\_\_\_

(2) Outside training

- Do                       Do not do

If do, where to send your employees for training & how many ? (1988)

- |  |   |
|--|---|
| <input type="checkbox"/> SIRIM (MIDEC): _____            | <input type="checkbox"/> Private institutes : _____ |
| <input type="checkbox"/> CIAST : _____                   | <input type="checkbox"/> Tied-up companies : _____  |
| <input type="checkbox"/> NPC : _____                     | <input type="checkbox"/> Overseas : _____           |
| <input type="checkbox"/> Other public institutes : _____ | <input type="checkbox"/> Others : _____             |

(3) What kind of government supports to be needed ?

- Subsidy for training
- Expansion of public training facilities
- Dispatch of instructors from public facilities
- On-the-job training by foreign experts
- Increase of number of technical seminars
- Others (please specify) : \_\_\_\_\_

4. Morale

(1) Morale level of employees

- Very low
- Relatively low
- Moderate
- Relatively high
- Very high

(2) QC circle activities

- Do                       Do not do

If do, how many circles are there ?

: \_\_\_\_\_ circles

(3) Suggestion systems of improving productivity & reducing costs

- Have                       Do not have

If have, how many suggestions in a year ?

: \_\_\_\_\_ /year(1988)

5. Labour union

- Have                       Do not have

If have, how many participation ratio ?

: \_\_\_\_\_ %

## E. MANAGEMENT

### 1. Future production planning

#### (1) Production prospects in Malaysia

Please fill in your estimates of production for castings in Malaysia.

	1988	1989	1990	1991
Volumes(1,000 tons)				

#### (2) Your company's future planning

##### 1) Planning to increase production. (1988 production = 100)

Whithin 1 year : \_\_\_\_\_

Whithin 3 year : \_\_\_\_\_

Whithin 10 year : \_\_\_\_\_

##### 2) Planning to increase export. (1988 export = 100)

Whithin 1 year : \_\_\_\_\_

Whithin 3 year : \_\_\_\_\_

Whithin 10 year : \_\_\_\_\_

### 2. Selling price (present)

- Iron casting : \_\_\_\_\_ M\$/kg
- Malleable casting : \_\_\_\_\_ M\$/kg
- Steel casting : \_\_\_\_\_ M\$/kg
- Al alloy casting : \_\_\_\_\_ M\$/kg
- Cu alloy casting : \_\_\_\_\_ M\$/kg
- Die casting : \_\_\_\_\_ M\$/kg
- Lost wax casting : \_\_\_\_\_ M\$/kg

### 3. Manufacturing costs (present)

#### (1) Cost composition

Cost		% of costs	Particulars of cost
Materials & Components	Raw materials		Costs of all materials & components for manufacturing including procured ones
	Others		
Labour cost			Payroll of factory's workers & clerical staffs excluding management & sales staffs
Sub-contract cost			Cost of processing outside
Fuel & Power cost			At factory
Depreciation cost			Factory's buildings, equipment & machinery, etc.
Others			Other manufacturing costs
Total		100%	

Note : Excluding general management & sales cost and profits

(2) Please state sharply-increased costs

: \_\_\_\_\_

(3) Cost saving

1) Cost saving activities

- Improving productivity (reducing man-powers)
- Improving technology levels
- Procuring lower cost materials
- Procuring materials directly from manufacturers
- In-house production of materials procured outside
- Others (please specify) : \_\_\_\_\_

2) Any particular problems for reducing costs ?

- Still lower production level after installing new facilities
- Higher cost of imported materials
- Higher power charges
- Higher fuel costs
- Others (please specify) : \_\_\_\_\_

#### 4. Financing

(1) Fund Raising

1) Funds raised in the past 2 years

Amount \_\_\_\_\_ Thousand M\$

2) The uses for the fund recruited in the past 2 years

- Increase in working capital due to the growth of sales
- Construction of a new plant
- Replacement or modernization of production facilities and equipment
- Setting-up of branch offices
- New product development
- Business diversification
- Making-up for loss
- Others (please specify) : \_\_\_\_\_

3) The sources of funds raised in the past 2 years

(From Lenders in Malaysia)

- Public Financial Institutions
- Private Financial Institutions
- Private Companies and Persons
- Parent Company and Related Companies

(From Lenders Overseas)

- Financial Institutions
- Parent Company and Related Companies
- Others

4) Funds to be recruited in the coming 2 years

Total amount \_\_\_\_\_ Thousand M\$

- 5) The major uses of funds to be recruited in the coming 2 years
- Increase in working capital due to the growth of sales
  - Construction of a new plant
  - Replacement or modernization of production facilities and equipment
  - Setting-up of branch offices
  - New product development
  - Business diversification
  - Making-up for loss
  - Others (please specify) : \_\_\_\_\_

- 6) The sources of funds to be recruited in the near future

(From Lenders in Malaysia)

- Public Financial Institutions
- Private Financial Institutions
- Private Companies and Persons
- Parent Company and Related Companies

(From Lenders Overseas)

- Financial Institutions
- Parent Company and Related Companies
- Others

## (2) Use of the Credit Guarantee System

- 1) Experience in the use of the CGG guarantee system

- Using
- Once used, but not using now
- Never used

- 2) Necessity for the expansion of the Credit Guarantee System in Malaysia

- Yes
- No

- 3) Major problems in the present CGG system

- Complicated formalities
- Loan amount is small
- Severe lending conditions
- Additional collateral is required
- Eligible firms are limited only to small-scale firms
- We do not have enough knowledge of the system and its procedures
- Others (please specify) : \_\_\_\_\_

- 4) Is it necessary that the government expand financial facilities for small-scale firms in order to improve their access to financial resources outside?

- Very Important
- Somewhat Important
- Not Important

## 5. Relocation program

- (1) If have, what are the major reasons?

- The estate is limited
- Poor condition of procurement materials

- Far from the customers
- Poor surrounding road condition
- Poor supplying water and electric power
- Poor drainage situation
- Getting claims of industrial pollution
- Deterioration of machines and equipment
- Diversification and/or increase of production
- Quitting for public works
- Merged in or combined to other firm
- Others (please specify) : \_\_\_\_\_

(2) Relocation to the Foundry Complex in future

1) Do you desire?

- Do
- Do not do

2) If do, what conditions to be needed?

- Near K.L.
- Near Ipoh
- Several activities
- Cheap land fee
- Others (please specify) : \_\_\_\_\_

Note : The basic concepts of the Foundry Complex.

There are common shared activities such as training, purchasing, maintenance, etc.  
Each plant within the Complex can be under separate independent management.

6. Matters of Your Concern

- 1) Securing funds
- 2) Recruiting good workers
- 3) Training workers
- 4) Improving quality
- 5) Increasing productivity
- 6) Reducing costs
- 7) Shortening delivery period
- 8) Reducing defective ratio
- 9) Modernising equipments & machinery
- 10) Procuring good & cheap materials & components
- 11) Using local materials & components
- 12) Introducing new technologies
- 13) Intensifying R & D activities
- 14) Developing new higher value-added products
- 15) Increasing production
- 16) Strengthening marketing
- 17) Expanding export
- 18) Obtaining overseas market informations
- 19) Obtaining technology informations
- 20) Utilising government incentives
- 21) Others (please specify) : \_\_\_\_\_

Please put only Serial Number in next column in order of concern.

(i)	(ii)	(iii)	(iv)	(v)
(vi)	(vii)	(viii)	(ix)	(x)
(xi)	(xii)	(xiii)	(xiv)	(xv)

## F. TECHNICAL TIE-UPS/JOINT VENTURES

### 1. Technical Tie-ups

(1) Any Technical Tie-ups made at present ?

- Have                       Do not have

• If have, with which countries ?

- U.K.  
 U.S.A  
 Japan  
 Others (please specify) : \_\_\_\_\_

(2) Any or any more Technical Tie-ups to be desired ?

- Have                       Do not have

1) If have, with which countries ?

- U.K.  
 U.S.A  
 Japan  
 Others (please specify) : \_\_\_\_\_

2) What to be expected from partner companies ?

- Technology transfer  
 Employees training  
 Overseas markets developed by partner companies  
 Knowledge of management  
 Others (please specify) : \_\_\_\_\_

### 2. Joint Ventures

(1) Any Joint Ventures to be desired ?

- Have                       Do not have

(2) If have, with which countries ?

- U.K.  
 U.S.A.  
 Japan  
 Others (please specify) : \_\_\_\_\_

(3) What to be expected from partner companies ?

- Technology transfer  
 Employees training  
 Overseas markets developed by partner companies  
 Knowledge of management  
 Finance  
 Others (please specify) : \_\_\_\_\_

## G. PROBLEM AREAS

### 1. Problems of manufacturing

- Shortage of production volume
- Lack of modern type machinery & equipment
- Lack of technology for reducing defects
- Lack of technology for making high quality products
- Unavailability of materials for making high value-added products
- Lack of technical information of products
- Low level productivity
- Others (please specify) : \_\_\_\_\_

### 2. Problems of sales & exports

- Local market demand is small
- No experience in export
- Price level is relatively low
- Required technology level is too high
- Too much competitors existing
- Others (please specify) : \_\_\_\_\_

### 3. Problems of labour management

- Shortage of workers
- Lack of skilled workers or technical staffs
- Frequent job hopping
- Rapid increase of labour costs
- High fringe benefit payment
- Increased training expenses
- Difficulty in labour negotiation
- Others (please specify) : \_\_\_\_\_

### 4. Problems of using incentives

Incentives	Not using	Using		
		Very effective	Effective	Not effective
• Pioneer Status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Investment Tax Allowance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Accelerated Depreciation Allowance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Reinvestment Allowance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Export Credit Refinancing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Abatement of Adjusted Income for Export	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Double Deduction of Export Credit Insurance Premiums	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Double Deduction for Promotion of Export	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Industrial Building Allowance for Export	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Double Deduction for R & D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Industrial Building Allowance for R & D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Double Deduction for Training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Industrial Building Allowance for Training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



• If not using, what are the major reasons?

- No knowledge of measures
- Too complicated procedures
- Slow approval of measures
- Doubtful effects
- Others (please specify) : \_\_\_\_\_

5. Problems of Fund Raising

(1) Extent of difficulty in raising funds

- Very difficult
- Somewhat difficult
- Easy

(2) Major problem areas in recruiting funds in Malaysia

- Severe loan eligibility
- Financial institutions require collateral for a loan
- Financial institutions require guarantee of the parent company
- Financial institutions take much time for screening
- Troublesome formalities of borrowing procedures
- Loan amount is limited
- High interest rate
- Exposure to exchange risk
- Undeveloped stock market in Malaysia
- Lack of access to the international financial market
- Company's financial manager is poor in know-how of financing
- Others (please specify) : \_\_\_\_\_

Thank you for your cooperation.  
Please return immediately.

Name : _____	Date : _____
Designation : _____	
Signature : _____	



**II-3 List of Companies which Responded  
to the Questionnaire Survey in Malaysia**



## II - 3 List of Companies which Responded to the Questionnaire Survey in Malaysia

1. Adamai Sdn Bhd
2. Alcast Sdn Bhd
3. Alloy Art Sdn Bhd
4. Automated Engineering
5. Bengkel Choy Soon Heng Sdn Bhd
6. Butterworth Foundry
7. Casting Industries Sdn Bhs
8. Cast Iron Products Sdn Bhd
9. Chee Peng Castion Mfr.
10. Chee Woh & Co Foundry
11. Central Foundry (M) Sdn Bhd
12. Cheong Hin Foundry Works
13. Chin Wooi Foundry
14. Chye Yew Seng
15. Choong Fei Foundry & Die
16. Choong Kee Foundry
17. Choong Lian Foundry
18. Chop Seng Huar Hardware
19. Cyclo Motor Industries Co
20. Dah Yung Steel (M) Sdn Bhs
21. Die Casting Products Sdn Bhd
22. Finecast Industries Sdn Bhd
23. Gah Hup Seng Sdn Bhd
24. Heng Loong Machinery & Trading
25. Heng Yuen Factory
26. Ho Yow Foundry
27. Hung Chang Machine Moulding
28. Hup Ngai Loong Foundry Sdn Bhd
29. Indah Foundry Sdn Bhd
30. Kejuruteraan Soon Way
31. Kin Lee Engineering Works & Trading
32. Kinko Steel Mill Bhd
33. Kit Loong Foundry

34. Kolling Engineering Sdn Bhd
35. Kong Lit Factory
36. Kong Foundry
37. Kwan Cheong Engineering (1976) Sdn Bhd
38. Kwong Hup Cheong Foundry
39. Kwong Hup Seng Engineering Sdn Bhd
40. Kwong Yee Loong Engrg & Foundry Workd
41. Lek Foong Foundry
42. Lien Seng Trading & Foundry
43. Lian Aik
44. Lien Yaik Hardware (M) Sdn Bhd
45. Lienyeu Seng Foundry
47. Meng Seng Hup Kee Casting & Engineering
48. Menglembu Wah Cheong Foundry Sdn Bhd
49. Metik Industry Berhad
50. Ngai Hing Foundry Works
51. Ngai Sum Engineering Foundry
52. Num Soon Metal Mfg Sdn Bhd
53. Prudence Metals Sdn Bhd
54. Sapura Automotive Ind Sdn Bhd
55. See Seng Foundry Works
56. Seng Fatt Engineering Works (1947) Sdn Bhd
57. Seng Fatt Foundry Works
58. Siew Cheong Foundry Works
59. Sin Ngai Seng Engineering Works
60. Sin Soon Hoe Foundry Engrg Works
61. Soon Fatt Engineering Works
62. Soon Seng Foundry
63. Soon Woh Foundry
64. Success Mahcinery & Foundry Works
65. Sun Chup Seng Foundry Sdn Bhd
66. Sun Kong Luen Cheong Foundry Sdn Bhd
67. Sun Sang Heng Kee Foundry Sdn Bhd
68. Sun Weng Heng Hup Kee Foundry
69. Syt Thong Sum

70. Taimoi Tap Industries Sdn Bhd
71. Tasek Iron & Steel Foundry Sdn Bhd
72. Teak Heng Foundry Sdn Bhd
73. Thong Sim Metal Casting & Engrg Works
74. Tick Tor Engineering Works
75. Tung Liang (M) Ind Sdn Bhd
76. United Casting Sdn Bhd
77. Universal Foundry Sdn Bhd
78. Wing Kong Foundry
79. Weng Seng Engineering Works
80. Wong Choong Foundry
81. Wong Weng Kong Foundry Works
82. Yew Hup Seng Foundry
83. Yew Lean Foundry
84. Yoon Foh Fatt Foundry
85. Yoon Steel (M) Sdn Bhd
86. Yuen Lee Casting
87. Zinc Alu Castin Sdn Bhd
88. Nan Young Foundry & Co
89. Lin Hup Foundry & Industry Works
90. Hup Heng Foundry Works
91. Hup Lek Foundry Factory
92. Speedmark Industrial (M) Sdn Bhd
93. Chap Huat Hardware Mfrg
94. Sin Ban Seng Foundry
95. Hunta Foundry (M) Sdn Bhd
96. Yin Sin Foundry
97. Yoong Cheng Foundry Sdn Bhd
98. Sin Tong Fatt Foundry
99. Hup Yik Foundry
100. Super Liner Industries Sdn Bhd
101. Dai Hing Die Casting Industry Sdn Bhd
102. Hoong Yuen Hing Iron Works
103. Ho Weng & Sons Engr Works





## **II-4 Results of the Questionnaire Survey in Malaysia on Tie-ups with Foreign Firms**



## II-4 Results of the Questionnaire Survey in Malaysia on Tie-ups with Foreign Firms

### (1) Technical Tie-Ups

#### 1) Current tie-ups

Based on the results of the current questionnaire survey, only four of the 103 respondents were currently involved in technical tie-ups with foreign firms. Two of these were iron-related firms, and the other two were involved in die-casting. One of the cast iron foundries is a new factory which began operation in 1989, while the other three factories have been in operation since the early 1970s. All of the factories are located in Kuala Lumpur and Selangor. The partner firms are of Japanese, British, Taiwanese, and Netherlands nationality.

#### 2) Desire for technical tie-ups

26 of the respondents indicated that they would like to participate in technical tie-ups in the future. Three of the 26 factories already had such tie-ups but began operations long ago.

Table II-1 shows the results of the survey question concerning the desired nationality of the tie-up partner.

Table II-1 Desired Nationality of Tie-up Partner

Type Production	No. of factories	No. of employees		Desired nationality							
		~30	31~	Japan	U.S.	Taiwan	U.K.	West Germany	Aust- ralia	Singa- pore	Other
Cast iron	15	7	8	10	5	7	1	1	2	1	5
Steel casting	4	1	3	3	3	1	2	1			
Light alloys	7	5	2	6	2						
Total	26	13	13	19	10	8	3	2	2	1	5

Source: Questionnaire Survey

Note: The desired nationality question permitted multiple responses (the numbers indicate the number of companies not having such a desire).

13 of the factories with up to 30 employees were enthusiastic about technical tie-ups, as were 13 of those with 31 or more.

Japan was the most desired tie-up partner, followed by the U.S. and Taiwan. "Other" covers those responses for which no nationality was given.

Areas in which assistance from the prospective partner were anticipated included the transfer of technology, the access to new markets already developed by the partner cooperation, and employee training opportunities. Table II-2 offers a summary of anticipated areas of assistance.

Table II-2 Areas in Which Assistance is Anticipated

	No. of factories	Type of production		
		Cast iron	Steel casting	Light alloys
Technology transfer	22	13	2	7
Access to new Markets	19	10	3	6
Employee training	15	10	3	2
Management know-how	1	1		
Total	57	34	4	15

Source: Questionnaire Survey (103 respondents)

Note: The totals take into account multiple responses.

## (2) Capital Tie-Ups

### 1) Current tie-ups

Eight of the 103 respondents were currently involved in joint-capital ventures with foreign corporations. These included six factories of cast iron, one of steel casting, and one of light alloys. The partners were of Taiwanese, Singaporean and Indonesian nationality.

In addition to these eight factories, two of the factories visited were involved in capital tie-ups with firms from Japan and Singapore for the production of cast iron and light alloys.

### 2) Desire for capital tie-ups

18 of the 103 respondents indicated that they would be interested in participating in capital tie-ups. One of the 18 factories, a cast iron factory, was already involved in such a tie-up.

The 18 factories included 14 of cast iron foundries, three of steel casting, and one of light alloys. Table II-3 shows the desired partner nationalities indicated by the 18 factories.

Table II-3 Desired Nationality of Capital Tie-up Partners

Type Production	No. of factories	No. of employees		Desired nationality						
		~30	31~	Japan	U.S.	Taiwan	U.K.	West Germany	Singa- pore	Other
Cast iron	14	8	6	5	2	5	1	1	1	6
Steel casting	3	1	2	3	2	2	2	1		
Light alloys	1	1								1
Total	18	10	8	8	4	7	3	2	1	7

Source: Questionnaire Survey

Note: The desired nationality question permitted multiple responses (the numbers indicate the number of companies not having such a desire)

There was an overall desire for capital tie-ups regardless of the size of the company. This was true in the case of technical tie-ups as well.

Again, Japan was the most often-indicated partner, followed by Taiwan and the U.S.

At present there are no tie-ups of either sort with U.S. firms, but it is noteworthy that a number of Malaysian companies are interested in building such a relationship.

Just as in the case of technical tie-ups, areas in which assistance from the prospective partner were anticipated included the transfer of technology, the access to new markets already developed by the partner company, and opportunities for employee training. Naturally, the desire for assistance in raising funds was also indicated by many of the firms. Table II-4 offers a summary of anticipated areas of assistance.

Table II-4 Areas in Which Assistance is Anticipated

	No. of factories	Type of production		
		Cast iron	Steel casting	Light alloys
Technology transfer	18	14	3	1
Access to new markets	18	14	3	1
Employee training	16	12	3	1
Fund raising	16	12	3	1
Management know-how	3	1		
Total	71	53	12	4

Source: Questionnaire Survey (103 respondents)

Note: The totals take into account multiple responses.



**II-5 List of Castings Currently Produced in and  
Exported from Malaysia**





II-5 List of Castings Currently Produced in and Exported from Malaysia

(1) Production Items

A. Rubber Industry

1. Rubber processing machinery
2. Rollers
3. Gears
4. Bearing housing
5. Chain gears
6. Pulleys

D. Automobile Industry

1. Brake drum
2. Clutch disc
3. Exhaust manifold
4. Cylinder liner
5. Air-condition bracket
6. Air-condition pulleys

B. Building Material Industry

1. Pipe and pipe fitting
2. Manhole cover
3. Valves
4. Hydrant
5. Pumps
6. Lamp posts
7. Coupling for pipe
8. Gibault joint and saddle
9. Weight blocks for lifts
10. Surface box
11. Concrete mixer parts
12. Pile shoes
13. Sanitary parts

E. Motorcycle Industry

1. Kick starter lever
2. Piston
3. Brake drum
4. Block Manifold
5. Cylinder block
6. Cylinder head
7. Crank case
8. Disc brake set
9. Brake shoe

C. Mining Industry

1. Water pumps and gravel pumps
2. Pump liner
3. Impeller
4. Coupling for machine
5. Pump casing
6. Dredging parts
7. Bushes
8. Sledge

F. Railway Industry

1. Brake drum
2. Wheels

G. Palm Oil Mill Industry

1. Worm screw
2. Sleeves
3. Pulleys
4. Boiler parts
5. Furnace grate
6. Dust collector parts
7. Sterilizer
8. Digester

H. Timber Industry

1. Saw-mill machinery
2. Dust pumps
3. Machine parts
4. Rollers

I. Brick Industry

1. Brick making machinery
2. Gears
3. Wheels
4. Pulleys
5. Bushes
6. Screw housing
7. Shovel conveyor

J. Quarry Industry

1. Coupling
2. Crusher
3. Grinding

K. Agriculture Machinery Industry

1. Chain gear
2. Bucket teeth
3. Bucket
4. Dredging
5. Weight blocks

L. Marine Industry

1. Propeller
2. Impeller
3. Shaft
4. Couplings
5. Ship trimmings

M. Chemical & Food Processing Industry

1. Valves
2. Pipe fitting
3. Joints
4. Boiler parts
5. Pulley
6. Impeller
7. Dust collector parts

N. Electrical Equipment Industry

1. Motor casing
2. Bearing housing
3. Protection box
4. Sleeve bushing
5. Grinding
6. Fan for motor
7. Induction motor

O. Telecommunication Industry

1. Telephone junction box
2. Manhole cover
3. Joints
4. Steps

P. Cement Industry

1. Crushers
2. Pulley
3. Stone barrel
4. Rollers
5. Sleeves for cement concrete vehicles
6. Others

Q. Glass Industry

1. Glass moulds
2. Others

R. Plastic Industry

1. Die set
2. Mould components

S. Weighting Equipment Industry

1. Weights
2. Components

T. Sport Equipment Industry

1. Weights
2. Components

U. Overhead Crane

1. Rollers
2. Others

V. Machinery Parts

1. Pulley
2. Coupling
3. Gear
4. Shaft
5. Tools
6. Wheels
7. General engineering parts
8. Others

W. Water Treatment Equipment

1. Self priming pump
2. Centrifugal pump
3. Valves
4. Others

X. Diesel Engine and Parts

1. Engine
2. Cylinder block
3. Cylinder head
4. Crane case
5. Others

Y. Petroleum Industry

1. Gas cooker
2. Station manhole for understand storage tank
3. Engineering parts
4. Pipe fittings
5. Valve
6. Others

(2) Export Items

<u>Industry</u>	<u>Particulars</u>	<u>Manufacturers</u>
Rubber Processing	Rubber Creppers Hammer Mills Transfer Pumps Prebreakers Valves	Kwan Cheong engineering Sphere Corporation Guthrie Engineering
Palm Oil Processing	Screw Press Bogie Wheels Ballards Capstans Elevator Sprockets Oil Pumps Boiler Fire Bars Valves	Kumpulan Emas Mechmar Bell Bhd Kai Peng Engineering Wong Heng Engineering Dah Yung Steel Sin Soon Hoe
Building Industries	Cast Iron Pipes Cast Iron Fittings Manhole Covers Valves Hydrant Pumps Lift Counterweight	United Castings Sdn. Bhd. Nam Soon Metals Seng Fatt Engineering
Mining Industries	Water Pumps Pumps Casing Impeller Dredge Buckets Monitor Tin Dredge Parts	Bradken Malaysia Yoon Steel Foundry Alloy Arts Foundry Nam Yong Foundry
Timber	Band saw Fan Casing Trolleys	Tick Tor Foundry Yew Hup Seng Foundry Kwong Hup Seng Foundry
Marine	Propeller Shafts Coupling Anchors	Sin Soon Hoe Foundry Kwong Yee Long Foundry
Quarry	Cone Crusher jaw Wearing parts	Yoon Steel Foundry Cheong Foundry Dah Yung Steel

(Source: MIDA)

### **III Computers and Computer Peripherals**



### **III-1 List of Companies and Organizations Visited**





## List of Companies Visited (Computer Industry Group)

<u>Company</u>	<u>Address</u>	<u>Tel No.</u>
I. Computer Related Industries		
1. NEC Sales (Malaysia) Sdn Bhd	13th Floor, Bangunan Arab Malaysian, Jln Raja Chulan 50200 Kuala Lumpur	2387788
2. Microcomputer Systems (M) Sdn Bhd	Level 3, Amoda Blding Jalan Imbi, 55100 K L	2486655
3. Computer Resources Sdn Bhd	Lot G46 & G49 Ground Floor Imbi Plaza, 28 Jalan Imbi 55100 Kuala Lumpur	2434462
4. Microbase Electronics Sdn Bhd	Lot G20 & 21, Ground Floor Imbi Plaza, 55100 K L	2424549
5. Techtrans Computer System Sdn Bhd	14 Lorong Jaya 14 c/o Taman Teknologi Malaysia Bandar Tun Razak, Ceras 56000 Kuala Lumpur	9302252
6. Compex Systems Sdn Bhd	No. 1 Jalan Sarawak Off Jalan Pudu, 55200 K L	2418844
7. Wearn's Electronics (M) Sdn Bhd	99 Jalan Parit Masjid 82000 Pontian, Johor	871611
8. Mitsumi Technology (M) Sdn Bhd	Batu 34 1/2 Jln Johor 82000 Pontian, Johor	878081
9. Fujitsu Component (M) Sdn Bhd	No. 1 Lorong Satu Kawasan Perindustrian Parit Raja 86400 Batu Pahat, Johor	482111
10. Maxtor Singapore ltd	2018 Solok Perusahaan 3 Prai Industrial Estate 13600 Penang	396500
11. Conner Peripherals Malaysia Sdn Bhd	981 Lot 19 Mukim 1 Solok Perusahaan 3 Kawasan MIEL, 13600 Prai	390500
12. Powermatic Sdn Bhd	Lot 5 Jalan Bersatu 13/4 46200 Petaling Jaya	7575600
13. PK Electronics Industries Sdn Bhd	No. 53 Senawang Industrial Estate, 70450 Seremban	772993
14. Menang Microelectronics Sdn Bhd	12 (Block B), Malaysia Technology Park Jalan Jaya 5 Bandar Tun Razak 50758 Kuala Lumpur	9312693
15. Kobe Precision	Lot 72, Sektor A Kawasan Perindustrian HICOM Shah Alam	5111120
16. Accent Technology	The Annex, Plaza MBF, Jalan Ampang, 50450 Kuala Lumpur	2618444
17. Astec (M) Sdn Bhd	A 1445 Jalan Tanjung Api 25050 Kuantan, Pahang	515522

## II. Assemblers of Electronics Products

1.	JVC Electronics Malaysia Sdn Bhd	Lot 1, Pesiaran Jubli Perak Seksyen 22, 4000 Shah Alam	5413377
2.	NEC Home Electronics	Lot 9, Kaw Perusahaan Tikam Batu, 08007 Sungai Petani	478700
3.	SONY Electronics (M) Sdn Bhd	Free Trade zone Prai Industrial Estate. 13600 Prai, Penang	396400
4.	Sharp-Roxy Corporation (M) Sdn Bhd	Lot 202, Bakar Arang Ind Estate, 08000 Sg. Petani Kedan	412854
5.	Sharp Roxy Electronics Corp (M) Sdn Bhd	Plo No. 1 Kawasan Perind Sri Gadang 83009 Batu Pahat, Johor	445466
6.	Brother Industries Technology (M) Sdn Bhd	Lot 62, Tebrau Ind Estate 81200 Johor Bahru, Johor	542107

## III. Manufacturers of Electronics Parts

1.	Rohm-Wako (Malaysia) Sdn Bhd	Lot 58, Jalan 26/6 HICOM Industrial Estate 40000 Shah Alam	5111313
2.	MC Industry	Plot 1240, Bayan Lepas FTZ 11900 Penang	833511
3.	Toshiba Electronics (M) Sdn Bhd	42507 Telok Panglima Garang 15 Km Klang-Banting Road Kuala Langat, Selangor	3526001
4.	Toshiba Capacitor (M) Sdn Bhd	Telok Panglima Garang (FTZ) 15KM, Jalan Kelang Banting Kuala Langat, Selangor	3526001
5.	Matsushita Electronic Components (M) Sdn Bhd	No. 1 Jalan SS 8/4 Sungei Way FTZ, Selangor	7760899
6.	Kami Electronics Industry (M) Sdn Bhd	5A Jalan Hasil Off Jalan Tampoi 81200 Johor Bahru	378405
7.	GG Circuits Industries Sdn Bhd	No. 10D & E, 5 <sup>2</sup> / <sub>1</sub> Miles Jalan Skudai, Tampoi 81200 Johor Bahru	368935
8.	Alps Electronics (Malaysia) Sdn Bhd	Lot 15. 02A, 15th Floor Menara Promet Jalan Sultan Ismail 50250 Kuala Lumpur	2436682
9.	Hitachi Consumer Products	Lot 4 Jalan PI/A K P Bangi	8250801
10.	SMK (M)	Equatorial Hotel	-

#### IV. Manufacturers of Metal Products

1. Kris Componets Sdn Bhd	11A Lorong 2A, Ceras Jaya Jalan Belakong, 43200 Ceras Selangor	9055117
2. Kein Hins Industry Sdn Bhd	1837 Jalan College 43300 Seri Kembangan Selangor	9486820
3. Loon Sunn Engineering Sdn Bhd	8233 Jalan 225 46100 Petaling Jaya	7561655
4. Hip Hoe Engineering Works Sdn Bhd	33 Jalan Kampong Pasir Baru Batu 6, Jalan Klang Lama 58200 Kuala Lumpur	7921549
5. Loh Kim Teow Engr Sdn Bhd	31-34 Lengkok Kampong Java 2 Bayan Lepas Non-FTZ 11900 Penang	837999
6. Eng Hardware Engr Sdn Bhd	Plot 69, Persiaran Kampong Jawa, Bayan Lepas Non-FTZ 11900 Bayan Lepas, Penang	840122
7. Ban Seng Lee Industries	Lot 1030, Jalan Besar Selayang Baru 68100 Batu Caves	6187148

#### V. Manufacturers of Plastic Injection Moulding Parts

1. Polynic Industries Sdn Bhd	Lot 256, Mak Mandin Industrial Estate 13400 Butterworth	345569
2. Precico Sdn Bhd	Plo 410, Lrg Perusahaan 8B Prai Industrial Estate 13600 Prai, P W	307414
3. May Plastics Industries	No. 15 Jalan 113 Kaw Perindustrian Kepong Baru 52100 Kuala Lumpur	6344180
4. Yong Kam Fook Plastic Ind Sdn Bhd	20/69 Persiaran Selangor 40700 Shah Alam	5590152
5. Itami Plastic Corp (M) Sdn Bhd	Plo 2, Kawasan Perindustrian 83300 Sri Gading, Batu Pahat Johor	4882667
6. Kohno Plastic (M) Sdn Bhd	Lot 79 Lorong Enggang 35 Kawasan Perusahaan Bebas Ampang Ulu Kelang 54200 Kuala Lumpur	4566622

#### VI. Related Organisations and Others

1. Malaysian National Computer Confederation (MNCC)	46A Jalan SS 2/66 47300 Petaling Jaya	7751576
2. Federation Manufacturers Malaysia (FMM)	17th Floor, Wisma Sime Darby Jalan Raja Laut, 50350 K L	2931244

3.	INTAN Computer Training Centre	Jalan Ilmu, 59700 K L	7578253
4.	Persatuan Industri Komputer Malaysia (PIKOM)	25th Floor, Menara Tun Razak Jalan Raja Laut, 50350 K L	2920297
5.	Syarikat Telekom Malaysia	STM Headquarters, 20th Floor Bukota Building Jalan Pantai Baru, 59200 K L	2329494
6.	Malaysian Institute of Microelectronic Systems (MIMOS)	Lot 7.2 & 7.3 7th Floor, Kompleks Bukit Naga Off Jalan Semantan Damansara Heights, 50490 K L	2552700
7.	Penang Development Corp	No. 1 Jalan Sungei Nibong 11909 Bayan Lepas, Penang	832111
8.	Akitek MAA	Bangunan Ming 15-01 15-01, Jalan Bukit Nahas 50714 Kuala Lumpur	2308955
9.	Sumitomo Corporation	15th Floor, UBN Tower 10 Jalan P Ramlee 50710 Kuala Lumpur	2308133
10.	Malaysian Plastic Manufacturers' Association (MPMA)	37, 2nd Floor, Jalan 20/14 Paramount Garden 46300 Petaling Jaya	7763027
11.	Malaysian Technology Park	Lot 8-12 Block A Jalan Jaya 5 Taman Jaya Bandar Tun Razak Tun Abdul Razak 56000 Kuala Lumpur	9307088
12.	MAMPU	4th Floor, Wisma PKNS Jalan Raja Laut 50527 Kuala Lumpur	2982066
13.	Japan Asean Investment Corporation (JAIC)	16th Floor, UBN Tower 10 Jalan P Ramlee 50710 Kuala Lumpur	2304031
14.	The Nomura Securities Co., Ltd.	24th Floor, UBN Tower No.10 Jalan P. Ramlee 50250 Kuala Lumpur	2305659
15.	Pahang State Development Corporation	16th Floor Kompleks Teruntum, Jalan Mahkota 25000 Kuantan Pahang	505566

## **III-2 Questionnaire Sheet for Survey in Malaysia**



THE STUDY ON SELECTED INDUSTRIAL PRODUCT DEVELOPMENT IN MALAYSIA  
FOR ELECTRICAL AND ELECTRONICS RELATED INDUSTRIES  
QUESTIONNAIRE SHEET

1 COMPANY OUTLINE

- (1) Name of Company \_\_\_\_\_
- (2) Address of Head Office \_\_\_\_\_
- TEL \_\_\_\_\_
- FAX \_\_\_\_\_
- (3) Name of Chief Executive \_\_\_\_\_
- (4) Year of Establishment \_\_\_\_\_
- (5) Number of Employees \_\_\_\_\_
- (6) Paid-up Capital \_\_\_\_\_
- (7) Annual Sales Value('88) \_\_\_\_\_
- Turnover ('88) \_\_\_\_\_
- Export Sales Value \_\_\_\_\_
- Export Ratio \_\_\_\_\_
- (8) Capital Structure
- Local \_\_\_\_\_ %
- Foreign \_\_\_\_\_ %
- To Foreign Affiliated Firm
- Name of Parent Firm \_\_\_\_\_
- Nationality of Parent Firm \_\_\_\_\_
- (9) Products \_\_\_\_\_
- (a) Major Products \_\_\_\_\_
- \_\_\_\_\_
- (b) Minor Products \_\_\_\_\_
- \_\_\_\_\_
- (10) Respondents
- Name: \_\_\_\_\_
- Title: \_\_\_\_\_

2 GENERAL QUESTIONS

2. 1 At present, what are the main problems in your company management?

- Procurement of funds
- Introduction of new technology
- Purchasing of materials
- High rental fees of land and buildings
- Difficulties in finding personnel
- Severe competition
- Low operating rate
- Others (Specify \_\_\_\_\_)

2. 2 Regarding industrial associations,

(1)

At present, are you a member of some sort of industrial association?

- Yes (Its name is \_\_\_\_\_)
- No

(2)

What do you believe are the current advantages of entry into an industrial association?

- Acquisition of marketing information
- Greater opportunity for the finding of business partners
- Stronger negotiating power with the Government
- Others (Specify \_\_\_\_\_)
- Nothing in particular
- No idea

(3)

Is there anything you feel an industrial association should pursue in the future?

- Joint purchase of materials
- Sponsoring of product exhibitions, business conferences, etc.
- Periodic supply of information.
- Others (Specifically \_\_\_\_\_)
- Nothing in particular
- No idea

(4)

Do you think it necessary to establish an industrial association specialized in electronics industry?

- Yes
- No



2. 3 Regarding quality control,

(1) Are you implementing QC activities?

- Yes
- No
- Have no knowledge about QC

(2) If provided in the future, which of the following would you want to make use of?

- Seminar concerning QC methods
- On-the-spot guidance by specialists visiting each factory
- Supply of QC manuals
- Training by dispatching the management staff to Japan
- Subsidy for the use of QC consultants
- Others (Specify \_\_\_\_\_)

2. 4 Regarding technical tie-up

(1) Have you had experience with a technical tie-up or Original Equipment Manufacture(OEM) arrangement?

- Have had technical tie-up
- Have had OEM deal
- No

(2) How did you find your partner in the technical tie-up or OEM arrangement?

- Offer from partner
- Uncovered by oneself
- Introduced by third party
- Others ( \_\_\_\_\_ )

(3) Do you know of the MIDA system for introduction of partners for technical tie-ups (RICOM)?

- Yes
- No
- Have used same and found it effective
- Have used same, but did not lead to contract

(4) Do you have any intention to start the production of personal computer, peripherals and related parts in future?

- Have a concrete plan (Product: \_\_\_\_\_)
- Have interest (Product: \_\_\_\_\_)
- Have no interest

(5) Do you desire a technical tie-up or OEM arrangement or Joint Venture with a foreign firm concerning production of personal computer and peripherals?

- Would like a technical tie-up
- Would like an OEM arrangement
- Would like a Joint Venture with a foreign firm
- No

### 3 QUESTIONS AS TO PERSONNEL DEVELOPMENT

#### 3. 1 Present Employment in Production Department

(1) Please enter the numbers of factory workers in the following table by type of workers and by academic back ground.

Type of Workers	System Engineer	Programmer	Engineer	Technician	Supervisor, Foreman	Skilled Worker	Non-skilled Worker
Academic Background							
Primary School							
Lower Secondary School							
Upper Secondary School							
Polytechnic							
University							
Vocational Training Institutions							

#### 3. 2 Shortage of Labour

(1) Is the shortage of manpower becoming a problem in your company?

- It is a serious problem.
- It is somewhat a problem.
- It is not a problem.

(2) When your company faces a manpower problem:

Which types of workers are insufficient?

	<u>A serious problem</u>	<u>Somewhat a problem</u>	<u>Not a problem</u>
<input type="checkbox"/> Engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Technician	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Supervisor, Foreman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Production line worker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> R&D personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> System engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Programmer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Salesperson	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Clerical worker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- (3) Which types of workers do you consider will be insufficient in your company in the coming 5 years?  
Please indicate the degree of the necessity of new employment.

	<u>Very insufficient</u>	<u>Somewhat insufficient</u>	<u>Sufficient</u>
<input type="checkbox"/> Engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Technician	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Supervisor, Foreman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Production line worker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> R&D personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> System engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Programmer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Salesperson	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Clerical worker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 3. 3 New Employment Plan

- (1) Please enter the numbers of new workers whom your company wishes to employ in the coming 5 years by academic background and by type of worker

Type of Workers	System Engineer	Programmer	Engineer	Technician	Supervisor, Foreman	Skilled Worker	Non-skilled Worker
Academic Background							
Primary School							
Lower Secondary School							
Upper Secondary School							
Polytechnic							
University							
Vocational Training Institutions							

- (2) Does your company have a long-term employment plan?

- Has a plan for within 1 year.  
 Has a plan for 1-3 years.  
 Has a plan for 3-5 years.  
 Has a plan for over 5 years.



### 3. 6 In-house Training

(1) Does your company have an in-house training system?

Yes

No

If your company chose "Yes" in the above question, please answer the questions (2)- (5).

(2) Which is the main way of training each type of worker?

	<u>On the Job Training</u>	<u>Seminar Within Company</u>	<u>Outside Training Institutions</u>	<u>Training at the parent Company</u>	<u>Others</u>
<input type="checkbox"/> General Worker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> ( )
<input type="checkbox"/> Supervisor, Foreman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> ( )
<input type="checkbox"/> Technician	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> ( )
<input type="checkbox"/> Engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> ( )
<input type="checkbox"/> Programmer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> ( )
<input type="checkbox"/> System Engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> ( )

(3) Do you think that your company currently gives enough training to employees?

Enough

Not Enough

If you answered "Not Enough" in the above question:  
In which respect is the present training system incomplete?

Training Period

Content and Level of Training

Size of Employees to Be Trained

Facilities and Materials

Others ( )

(4) What are the major problems in carrying out in-house training in your company?

Supervisors are busy and do not have enough time to give training.

Training manuals are not prepared.

Lack of well-organized training system and planning

Instructors are not trained within the company.

Lack of budget

Trainees are not motivated to receive training.

The levels of trainees vary widely.

It is difficult to invite outside lecturers and instructors.

Outside training institutions do not prepare appropriate curricula.

Outside training institutions receive a limited number of trainees.

Outside training institutions hold insufficient equipment, materials and instructors.

There is no training institution near the company.

Others ( )

(5). Does your company have a plan to expand in-house training?

Yes

No

If your company have any plan, what kind of training does your company plan to expand?

( )

If you chose "No" in the question (1), please answer the questions (6) and (7).

(6) What is the reason that your company does not give in-house training?

Not necessary (If not necessary, why? )

Lack of budget

Lack of know-how and instructors

Others ( )

(7) Does your company have a plan to start in-house training?

Yes

No

If you answered "Yes" in the question above, what kind of training does your company plan to start?

( )

### 3. 7 Use of Outside Training Institutions

(1)

Which outside training institutes does your company use for employees training?

<u>Name of Training Institute</u>	<u>Using</u>	<u>Once used, but not now.</u>	<u>Never used.</u>	<u>Do not know</u>
<input type="checkbox"/> MARA Vocational Training Institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> CIAST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Industrial Training Institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> National Productivity Centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> MIDECA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Others ( )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(2) How do you evaluate outside training institutes?

<u>Name of Training Institute</u>	<u>Useful</u>	<u>Somewhat Useful</u>	<u>Useless</u>	<u>Do not know well</u>
<input type="checkbox"/> MARA Vocational Training Institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> CIAST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Industrial Training Institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> National Productivity Centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> MIDEDEC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Others ( )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(3) Which vocational training institutions do you consider the government should place greater emphasis for vocational training?  
Please evaluate the importance of expanding institutions.

<u>Name of Training Institute</u>	<u>Very Important</u>	<u>Somewhat Important</u>	<u>Not Important</u>	<u>Do not know the institute well</u>
<input type="checkbox"/> MARA Vocational Training Institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> CIAST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Industrial Training Institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Youth Training Centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Ministry of Welfare Services' Training Centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> National Productivity Centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> MIDEDEC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Others ( )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(4) In which fields of technologies do you consider the government should expand training institutions?

	<u>General Worker</u>	<u>Supervisor, Foreman</u>	<u>Technician</u>
<input type="checkbox"/> Machine Operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Die Making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Forging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Welding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Metal Fabrication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Press Work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Foundry and Casting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Rubber Moulding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Plastic Moulding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Electrical Engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Electronics Engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Instructor and Supervisor Training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Plant Engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Quality Control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Computer Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. 8

Please give your opinion on the idea of establishing a training institution jointly with the cooperation of the public sector and private sector. This idea is that a training institution be established by drawing specialized knowledge from private manufacturing firms and by funding from the government.

(1) Do you think that this type of institution is necessary for the realization of plentiful supply of skilled labour?

- Necessary
- Not Necessary

(2) Will you send employees to that institution if it is put into operation?

- Yes
- No

(3) Upon which types of training do you consider that institution should place emphasis?

- Training of General Workers
- Training of Foremen or Supervisors
- Training of Technicians
- Training of Engineers

(4) Will you provide cooperation to that institution?

- Yes
- No

If answered "Yes", which types of participation may be possible?

- Dispatch of instructors
- Provision of machinery and equipment
- Offering of building
- Provision of funds

3. 9 Government Support

(1) Does your company receive training incentive?

- Yes
- No

(2) What are the problems of the Government's training incentive scheme?

- Small benefit from incentive
- Complicated formalities
- Narrow eligibility for incentive
- Little knowledge of training incentive
- Others ( )



4 QUESTIONS AS TO FINANCING

4. 1 Fund Raising

(1)

How much has your company raised funds in the past 2 years?

Amount \_\_\_\_\_ Thousand M\$

(2)

What are the uses of the fund recruited in the past 2 years?

- Increase in working capital due to the growth of sales
- Construction of a new plant
- Replacement or modernization of production facilities and equipment
- Setting-up of branch offices
- New product development
- Business diversification
- Making-up for loss
- Others ( )

(3)

From what sources has your company raised funds in the past 2 years?

Borrowing

(From Lenders in Malaysia)

- Public Financial Institutions
- Private Financial Institutions
- Private Companies and Persons
- Parent Company and Related Companies

(From Lenders Overseas)

- Financial Institutions
- Parent Company and Related Companies
- Others

Lease

Issuance of Stock

(4)

How much is your company going to recruit funds in the coming 2 years?

Total amount \_\_\_\_\_ Thousand M\$

(5) What are the major uses of funds to be recruited in the coming 2 years?

- Increase in working capital due to the growth of sales
- Construction of a new plant
- Replacement or modernization of production facilities and equipment
- Setting-up of branch offices
- New product development
- Business diversification
- Making-up for loss
- Others ( )

(6) From what sources would your company expect to recruit funds in the near future?

- Borrowing
  - (From Lenders in Malaysia)
    - Public Financial Institutions
    - Private Financial Institutions
    - Private Companies and Persons
    - Parent Company and Related Companies
  - (From Lenders Overseas)
    - Financial Institutions
    - Parent Company and Related Companies
    - Others
- Lease
- Issuance of Stock

4. 2  Problems of Fund Raising

(1) Does your company have difficulty raising funds ?

- Very difficult
- Somewhat difficult
- Easy

(2) What kind of difficulty does your company have?

- Severe loan eligibility
- Financial institutions require collateral for a loan.
- Financial institutions require gurantee of the parent company.
- Financial institutions take much time for screening.
- Troublesome formalities of borrowing procedures
- Loan amount is limited.
- High interest rate
- Exposure to exchange risk
- Undeveloped stock market in Malaysia
- Lack of access to the international financial market
- Company's financial manager is poor in know-how of financing.
- Others ( )

4. 3 Use of the Credit Gurantee System

(1) Does your company borrow loans through the CGC schemes?

- Using
- Once used, but not using now.
- Never used.

If your company has never used a loan with CGC's guarantee, please answer the following questions?

Have your company ever examined the use of CGC?

- Yes
- No

What are the reason of not using the CGC? )

Does your company have any plan to use the CGC?

- Yes
- No

(2) Do you wish the expansion of the Credit Gurantee System in Malaysia?

- Yes
- No

(3) What problems does the present CGC schemes have?

- Complicated formalities
- Loan amount is small.
- Severe lending conditions
- Additional collateral is required.
- Eligible firms are limited only to small-scale firms
- We do not have enough knowledge of the system and its procedures.
- Others ( )

(4) Is it necessary that the government expand financial facilities for small-scale firms in order to improve their access to financial resources outside?

- Very Important
- Somewhat Important
- Not Important

4. 4 Financial Support System for Long-term Investment

(1) Is there any necessity for the government to set up a special financing scheme for long-term investments by the electronics industry?

- Very necessary
- Somewhat necessary
- Not necessary

(2) If the government sets up a new financing scheme for long-term investment, at which level should lending conditions be set?

Interest Rate \_\_\_\_\_ %  
Repayment Period \_\_\_\_\_ Years  
Maximum Loan Amount \_\_\_\_\_ Thousand \$

5 PROMOTION OF PARTS INDUSTRIES

For Purchasers of parts

(Question 5.1~ 5.3)

5. 1 You are requested to answer following question about current domestic procurement of parts.

(1)

Please give the approximate rates of local procurement of parts at present and in future

At present (as of 1989) \_\_\_\_\_%

After 5 years (expectation) \_\_\_\_\_%

(2)

Have the above local procurement rates changed recently?

- Have grown considerably
- Have grown slightly
- Have not changed much
- Have fallen due to quality problems

(3)

From how many domestic companies do you presently procure parts?

Its number is \_\_\_\_\_.

(4)

What is your intention toward raising the rate of domestic procurement?

- Very positive
- Desire to increase purchase if conditions are met
- Satisfied with current state
- Not particularly interested at present

(5)

Which of the following items most closely expresses your policy regarding future domestic procurement?

- Wish to raise local content through conversion to in-house manufacture
- Wish to find good local subcontractors
- Be in the process of the invitation of investment by related overseas parts manufacturers
- Cannot expect much domestically, so most rely on imports from abroad
- Nothing in particular

- (6) What are the main methods you use for finding local parts suppliers?
- Sales efforts by suppliers
  - Word of mouth communications among persons in the same industry
  - Business contacts at head office
  - Directories and other publications
  - Introductions from the third parties/persons
- (7) How would you feel about the official support systems for the introduction of local parts suppliers?
- Necessary
  - Would like to use it if established
  - Do not feel it would be so effective
  - Not necessary
- (8) What would be the most desirable forms of such a service?
- Publication of periodic directories
  - Provision of the latest information by on-line system
  - Setting-up of periodic exhibitions
  - Permanent establishment of information consultation offices
  - Others (Specifically \_\_\_\_\_)
- (9) Do you know that the MTI is offering an introduction service of subcontractors?
- Yes
  - No
- (10) Which of the following items would you consider most effective in raising the rate of domestic procurement of parts in Malaysia?
- Offering incentives for use of domestic parts
  - Guidance in quality control for local parts manufacturers
  - Promotion of investment in Malaysia by foreign affiliated parts manufacturers
  - Arrangement of information regarding domestic parts manufacturers
  - Import restrictions on parts by countries of origin
  - Others (Specify \_\_\_\_\_)

5. 2 Please give your evaluation of domestic procurement of the following parts:

Score: A - Procurement is fully feasible at present

B - Domestic parts exist, but there are some problems in quality or in securing stable supplies

C - Domestic parts currently do not exist, so domestic production is strongly desired

D - Domestic parts currently do not exist, and there are little merits in domestic procurement

Name of part	A	B	C	D
Plastic Injection Moulded Parts				
Pressed Metal Parts				
Turning Parts (Axes, Dowels)				
Die Cast Parts				
Rubber Rollers				
Rubber Belts				
Rubber Moulded Parts				
Screws, Washers				
Precision Springs (Coils, Sheets)				
Precision Bearings (Balls, Sintered Alloy)				
IC, LSI (MP, ROM, RAM, Gate-Alleys, TTL, etc)				
Hybrid IC				
Printed Circuit Boards (Plated Through-Holes, Multilayers)				
Resistors, Capacitors				
Variable Resistors				
Diodes, Transistors, LED				
Switches				
Switching Power Supplies				
Solenoids, Coils				
Wire Harnesses, Connectors				
Photocouplers				
Electromagnetic Clutches				
DC Motors, Stepping Motors				
Fans				
Piezoelectric Buzzers				
Transformers				
Liquid Crystal Panels				
HDD / FDD				
C R T				

5. 3 Regarding promotion of local companies,

(1)

Do you provide some sort of assistance to local parts manufacturers?

Yes

No

(2)

What are the methods you use?

Technical assistance for the improvement of products' quality or the guidance in QC

Assistance in training

Financial assistance

Provision of materials

Provision machinery or other production facilities

Introduction of new customers

Others (Specify \_\_\_\_\_)

(3)

Which of the following do you consider to be the greatest problems faced by local parts manufacturers

Lack of long-term outlook on management

Lack of interest in improving quality

Lack of product development and improvement capabilities

Lack of knowledge on business practices etc.

Lack of marketing capabilities

Lack of engineers

(4)

Which of the following methods do you consider effective for improving the product development and improvement capabilities of local parts manufacturers?

Provision of subsidies for R & D support organizations

Transmission of technology through the establishment of official R & D support organizations

Provision of technical information

Experience through transactions with foreign affiliated companies

Technical tie-ups with foreign affiliated companies

Others (Specify \_\_\_\_\_)

For manufacturers of parts

(Question 5.4 ~ 5.5)

5. 4 Regarding the marketing of the current products to domestic assemblers (including companies in FTZ, or LMW),

- (1) The present sales ratio of products to domestic assembly companies is \_\_\_\_\_ %
- (2) How has the sales ratio for domestic assemblers changed in recent 3 years?
- Has not changed
  - Has grown slightly
  - Has grown remarkably
  - Has fallen
  - Others (Specify \_\_\_\_\_)
- (3) How many domestic assemblers do you presently do business with?
- Its number is \_\_\_\_\_ .
- (4) What are the production items of your client assemblers?
- Colour TV set
  - Audio Equipment
  - Air conditioner
  - Other Consumer Product
  - Semiconductor
  - Other electronic parts
  - Industrial Product
  - Others (Specify \_\_\_\_\_)
- (5) What is your intention for the marketing expansion to domestic assemblers from now on?
- Under seeking for new marketing sources
  - Have intention, but of nothing concretely
  - Not particularly interested



5. 5 Regarding the development of new marketing sources

- (1) What do you consider to be the major obstacles for the development of new markets?
- Lack of marketing information
  - Lack of business talks and other opportunities for business expansion
  - Lack of information on business practices, etc.
  - Severe requirement on the level of technology and product quality
  - Others (Specify \_\_\_\_\_)
- (2) What are the main methods you use for developing customers?
- Word-of-mouth communication
  - Offers from customers
  - Own sales efforts
  - Introductions by the third parties/persons
  - Participation in exhibitions, business conferences, etc.
  - Insertions in directories, etc.
  - Others (Specify \_\_\_\_\_)
- (3) Do you know of the MEXPO'S system of the introduction of overseas business partners?
- Yes
  - No
  - Have used it and found it effective
  - Have used it, but it did not lead to establishment of business relations
- (4) Have you ever participated in an exhibition, a business meeting, etc.?
- Yes, domestically
  - Yes, overseas as well
  - No experience
- (5) Do you wish to participate in an exhibition, a business meeting, etc.?
- Yes, domestically
  - Yes, overseas as well
  - Not interested
- (6) If you answered "Not interested" in response to question[5], why?
- Have hands full with current orders at present
  - Difficult to cover expenses
  - Not expected much in terms of results
  - Others (Specify \_\_\_\_\_)
- (7) Which market do you consider most promising in the future?
- Domestic, multinational companies
  - Domestic, indigenous companies
  - Singapore and other nearby export markets
  - Japan
  - Western countries and U.S.

## 6 ASSISTING PROGRAMMES

Assisting programmes, which are with regard to the promotion of the electronics industry in Malaysia, have been set up as follows.  
Which five among those items do you consider most important?

<Regarding education and training>

- Installing more vocational training institutes
- Revision of curricula of vocational training institutes
- Installment of a layer number of branch schools of polytechnics
- Revision of curricula of polytechnics
- Expansion of curricula related to electronics at universities
- Construction of closer joint R&D relationships between private sectors and universities
- Establishment of new vocational training institutions through the co-operation of both public and private sectors

<Regarding fund raising>

- Simplification of loan procedures of financial institutions
- Amplification of long-term investment funds and financing schemes for new investments
- Amplification of low-interest loan schemes for small-and-medium scale companies
- Amplification of CGC Schemes

<Regarding management and marketing>

- Preparation of domestic parts manufacturers' directories
- Improvement of the MEXPO's system of introduction of business partners, and strengthening of other assisting activities for overseas marketing
- Openings of and participating assistances for the exhibitions and business conferences of electronics products
- Establishment of subsidy systems for small-and-medium scale companies to make use of consultants
- Opening of seminars concerning management for small-and-medium sized companies

<Regarding Quality Control(QC)>

- Assistance for QC activities of local parts manufacturers
- Establishment of the product inspection system for improving the quality of domestic parts

<Regarding technology and R&D>

- Expansion of MIDA's services for the introduction of technical tie-up of OEM partners
- Establishment of subsidy systems for strengthening R&D activities, or amplification of tax incentives
- Establishment of some public institutions supporting R&D activities in the field of electronics

<Others>

- Preparation of hi-tech industrial parks (industrial estates) for the electronics industry
- Strengthening of incentives for assistances of local subcontracting companies by assembling companies
- Amplification of the Subcontracting Scheme extended by MIT

<Specification besides those aforementioned>

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



**III-3 List of Companies which Responded  
to the Questionnaire Survey in Malaysia**



## List of Companies which Responded to the Questionnaire Survey in Malaysia

1. Action Industries (M) Sdn. Bhd.
2. Advanced Micro Devices Export Sdn. Bhd.
3. Applied Magnetics (M) Sdn. Bhd.
4. Asian NDK Crystal Sdn. Bhd.
5. Canal Electronic (M) Sdn. Bhd.
6. Cinetech Manufacturing Sdn. Bhd.
7. Clarion (M) Sdn. Bhd.
8. Communico Electronics Sdn. Bhd.
9. Conner Peripherals (M) Sdn. Bhd.
10. Contraves Advanced Devices Sdn. Bhd.
11. Cybron Technology (M) Sdn. Bhd.
12. Discomp Magnetics (M) Sdn. Bhd.
13. East Coast Electronic Sdn. Bhd.
14. Eastrade Electronics (M) Sdn. Bhd.
15. Electrical Components Sdn. Bhd.
16. FRS (M) Sdn. Bhd.
17. Hitachi Metals Electrical (M) Sdn. Bhd.
18. GG Circuits Industries Sdn. Bhd.
19. Granek Sdn. Bhd.
20. Hitachi Semiconductor (M) Sdn. Bhd.
21. Innopower Electronics Sdn. Bhd.
22. Innopower Keidenki Sdn. Bhd.
23. JVC Electronics (M) Sdn. Bhd.
24. JVC Video Manufacturing (M) Sdn. Bhd.
25. KESP Sdn. Bhd.
26. King Musical Ind. Sdn. Bhd.
27. Koa Denko (M) Sdn. Bhd.

28. Kobe Precision (M) Sdn. Bhd.
29. Konsep Ganda Sdn. Bhd.
30. Lambang Hidup, Ltd.
31. Lemtronics Sdn. Bhd.
32. Malaysia Quartz Crystal Sdn. Bhd.
33. Marconi (M) Sdn. Bhd.
34. Matsushita Electric Co., (M) Bhd.
35. Matsushita Electronic Components (M) Sdn. Bhd.
36. Matsushita Electronic Devices (M) Sdn. Bhd.
37. Matsushita Television Co., (M) Sdn. Bhd.
38. Maxtor Sidgapore Ltd.
39. Menange Micro-Electronics Sdn. Bhd.
40. Meranti Computers Sdn. Bhd.
41. Mitsui High-Tec (M) Sdn. Bhd.
42. Mitsuoka Electronics (M) Sdn. Bhd.
43. Molex (M) Sdn. Bhd.
44. Moritetsu Electric (M) Sdn. Bhd.
45. Multitone Electronics Sdn. Bhd.
46. Naito Electronics (M) Sdn. Bhd.
47. National Semiconductor Sdn. Bhd. (Malacca)
48. NEC Semiconductors (M) Sdn. Bhd.
49. Northern Telecom Components Sdn. Bhd.
50. Northern Telecom Industries Sdn. Bhd.
51. Northern Telecom (M) Sdn. Bhd.
52. Pan International Electronics (M) Sdn. Bhd.
53. Panshin Components Sdn. Bhd.
54. Pemas NEC Telecommunications Sdn. Bhd.
55. Pemas NEC (Kedah) Sdn. Bhd.
56. Perwira Ericsson Sdn. Bhd.
57. Radiola Corporation (M) Sdn. Bhd.



58. Rectron (M) Sdn. Bhd.
59. Richwell Industries Sdn. Bhd.
60. Sankyo Seiki (M) Sdn. Bhd.
61. Sharp-Roxy Corporation (M) Sdn. Bhd.
62. Silver Electronics (M) Sdn. Bhd.
63. Siong Export Industries Sdn. Bhd.
64. Sony TV Industries (M) Sdn. Bhd.
65. South East Asia Carbon & Trading (M) Sdn. Bhd.
66. Swilynn (M) Sdn. Bhd.
67. Techtrans Systems Sdn. Bhd.
68. Thomson Electronic Parts (M) Sdn. Bhd.
69. Toshiba Capacitor (M) Sdn. Bhd.
70. Transicoil (M) Sdn. Bhd.
71. Two-Sanshin (M) Sdn. Bhd.
72. Yokowo Electronics (M) Sdn. Bhd.
73. Accent Technology Sdn. Bhd.
74. Avnet Industries (M) Sdn. Bhd.
75. Daimik Electronic Industrial Co., Sdn. Bhd.
76. Dai Hwa Industrial Co (M) Sdn. Bhd.
77. East Coast Electronic Sdn. Bhd.
78. Elektronik Okano (M) Sdn. Bhd.
79. Epson Precision (M) Sdn. Bhd.
80. European (M) Electronics Sdn. Bhd.
81. Epson Precision (Johor) Sdn. Bhd.
82. Funai Electric (M) Sdn. Bhd.
83. G.E. Audio (M) Sdn. Bhd.
84. Hitachi Consumer Products (M) Sdn. Bhd.
85. I.E.S. Industries Sdn. Bhd.
86. J & E (M) Sdn. Bhd.
87. Kesm Industries Sdn. Bhd.

88. Kyotronics (M) Sdn. Bhd.
89. Lucas Automotive Sdn. Bhd.
90. Matsushita Precision Industrial Co (M) Sdn. Bhd.
91. Micro Base Electronics Sdn. Bhd.
92. Microcomputer Systems (M) Sdn. Bhd.
93. Mitsumi Electronics (BP) Sdn. Bhd.
94. Motorola Semiconductor Sdn. Bhd.
95. Multitape Industries Sdn. Bhd.
96. Okida Enterprise Sdn. Bhd.
97. Omron (M) Sdn. Bhd.
98. Omron (M) Electronics Sdn. Bhd.
99. Precima Sdn. Bhd.
100. PNE Electric Sdn. Bhd.
101. Quality Technologies Electronics (M) Sdn. Bhd.
102. Quamac Sdn. Bhd.
103. Rohm-Wako (M) Sdn. Bhd.
104. Santronics (M) Sdn. Bhd.
105. Sapura Holdings Sdn. Bhd.
106. S.E.H. (M) Sdn. Bhd.
107. SGS-Thomson Microelectronics Sdn. Bhd.
108. Singamip Industry Sdn. Bhd.
109. Singatronics (M) Sdn. Bhd.
110. Tamura Electronics (M) Sdn. Bhd.
111. Technocom Systems Sdn. Bhd.
112. Teletron Industries Sdn. Bhd.
113. Texas Instruments (M) Sdn. Bhd.
114. Todai (M) Sdn. Bhd.
115. Toko Electronic (M) Sdn. Bhd.
116. Wearnes Electronics (M) Sdn. Bhd.
117. Zal Telecommunication Inds. Sdn. Bhd.

- 1 1 8. Zenith Electric Co (M) Sdn. Bhd.
- 1 1 9. Zenith Transformer Mfg. Sdn. Bhd.
- 1 2 0. Fujitsu Component (M) Sdn. Bhd.
- 1 2 1. Tru Tech Electronics (M) Sdn. Bhd.
- 1 2 2. Asahi Electronics (M) Sdn. Bhd.
- 1 2 3. Astec Pekan Sdn. Bhd.



### **III-4 Results of the Questionnaire Survey in Malaysia**



## Results of the Questionnaire Survey in Malaysia

## 1 Outline of firms which respond to the questions

## (1)Year of establishment

Period	Response
Befor 1970	4
1971-1978	32
1979-1983	25
1983-1986	22
After 1987	39
NA	1
Total	123

## (2)Number of employees

Number of employees	Response
1,000 or over	33
Less than 1,000	15
Less than 500	48
Less than 100	26
NA	1
Total	123

## (3)Paid-up Capital

Paid-up Capital	Response
M\$ 10 Million or over	22
Less than M\$ 10 Million	18
Less than M\$ 5 Million	18
Less than M\$ 2.5 Million	62
NA	3
Total	123

(4) Annual turnover

Annual turnover	Response
M\$ 100 Million or over	1 1
Less than M\$ 100 Million	3 3
Less than M\$ 10 Million	2 7
Less than M\$ 1 Million	8
NA	4 4
Total	1 2 3

(5) Export ratio

Export ratio	Response
Less than 10%	4
Less than 30%	5
Less than 50%	4
Less than 90%	8
90% or over	6 6
NA	3 6
Total	1 2 3

(6) Nationality of parent firm

Nationality of parent firm	Response
Japanese	4 5
American & European	2 3
Other foreign	2 4
Local	2 5
NA	6
Total	1 2 3

(7) Major products

Products	Response
Consumer electronics	2 6
Industrial electronics	2 4
Electronics components	6 6
Others	6
NA	1
Total	1 2 3



## 2 General Questions

### 2. 1 Problems in Management (Multiple Answers)

Unit : %

	Total		By Scale of Employees			
	Resp.	%	Type1	Type2	Type3	Type4
Raising funds	16	3.7	0	0	13.6	40.0
Introduction of new technology	25	21.4	18.8	20.0	18.2	28.0
Purchasing of materials	35	29.9	28.1	20.0	31.8	36.0
High rental fees of land and buildings	5	4.3	3.1	0	4.5	8.0
Difficulties in finding personnel	61	52.1	53.1	53.3	54.5	48.0
Severe competition	13	26.5	31.3	13.3	27.3	28.0
Low operating rate	13	11.1	3.1	6.7	13.6	20.0
Others	15	12.8	12.5	33.3	11.4	4.0

Note : Type 1 Number of employees is more than 1,000.  
 Number of companies which belong to this type is 33.  
 Type 2 Number of employees is below 1,000.  
 Number of companies which belong to this type is 15.  
 Type 3 Number of employees is below 500.  
 Number of companies which belong to this type is 48.  
 Type 4 Number of employees is below 100.  
 Number of companies which belong to this type is 10.

### 2. 2 Industrial Associations

#### (1) Entry into industrial associations

	Total		By Scale of Employees (%)			
	Resp.	%	Type1	Type2	Type3	Type4
Yes	77	63.1	81.3	60.0	62.5	42.3
No	45	36.9	18.8	40.0	37.5	57.7

#### (2) Advantages of entry into industrial associations (Multiple answers)

	Total		By Scale of Employees (%)			
	Resp.	%	Type1	Type2	Type3	Type4
Acquisition of marketing information	62	51.7	33.3	35.7	63.0	61.5
Greater bussiness opportunity	17	14.2	9.1	0	15.2	23.1
Stronger negotiating power with government	60	50.0	60.6	71.4	52.2	23.1
Others	21	17.5	21.2	35.7	17.4	3.8
Nothing	10	8.3	12.1	7.1	8.7	3.8
No idea	10	8.3	3.0	0	6.5	23.1

(3) Roll of industrial associations

	Total		By type of product (%)			
	Resp.	%	Type A	Type B	Type C	Type D
Joint purchase of materials	14	11.7	4.0	.3	6.2	20.0
Sponsoring of exhibition and business conference	51	42.5	48.0	45.8	40.0	40.0
Supply of information	85	70.8	68.0	79.2	70.8	60.0
Others	14	11.7	12.0	12.5	10.8	0
Nothing	8	6.7	8.0	4.2	7.7	0
No idea	7	5.8	0	4.2	7.7	20.0

Note : Type A = consumer product manufacturers  
 Number of consumer product manufacturers is 26.  
 Type B = industrial product manufacturers  
 Number of industrial product manufacturers is 24.  
 Type C = electronics component manufacturers  
 Number of electronics component manufacturers is 66.  
 Type D = other electronic product manufacturers  
 Number of other electronic product manufacturers is 6.

(4) Necessity for a association for electronics industry

	Total		By type of product (%)			
	Resp.	%	Type A	Type B	Type C	Type D
Necessary	97	81.5	88.0	87.5	74.6	100.0
Not necessary	22	18.5	12.0	12.5	25.4	0

2. 3 Quality Control (QC)

(1) Implementation of QC activities

	Total		By size of employees			
	Resp.	%	Type1	Type2	Type3	Type4
Yes	112	92.6	100.0	93.3	89.6	88.0
No	9	7.4	0	6.7	10.4	12.0
No knowledge about QC	0	0	0	0	0	0

## (2) Expected public assistance for QC activities (Multiple answers)

	Total		By size of employees			
	Resp.	%	Type1	Type2	Type3	Type4
Seminer concerning QC methods	67	58.3	63.3	40.0	64.4	54.2
On-the-spot guidance	34	29.6	16.7	20.0	40.0	33.3
Supply of QC manuals	58	50.4	46.7	53.3	53.3	45.8
Management staff training in Japan	30	26.1	43.3	26.7	20.0	12.5
Subsidy for the use of QC consultants	35	30.4	23.3	33.3	35.6	29.2
Others	6	5.2	6.7	6.7	2.2	8.3

## 2. 4 Technical tie-ups

## (1) Experiences of technical tie-up or OEM arrangement

	Total		By size of employees (%)			
	Resp.	%	Type1	Type2	Type3	Type4
Had technical tie-up	29	24.6	17.2	28.6	29.2	23.1
Had OEM deal	28	23.7	6.9	21.4	22.9	46.2
No	70	59.3	75.9	64.3	52.1	50.0

## (2) Way of finding a partner in technical tie-up or OEM arrangement

	Total		By size of employees (%)			
	Resp.	%	Type1	Type2	Type3	Type4
Offer from partner	22	33.8	20.0	33.3	42.3	30.0
Uncovered by oneself	14	21.5	20.0	22.2	19.2	25.0
Introduced by others	15	23.1	10.0	22.2	26.9	25.0
Others	22	33.8	50.0	44.4	23.1	35.0

## (3) Use of RICOM

	Total		By size of employees (%)			
	Resp.	%	Type1	Type2	Type3	Type4
Have knowledge	26	22.2	13.3	35.7	23.4	24.0
Have no knowledge	88	75.2	83.3	64.3	72.3	76.0
Have used, and found it effective	2	1.7	0	0	4.3	0
Have used, but did not lead to contact	4	3.4	3.3	7.1	0	8.0

(4) Intention to start to produce PC and peripherals ①By size of employees

	Total		By size of employees (firm)			
	Resp.	%	Type1	Type2	Type3	Type4
Have a concrete plan	18	16.5	2	2	6	7
Have interest	26	23.9	4	2	14	6
Have no interest	65	59.6	23	10	23	9

(4) Intention to start to produce PC and peripherals ②By type of product

	Total		By type of product (Firm)			
	Resp.	%	Type A	Type B	Type C	Type D
Have a concrete plan	18	16.5	2	6	10	0
Have interest	26	23.9	6	5	12	3
Have no interest	65	59.6	16	8	38	3

(4) Intention to start to produce PC and peripherals ③By Nationality

	Total		By Nationality (Firm)			
	Resp.	%	Type a	Type b	Type c	Type d
Have a concrete plan	18	16.5	5	2	3	8
Have interest	26	23.9	5	2	11	7
Have no interest	65	59.6	30	15	6	9
Total		100.0	46	22	23	25

Note: Type a= Japanese

Type b= U.S. and European

Type c= Other foreign

Type d= Local

Total number includes companies which did not respond the question.

(5) Desire for Technical tie-up or OEM arrangement (Multiple answers)

	Total		By size of employees (firm)			
	Resp.	%	Type1	Type2	Type3	Type4
Technical tie-up	16	37.2	2	2	5	7
OEM arrangement	12	27.9	2	1	4	5
Joint venture with foreign firms	18	41.9	1	2	6	9
No interest	12	27.9	1	2	8	0

## (5) Desire for Technical tie-up or OEM arrangement (Multiple answers)

	Total		By Nationality (Firm)			
	Resp.	%	Type a	Type b	Type c	Type d
Technical tie-up	16	37.2	1	0	6	8
OEM arrangement	12	27.9	0	1	6	4
Joint venture with foreign firms	18	41.9	4	0	3	11
No interest	12	27.9	4	3	4	1

\*One company whose nationality is unknown desires technical tie-up and OEM arrangement.

## 3. Human Resource Development

## 3. 1 Labour situation

(1) Present employment in production department by type of workers and by academic back ground Unit: Person

	System Engineer	Programmer	Engineer	Technician	Supervisor	Skilled worker	Simple worker	Total
Primary School	0	0	0	5	3	455	1861	2324
Lower Secondary School	3	3	1	148	63	9712	19119	29049
Upper Secondary School	1	11	8	355	708	9301	14358	24742
Polytechnic	4	3	129	973	208	157	19	1493
University	23	38	604	126	202	4	33	1030
Vocational Training Institutions	0	11	66	1031	356	585	43	2092
Total	31	66	808	2638	1540	20214	35433	60730

\*The figures above are sums of workers who work for responding firms at Nov. 1989. The number of firms which respond to this question is 101.

## 3. 2 Labour demand

(1) Present shortage of Labour

	Response (A)	(A)/(B)
Serious problem	19	16.0%
Somewhat a problem	69	58.0%
Not a problem	31	26.1%

\*(B); Total number of firms which respond to this question.

## (2) Present shortage of labour by type of worker

Unit:firm

	Total	Serious problem	Somewhat a problem	Not a problem
Engineer	49	18	33	8
Technician	65	19	45	12
Supervisor	41	4	37	19
Line worker	58	18	39	16
R&D Personnel	32	13	19	5
System Engineer	27	6	21	5
Programmer	22	6	16	12
Manager	23	3	22	18
Salesperson	11	6	6	24
Clerical worker	12	0	11	37

## (3) Future shortage of labour by type of worker (in five years)

Unit:firm

	Total	Very insufficient	Somewhat insufficient	Sufficient
Engineer	63	20	43	20
Technician	83	23	58	16
Supervisor	45	10	35	29
Line worker	75	23	52	18
R&D Personnel	43	18	23	20
System Engineer	30	8	22	23
Programmer	27	8	18	27
Manager	25	6	19	39
Salesperson	15	6	8	35
Clerical worker	14	3	12	53

### 3. 3 Future labour demand

(1) Future employment in production department by type of workers and by academic back ground (In five Years) Unit: Person

	System Engineer	Programmer	Engineer	Technician	Supervisor	Skilled worker	Simple worker	Total
Primary School	0	0	0	0	0	0	1290	1290
Lower Secondary School	0	0	0	12	0	2881	12041	14934
Upper Secondary School	0	2	0	19	241	2628	7911	10801
Polytechnic	0	13	35	618	511	217	183	1577
University	45	44	312	56	110	0	20	587
Vocational Training Institutions	5	1	4	343	96	235	215	899
Total	50	60	351	1048	958	5961	21660	30088

\*The figures above are sums of workers whom responding firms wish to employ in coming 5 years. The number of firms which respond to this question is 79.

(2) New employment plan

	Response (A)	(A) / (B)
Has a plan for within 1 year	45	42.1%
Has a plan for 1-3 years	41	38.3%
Has a plan for 3-5 years	7	6.5%
Has a plan for over 5 years	14	13.1%

\*(B); Total number of firms which respond to this question.

### 3. 4 Evaluation of level of new graduates by institution

(1) Evaluation of level of new graduates by institution

Score: A Sufficiently Satisfies the company's requirements.  
 B Almost meets the company's requirements.  
 C Is somewhat below the company's requirements.  
 D Is far below the company's requirements.

Unit: %

	A	B	C	D
Primary School	28.9	15.8	22.4	32.9
Lower Secondary School	28.4	37.5	29.5	4.5
Upper Secondary School	37.5	44.2	18.3	0
Polytechnic	22.8	57.4	17.8	2.0
University	32.7	43.6	18.8	5.0
Vocational Training Institutions	20.6	51.0	26.5	2.0

\*Figures above; Response / total number of firms which respond to this question.

3. 5 Needs for the expansion of education and training institutions  
 (1) Needs for the expansion of education and training institutions by subject. (Multiple answers) Unit:firm

Institution Subject	Upper Secondary School	Polytechnic	Universities
Electricity	23	57	33
Electronics	33	89	61
Information science	41	54	62
Communication	13	41	43
Mechanical	21	67	48
Chemistry	15	18	29
Metal work	17	39	13
Management	8	24	67
Others	5	8	12
Department of science and mathematics	23	15	18
Others	8	4	6

3. 6 In-house Training  
 (1) Implementation of in-house Training

	Response (A)	(A)/(B)
Has an in-house training system	95	79.8%
Has not an in-house training system	24	20.2%

\*(B); Total number of firms which respond to this question.

(2) Ways of Training by type of worker (Multiple answer)

	OJT	Seminar within company	Outside training institutions	Training at parent company	Others
General worker	91	15	0	6	0
Supervisor	55	38	38	39	2
Technician	69	26	29	38	4
Engineer	42	18	33	54	6
Programmer	30	16	31	23	4
System Engineer	19	13	19	22	4

\*OJT ;On the job training



(3) Evaluation of own in-house training system

	Response (A)	(A)/(B)
Enough	48	50.5%
Not enough	47	49.5%

\* (B); Total number of firms which respond to this question.

Insufficient field in present training system (Multiple answer)

	Response(A)	(A)/(B)
Training period	14	29.8%
Content and level of training	23	48.9%
Size of employees to be trained	16	34.0%
Facilities and materials	26	55.3%
Others	4	8.5%

\* (B); Total number of firms which respond to this question.

3.6(4) Major problems in in-house training (Multiple answers)

Problem area	Response(A)	(A)/(B)
Supervisors are too busy and do not have enough time to give training.	50	58.1%
Training Manuals are not prepared.	20	23.3%
Lack of well-organized training system.	38	44.2%
Instructors are not trained within a company	20	23.3%
Lack of budget.	13	15.1%
Trainees are not motivated to receive training.	13	15.1%
The levels of trainees vary widely.	23	26.7%
It's difficult to invite outside lecturers.	6	7.0%
Outside training institutions do not prepare appropriate curricula.	16	18.6%
Outside training institutions receive a limited number of trainees.	1	1.2%
Outside training institutions hold insufficient equipment, materials and instructors.	8	9.3%
There is no training institution near the company.	16	18.6%
Others	9	10.5%

\* (B); Total number of firms which respond to this question.

(5) Expansion plan of in-house training

	Response(A)	(A)/(B)
Has an expansion plan	70	76.9%
Has not an expansion plan	21	23.1%

\*(B);Total number of firms which respond to this question.

(6) Reasons for not having an in-house training system (Multiple answer)

	Response(A)	(A)/(B)
Not necessary	3	13.6%
Lack of budget	7	31.8%
Lack of know-how and instructors	11	50.0%
Others	4	18.2%

\*(B);Total number of firms which respond to this question.

(7) Plan to start in-house training

	Response(A)	(A)/(B)
Has a plan	8	36.4%
Has no plan	14	63.6%

\*(B);Total number of firms which respond to this question.

3.7 Use of outside training institutions

(1) Use of outside training institutions (Multiple answer)

	Using	Once used but not now	Never used	Do not know
MARA vocational training institution	5	5	47	6
CIAST	7	5	42	13
Industrial training institutions	10	7	42	7
NPC	35	14	32	4
MIDEC	3	0	42	12
Others	38	2	17	6

(2) Evaluation of outside training institutions (Multiple answer)

	Useful	Somewhat useful	Useless	Do not know the institution well
MARA vocational training institution	9	26	0	36
CIAST	12	12	0	50
Industrial training institutions	15	29	1	32
NPC	29	45	1	22
MIDEC	5	10	1	44
Others	23	13	0	18

(3) Necessity for expansion of training institutions by institution (Multiple answer)

	Very important	Somewhat important	Not important	Do not know the institution well
MARA vocational training institution	38	24	1	30
CIAST	18	18	1	47
Industrial training institutions	38	29	0	29
Youth training centers	16	27	5	33
Ministry of welfare services' training centers	6	21	4	43
NPC	45	33	1	19
MIDEC	6	14	1	43
Others	6	5	1	12

(4) Necessity for expansion of training institutions by technology  
(Multiple answer)

	General worker	Supervisor	Technician
Machine operation	43	23	29
Die Making	14	20	37
Forging	9	7	13
Welding	13	10	20
Metal fabrication	15	14	23
Press work	16	10	15
Foundry and casting	17	9	13
Rubber moulding	13	10	12
Plastic moulding	16	22	21
Electrical Engineering	11	35	67
Electronics Engineering	11	53	88
Instructor and supervisor training	5	74	31
Plant engineering	3	41	36
Quality control	39	86	62
Computer science	4	44	41

3. 8 Necessity for establishing a public-private-joint training institution  
(1) Necessity for establishing a public-private-joint training institution

	Response(A)	(A)/(B)
Necessary	110	91.7%
Not necessary	10	8.3%

\*(B); Total number of firms which respond to this question.

(2) Intention to send employees to the public-private-joint training institution

	Response(A)	(A)/(B)
Has intention	107	91.5%
Has no intention	10	8.5%

\*(B); Total number of firms which respond to this question.

(3) Expected type of training in the public-private-joint training institution  
(multiple answer)

	Response(A)	(A)/(B)
Training of general workers	28	23.7%
Training of supervisors	91	77.1%
Training of technicians	102	86.4%
Training of engineers	59	50.0%

\*(B); Total number of firms which respond to this question.

(4) Intention to cooperate to the public-private-joint training institution

	Response(A)	(A)/(B)
Has intention	87	79.1%
Has no intention	23	20.9%

\*(B); Total number of firms which respond to this question.

Possible types of cooperation to the public-private-joint training institution (Multiple answer)

	Response(A)	(A)/(B)
Dispatch of instructors	45	36.6%
Provision of machinery and equipment	17	13.8%
Offering of building	2	1.6%
Provision of funds	28	22.8%

\*(B); Total number of firms which respond to this question.

3.9 Incentive for trainings

(1) Use of Incentive for trainings

	Response(A)	(A)/(B)
Using	11	9.4%
Not using	106	90.6%

\*(B); Total number of firms which respond to this question.

(2) Problem in incentive for trainings (Multiple answer)

	Response(A)	(A)/(B)
Small benefit from incentive	14	14.9%
Complicated formalities	20	21.3%
Narrow eligibility for incentive	16	17.0%
Little knowledge of the incentive	55	58.5%
Others	9	9.6%

\*(B); Total number of firms which respond to this question.

#### 4 Financing

##### 4.1 Fund raising

###### (1) Uses of funds recruited in the past two years

	Responses	Percentage (%)
Working capital	52	60.5
Construction of new plant	48	55.8
Modernisation of facilities	35	40.7
Setting-up of branch offices	6	7.0
Product development	20	23.3
Business diversification	10	11.6
Making-up for loss	10	11.6
Others	11	12.8

###### (2) Funds sources in the past two years

	Responses	Percentage (%)
Borrowing	59	81.9
(From lenders in Malaysia)		
Public financial institutions	19	(32.2)
Private financial institutions	26	(44.1)
Private companies and persons	3	(5.1)
Parent or related companies	6	(10.2)
(From lenders overseas)		
Financial institutions	3	(5.1)
Parent or related companies	19	(15.4)
Others	3	(5.1)
Lease	13	18.1
Issuance of stock	15	12.2

(3) Uses of funds recruited in the coming two years

	Responses	Percentage (%)
Working capital	53	63.9
Construction of new plant	43	51.8
Modernisation of facilities	39	47.0
Setting-up of branch offices	4	4.8
Product development	31	37.3
Business diversification	17	20.5
Making-up for loss	3	3.6
Others	4	4.8

(4) Funds sources in the coming two years

	Responses	Percentage (%)
Borrowing	71	88.8
(From lenders in Malaysia)		
Public financial institutions	26	(37.1)
Private financial institutions	27	(38.6)
Private companies and persons	3	(4.3)
Parent or related companies	8	(11.4)
(From lenders overseas)		
Financial institutions	5	(7.1)
Parent or related companies	24	(34.3)
Others	0	(0)
Lease	12	9.8
Issuance of stock	10	12.5

4.2 Problems in funds raising

(1) Difficulties in funds raising

	Responses	%
Very difficult	11	11.3
Somewhat difficult	36	37.1
Easy	50	51.5

(2) Reasons for difficulty in fund raising

	Responses	Percentage (%)
Severe loan eligibility	7	15.6
Collateral for a loa is required	26	57.8
Gurantee of the parent company is required	12	26.7
Much time for screening	10	22.2
Borrowing procedures are troublesome	13	28.9
Loan amount is limited	17	37.8
High interest rate	16	35.6
High exchange risk	7	15.6
Undeveloped stock market in Malaysia	1	2.2
Lack of access to the international financial market	8	17.8
Lack of financing know-how in the company	1	2.2
Others	1	2.2

4.3 Use of CGC

(1) Use of CGC

	responses	%
Using	4	3.8
Once used, but not now	5	4.8
Never used	96	91.4

Examined the use of CGC

	Responses	%
Yes	11	13.3
No	72	86.7

Having a plan to use CGC

	Responses	%
Yes	13	19.1
No	55	80.9



(2) Wish the expansion of CGC scheme

	Responses	%
Yes	44	66.7
No	22	33.3

(3) Problems in CGC scheme

	Responses	%
Complicated formalities	6	8.6
Loan amount is small	11	15.7
Severe lending conditions	4	5.7
Additional collateral is required	6	8.6
Eligible firms are limited to SMI	16	22.9
Lack of knowledge of the scheme	46	65.7
Others	1	1.4

(4) Importance of financial facilities for small & medium-scale industry

	Responses	%
Very important	53	59.6
Somewhat important	28	31.5
Not important	8	9.0

4.4 Financial support system for long-term investment

(1) Necessity for financing scheme for long-term investment by electronics industry

	Responses	%
Very necessary	56	54.9
Somewhat necessary	40	39.2
Not necessary	6	5.9

(2) Expected lending conditions

① Expected interest rate

Interest rate	Responses
Below 3.5 %	4
Below 5.0 %	26
Below 7.0 %	12
More than 7.0 %	5
NA	76

② Expected lending terms

Terms	Responses
1 year ≅ 3 years	1
3 years ≅ 5 years	3
5 years ≅ 7 years	23
7 years ≅ 9 years	3
9 years ≅ 15 years	17
More than 15 years	7
NA	69

③ Expected maximum loan amount

Maximum loan amount	Responses
M\$15 thousand - M\$50 million	47
M\$50 million - M\$100 million	2
M\$450 million - M\$500 million	1
NA	73

5 Promotion of parts industry

5. 1 Problems Concerning Management

(1) Managerial Problems Pointed Out by Parts Makers

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
Procurement of funds	6	1	-	3	2	-
Introduction of new technology	14	5	3	4	2	-
Purchase of materials	17	10	4	3	-	-
High rental fees of land and building	2	-	-	-	2	-
Difficulty in finding personnel	33	11	6	9	4	3
Severe competition	17	8	2	6	1	-
Low operation rate	5	2	-	2	1	-
Others	11	1	7	1	1	1
N.A.	4	2	1	1	-	-

## (2) Problems of Parts Makers Pointed Out by Customers

(No. of Companies Answered)

	Consumer Electronics Maker	Industrial Electronics Makers
Total	26	24
Lack of Long-term outlook on management	5	6
Lack of interest in improving quality	9	7
Lack of product development and improvement capabilities	15	12
Lack of knowledge on business practices etc.	-	2
Lack of marketing capabilities	2	6
Lack of engineers	7	6
N.A.	4	2

## 5. 2 Procurement of Materials

## (1) Present Local Contents of Electronics Companies in Malaysia

(No. of Company Answered)

	Local contents at present	Local contents in five years (Estimate)
Less than 10%	21	6
10~20%	15	10
20~50%	34	19
50~80%	23	39
More than 80%	6	23
N.A.	24	26
Total	123	123

## (2) Changes in Local Parts Procurement Rate

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Have grown considerably.	8	4	2	1	1	-
Have grown slightly.	29	15	4	7	1	2
Have not changed much.	22	9	7	4	1	1
Have fallen due to quality problem.	-	-	-	-	-	-
N.A.	7	1	1	1	3	1

## (3) Policy toward Increase in Local Procurement Rate

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Very positive	13	3	4	5	1	-
Desire to increase purchase if conditions are met	40	22	8	6	2	2
Satisfied with current state	3	1	-	2	-	-
Not particularly interested at present	5	3	1	-	-	1
N.A.	5	-	1	-	3	1

## (4) Assistant to Local Parts Makers

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
Provide assistance.	38	19	10	7	-	2
Do not provide assistance.	23	10	3	6	3	1
N.A.	5	-	1	-	3	1

## (5) Types of Assistance to Parts Makers

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Technical assistance for the improvement of products' quality or the guidance in QC	37	20	10	5	-	2
Assistance in training	7	3	2	1	-	1
Financial assistance	2	2	-	-	-	-
Provision of materials	10	6	2	1	-	1
Provision of machinery or other production facilities	5	3	2	-	-	-
Introduction of new customers	5	1	1	3	-	-
Others	2	1	1	-	-	-
N.A.	24	7	3	6	6	2

## (6) Problems of Local Parts Makers

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Lack of long-term outlook on management	17	10	3	3	-	1
Lack of interest in improving quality	26	15	2	6	3	-
Lack of product development and improvement capabilities	36	17	10	7	1	1
Lack of knowledge on business practices etc.	4	3	-	-	1	-
Lack of marketing capabilities	7	3	2	2	-	-
Lack of engineers	7	4	1	2	-	-
N.A.	11	1	2	2	3	3

## (7) Methods to Find Local Parts Suppliers

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Sales efforts by suppliers	35	17	9	7	1	1
Word of mouth communication among persons in the same industry	21	9	3	7	-	2
Business contacts at head office	9	4	1	2	1	1
Directories and other publications	35	12	10	10	1	2
Introduction from the third parties/persons	20	10	3	6	1	-
N.A.	6	-	2	-	3	1

## (8) Effective Method for Improving Local Procurement Ratio

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Offering incentives for use of domestic parts	32	13	6	10	2	1
Guidance in quality control for local parts manufacturers	44	22	8	11	-	3
Promotion of investment in Malaysia by foreign affiliated parts manufacturers	24	10	6	6	1	1
Arrangement of information regarding domestic parts manufacturers	16	5	1	9	1	-
Import restrictions on parts by country of origin	4	3	-	1	-	-
Others	2	-	2	-	-	-
N.A.	6	-	2	-	3	1

### 5. 3 Quality Control

#### (1) Existence of Quality Control Activity

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
Exists.	62	26	13	13	6	4
Does not exist.	3	2	1	-	-	1
N.A.	1	1	-	-	-	-

#### (2) Measures Intended to be Taken in the Future for the Improvement of Quality

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
Seminar concerning QC method	33	13	7	8	2	3
On-the-spot guidance by specialists visiting each factory	16	4	1	7	3	1
Supply of QC manuals	35	16	5	9	2	3
Training by dispatching the management staff to Japan	22	16	1	2	2	1
Subsidy for the use of QC consultants	15	5	5	3	-	2
Others	3	-	3	-	-	-
N.A.	4	2	1	1	-	-

### 5. 4 Securing of Labour Force

#### (1) Situation of Shortage of Labour Force

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
It is a serious problem.	8	4	-	1	2	1
It is somewhat a problem.	41	18	9	9	3	2
It is not a problem.	15	5	5	3	1	1
N.A.	2	2	-	-	-	-

## (2) Types of Workers Insufficient

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N. A.
Total	66	29	14	13	6	4
Engineer	26	10	7	8	-	1
Technician	35	14	6	8	4	3
Supervisor, Foreman	23	10	4	4	2	3
Production Line Worker	38	16	6	10	5	1
R&D Personnel	14	6	4	3	1	-
System Engineer	13	6	3	4	-	-
Programmer	12	9	1	1	-	1
Manager	14	6	5	2	-	1
Salesperson	3	-	2	-	1	-
Clerical Worker	5	2	2	1	-	-

## 5. 5 Personnel Development

## (1) Existence of In-house Training

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N. A.
Total	66	29	14	13	6	4
Have an in-house training system.	54	26	14	10	3	1
Do not have an in-house training system.	12	3	-	3	3	3
N. A.	-	-	-	-	-	-

## (2) Situation of In-house Training

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N. A.
Total	66	29	14	13	6	4
Give enough training	29	16	9	2	2	-
Do not give enough training.	25	10	5	8	1	1



## (3) Problems of In-house Training

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
Supervisors are busy and do not have enough time to give training	30	14	7	4	2	1
Training manuals are not prepared.	12	9	2	1	-	-
Lack of well-organized training system and planning.	20	9	6	4	1	-
Instructors are not trained within the company.	10	6	3	1	-	-
Lack of budget	4	1	2	1	-	-
Trainees are not motivated to receive training.	7	3	2	1	-	1
The levels of trainees vary widely.	12	5	2	4	-	1
It is difficult to invite outside lecturers and instructors.	6	2	3	1	-	-
Outside training institutions do not prepare appropriate curricula.	12	2	7	3	-	-
Outside training institutions receive a limited number of trainees.	1	1	-	-	-	-
Outside training institutions hold insufficient equipment, materials and instructors.	6	1	4	2	-	-
There is no training institution near the company.	11	5	3	-	1	-
Others	5	2	3	-	-	-

## 5. 6 Fund Raising

### (1) Difficulty in Raising Fund

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
Very difficult	3	-	-	2	1	-
Somewhat difficult	20	6	5	5	1	3
Easy	29	18	5	5	1	-
N.A.	14	5	4	1	3	1

### (2) Reasons of Difficulty in Raising Fund

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
Severe Loan eligibility	4	1	-	3	-	-
Financial institutions require collateral for a loan.	11	-	1	6	2	2
Financial institutions require guarantee of the parent company.	7	2	3	2	-	-
Financial institutions take much time for screening.	2	-	-	1	-	1
Troublesome formalities of borrowing procedures	6	1	2	1	1	1
Loan amount is limited.	6	1	1	3	1	-
High interest rate	8	2	-	2	2	2
Exposure to exchange risk	5	2	2	1	-	-
Undeveloped stock market in Malaysia	-	-	-	-	-	-
Lack of access to the international financial market	3	3	-	-	-	-
Company's financial manager is poor in know-how of financing.	1	-	-	-	-	1
Others	-	-	-	-	-	-

## 5. 7 Marketing

### (1) Problems of New Market Development

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N. A.
Total	66	29	14	13	6	4
Lack of marketing information	22	10	5	5	1	1
Lack of business talks and other opportunities for business expansion	6	4	-	2	-	-
Lack of information on business practices, etc.	5	2	1	1	1	-
Severe requirement on the level of technology and product quality.	12	6	1	5	-	-
Others	7	4	1	1	-	1
N. A.	24	7	7	4	4	2

### (2) Experience in Participating in Exhibitions

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N. A.
Total	66	29	14	13	6	4
Yes, domestically.	9	7	-	2	-	-
Yes, overseas as well.	13	6	4	2	-	1
No experience.	30	13	5	7	3	2
N. A.	14	3	5	2	3	1

### (3) Wish to Participate in Exhibitions

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N. A.
Total	66	29	14	13	6	4
Yes, domestically.	13	6	2	2	1	2
Yes, overseas as well.	18	7	2	8	1	-
Not interested.	20	13	5	-	1	1
N. A.	15	3	5	3	3	1

## (4) Reasons of not Interested in Exhibitions

(No. of Company Answered)

(Parts Makers)	Total	Japanese Company	European Company	Other Foreign Company	Local Company	N.A.
Total	66	29	14	13	6	4
Have hands full with current orders at present	7	5	1	-	1	-
Difficult to cover expenses.	-	-	-	-	-	-
Not expected much in terms of results.	8	6	1	-	-	1
Others	5	2	2	-	-	1
N.A.	1	-	1	-	-	-

6 Expectations for government supports

	Responses	%
Expansion of vocational training schools	45	40.5
Review of curricula at vocational schools	37	33.3
Establishment of politechnics in local areas	24	21.6
Review of curricula at politechnics	34	30.6
Expansion of electronics courses at universities	52	46.8
Establishment of university-industry joint R&D system	49	44.1
Establishment of government-private sector vocational training organisations	47	42.3
Simplification of procedures for loans from financing organisations	45	40.5
Establishment of long-term investment funds for new investment	40	36.0
Introduction of low interest rate financing scheme for small and medium-scale firms	46	41.4
Expansion of CGC Scheme	7	6.3
Preparation of domestic parts manufacturers directory	63	56.8
Improvement of MEXPO's inquiry services and strengthening of its activities for development of overseas markets	19	17.1
Holding of exhibitions and business talks for electronics parts and subsidies for participation	34	30.6
Subsidies for the utilisation of management consultants by small & medium-scale firms	23	20.7
Holding of management seminars for small & medium-scale firms	15	13.5
Support for QC activities at domestic parts manufacturers	66	59.5
Creation of inspection system for quality improvement of domestic parts	53	47.7
Expansion of MIDA services for introduction of partners for technological tie-ups/OEM agreement	37	33.3
Supply of subsidies for R&D activities and review of tax incentives	51	45.9
Creation of public sector research institutes for electronics	43	38.7
Establishment of high-tech industrial estates for electronics industry	62	55.9
Incentives for support of subcontractors by assembly manufacturers	47	42.3
Review of MTI's subcontracting scheme	8	7.2

Note : Percentage = Responses / Total number of respondents



**III-5 List of the U.S. Computer-related Manufacturers  
which were Objects of the Telephone Interviews**





List of the U.S. Computer-related Manufacturer which were objects of  
the Telephone Interviews 1 / 3

Company	Address	TEL
1. Amdek Corporation	3471 N. First Street, San Jose CA 95134	408-436-8570
2. AST Research Inc.	2121 Alton Avenue Irvine, CA 92714	714-863-1333
3. AT&T Data Systems Group	1 Speedwell Avenue Morristown, NJ 07962	800-247-1212
4. Apple Computer, Inc.	20525 Mariani Avenue Cupertino, CA 95014	408-996-1010
5. Atari Corporation	1196 Borregas Avenue Sunnyvale, CA 94088	408-745-2000
6. BULL HN Information Systems, Inc.	300 Concord Road Billerica, MA 01821	617-671-6000
7. Commodore Business Machines	1200 Wilson Drive West Chester, PA 19380	215-431-9100
8. Compaq Computer Corporation	20555 FM D149 Houston, TX 77070	713-370-0670
9. ComputerLand Corporation	30800 Santana Street Hayward, CA 94544	415-734-4000
10. Dell Computer Corporation	9505 Arboretum Blvd. Austin, TX 78759	512-338-4400
11. Data General Corporation	4400 Computer Drive Westboro, MA 01580	508-366-8911
12. Digital Equipment Corporation	146 Main Street Maynard, MA 01754	617-493-5350
13. Everex Computer Systems Division	48431 Milmont Drive Fremont, CA 94538	415-498-1111
14. GRID Systems Corporation	47211 Lakeview Box 5003 Fremont, CA 94537-5003	415-656-4700
15. Hewlett-Packard Company	3000 Hanover Street Palo Alto, CA 94304	415-857-1501
16. IBM Corporation	Old Orchard Road Amonk, NY 10504	914-765-1900
17. Kaypro Corporation	533 Stevens Avenue Solano Beach, CA 92075	619-481-4300

Company	Address	TEL
18. Leading Edge	225 Tumpike Street Canton, MA 02021	617-828-8150
19. Memorex Telex Corporation	4343 S. 118th East Avenue Tulsa, OK 74146	918-627-1111
20. NCR Corporation	1700 South Patterson Blvd. Dayton, OH 45479	513-445-5000
21. Tandon Computer Corporation	405 Science Drive Moorpark, CA 93021	805-523-0340
22. Tandy Corporation	1800 One Tandy Center Ft. Worth, TX 76102	817-390-3011
23. TeleVideo Systems, Inc.	550 East Brokaw Road P.O. Box 49048 San Jose, CA 95161-9048	408-954-8333
24. Texas Instruments, Inc.	13500 N. Central Expressway Dallas, TX 75265	214-995-4855
25. Unisys Corporation	P.O. Box 500 Blue Bell, PA 19424	215-542-4011
26. Victor Technologies	395 Phoenixville Pike Malvern, PA 19355	215-251-5000
27. Wang Laboratories, Inc.	One Industrial Avenue Lowell, MA 01851	617-459-5000
28. Wyse Technology	3571 North First Street San Jose, CA 95134	408-433-1000
30. Zenith Data Systems	1000 Milwaukee Avenue Glenview, IL 60025	312-699-4800
31. AREAL TECHNOLOGY, INC.	3050 Scott Boulevard Santa Clara, CA 95054	
32. BRAND TECHNOLOGIES, INC.	9559 Irondale Avenue Chatsworth, CA 91311	
33. CARDIFF PERIPHERALS CORPORATION	5421 Avenida Encinas Carlsbad, CA 92008	
34. COMPORT CORPORATION	734 Sycamore Drive Milpitas, CA 95035	
35. CONNER PERIPHERALS, INC.	2221 Old Oakland Road San Jose, CA 95131	
36. IMPRIMIS TECHNOLOGY INCORPORATED Subsidiary of Control Data Corporation	8100-34th Avenue South Minneapolis, MN 55440	

Company	Address	TEL
38. INTERNATIONAL BUSINESS MACHINES CORPORATION	Route 22 Armonk, NY 10504	
39. JOSEPHINE COUNTY TECHNOLOGY INC.	1899 N.W. Hawthorne Grants Pass, OR 97526	
40. KALOK CORPORATION	1287 Anvilwood Avenue Sunnyvale, CA 94089	
41. LAPINE TECHNOLOGY CORPORATION	182 Topaz Avenue Milpitas, CA 95035	
42. MAGNUM TECHNOLOGY CORPORATION Subsidiary of Danbus Memory Systems, Inc.	5630B Kearney Mesa Road San Diego, Ca 92111	
43. MAXTOR CORPORATION	150 River Oaks Parkway San Jose, CA 95134	
44. MICROPOLIS CORPORATION	21123 Nordhoff Street Chatsworth, CA 91311	
45. MICROSCIENCE INTERNATIONAL CORPORATION	305 North Mathilda Avenue Sunnyvale, CA 94086	
46. MILTOPE CORPORATION	1770 Walt Whitman Road Melville, NY 11747	
47. MINISCRIBE CORPORATION	1871 Lefthand Circle Longmont, CO 80501	
48. PLUS DEVELOPMENT CORPORATION Subsidiary of Quantum Corporation	1778 McCarthy Boulevard Milpitas, CA 95035	
49. PRIAM CORPORATION	20 West Montague Expressway San Jose, CA 95134	
50. QUANTUM CORPORATION	1804 McCarthy Boulevard Milpitas, CA 95035	
51. SEAGATE TECHNOLOGY	920 Disc Drive Scotts Valley, CA 95066	
52. TANDON CORPORATION	20320 Prairie Street Chatsworth, CA 91311	
53. WESTERN DIGITAL CORPORATION	2445 McCabe Way Irvine, CA 92714	
54. XEBEC	3579 Highway 50 East Carson City, NV 89701	



### **III-6 List of Member Companies of JEIDA**



## List of Member Companies of JEIDA

1. Aitech Co., Ltd.
2. Asahi Glass Co., Ltd.
3. Asia Electronics Ind. Co., Ltd.
4. Advantest Co.,
5. Alps Electric Co., Ltd.
6. Ando Electric Company Ltd.
7. Anritsu Co.,
8. Iwatsu Electric Co., Ltd.
9. Okura Electric Co., Ltd.
10. Osaka Titanium Co., Ltd.
11. Oki Electric Ind. Co., Ltd.
12. Oki-Unisys Co., Ltd.
13. Casio Computer Co., Ltd.
14. Canon Inc.
15. Kubota Computer Co., Ltd.
16. Graph-Tech Co., Ltd.
17. Kokusai Electric Co., Ltd.
18. Copal Electronics Co., Ltd.
19. Komatsu Electronics Co., Ltd.
20. Sanyo Electric Co., Ltd.
21. SPC Electronics Co.,
22. Shimazu Co.,
23. Shaken Co., Ltd.
24. Sharp Co.,
25. Juki Co., Ltd.
26. Showa Information Equipment Co., Ltd.

27. Shinetsu Semiconductor Co., Ltd.
28. Shinko Co., Ltd.
29. Shinko Electric Co., Ltd.
30. New Japan Radio Co., Ltd.
31. Sumitomo Electric Ind. Ltd.
32. Seiko Epson Co.,
33. Seikoshya Co.,
34. Seiko Instruments Inc.
35. Sord Co.,
36. Sony Co.,
37. Daikin Ind. Co.,
38. Omron Tateishi Electronics Co.,
39. Tamura Electric Works Ltd.
40. Chino Co.,
41. Chuo Electronics Co., Ltd.
42. Teac Co.,
43. Teikoku Tsushin Kogyo Co., Ltd.
44. TDK Co.,
45. Densan Co., Ltd.
46. Tokyo Applied Chemistry Ind. Co.,
47. Tokyo Cathode Research Institute Co.,
48. Tokyo Meter Co., Ltd.
49. Tokyo Tatsuno Co., Ltd.
50. Tokyo Electric Co.,
51. Totoku Electric Co., Ltd.
52. Tokiko Co.,
53. Tokin Co.,
54. Toko Inc.
55. Toshiba Co.,



56. Toyo Communication Equipment Co., Ltd.
57. Tore Engineering Co.,
58. Shinnichi Electric Co., Ltd.
59. Nitetsu Electronics Co., Ltd.
60. Nippon Avionics Co., Ltd.
61. Nippon Glass Co., Ltd.
62. Nippon kohden Co.,
63. Nippon Silicon Co.,
64. Nippon Signal Co.,
65. Data General Japan Co.,
66. NEC Co.,
67. NEC Office Systems Co.,
68. Nippon Electric Ind. Co., Ltd.
69. NEC Home Electronics Ltd.
70. Nippon Denso Co., Ltd.
71. Victor Co., of Japan Ltd.
72. Japan Business Computer Co., Ltd.
73. Japan Minicomputer Systems Co.,
74. Japan Radio Co., Ltd.
75. Japan Mectrom Co., Ltd.
76. Hitachi Ltd.
77. Hitachi Maxell Ltd.
78. PFU Co.,
79. Fanac Ltd.
80. Fuji Xerox Co.,
81. Fujisoku Electric Co., Ltd.
82. Fujitsu Ltd.
83. Fujitsu Isotech Co., Ltd.
84. Fuji Electric Co., Ltd.

85. Fuji Facom Co., Ltd.
86. Furukawa Electric Co., Ltd.
87. Hokuriku Electric Ind. Co., Ltd.
88. Hoya Co.,
89. Matsushita Communication Industrial Co., Ltd.
90. Matsushita Electric Industrial Co., Ltd.
91. Matsushita Electric Works Ltd.
92. Marcon Electronics Co., Ltd.
93. Mitsubishi Electric Co.,
94. Murata Manufacturing Co., Ltd.
95. Meidensha Co.,
96. Yasukawa Electric Co.,
97. Yamatake Honewell Co.,
98. Yamaha Co., Ltd.
99. Yokogawa Electric Co.,
100. Yokogawa-Hewlett-Packard Ltd.
101. Ricoh Company Ltd.
102. Roland G Co., Ltd.
103. YE Data Co.,
104. Wakom Co.,



JICA