資　　料

1 ミニッツ

MINUTES OF DISCUSSIONS BETWEEN THE JAPANESE EVALUATION TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE KINGDOM OF THAILAND ON JAPANESE TECHNICAL COOPERATION FOR THE DEVELOPMENT OF MECHATRONICS ENGINEERING COURSE AT BACHELOR DEGREE LEVEL IN PATHUMWAN TECHNICAL COLLEGE

The Japanese Evaluation Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Dr. Tsutomu Wada, visited the Kingdom of Thailand from August 17th to August 27th, 1997. During its stay in the Kingdom of Thailand, the Team had a series of discussions with the Thai authorities concerned, and jointly evaluated the present achievement of the Project for the Development of Mechatronics Engineering Course at Bachelor Degree Level in Pathumwan Technical College (hereinafter referred to as "the Project") and exchanged views on the possible technical cooperation programs to be further implemented to fulfill the Master Plan of the Record of Discussions signed on 3rd of March 1993 (hereinafter referred to as "the R/D").

As a result of the discussions, both sides agreed to report to their respective Governments the matters referred to in the documents attached hereto.

Bangkok, 26th August, 1997

J. Wada

Dr. Tsutomu Wada
Leader
Japanese Evaluation Team
Japan International Cooperation Agency Japan

Mr. Chingchai Mongkoltham
Minister
Ministry of Education
The Kingdom of Thailand

THE ATTACHED DOCUMENT

I. INTRODUCTION

1. Preface

The Project was initiated in April 1993 and will be completed by March 1998. With the remaining project period of approximate seven (7) months, the Team visited the Kingdom of Thailand for the purpose of evaluating the achievement of the Project.

The evaluation has been undertaken jointly by the Thai counterparts and related authorities in the Project and the Team.

2. Methodology of Evaluation

Project Design Matrix was used as the basis of evaluation. The Team reviewed all the activities and achievements, and evaluated the Project based on the following components;

(1) Effectiveness
(2) Impact
(3) Efficiency
(4) Relevance
(5) Sustainability

In order to evaluate the past performance of the Project, the following materials were used:

(1) The R/D, Tentative Schedule of Implementation, Annual Work Plans, Minutes of Discussions and other documents agreed on or accepted in the course of implementation of the Project
(2) The Project Design Matrix
(3) Data of input and output from the Project
(4) Results of a series of interviews

II. BACKGROUND AND SUMMARY OF THE PROJECT

1. Background of the Project

The Seventh National Economic and Social Development Plan (1992 - 1996) had an objective of

developing the Kingdom of Thailand to industrialization in order to promote development of human quality of life. Therefore, Pathumwan Technical College, under control of the Department of Vocational Education, the Ministry of Education, had tried to upgrade its graduates' and personnel's qualities in order to keep up with the newest technology.

However, basic educational and training equipment equivalent to the high technological level of the industrial sector is deficient, and the budget is limited. These made Pathumwan Technical College unable to produce the students with qualifications as the market's need.

Under these circumstances, Pathumwan Technical College requested the Government of Japan for educational equipment under grant aid program in 1990. In 1991, the requested grant aid project named "The Development of Courses in Higher Production and Industrial Technology". valuing one hundred and twenty four (124) million baht to supply the equipment was approved by the government of Japan. Besides the grant aid project, Pathumwan Technical College planned the project for produce the practical engineer according to effective usage of the equipment that provided by the government of Japan, because of the lack of skillful engineer and technologist in Thailand. In 1991, the proposal of the technical cooperation which aimed to develop and establish mechatronics engineering course at bachelor degree level in Pathumwan Technical College in order to supply Thailand's modern industrial sectors with capable and practical mechatronics engineers presented to the government of Japan.

After donating equipment requested by the grant aid project, the government of Japan decided to provide Pathumwan Technical College technical assistance in order to establish new department for mechatronics engineering course at bachelor degree level which would be opened in 1994. The R/D and the Tentative Schedule of Implementation for the Project were agreed between the JICA mission team and the Department of Vocational Education, the Ministry of Education on 9th March, 1993.

JICA started its five-year technical cooperation for the Project on 1st April, 1993.

2. *Master Plan of the Project*

The Objective of the Project and Scope of the Japanese Technical Cooperation were stipulated in the master plan of the R/D as follows:

(1) Objective of the Project

The main objective of the Project is to develop and establish Mechatronics Engineering Course at bachelor degree level in Pathumwan Technical College in order to supply Thailand's modern industrial sector with capable and practical mechatronics engineers.

(2) Scope of the Japanese Technical Cooperation

The Japanese Technical Cooperation covers eleven (11) subjects specified below;

a) Automatic Control

b) Microcomputer
c) CAD
d) Instrumentation
e) CAM and CNC
f) Fluid Power Control
g) Process Control
h) Robotics
i) Digital Control System
j) Factory Automation
k) Sensor Technology

3. *Review of the Project Design Matrix*

The Project Design Matrix (PDM) of the Project was prepared in the second year of the Project based on the Master Plan and Tentative Schedule of Implementation attached to the R/D. However, the project purpose and outputs were not described in detail in the PDM. Therefore, through a review of past documents and discussions with the parties concerned, the Team decided to use following descriptions of the project purpose and outputs for the evaluation.

(1) Project Purpose

Practical and qualified engineers in mechatronics at bachelor degree level are provided for Thai industry.

(2) Expected Outputs of the Project

a) Sufficient numberof teaching staff with qualified teaching and research capability in mechatronics at bachelor degree level is ensured.
b) Curriculum and syllabuses for bachelor degree level education in mechatronics are prepared and eligibly used.
c) Teaching materials for bachelor degree level education in mechatronics are prepared and used in the classes.
d) Appropriate facilities and equipment are operational and utilized for education and research activities in mechatronics at bachelor degree level.
e) Updated academic and technical information on mechatronics is available for teaching staff and students.
f) Management and administration system for the Mechatronics Engineering Course is effectively functional.

III. ACCOMPLISHMENT BY THE PROJECT

1. Inputs

(1) Japanese side

a) Dispatch of Experts

In accordance with the R/D, the Japanese side dispatched fifteen (15) long-term experts and thirty nine (39) short-term experts to the Project for technology transfer up to today. By the end of the cooperation period, two (2) more short-term experts are scheduled to be dispatched.

These experts were sufficiently qualified in their respective fields and they have contributed to the excellent performance of the Project.

b) Training of Thai Counterpart Personnel in Japan

During the cooperation period, seventeen (17) Thai counterpart personnel in total were accepted in Japan as trainees.

They were able to improve their knowledge and techniques in Japan. After completing the training in Japan, most of the trainees returned to their respective positions and applied the knowledge and techniques acquired in Japan to implement activities in the Mechatronics Engineering Course.

c) Provision of Machinery and Equipment

The machinery and equipment purchased in Japan valued at about two hundred and eleven million (211,000,000) Japanese Yen in total (planned by the end of March, 1997) were provided. Most of them are effectively utilized for the Project.

d) Other Financial Support

For effective and smooth implementation of the Project, special measures have been taken to supplement a portion of the local expenditures in accordance with the R/D. These measures include production of text books and travel allowance to attend to the international conference such as the South East Asian higher engineering education network seminar under JICA scheme.

(2) Thai side

a) Appointment of Counterpart and Other Personnel

By the end of the Project period, fifteen (15) counterpart personnel were secured as academic staff in the department of mechatronics engineering course in Pathumwan Technical College.

They have been sufficiently qualified at technical college level in their respective fields and contributed to the good performance of the Project.

b) Allocation of Budget

From the Thai side, approximately two hundred and ten million (210,000,000) baht were allocated to the Project since 1993, which was used for temporary wages, remuneration, public utilities and other expenses including the cost of necessary equipment and installations in Pathumwan Technical College.

c) Provision of Facilities

The necessary spaces for laboratories and office of the Project have also been provided in line with the R/D.

(3) Supporting system

a) The Joint Committee

The joint committee meeting was held four (4) times during the project period. The members of the committee are the JICA experts, Pathumwan Technical College, the Department of Vocational Education (DOVE), Ministry of Education, Embassy of Japan and JICA Thailand Office. Major topics in the committee were reports of the current activities.

b) The Technical Advisory Committee in Japan

The committee meetings were held basically twice a year to provide advice and consultation to the Project. The participants were from the Ministry of Education, Science, Sports and Culture, the national colleges of technology, universities of technology concerned and JICA.

2. *Outputs*

(1) Qualified Teaching Staff

Fifteen (15) teaching staff have been ensured in the Mechatronics Engineering Course, among whom only one (1) has doctorate degree and three (3) have master degree. One (1) teaching staff is studying for doctorate degree and six (6) for master degree in universities and hence not fully available for classes in the Course at this moment. Only 51% of the credits are given by the full-time teaching staff of the Course, while 39% by the teaching staff of other Departments and 10% from other institutes. For the fourth grade students, all the classes on applied subjects which account for 68% of the credits are given by the teachers from other institutes.

Since the establishment of the Course, nine (9) research works have been conducted by some teaching staff. Their publication is not yet completed, while two presentations on research works will be made by the end of the Project.

(2) Curriculum and Syllabuses

A curriculum and syllabuses for the Mechatronics Engineering Course were developed through a number of workshops with an assistance of experts. They are considered to be at bachelor degree level, although having been used in a higher diploma course.

(3) Teaching Materials

More than twenty (20) titles of textbook and guide book / manuals for experiment have been developed in English and Thai language as a result of considerable efforts by the counterparts and experts. All of the eleven fields in mechatronics will be provided with some teaching materials by the end of the Project.

(4) Equipment and Facilities

Owing to the efforts by counterparts and the technical assistance given by the experts, majority of the equipment provided by the grant aid project as well as those provided by the Project become operational and are well utilized for educational and research activities.

(5) Availability of Academic and Technical Information

A library for both teaching staff and students was placed in the staff room and 580 titles of books were provided. Two hundred and eighty eight (288) titles of English books in the Project Office are also available for teaching staff. In addition, it is planned to make the Internet system available for teaching staff and students from September 1997.

(6) Management and Administration System

The management and administration system of the Mechatronics Engineering Course is not yet independent but combined with that of the Department of Industrial Education. Decision making process is not fully decentralized down to department nor course levels. Continuous efforts for effective management of the Course have been made through the Course Meeting, which was initiated by the Project and regularized from 1997.

3. *Project Purpose*

Through the bachelor degree level education in the Higher Diploma Course, which was started in

1993 and will be expected to be upgraded into a bachelor degree course within six months, the first fourteen (14) practical mechatronics engineers at bachelor degree level in Thailand are expected to finish the Course in March 1998. More than ten (10) graduates are expected to be provided for private industrial sectors as practical engineers, and the rest are expected to become teachers of the Mechatronics Engineering Course for its future development.

Although the first graduates can be qualified at bachelor degree level and ought to be provided with bachelor degrees if the Vocational Bill pass the parliament as expected, they will be unlicensed to Professional Engineer at the time of graduation because they will not complete some required credits through the present curriculum.

IV. ANALYSIS ON THE FIVE EVALUATION CRITERIA

1. Effectiveness

Since the graduates are expected to work in Thai industries as the mechatronics engineers at bachelor level, it is regarded that the initial stage of the project purpose will be achieved at the end of the Project. However, the number of graduates is limited and their quality needs future verification based on the grade of their job.

Education capacity of the Mechatronics Engineering Course needs further development in order to produce targeted number of graduates in the future: eighty (80) graduates per year. In this regard, the outputs of the Project are not yet sufficient for the high quality education of full scale.

Quantity and quality of teaching staff are still insufficient. For full scale education, it is estimated that the Mechatronics Department needs at least twenty-six (26) teaching staff, of which at least half are higher degree holders. In reality, there are only fifteen (15) teaching staffs and only four (4) of them have higher degree. Moreover, some of the teaching staff are not fully available in education at the Course because they are studying for higher degree. The teaching staff has not necessarily intended to research activities because of the limitation in time, budget and equipment. In these regards, an increase in the number of teaching staff who have higher degree and the promotion of research activities are the most important tasks for the future.

The curriculum used in the Mechatronics Engineering Course seems to be appropriate in general for bachelor degree level education. However, the present curriculum does not cover some credits required to get the license to Professional Engineer. In addition, basic subjects have to be considered more importance in order to deepen the students' understanding of applied subjects required as practical engineers with flexibility and adjustability. In these regards, comprehensive re-assessment and improvement of the curriculum are required after completing the whole grade education in next March.

Although the syllabuses used in the Course also seem to be appropriate in general, they are not always taught as such in the actual classes because of shortage of teaching staff.

As for teaching material, the number of guide books and manuals for the experiment written in Thai language is not sufficient, and needs to be increased in the future. On the other hand, minimum requirement for text books will have been satisfied by the end of the Project.

Facilities and equipment provided by the Project, as well as those provided by the grant aid project, enabled the Course to conduct experiments and exercises effectively. However, in order to fully utilize those equipments and facilitate research activities by both teaching staff and students, sufficient basic tools and technicians are to be provided. A workshop is also essential to promote research activities effectively.

The Project provided books on academic / technical information only at a limited scale, and the library in the Course is poor in content. Even though the Internet system is expected to be introduced by the end of the Project, availability of updated academic technical information on mechatronics will remain very insufficient for research activities by teaching staff and students.

A course meeting is being held on a weekly basis. However, the management and administration system for the Mechatronics Engineering Course is rather complex and not very efficient. An introduction of appropriate management and administration system will be necessary in preparation for the expected upgrading. It seems that the PTC is lacking key personnel who are highly capable in successfully developing and managing the new Institute of Technology.

2. *Impact*

Through establishing the Mechatronics Engineering Course and having the first graduates in near future, the Project has put the first step toward providing practical and qualified mechatronics engineers in Thailand. Although it is difficult to assess the long-term impact of the project at this moment, the results of the Project mentioned above will contribute to a promotion of factory automation and high-tech industry in the country for the future.

One indirect impact of the project is that the process of upgrading the PTC to a university seems to have been facilitated by the trained teaching staff and the outstanding equipment provided by JICA.

No concrete unfavorable impact of the Project was observed nor foreseen.

3. *Efficiency*

In spite of language barrier, technology transfer from the experts to the counterparts has been conducted relatively efficiently through intensive man-to-man communication. For some of the counterparts, the efficiency of technology transfer was increased by an arrangement that they received training from the same expert both in Japan and Thailand.

Equipment provided by the Project and those equipment provided for the Mechatronics Engineering

Course by the grand aid project are well utilized in general. However, some of the equipment by the grant aid project which are not directly related to the Mechatronics Engineering Course are not always fully utilized.

Training efforts in the early stage of the Project were not fully rewarded because the initial four(4) counterparts sent to Japan didn't become full-time teaching staff of the Mechatronics Engineering Course. Another conditions which affected the project implementation are as follows; a mismatch of timings between delivery of equipment and dispatch of short-term experts or research activities; counterparts' heavy load for teaching and study for higher degree which limited the time for day-to-day communication with experts; delayed and shortened training period in Japan due to insufficient English capability of some counterparts.

The upgrading of the Mechatronics Engineering Course to a bachelor degree course was regarded as a "pre-condition" in the PDM, but is now expected to be realized only at the last period of the Project. It can be pointed out that if the upgrading was realized in the early stage of the Project, research works by the teaching staff may have been increased more rapidly under a much favorable research environment in terms of incentives, budget, and equipment.

4. Relevance

The overall goal of the Project, promotion of high-level industry in Thailand, remains to be one of the priority development goals of the Government of Thailand. Demand for practical and qualified mechatronics engineers will continuously increase in the future, because the labor cost in Thailand is getting expensive, and hence Thai industry has to establish high-tech and automated production system in order to sustain strong international competitiveness in the future. In this connection, the importance and necessity of mechatronics engineering in Thailand have to be clearly recognized by Thai industry. This issue seems not to be addressed much by the Project so far.

The planning was not fully detailed at the time of commencement of the Project. This may be because; i) the timing of upgrading to bachelor degree course was not clearly foreseen; ii) the total picture of the new institute was not appropriately reflected to the Master Plan in the R/D. Moreover, the descriptions of the project purpose and outputs / activities to achieve the project purpose in PDM were not elaborated enough, and concrete targets to be achieved at the end of the Project were not shown in the PDM. All of these conditions made the project activities difficult to be effectively organized centering on the project purpose.

5. Sustainability

At present, all the trained counterparts seem to be enthusiastic to the solid establishment of the Mechatronics Engineering Course, and likely to remain in the Course even after the Project is over.

However, since the demand for practical and qualified engineers is increasing, certain measures will be necessary to ensure the qualified teaching staffs in the Course, especially for those who have higher degree.

Due to lack of research experiences, most of the present teaching staff in the Mechatronics Engineering Course will not be able to continue research activities of good quality by themselves. Assuming that the Course will be upgraded to a bachelor degree course in the near future, and assuming that an appropriate budgetary support will be given by the new university, continuous training on research activities is most important in order to make the Course self-sustainable as a bachelor degree course.

The management of the Course seems to have been strengthened in a form of weekly course meeting. However, additional inputs of know-how on management under the scheme of university, either by training or recruiting new staff, will be necessary to sustain and improve the outputs of the Project.

V. CONCLUSION

The Project has been well implemented owing to the great efforts by the experts from JICA and the counterpart staff of PTC. By establishing the new Mechatronics Engineering Course at bachelor degree level and providing the first graduates in coming March, the initial stage of the project purpose is considered to be achieved by the end of the Project. Although initial planning of the Project was not detailed, there were no serious management problems. The outcome of the Project is expected to bring about an important positive impact to the high-level industrialization of the Thailand, if the Course can educate mechatronics engineers at a full scale after upgraded to a bachelor degree course and sufficient quantity and quality of teaching staff are ensured.

Strengthening of research capability and increase of higher degree holders among the teaching staff are the main issues for the post project period in order to fully achieve the project purpose with sustainability. In addition, a favorable research environment has to be prepared in terms of equipment, budget, and incentives. A continuous improvement and development of curriculum, syllabuses, and teaching materials is also needed. In consideration of the above, the needs for continuous assistance after the Project are clearly recognized.

VI. RECOMMENDATIONS

Based on the findings and analysis on the five evaluation criteria, following recommendations are made.

(1) An extension of the Project for two to three years is recommended in order to ; strengthen research capability of the teaching staff; improve the curriculum, and; develop teaching materials. In the extension period, technical assistance on research works shall be provided mainly by short-term experts. In accordance with the human resource development plan of the Mechatronics Engineering Course, it shall be targeted that at least half of the teaching staff will have higher degree or will be well under the way to get higher degree by the end of the extension period.

(2) Maximum efforts shall be made so that the final approval will be given to the Vocational Bill as soon as possible, since the extension is highly effective only if a favorable research environment is prepared in terms of budget and incentives for research works. For the same purpose, PTC shall make its best efforts to secure appropriate research budget for the extension period whether the Vocational Bill is approved or not.

(3) A concrete and well detailed plan for the extension period shall be elaborated by the Project as soon as possible through an active consultation among all the parties concerned, i.e. the chief advisor, coordinator, and the experts from JICA, counterpart staff and the management staff of the PTC.

(4) Preparation for the management and administration system under the new Institute shall be started as soon as possible, so that the extended project will be implemented highly effectively. In this connection, recruitment of key personnel who are highly capable in developing and managing a new university shall be put into consideration.

(5) Effective measures shall be taken in order to increase Thai industry's recognition on mechatronics engineering. The measures will include ; publication, dissemination, and seminars on research works; seminars on an introduction to mechatronics; dissemination to mass media; technical exchange with universities and private firms, etc.

2 THE JOINT COMMITTEE CONFERENCE

THE PROJECT FOR THE DEVELOPMENT OF MECHATRONICS ENGINEERING COURSE AT BACHELOR DEGREE LEVEL IN PATHUMWAN TECHNICAL COLLEGE

21 AUGUST,1997

Contents

1. List of experts 38
2. List of counterparts received training Ir Japan 41
3. JICA Budget 42
4. List of equipment provided by JICA 43
   4-1. Major equipment 43
   4-2. Equipment carried with experts 53
   4-3. Equipment purchased by local cost 66
5. Number of classes given by teachers 72
6. Summary of research works 73
7. Frequency of committee of teaching staff held 76
8. List of Teaching Material produced/secured 77
9. Organization structure of DOVE,PTC 80
10. List of counterparts and number of staff 82
11. Thai Budget 87
12. List of equipment purchased by Thai budget 91
13. Curriculum of Mechatronics Engineering 94
14. Process of student admission 98
15. Number of student enrolled and dropout 99
16. List of laboratories 100

1. List of experts

LIST OF EXPERT DISPATCHED (1993 -1998)

NO.	NAME OF EXPERT	FIELD	ASSIGNING PERIOD
LONG-TERM EXPERTS			
JFY 1993			
1.	Inosuke MORI	Chief Advisor	1993/07/01 - 1996/06/30
2.	Tomoyuki IRIE	Coordinator	1993/07/01 - 1998/03/31
JFY 1994			
3.	Katsumi ISHIHARA	Instrumentation	1994/04/01 - 1996/03/31
4.	Tadayoshi FURUYA	Automatic Control	1994/04/07 - 1995/04/06
JFY 1995			
5.	Yoshio SORIMACHI	Microcomputer	1995/04/01 - 1996/03/31
6.	Shuzo OKAZAKI	CAD	1995/05/10 - 1996/05/09
JFY1996			
7.	Shohei MIYAGAWA	Robotics	1996/04/01 - 1997/03/31
8.	Kunio KAWAKATSU	Factory Automation	1996/04/01 - 1997/03/31
9.	Toshiya SAKABE	Sensor Technology	1996/04/01 - 1997/03/31
10.	Yasuaki HIROO	CAD	1996/04/01 - 1997/03/31
11.	Shoichi OKAMOTO	Chief Advisor	1996/09/03 - 1998/03/31
JFY 1997			
12.	Haruaki KISHIGE	Fluid Power Control	1997/04/01 - 1998/03/31
13.	Kaname SATO	Microcomputer	1997/04/01 - 1998/03/31
14.	Shoji YAMAUCHI	Process Control	1997/04/01 - 1998/03/31
15.	Yoshiichi YAMAMOTO	Robotics	1997/04/01 - 1998/03/31

* JFY(Japanese Fiscal Year)

NO.	NAME OF EXPERT	FIELD	ASSIGNING PERIOD
SHORT-TERM EXPERTS			
JFY 1993 (3 persons)			
1.	Masazumi KUMAGAI	Microcomputer	1993/09/26 - 1993/10/08
2.	Masaaki KUDO	Sensor Technology	1993/09/26 - 1993/10/08
3.	Kensuke HASEGAWA	Mechatronics	1993/12/12 - 1993/12/28
JFY 1994 (6 persons)			
4.	Shuzo OKAZAKI	CAD	1994/04/30 - 1994/05/13
5.	Yoshio SORIMACHI	Microcomputer	1994/04/30 - 1994/05/13
6.	Tomoju OIZUMI	Digital Control	1994/04/30 - 1994/05/13
7.	Shoji KINOSHITA	CAM/CIM	1994/07/25 - 1994/08/30
8.	Haruo NAKA	Factory Automation	1994/08/10 - 1994/09/30
9.	Norio FURUSE	Microcomputer	1994/12/14 - 1995/01/10
JFY 1995 (10 persons)			
10.	Toshiya SAKABE	Sensor Tchnology	1995/05/01 - 1995/05/19
11.	Yasuaki HIROO	CAD	1995/05/01 - 1995/05/19
12.	Kunio KAWAKATSU	Factory Automation	1995/05/01 - 1995/05/19
13.	Shohei MIYAGAWA	Robotics	1995/05/01 - 1995/05/19
14.	Takehisa OHNO	Fluid Power Control	1995/07/31 - 1995/08/25
15.	Shoji YAMAUCHI	Process Control	1995/08/03 - 1995/08/31
16.	Norio FURUSE	Digital Control	1995/08/03 - 1995/08/31
17.	Akiyoshi OKITSU	Dept. Management	1995/10/25 - 1995/11/01
18.	Hitoshi ASANO	Microcomputer	1995/12/10 - 1996/01/06
19.	Yoshikazu TAKAHASHI	Automatic Control	1996/03/17 - 1996/04/03
JFY 1996 (11 persons)			
20.	Ritsu KAGAWA	Digital Control	1996/03/26 - 1996/04/13
21.	Kane SATO	CAM & CNC	1996/03/26 - 1996/04/13
22.	Yoshiichi YAMAMOTO	Robotics	1996/04/28 - 1996/05/11
23.	Haruaki KISHIGE	Fluid Power Control	1996/04/28 - 1996/05/11
24.	Haruo TAKAHASHI	Sensor Technology	1996/07/01 - 1996/08/20

NO.	NAME OF EXPERT	FIELD	ASSIGNING PERIOD
25.	Takaharu KURODA	Robotics	1996/07/01 - 1996/09/30
26.	Tadayoshi FURUYA	Automatic Control	1996/07/23 - 1996/08/15
27.	Tetsutaro HOSHI	CAM&CNC	1996/08/12 - 1996/09/01
28.	Katsumi ISHIHARA	Instrumentation	1996/11/01 - 1997/02/10
29.	Masayuki IKEDA	Instrumentation	1996/11/29 - 1996/12/13
30.	Tomoji OIZUMI	Digital Control	1997/03/17 - 1997/03/30
JFY 1997 (11 persons)			
31.	Masataka YONEKURA	CAM & CNC	1997/04/28 - 1997/05/10
32.	Tomoju OIZUMI	Digital Control	1997/05/12 - 1997/05/23
33.	Ritsu KAGAWA	Digital Control	1997/07/14 - 1997/08/23
34.	Kiyotada SATO	Digital Control	1997/07/15 - 1997/09/07
35.	Haruo TAKAHASHI	Sensor Technology	1997/07/22 - 1997/08/19
36.	Yasuaki HIROO	CAD	1997/08/03 - 1997/08/24
37.	Tetsutaro HOSHI	CAM & CNC	1997/08/06 - 1997/08/24
38.	Tadayoshi FURUYA	Automatic Control	1997/08/12 - 1997/08/28
39.	Koji TESHIMA	Fluid Power Control	1997/08/24 - 1997/09/12
40.	Kunio KAWAKATSU	Factory Automation	1997/12/14 - 1997/12/27
41.	Tomoji OIZUMI	Digital Control	1998/03/23 - 1998/04/07

* JFY (Japanese Fiscal Year)

2. List of counterparts received training in Japan

LIST OF COUNTERPARTS RECIEVED TRAINING IN JAPAN

NO.	NAME	FIELD	PERIOD	PLACE (College of Tech.)
JFY 1993				
1.	Paisan THARAKSA	Instrumentation	93/10/26 - 94/03/02	GIFU
2.	Chatchaval PORNPATKUL	Robotics & CIM	93/10/26 - 94/03/02	GIFU
3.	Uthai MANWONG	Automatic Control	93/10/26 - 94/03/18	KITAKYUSHU
JFY 1994				
4.	Suriya WARI	Digital Control	94/07/25 - 95/03/31	MIYAGI
5.	Yanyong CHANTASRIVIROAT	CAD	94/07/25 - 95/03/31	AKASHI
6.	Attaporn KANCHANATAP	Microcomputer	94/10/17 - 95/03/31	NAGAOKA
JFY 1995				
7.	Prasert PRACHPRAYOON	CAD	95/09/25 - 96/03/29	KURUME
8.	Santi WANGNIPRANTO	Sensor Technology	95/09/25 - 96/03/29	NARA
9.	Montri MANGKLASAWATD	Factory Automation	95/10/30 - 96/03/29	MAIZURU
10.	Kosuchon SATAYOTIN	CAM & CNC	95/10/30 - 96/03/29	KURUME
11.	Boonrueng WANGSILABAT	Robotics	95/10/30 - 96/03/29	KISARAZU
JFY 1996				
12.	Pramot SRINOI	Microcomputer	96/07/22 - 97/03/26	ICHINOSEKI
13.	Arkom MANEEKANTO	Process Control	96/08/05 - 97/03/28	TAKAMATSU
14.	Satean TUNYASRIUT	Robotics	96/09/09 - 97/03/23	KUMAMOTO
15.	Tiab EUAKIT	Fluid Power Control	96/10/28 - 97/03/29	NARA
JFY 1997				
16.	Wichien TAWEESUK	Digital Control	97/08/25 - 98/01/31	MIYAGI
17.	Punyapat CHOFABUNTHIT	CAM & CNC	97/08/25 - 98/03/22	KURUME

* JFY (Japanese Fiscal Year)

3. JICA Budget

Budget approved by the Government of Japan

Item	1993	1994	1995	1996	1997	Total	Remarks
1. Local Cost	3,000	2,600	3,779	3,182	2,790	15,351	Postage and communication expense, Office supply expense, Material expense, etc.
2. Research Work	1,000	1,070			813	2,883	Research work on the Solor Car, Presentation in International Conference
3. Technical Exchange	1,000					1,000	Visit Surabaya Polytechnic, Indonesia in October, 1993
4. Textbook Printing	1,000	2,630	2,019	1,702	1,408	8,759	19 titles of the textbook has been printed
5. Hgher Education				269	499	768.	7 counterparts are studying in Master degree and Doctorate degree
6. Major Equipment	7,943	18,537	49,929	109,100	25,350	210,859	Reference with list of equipment
Total	13,943	24,837	55,727	114,253	30,860	239,620	(¥1,000)

* Budget year is Japanese Fiscal Year (April - March)

4. List of equipment provided by JICA (As of July, 1997)

4-1. Major equipment

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Delivered date	Place
JICA93001	COMPUTER SOFTWARE		22 March 1994	Expert Room 361
	MATLAB/SIMULINK Ver 4.0(English)	1 set		
	TOOLBOX:SIGNAL PROCESSING	1 set		
	TOOLBOX:CONTROL SYSTEM	1 set		
	MATHCAD 5.0(English)	1 set		
	MS WINDOWS 3.1(English)	1 set		
JICA93002	APPARATUS FOR DETERMINATION OF THE	1 set	27 June 1994	Physics Lab. 511
	GRAVITATIONAL CONSTANT			
	LASER COMPLETE APPARATUS	1 set	27 June 1994	
	IRON STAND	1 set		
	SPARE PARTS: STRING/DAMPER OIL/DRY			
	CELL			
JICA93003	FORCE & MOTION EXPERIMENT APPARATUS	1 set	27 June 1994	Physics Lab. 511
	PAIR OF DYNAMICS CARTS	2 pcs		
	RECORDING TIMER	3 pcs		
	STEPDOWN TRANSFORMER	3 pcs		
	SPARE PARTS: PAPER TAPE/CARBON DISK			
JICA93004	SHIVE'S WAVE MACHINE	1 set	27 June 1994	Physics Lab. 511
	POWER HOSE	1 pc		
JICA93005	SPECIFIC THERMAL CAPACITIES OF	1 set	27 June 1994	Physics Lab. 511
	DEFFERENT GASES			
	ELECTRIC DIGITAL COUNTER	1 pc		
	DIGITAL MULTIMETER	1 pc		
	ULTRA LOW FREQUENCY OSCILLATOR	1 pc		
	AUDIO AMPLIFIER	1 pc		
	LEAD WIRE SET	1 set		
	STEPDOWN TRANSFORMER	1 pc		
	TABLE-TAP	1 set		
JICA93006	LASER COMPLETE APPARATUS	1 set	27 June 1994	Physics Lab. 511
	STEPDOWN TRANSFORMER	1 pc		
	OPTICAL BENCH	1 pc		
JICA93007	APPARATUS FOR DETERMINATION OF	1 se	27 June 1994	Physics Lab. 511
	VELOCITY OF LIGHT			
JICA93008	SPECTROMETER	1 set	27 June 1994	Physics Lab. 511
	STEPDOWN TRANSFORMER	1 pc		
JICA93009	SOUND EXPERIMENTS APPARATUS	1 set	27 June 1994	Physics Lab. 511
	SPARE PARTS: DRY CELL			
JICA93010	ELECTROMAGNET	1 set	27 June 1994	Physics Lab. 511
	AUTO-TRANSFORMER	1 pc		
	POWER HOSE	1 pc		
JICA93011	ELECTRON DIFFRACTION TUBE	1 set	27 June 1994	Physics Lab. 511
JICA93012	PERSONAL COMPUTER	1 set	30 June 1994	Expert Room 362
	-IBM PS/VALUE POINT			
	-17"FLAT SCREEN MONITOR(EIZO)			

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Delivered date	Place
JICA93013	LASER PRINTER	1 set	30 June 1994	Expert Room 362
	-DATAPRODUCT LZR1555(A3 SIZE)			
JICA93014	PERSONAL COMPUTER	1 set	18 May 1994	Expert Room 362
	-APPLE CENTRIS 650			
JICA94015	PERSONAL COMPUTER FOR LAN SYSTEM	1 set	5 July 1994	New CAD Lab
	-DEC PC LPx466DX2			
	-DEC 14" MONO CRT			
	-INTEL LAN CARD			
	-HDD520, 16M RAM			
JICA94016	PERSONAL COMPUTER FOR LAN SYSTEM	1 set	5 July 1994	New CAD Lab
	-DEC LPx466DX2			
	-SAMPO ALFASCAN 17" CRT			
	-INTEL LAN CARD			
	-HDD520MB, 16M RAM			
JICA94017	OPTICAL DRIVE	1 unit	5 July 1994	New CAD Lab
	-FUJITSU 3.5"128MB OPTICAL DRIVE			
JICA94018	COLOR SCANNER	1 unit	5 July 1994	New CAD Lab
	-HP SCANJET IIC			
JICA94019	LAN CARD	22 pcs	5 July 1994	New CAD Lab
	-INTEL ETHEREXPRESS COAX			
JICA94020	COMPUTER SOFTWARE		5 July 1994	New CAD Lab
	-DRAFTMAN	1 set		
	-AUTO MANAGER	1 set		
	-AUTOCAD R12 FOR WINDOWS	1 set		
	-NETWARE 3.12(50 USER LICENCE)	1 set		
JICA94021	LAN CONNECTING PARTS		5 July 1994	CAD Lab
	-NETWORK CABLE	200m		
	-BNC CONECTOR	50 pcs		
	-TERMINATOR	2 pcs		
JICA94022	ENGINEERING WORK STATION	1 set	5 July 1994	Expert Room 362
	-HP APOLLO 9000 MODEL 715/33			
	-CD ROM DRIVE			
	-CD ROM MEDIAKIT			
	-HP UX C/ANSI DEVELOPER'S BUNDLE			
	-FORTRAN/9000			
JICA94023	PERSONAL COMPUTER	1 set	5 July 1994	Expert Room 362
	-IBM PS VALUE POINT DX2-66			
	-SONY 17"COLOR CRT			
	-NETWORK ADAPTER			
	-HDD340MB, 8MB RAM			
JICA94024	COMPUTER SOFTWARE		5 July 1994	Expert Room 361
	-PC NFS 5.0	1 set		
	-VISTA EXEED	1 set		

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Deliveredddate	Place
	-WINDOWS 3.1 THAI EDITION	1 set		
	-MS WORD THAI EDITION	1 set		
	-MS EXCEL THAI EDITION	1 set		
	-ACTION 2.5 (ENGLISH)	1 set		
	-WORKS FOR WINDOWS (ENGLISH)	1 set		
	-PAGEMAKER 5.0 (ENGLISH)	1 set		
	-MATHMATICA (ENGLISH)	1 set		
	SOLAR CAR AUTO-DRIVING UNITS			
JICA94025	ULTRASONIC SENSOR, KEYENCE UD-320	3 pcs	16 March, 1995	Sensor Lab(357)
JICA94026	AMPLIFIER FOR UD-320, KEYENCE UD-300	3 sets	16 March, 1995	Sensor Lab(357)
	WITH POWER SUPPLY KZ-U2			
JICA94027	CABLE, KEYENCE UD-05	3 pcs	16 March, 1995	Sensor Lab(357)
JICA94028	PERSONAL COMPUTER, NEC-9801NS/A	1 set	16 March, 1995	Expert Room 361
	WITH TRANSFORMER			
JICA94029	EXPANSION SYSTEM	1 unit	16 March, 1995	Expert Room 361
	MICRO SCIENCE EXB98NT-91-DC12			
JICA94030	AD/DA/DIO COUNTER	1 pc	16 March, 1995	Expert Room 361
	MICRO SCIENCE MFU98-401B			
JICA94031	DC SERVO MOTER, SANYO M603T-032-L6-9	2 unit	16 March, 1995	Expert Room 361
JICA94032	BATTERY, 12V-10AH	3 pcs	16 March, 1995	Solor Car
JICA94033	SKYPORT 6A TRANSMITTER	1 pc	16 March, 1995	Solor Car
	FUTABA T6VA-FM40MHZ			
JICA94034	RECEIVER, FUTABA FP-R116FB-FM40MHZ	1 pc	16 March, 1995	Solor Car
JICA94035	HIGH TORQE SERVO, FUTABA FP-S3303	3 pcs	16 March, 1995	Solor Car
JICA94036	TRANSMITTER	1 pc	16 March, 1995	Expert Room 361
	FF7 SUPER-H, T7UHPS-FM40MHZ			
JICA94037	RECEIVER	1 pc	16 March, 1995	Expert Room 361
	FF7 SUPER-H, R137GP-FM40MHZ			
JICA94038	RATE GYRO, FP-G153BB	3 pcs	16 March, 1995	Expert Room 361
JICA94039	NICAD BATTERY, NT-8LP	2 pcs	16 March, 1995	Expert Room 361
JICA94040	NICAD BATTERY, NR-4NB	2 pcs	16 March, 1995	Solor Car
JICA94041	BATTERY CHARGER, FBC-22A(220V)	2 pcs	16 March, 1995	Solor Car
JICA94042	INPUT/OUTPUT MODULE FOR IPC620-35	1 set	23 May, 1995	Process Control
	-24VDC SOURCE OUTPUT(16pts)			Lab.
	-24VDC SOURCE OUTPUT(32pts)			
	-ANALOG OUTPUT MODULE			
	-24VDC INPUT(16PTS)			

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Delivered date	Place
	-24VDC INPUT(32PTS)			
	-24VDC SINK FAST RESPONCE INPUT(16)			
	-THERMOCOUPLE INPUT MODULE(4pts)			
	-UNIVERSAL ANALOG INPUT MODULE(8pts			
	-ISOLATE ANALOG INPUT MODULE(8pts)			
	-INPUT SIMULATOR MODULE(8pts)			
	-ABSOLUTE ENCODER MODULE			
	-HIGH SPEED COUNTER MODULE			
	-SERIAL INPUT/OUTPUT MODULE(SIOM)			
	-I/O RACK POWER SUPPLY MODULE			
	-621 I/O FULL LACK			
	-16 POINT I/O TERMINAL BLOCK SET			
	-32 POINT I/O TERMINAL BLOCK SET WITH LED			
	-THERMOCOUPLE I/P TERMINAL BLOCKSET			
JICA94043	MICROPAK 5 DATA PROCESSOR		16 June, 1995	Metrology LAB.
	-MITSUTOYO 264-135E MPK5	1 unit		
	-CONNECTING CABLE	2 pcs		
JICA94044	DATA PROCESSOR FOR SMALL TOOLS		16 June, 1995	Metrology LAB.
	-MITSUTOYO 264-503E/DP-1HS	1 unit		
	-CONNECTING CABLE	2 pcs		
JICA94045	LASER SCAN MICROMETER		16 June, 1995	Metrology LAB.
	-MEASURING UNIT 544-811 FOR LSM301	1 unit		
	-DISPLAY UNIT 544-053 FOR LSM-3100	1 unit		
	-THERMAL PRINTER 956538	1 unit		
JICA94046	PROFILE PROJECTOR		16 June, 1995	Metrology LAB.
	-MITSUTOYO 302-926E MODEL PJ303-100	1 unit		
	-OBLIQUE REFLECTION MIRROR (10X)	1 pc		
	-MACHINE STAND 172-267	1 pc		
JICA95047	PERSONAL COMPUTER FOR CAD SYSTEM	40 set	8 Jan. 1996	New CAD Lab
	-AT&T PC MODEL:GLOBALYST 620 540MB HDD, 16MB RAM			
JICA95048	PERSONAL COMPUTER FOR CAD SYSTEM	1 set	8 Jan. 1996	New CAD Lab
	-DECpc MODEL:VENTURIS FP 5100 1GB SCSI HDD, 40MB RAM, CD-ROM			
JICA95049	MONITOR FOR PERSONAL COMPUTER	41 set	8 Jan. 1996	New CAD Lab
	-SAMPO 17" CRT MODEL:1788BE			
JICA95050	PRINTER	2 sets	8 Jan. 1996	New CAD Lab
	-HP LASER JET 4V			
JICA95051	PLOTTER	1 set	8 Jan. 1996	New CAD Lab
	-HP DESIGN JET 600			
JICA95052	HP JET DIRECT CARD MODEL:J2550A	3 sets	8 Jan. 1996	New CAD Lab
JICA95053	LAN CADR	21 pcs	8 Jan. 1996	New CAD Lab
	-INTEL ETHER EXPRESS PRO			

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Delivered date	Place
JICA95054	HUB	2 pcs	8 Jan. 1996	New CAD Lab
	-3COM LINKBUILDER FMS 24 PORT			
JICA96055	SOFTWARE		15 Jan. 1996	Expert Room 361
	-SMART CAM RORM MACHINING FOR WIN	1 set		
	-SMART CAM AUTOCAD CONNECTION FOR WIN	1 set		
JICA96056	PERSONAL COMPUTER FOR SMART CAM	1 set	14 March 1996	CNC Lab
	-DEC VENTURIS 575			
	-CPU PENTIUM 120MHz			
	-MRMORY 40MB			
	-HARDDISK 1.2GB			
	-SONY 20" COLOR MONITOR			
JICA96057	MAGNET STAND	10 set	12 JULY, 1996	Sensor Lab(357)
	C2-80			
JICA96058	FREQUENCY SHIFTER	1 pc	12 JULY, 1996	Sensor Lab(357)
	S-210-633			
JICA96059	FREQUENCY SHIFT DRIVER		12 JULY, 1996	Sensor Lab(357)
	SD-310	1 pc		
	RP-SC-001	1 pc		
JICA96060	PHASE METER	1 pc	12 JULY, 1996	Sensor Lab(357)
	LMP-107A			
JICA96061	PINHOLE POSITIONER	2 pcs	12 JULY, 1996	Sensor Lab(357)
	FP-5M			
JICA96062	POLARIZER HOLDER	4 pcs	12 JULY, 1996	Sensor Lab(357)
	Σ-58M-(30)			
JICA96063	MIRROR HOLDER	2 pcs	12 JULY, 1996	Sensor Lab(357)
	Σ-47-30M			
JICA96064	FIBER OPTIC CHUCK HOLDER	2 pcs	12 JULY, 1996	Sensor Lab(357)
	Σ-60-2			
JICA96065	MIRROR HOLDER	2 pcs	12 JULY, 1996	Sensor Lab(357)
	Σ-47-30M			
JICA96066	AUTOMATIC STAGE	1 pc	12 JULY, 1996	Sensor Lab(357)
	MINI-60X			
JICA96067	STAGE CONTROLLER	1 pc	12 JULY, 1996	Sensor Lab(357)
	MINI-5P			
JICA96068	XY TABLE	1 set	12 JULY, 1996	Lasor Lab(312)
	-MECHANICAL STAGE SYSTEM PS-120E-XY			
	-PROGRAM CONTROLLER CAT-II			
	-PULSE MOTOR DRIVER PACK SD-P			
	-TRANSFORMER			

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Delivered date	Place
	-MANUAL (English)			
JICA96069	PERSONAL COMPUTER	1 set	12 JULY, 1996	Sensor Lab(357)
	-WORKGROUP SERVER 9150/120			
	-KEYBOARD			
	-17" COLOR DISPLAY 1710AV			
	-COLOR PRINTER APPLE COLOR STYLE			
	WRITER RPO			
JICA96070	FA PROGRAMMING SYSTEM	1 set	12 JULY, 1996	CNC Room(314)
	-FANUC SYSTEM P-Model H			
	-Quick FAPT MILL-II			
	-FAPT Cut			
	-FAPT Turn			
	-FAPT Digitizer			
	-Symbolic FAPT Turn			
	-Tablet(A3)			
	-Handy File (with AC Adapter)			
	-PRINTER			
	-FACT Cad Link-II			
JICA96071	HE-NE LASER		11 Oct. 1996	Sensor Lab(357)
	GLG57730	1 pc		
	POWER SUPPLY GLS5732	1 pc		
JICA96072	PHOTO-MULTIPLIER TUBE		11 Oct. 1996	Sensor Lab(357)
	R636-10	4 pc		
JICA96073	SOCKET		11 Oct. 1996	Sensor Lab(357)
	E7717-500	4 pc		
JICA96074	POWER SUPPLY		11 Oct. 1996	Sensor Lab(357)
	C3350			
JICA96075	FUZZY CONTROL UNIT	1 set	11 Oct. 1996	Industrial
	FC-201			Electronic(353)
JICA96076	CCD CAMERA		11 Oct. 1996	Sensor Lab(357)
	CC CAMERA C3077-51	1 pc		
	AC ADAPTER A3472-51	1 pc		
	C MOUNT LENS A3748-03	1 pc		
JICA96077	VIDEO MONITOR	1 pc	11 Oct. 1996	Sensor Lab(357)
	PM127A with Cable			
JICA96078	VIDEO PRINTOR		11 Oct. 1996	Sensor Lab(357)
	UP-890CE	1 pc		
	BNC-BNC CABLE	3 pc		
	VIDEO PRINTOR PAPER UPP-110S	6 pc		
JICA96079	GRAPHIC PROCESSING BOARD		11 Oct. 1996	Sensor Lab(357)
	IQ-V55	1 pc		
JICA96080	GRAPHIC PROCESSING SOFTWARE		11 Oct. 1996	Sensor Lab(357)
	IPLAB SPECTRUM-IQV	1 pc		

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Deliveredddate	Place
JICA96081	LASER PROCESSING SYSTEM	1 set	11 Oct. 1996	Lasor Lab(312)
	YAGLASER 8100MQ			
	PROCESSING OPTICAL UNIT LBD-700			
	STAND			
	SUPPLIES			
	ACCESSORIES			
JICA96082	MAGNETIC FLOAT CONTROL SYSTEM	1 set	6 Nov. 1996	Expert room 362
	-MAIN CONTROL UNIT			
	-PERSONAL COMPUTER			
	-POWER SUPPLY			
	-LCZ METER			
	-DIGITAL MULTIMETER			
	-OPTIONAL PARTS			
JICA97083	UNIT COOLER FOR LASER PROCESSING	1 unit	28 Jan. 1997	Lasor Lab(312)
	SYSTEM RKL-2200V-C			
JICA97084	STANDARD ACCESSORIE FOR UNIT COOLER	1 set	28 Jan. 1997	Lasor Lab(312)
	-FAN			
	-PUMP			
	-FILTER			
	-MAGNET SWITCH FOR PUMP			
	-THERMAL RELAY FOR PUMP			
	-MAGNET SWITCH FOR COMPRESSOR			
	-THERMAL RELAY FOR COMPRESSOR			
JICA97085	BYPASS VALVE(DRAINAGE) FOR UNIT	1 pc	28 Jan. 1997	Lasor Lab(312)
	COLLER			
JICA97086	TRANSFORMER(10KVA) FOR UNIT COOLER	1 pc	28 Jan. 1997	Lasor Lab(312)
JICA97087	PERSONAL COMPUTER"WINWAY P/166"	5 sets	14 March 1997	CNC Lab
	-CPU intel pentium 166Mhz			
	-64MB EDO-RAM			
	-CACHE MEMORY 256KB			
	-3.5"FDD			
	-2.1GB HDD			
	-S3 TRI064 VIDEO ADAPTER			
	-8X CD-ROM DRIVE			
	-104 KEYBOARD			
	-MOUSE			
	-NRTWORK INTERFACE			
	-21"EIZO FLEXSCAN COLOR MONITOR			
	-WINDOWS NT4.0 Pre-installed with licence			
JICA97088	A3 SIZE COLOR SCANNER	1 set	14 March 1997	CNC Lab
	-SCANNER UMAX COLOR IMAGE			
	-SCSI INTERFACE CARD			
	-SCSI CABLE			
JICA97089	COLOR PRINTER	1 set	14 March 1997	CNC Lab

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Delivered date	Place
	-EPSON STYLUS COLOR 200			
JICA97090	B4 SIZE LASER PRINTER	1 set	14 March 1997	CNC Lab
	-HP LASER JET 4V			
JICA97091	SOFTWARE	5 sets	14 March 1997	CNC Lab
	-MECHANICAL DESKTOP FOR WINDOWS NT			
JICA97092	SOFTWARE	5 sets	14 March 1997	CNC Lab
	-HYPER MILL V3 FOR WINDOWS NT			
JICA97093	SOFTWARE	1 set	14 March 1997	CNC Lab
	-MS VISUAL C++ PRO EDITION FOR			
	WINDOWS NT			
JICA97094	UPS 500VA POWER COM	5 pcs	14 March 1997	CNC Lab
JICA97095	PERSONAL COMPUTER"IBM PC140"	20 set	26 March 1997	Mechatro Lab(5F
	-CPU intel pentium 100Mhz			
	-16MB RAM			
	-CACHE MEMORY 256KB			
	-3.5"FDD			
	-850MB HDD			
	-CIRCUS5436 VIDEO ADAPTER			
	-8X CD-ROM DRIVE			
	-104 KEYBOARD			
	-MOUSE			
	-POWER CORD			
	-17"EIZO FLAT SCREEN COLOR MONITOR			
	-WINDOWS 95 THAI Pre-installed			
JICA97096	SOFTWARE	20 set	26 March 1997	Mechatro Lab(5F
	-AUTO CAD R.13(CD-ROM)			
JICA97097	SOFTWARE	42 set	25 March 1997	New CAD Lab
	-MS WINDOWS 95 THAI UPG (CD ROM)			
	-MS WINDOWS 95 THAI UPG (41 USERS			
	LICENCE)			
JICA97098	ENGINEERING WORKSTATION for CAD/CAM	1 set	28 May 1997	CAM/CAE Lab(1F)
	POWER STATION 42T			
	-INTEGRATED ETHERNET CONTROLLER	(1)		
	-INTEGRATED SCSI-2 CONTROLLER	(1)		
	-3.5"2.88MB DISK DRIVE	(1)		
	-8X SPEED SCSI-2 CD-ROM	(1)		
	-POWER GXT500D	(1)		
	-2.2 GB HARD DISK DRIVE	(1)		
	-P200 COLOR MONITOR	(1)		
	-MAINTENANCE PACKAGE	(1)		
	-DIAGOSTIC DISKETTES	(1)		
	-16MB SIMM	(1)		
	-ETHERNET THIN CABLE TRANSCEIVER	(1)		
	-13W3 TO 13W3 DISPLAY CABLE	(1)		
	-SOFTWARE PRELOADED	(1)		
	-ULTIMEDIAL AUDIO ADAPTER	(1)		

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Delivered date	Place
	-KEYBOARD	(1)		
	-MOUSE	(1)		
	-1.2GB 1/4" TAPE DRIVE	(1)		
	-INTEGRATED SCSI-2 CABLE	(1)		
	-AVX V4.1(SYSTEM SOFTWARE)	(1)		
	-PEX & PHIGS V4.1(SYSTEM SOFTWARE)	(1)		
	-BASIC MRM SPO CD ROM	(1)		
JICA97099	ENGINEERING WORKSTATION for 2D/3D	1 set	28 May 1997	CAM/CAE Lab(1F)
	POWER STATION 25T			
	-INTEGRATED ETHERNET CONTROLLER	(1)		
	-INTEGRATED SCSI-2 CONTROLLER	(1)		
	-1GB SCSI-2 DISK DRIVE(3.5")	(1)		
	-3.5"2.88MB DISK DRIVE	(1)		
	-POWER GXT500D	(1)		
	-2.2 GB HARD DISK DRIVE	(1)		
	-P200 COLOR MONITOR	(1)		
	-MAINTENANCE PACKAGE	(1)		
	-DIAGOSTIC DISKETTES	(1)		
	-16MB SIMM	(1)		
	-ETHERNET THIN CABLE TRANSCEIVER	(1)		
	-13W3 TO 13W3 DISPLAY CABLE	(1)		
	-SOFTWARE PRELOADED	(1)		
	-80 MHz POWER PC 601	(1)		
	-ULTIMEDIAL AUDIO ADAPTER	(1)		
	-KEYBOARD	(1)		
	-MOUSE	(1)		
	-AVX V4.1(SYSTEM SOFTWARE)	(1)		
	-PEX & PHIGS V4.1(SYSTEM SOFTWARE)	(1)		
	-BASIC MRM SPO CD ROM	(1)		
JICA97100	CAM/CAE SOFTWARE	1 set	28 May 1997	CAM/CAE Lab(1F)
	CATIA SOLUTION V4			
	-SURFACED PART DESIGN CONFIG.	(1)		
	-MANUFACTURING INFRASTRUCTURE PRD.	(1)		
	-MULTIPLE AXIS MILLING PRODUCT	(1)		
	-LATHE PRODUCT	(1)		
	-MILLING ANALYSIS PRODUCT	(1)		
	-ROBOT & CONTROLLER DEF. PRODUCT	(1)		
	-CELL DESIGN & ROBOT PROG. PRODUCT	(1)		
	-ANALYSIS INFRASTRUCTURE PRODUCT	(1)		
	-SCIENTIFIC PRESENTATION MANAGER	(1)		
	PRODUCT	(1)		
	-FINITE ELEMENT MODELER PRODUCT	(1)		
	-ELFINI SOLVER PRODUCT	(1)		
JICA97101	2D/3D CAD SOFTWARE	1 set	28 May 1997	CAM/CAE Lab(1F)
	CATIA SOLUTION V4			
	-MECH ADV. ASSEMBLE DESIGN CONFIG.	(1)		
	-SYSTEMSOFTWARE ANNUAL LICENCE	(1)		
	-RESOURCE LICENSE MANAGER FOR	(1)		
	SHARING SOFTWARE LICENSE			
JICA97102	POCKET COMPUTER	20 set	28 May 1997	MECHA. ENG. DEPT.
	-SHARP PC-E500S			

LIST OF MAJOR EQUIPMENT PROVIDED BY JICA

Code	Name of Equipment	Qty.	Delivered date	Place
JICA97103	AIR PRESSURE CONTROL APPARATUS	1 set	30 July 1997	
	-LU-AC201	(1)		
	-MOTOR	(1)		
	-AIR SUPPLY EQUIPMENT	(1)		
	-I/O PRO	(1)		
JICA97104	CHARGER AMPLIFIER	1 set	30 July 1997	
	-CA2000	(1)		
	-TRANSFORMER	(1)		
JICA97105	DIGITAL MULTIMETER	5 set	30 July 1997	Mechatro Lab(5F
	-VOAC7412	(5)		
	-SHEET TYPE THERMOCOPLE	(3)		

4-2. Equipment carried with experts

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
JEXPERT93001	Tomoyuki IRIE	COPIER	1 unit	26 July 1993	EXPERT ROOM 361
	(Coordinator)	-Canon NP-2020 Copier			
JEXPERT93002	Inosuke MORI	PERSONAL COMPUTER AND PRINTER	1 set	4 August 1993	EXPERT ROOM 361
	(Chief Advisor)	,SOFTWARE			
		MAT 486DX-33C			
		-14"SVGA CRT			
		-120MB HDD			
		STAR PRINTER XB2425			
		IBM DOS/V Ver5.02			
		ICHITARO DASH			
		LOTUS 123 NOTE			
JEXPERT93003	Masazumi KUMAGAI	Z80 CROSS ASSEMBLER	5 set	26 Sep. 1993	MICRO COM.LAB
	(Microcomputer)	-3.5" 5"FLOPPY DISK			
		-INSTRUCTION MANUAL	1 set		MICRO COM.LAB
JEXPERT93004		PLASTIC OPTICAL FIBER	1 set		COMMUNICATION LAB.
		ASSEMBLING KIT			
JEXPERT93005		DOWN TRANSFORMER FOR ABOBE	1 set		COMMUNICATION LAB.
		ASSEMBLING KIT			
JEXPERT93006		BOOKS	22 vols		EXPERT ROOM 361
JEXPERT93007		1/4W CARBON RESISTOR	1 set		EXPERT ROOM 361
		169-KINDS(50pcs/set)			
JEXPERT93008		CERAMIC CONDENSER	1 set		EXPERT ROOM 361
		55-KINDS(10pcs/set)			
JEXPERT93009		MYLER CONDENSER	1 set		EXPERT ROOM 361
		33-KINDS(10pcs/set)			
JEXPERT93010		ELECTROLYSIS CONDENSER	1 set		EXPERT ROOM 361
		55-KINDS(10pcs/set)			
JEXPERT93011		COAXIAL CONNECTOR	10 pcs		MICRO COM.LAB.
		BNC-TA-JPJ			
JEXPERT93012		JAMPER WIRE CP-002	1 set		EXPERT ROOM 361
JEXPERT93013		JAMPER KITS CP-012	1 set		EXPERT ROOM 361
JEXPERT93014		BNC-BNC COAXIAL CABLE 1m	10 pcs		MICRO COM.LAB.
JEXPERT93015		BNC-MINOMUSHI COAXIAL CABLE	10 pcs		MICRO COM.LAB.
JEXPERT93016		VZ EDITOR	1 pc		EXPERT ROOM 361
JEXPERT93017		TOOL SETS ENGINEER:KS-06	2 set		EXPERT ROOM 361

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qtv.	Delivered date	Place
JEXPERT93018	Masaaki KUDO	OPTICAL FIBER CABLE	1,000m	26 Sep. 1993	COMMUNICATION LAB.
	(Sensor Technology)	G.50/125 1001			
JEXPERT93019		OPTICAL FIBER CABLE	1,000m		COMMUNICATION LAB.
		G.50/125 3005			
JEXPERT93020		OPTICAL FIBER CUTTER CT-02	1 pc		COMMUNICATION LAB.
JEXPERT93021		STRIPPER JS-01	1 pc		COMMUNICATION LAB.
JEXPERT93022		OBJECT LENS OB-5(X5)	2 pcs		COMMUNICATION LAB.
JEXPERT93023	Inosuke MORI	BOOKS	46 vols	26 Nov. 1993	EXPERT ROOM 361
	(Chief Advisor)				
JEXPERT93024	Kensuke HASEGAWA	DC SERVO MOTER	1 pc	13 Dec. 1993	SOLAR CAR LAB.
	(Robotics)	-UGRAMEM 40MA207			
JEXPERT94025	Tadayoshi FURUYA	PERSONAL COMPUTER	1 set	22 March 1994	EXPERT ROOM 361
	(Automatic Control)	-DECpc LPv466DX2			
JEXPERT94026		PRINTER	1 unit		EXPERT ROOM 361
		-Canon BJ-230			
JEXPERT94027	Katsumi ISHIHARA	HANDY DIGITAL GAUGE (SMB-10A)	1 pc	1 April 1994	SENSOR LAB
JEXPERT94028	(Instrumentation)	CABLE U-16	1 pc		SENSOR LAB
JEXPERT94029		GAUGE KFG-20-120-C1-11 N30C2	2 pcs		SENSOR LAB
		KFG-10-120-C1-11 N30C2	2 pcs		SENSOR LAB
		KFG-5-120-C1-11 N30C2	2 pcs		SENSOR LAB
		KFG-10-120-D16-11 N30C2	2 pcs		SENSOR LAB
		KFG-5-120-D16-11 N30C2	2 pcs		SENSOR LAB
JEXPERT94030		LEAD WIRE L-5(100m)	1 pc		SENSOR LAB
JEXPERT94031		STICK GAUGE	1 set		SENSOR LAB
JEXPERT94032		STICK GAUGE R	1 set		SENSOR LAB
JEXPERT94033		ADHESIVE PC-6	2 pcs		SENSOR LAB
JEXPERT94034		ADHESIVE PC-28	2 pcs		SENSOR LAB
JEXPERT94035		COATING MATERIAL C-1A	2 pcs		SENSOR LAB
JEXPERT94036		TOOLS SET No.700S	1 set		EXPERT ROOM 361
JEXPERT94037	Shuzo OKAZAKI	PERSONAL COMPUTER	1 pc	2 May 1994	EXPERT ROOM 361

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
	(CAD)	-IBM Think Pad 220			
		-EXTENTION MEMORY 4MB	1 pc		EXPERT ROOM 361
JEXPERT94038		WINDOWS 3.1 Japanese	1 set		EXPERT ROOM 361
JEXPERT94039		MS-EXCEL 5.0 Japanese	1 set		EXPERT ROOM 361
JEXPERT94040		MS-WORD 5.0 Japanese	1 set		EXPERT ROOM 361
JEXPERT94041		ENERGY INSPECTION APPARATUS	1 pc		MECHATRONICS DEP.
		FOR CONDENSOR			
JEXPERT94042		VARIABLE RESISTOR RE-T2	1 pc		MECHATRONICS DEP.
JEXPERT94043	Yoshio SORIMACHI	TOOL SET S-10	2 sets	2 May 1994	EXPERT ROOM 361
JEXPERT94044	(Microcomputer)	UNVERSAL PRINTED CIRCUIT BOARD	10 pcs	-	EXPERT ROOM 361
		CPU-131			
JEXPERT94045		I.C.TEST CRIP STC-16A	2 pcs		EXPERT ROOM 361
JEXPERT94046		I.C. TC4011BP	10 pcs		EXPERT ROOM 361
		TC4001BP	10 pcs		EXPERT ROOM 361
		TC4049BP	10 pcs		EXPERT ROOM 361
		MC4013BP	10 pcs		EXPERT ROOM 361
		TC4027BP	10 pcs		EXPERT ROOM 361
JEXPERT94047		OP AMPLIFIER LM741CH	10 pcs		EXPERT ROOM 361
		M1458	10 pcs		EXPERT ROOM 361
		MPC324	10 pcs		EXPERT ROOM 361
JEXPERT94048		I.C.SOKET DICF-E8	20 pcs		EXPERT ROOM 361
		DICF-E14	20 pcs		EXPERT ROOM 361
		DICF-E16	20 pcs		EXPERT ROOM 361
JEXPERT94049		BISS/NUT 3¢x10mm	100 pcs		EXPERT ROOM 361
		3¢x30mm	100pcs		EXPERT ROOM 361
		NUT 3mm	200pcs		EXPERT ROOM 361
		FLAT WASHER 3mm	400pcs		EXPERT ROOM 361
		SPRING WASHER 3mm	200pcs		EXPERT ROOM 361
JEXPERT94050		PERSONAL COMPUTER	1 pc		EXPERT ROOM 361
		-IBM Think Pad 220			
		-EXTENTION MEMORY 4MB	1 pc		EXPERT ROOM 361
JEXPERT94051		TRANSFORMER MTB-100 220V/100V	1 pc		EXPERT ROOM 361
JEXPERT94052	Tomoju OOIZUMI	HANDY PERSONAL COMPUTER	1 pc	2 May 1994	EXPERT ROOM 361
	(Digital Control)	YHP HP100XL			
JEXPERT94053		CONECTIVITY PACK YHP F1021A	1 pc		EXPERT ROOM 361

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
JEXPERT94054		HANDY BOOK PLAYER SONY DD-22	1 pc		EXPERT ROOM 361
JEXPERT94055		HANDY BOOK PLAYER SONY DD30DBZ	1 pc		EXPERT ROOM 361
JEXPERT94056		CD FOR HANDY BOOK PLAYER	1 set		EXPERT ROOM 361
JEXPERT94057	Inosuke MORI	BOOKS	74 vols	3 May 1994	EXPERT ROOM 361
	(Chief Advisor)				
JEXPERT94058	Katsumi ISHIHARA	BOOK	1 vol	27 June 1994	EXPERT ROOM 361
	(Instrumentation)				
JEXPERT94059	Tomoju OOIZUMI	DISK CARD(F1012A)	1 pc	27 June 1994	EXPERT ROOM 361
	(Digital Control)				
JEXPERT94060	Shuzo OKAZAKI	POCKET COMPUTER(SHARP PC-E650)	42 pcs	27 June 1994	MECHATRONICS DEP.
	(CAD)	-MANUAL FOR PC-E500	42 vols		
JEXPERT94061		PRINTER(SHARP CE-126P)	8 pcs		
JEXPERT94062	Tadayoshi FURUYA	PERSONAL COMPUTER		27 June 1994	EXPERT ROOM 362
	(Automatic Control)	-MACHINTOSH 8100/80V)	1 pc		
		-DISPLAY	1 pc		
		-KEY BOARD	1 pc		
JEXPERT94063		BOOKS	2 vols		
JEXPERT94064	Inosuke MORI	BORDA'S PENDULUM (BP-40)	2 sets	27 June 1994	PHYSICS LAB. 511
JEXPERT94065	(Chief Advisor)	YOUNG'S MODULUS APPARATUS	2 sets		PHYSICS LAB. 511
		EWING'S PATTERN(TY-400)			
JEXPERT94066		TORSIONAL RIGIDITY APPARATUS	2 sets		PHYSICS LAB. 511
		(NP-190)			
JEXPERT94067		ANGULAR MOMENTUM KIT(AE-420)	1 set		PHYSICS LAB. 511
JEXPERT94068		DEMONSTRATOR OF NEWTON'S LAWS	1 set		PHYSICS LAB. 511
		OF MOTION(NO. 121-780)			
JEXPERT94069		ELECTRIC RESISTANCE COMPARISON	1 set		PHYSICS LAB. 511
		APPARATUS(RSC-5)			
JEXPERT94070		RESISTANCE MEASURING EXPERIMENT	1 set		PHYSICS LAB. 511
		APPARATUS(ST-103A)			
JEXPERT94071		ELECTRO-MAGNETIC INDUCTION	1 set		PHYSICS LAB. 511
		EXPERIMENT APPARATUS(EIS-15)			
		-TRANSFORMER(220V.-100V.)			

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qtv.	Delivered date	Place
JEXPERT94072	Shoji KINOSHITA	PERSONAL COMPUTER	1 set	2 August 1994	EXPERT ROOM 361
	(CAM/CIM)	-DECpc LPv+466DX2			
		-340 MB HDD			
		-SAMPO 17" CRT			
JEXPERT94073		PRINTER	1 set	2 August 1994	EXPERT ROOM 361
		-HP DESKJET 1200C/PS			
JEXPERT94074		ADITIONAL PARTS FOR LAN SYSTEM	1 set	2 August 1994	CAD LAB. 382
		-SEGATE 1.05 GB SCSI HDD			
		-16MB MEMORY			
JEXPERT94075	Inosuke MORI	THERMO ELECTROMOTIVE FORCE	1 set	7 October 1994	PHYSICS LAB. 511
	(Chief Advisor)	MEASURING APPARATUS			
		-SHIMAZU ST-105A			
JEXPERT94076		ELECTRO-MAGNETIC FORCE MEASURING	1 set	7 October 1994	PHYSICS LAB. 511
		APPARATUS			
		-SHIMAZU KEM-5			
JEXPERT94077		OSCILOSCOPE JDE-75N	2 pcs	7 October 1994	PHYSICS LAB. 511
JEXPERT94078		VOLT SLIDER SN-260-5	2 pcs	7 October 1994	PHYSICS LAB. 511
JEXPERT94079		SLIDE RHEOSTAT RE-5	2 pcs	7 October 1994	PHYSICS LAB. 511
JEXPERT94080		DC VOLTMETER HQ-300	2 pcs	7 October 1994	PHYSICS LAB. 511
JEXPERT94081		AC VOLTMETER HQ-150	2 pcs	7 October 1994	PHYSICS LAB. 511
JEXPERT94082		DC AMMETER HQ-5	2 pcs	7 October 1994	PHYSICS LAB. 511
JEXPERT94083		AC AMMETER HQ-10	2 pcs	7 October 1994	PHYSICS LAB. 511
JEXPERT94084		DC VOLTMETER MP-41	10 pcs	7 October 1994	PHYSICS LAB. 511
JEXPERT94085		AC VOLTMETER RP-41	12 pcs	7 October 1994	PHYSICS LAB. 511
JXEPERT94086	Norio FURUSE	MODEM			
	(Microcomputer)	-PANASONIC T0705B	1 set	14 December 1994	EXPERT ROOM 361
JEXPERT94087		MODEM			
		-I/O DATA PCF-144	1 set	14 December 1994	EXPERT ROOM 361
JEXPERT94088		SOFTWARE			
		-MICROSOFT OFFICE(JAPANESE)	1 pc	14 December 1994	EXPERT ROOM 361
JEXPERT94089		UPS			
		-VICTRON MICRO 110	1 pc	16 December 1994	EXPERT ROOM 361
JEXPERT95090	Yoshio SORIMACHI	IN-OUT PUT BOARD DT31-EZ	2 pcs	1 March 1995	EXPERT ROOM 362
JEXPERT95091	(Microcomputer)	SCREW TERMINAL STP-EZ	2 pcs	1 March 1995	EXPERT ROOM 362

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
JEXPERT95092		SERVO MOTER SSPS105	4 pcs	1 March 1995	EXPERT ROOM 362
JEXPERT95093	Yasuaki HIROO	EDGE TOP POSITIONING MEASURE	1 pc	1 May 1995	CNC LAB.
JEXPERT95094	(CAD)	POSITIONING MEASURE	2 pcs	1 May 1995	CNC LAB.
JEXPERT95095		MODELING WAX	4 box	1 May 1995	CNC LAB.
JEXPERT95096		FACE MILL	1 pc	1 May 1995	CNC LAB.
JEXPERT95097		ULTRA HARD TIP	10 pcs	1 May 1995	CNC LAB.
JEXPERT95098		ULTRA HARD BALL MILL	4 pcs	1 May 1995	CNC LAB.
JEXPERT95099		END MILL	3 pcs	1 May 1995	CNC LAB.
JEXPERT95100	Toshiya SAKABE	PERSONAL COMPUTER			
	(Sensor Technology)	-APPLE POWERBOOK 520C	1 set	1 May 1995	EXPERT ROOM 361
JEXPERT95101		SOFTWARE			
		-EG WORD V6.0	1 set	1 May 1995	EXPERT ROOM 361
JEXPERT95102		SOFTWARE			
		-MS WORD V6.0 for MAC	1 set	1 May 1995	EXPERT ROOM 361
JEXPERT95103		SOFTWARE			
		-ALDUS SUPER PAINT 3.5J for MAC	1 set	1 May 1995	EXPERT ROOM 361
JEXPERT95104		SOFTWARE			
		-MS EXCEL 5.0J for MAC	1 set	1 May 1995	EXPERT ROOM 361
JEXPERT95105		SOFTWARE			
		-FILE MAKER PRO 2.1	1 set	1 May 1995	EXPERT ROOM 361
JEXPERT95106	Shuzo OKAZAKI	SOFTWARE			
	(CAD)	-ADOBE PHOTOSHOP 3.0J for MAC	1 set	10 May 1995	EXPERT ROOM 361
JEXPERT95107		SOFTWARE			
		-ADOBE ILLUSTRATOR 5.0 for MAC	1 set	10 May 1995	EXPERT ROOM 361
JEXPERT95108		SOFTWARE			
		-ALDUS PAGE MAKER 5.0J for MAC	1 set	10 May 1995	EXPERT ROOM 361
JEXPERT95109		SOFTWARE			
		-CLARIS WORKS 2.0V2 for MAC	1 set	10 May 1995	EXPERT ROOM 361
JEXPERT95110		SOFTWARE			
		-MAC DRAW PRO 1.5V2	1 set	10 May 1995	EXPERT ROOM 361
JEXPERT95111		COLOR IMAGE SCANNER			
		-EPSON GT-8500ART	1 set	10 May 1995	EXPERT ROOM 362
JEXPERT95112	Tomoyuki IRIE	COPIER			

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
	(Coordinator)	-MINOLTA EP-1080	1 unit	10 May 1995	EXPERT ROOM 361
JEXPERT95113		AUTOMATIC DOCUMENT FEEDER			
		-MINOLTA AF-3	1 unit	10 May 1995	EXPERT ROOM 361
JEXPERT95114		10-BIN SORTER			
		-MINOLTA S-104	1 unit	10 May 1995	EXPERT ROOM 361
JEXPERT95115	Yoshio SORIMACHI	PERSONAL COMPUTER			
	(Microcomputer)	-DELL OMNI PLEX 590	1 set	25 May 1995	EXPERT ROOM 362
JEXPERT95116		LASER PRINTER			
		-CANON LBPB406EII	1 set	25 May 1995	EXPERT ROOM 362
JEXPERT95117		MODEM			
		-MD144XT10V-W	1 set	25 May 1995	EXPERT ROOM 362
JEXPERT95118		SOFTWARE			
		-MATLAB APPLICATION	8 sets	25 May 1995	EXPERT ROOM 362
JEXPERT95119	Inosuke MORI	HARD DISK			
	Cheif Advisor)	-EXTERNAL HDD FOR HP EWS(1GB)	1 unit	13 June 1995	EXPERT ROOM 361
JEXPERT95120	Shuzo OKAZAKI	PERSONAL COMPUTER			
	(CAD)	-DELL OMNI PLEX 590	1 unit	29 June 1995	EXPERT ROOM 362
JEXPERT95121		LASER PRINTER			
		-CANON LBPB406EII	1 unit	29 June 1995	EXPERT ROOM 362
JEXPERT95122	Shohei MIYAGAWA	SIMM MEMORY			
	(Robotics)	-16MB RAM for DEC PC	2 unit	10 July 1995	EXPERT ROOM 361
JEXPERT95123		SIMM MEMORY			
		-4MB RAM for IBM PC	2 unit	10 July 1995	EXPERT ROOM 362
JEXPERT95124		IDE HARD DISK			
		-525MB HDD for DEC PC	1 unit	10 July 1995	EXPERT ROOM 361
JEXPERT95125		IDE HARD DISK			
		-540MB HDD for IBM PC	1 unit	10 July 1995	EXPERT ROOM 362
JEXPERT95126		GP-IB CARD			
		-HP-IB 823358	1 set	10 July 1995	EXPERT ROOM 362
JEXPERT95127	Shoji YAMAUCHI	POCKET COMPUTER			
	(Fluid Power Control)	-SHARP PC-E500	6 sets	28 July 1995	MECHATRONICS DEP.

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment		Qty.	Delivered date	Place
JEXPERT95128	Takehisa OHNO	SOFTWARE				
	(Fluid Power Control)	-MS WINDOWS 3.1E		1 set	31 July 1995	EXPERT ROOM 361
JEXPERT95129		SOFTWARE				
		-ICHITARO V6.0 FOR WIN		1 set	31 July 1995	EXPERT ROOM 361
JEXPERT95130		SOFTWARE				
		-HANAKO V3.1 FOR WIN		1 set	31 July 1995	EXPERT ROOM 361
JEXPERT95131	Norio FURUSE	PALAREL I/O CARD	AT-03	2 pcs	3 August 1995	ROBOTICS LAB
JEXPERT95132	(Microcomputer)	A/D CONVERTER CARD	AT-14	1 pce	3 August 1995	ROBOTICS LAB
JEXPERT95133		D/A CONVERTER CARD	A-15	1 pce	3 August 1995	ROBOTICS LAB
JEXPERT95134		ENCORDER COUNTER	UTC-ATEN	1 pce	3 August 1995	ROBOTICS LAB
JEXPERT95135		RELAY CARD	AISA-R08	1 pce	3 August 1995	ROBOTICS LAB
JEXPERT95136		AC/DC POWER SUPPLY	200V/+5V	1 pce	3 August 1995	ROBOTICS LAB
JEXPERT95137		AC/DC POWER SUPPLY	200V/+12V	2 pcs	3 August 1995	ROBOTICS LAB
JEXPERT95138		ENCORDER	TS5307N510	1 pce	3 August 1995	ROBOTICS LAB
JEXPERT95139		ENCORDER	TS5320N510	1 pce	3 August 1995	ROBOTICS LAB
JEXPERT95140		DC MORTER	DME3456HPB	2 pcs	3 August 1995	ROBOTICS LAB
JEXPERT95141		DC MORTER GEAR HEAD	6H600	2 pcs	3 August 1995	ROBOTICS LAB
JEXPERT95142		STEPPING MOTER UNIT	UMD-245-A	1 pce	3 August 1995	ROBOTICS LAB
JEXPERT95143		DIGITAL MULTI METER	754401	1 pce	3 August 1995	EXPERT ROOM 361
		SOFT WARE				
JEXPERT95144		-OS2 WARP V3 (Japanese)		1 pce	3 August 1995	EXPERT ROOM 361
JEXPERT95145	Shoji YAMAUCHI	DC POWER SUPPLY HP6654A		1 unit	31 August 1995	EXPERT ROOM 362
	(Fluid Power Control)	-540W HP-IB PROGRAMABLE POWER				
		SUPPLY				
JEXPERT95146	Matsuyoshi OKITSU	READING TELESCOPE WITH SCALE &		1 set	25 OCTOBER 1995	PHYSICS LAB. 511
	(Dept. Management)	SUPPORT				
JEXPERT95147		ELECTRONIC COUNTER XN-10		1 set	25 OCTOBER 1995	PHYSICS LAB. 511
JEXPERT95148		SUSPENSION WIRE		2 pcs	25 OCTOBER 1995	PHYSICS LAB. 511
JEXPERT95149		STEEL BALL 3pcs/SET		1 set	25 OCTOBER 1995	PHYSICS LAB. 511
JEXPERT95150		SOFTWARE				
		-AUTO-CAD(R12J)LIBRARY Σ2(9)		1 set	25 OCTOBER 1995	EXPERT ROOM 361
JEXPERT95151		SOFTWARE				
		-WIN CAD 4 FOR PC		1 set	25 OCTOBER 1995	EXPERT ROOM 361

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
JEXPERT95152	Hitoshi ASANO	OVERDRIVE PROCESSOR(DX40DP100)	3 pcs	10 DECEMBER 1995	EXPERT ROOM 362
	(Microcomputer)				(ON PC)
JEXPERT95153		DIGITAL CAMERA(CASIO)	1 pc	10 DECEMBER 1995	EXPERT ROOM 362
JEXPERT95154		INTERFACE OF DIGITAL CAMERA	1 pc	10 DECEMBER 1995	EXPERT ROOM 362
		FOR WINDOWS(LK-1)			
JEXPERT95155		INTERFACE OF DIGITAL CAMERA	1 pc	10 DECEMBER 1995	EXPERT ROOM 362
		FOR MACINTOSH(LK-2)			
JEXPERT95156		TRANSCEIVER(CENTER COM MX60T)	1 pc	10 DECEMBER 1995	EXPERT ROOM 362
JEXPERT95157		LAN ADAPTER(RE2001 PLUS-W)	1 pc	10 DECEMBER 1995	EXPERT ROOM 362
JEXPERT95158		SOFTWARE			
		-CCT-WIN	1 set	10 DECEMBER 1995	EXPERT ROOM 362
JEXPERT95159		TWIST PAIRS CABLE	3 pcs	10 DECEMBER 1995	EXPERT ROOM 362
JEXPERT95160		SOFTWARE			
		-CENTURE NET PC/TCP VER. 5	2 sets	10 DECEMBER 1995	EXPERT ROOM 362
JEXPERT95161	Yoshikazu TAKAHASHI	ENGINE UNIT WITH CELL	2 pcs	17 MARCH 1996	MECHATRONICS DEPT.
JEXPERT95162	(Automatic Control)	AIR PUMP FKDX	1 pce	17 MARCH 1996	MECHATRONICS DEPT.
JEXPERT95163		BATTERY CHARGER II	1 pce	17 MARCH 1996	MECHATRONICS DEPT.
JEXPERT95164	Ritsu KAGAWA	MECHATRO TRAINING MATERIAL	1 set	26 MARCH 1996	EXPERT ROOM 361
	(Digital Control)	- SKY TRO			
JEXPERT95165	Shohei MIYAGAWA	PROGRAMABLE CONTROLLER	1 set	1 APRIL 1996	ROBOTICS LAB
	(Robotics)	consist of			
		-BASIC UNIT KZ-16T			
		-POWER SUPPLY UNIT KZ-U2			
		-SOFTWARE KZ-3H4			
JEXPERT95166	Toshiya SAKABE	PRINTER HP-DESKJET 850c	1 pce	1 APRIL 1996	EXPERT ROOM 362
JEXPERT95167	(Sensor Technology)	DIGITAI STORAGE SCOPE	1 pce	1 APRIL 1996	SENSOR LAB 357
		-IWATSU DS-8601A			
JEXPERT95168		THERMAL PRINTER	1 pce	1 APRIL 1996	SENSOR LAB 357
		-IWATSU SE3303			
JEXPERT95169		LOGIC PROBE	1 pce	1 APRIL 1996	SENSOR LAB 357
		-IWATSU DS-001			
JEXPERT95170	Haruaki KISHIGE	PERSONAL COMPUTER	1 set	28 APRIL 1996	EXPERT ROOM 362
	(Fluid Power Control)	-APPLE POWERBOOK 5300c/100			

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
JEXPERT96171	Kunio KAWAKATSU	TRAINING CONVEYER MODULE	1 unit	27 MAY 1996	METROLOGY LAB
	(Factory Automation)				
JEXPERT96172	Haruo TAKAHASHI	PERSONAL COMPUTER	1 set	1 JULY 1996	EXPERT ROOM 362
	(Sensor Technology)	-APPLE POWERBOOK 5300c/100			
JEXPERT96173		SOFTWARE	1 pce	1 JULY 1996	EXPERT ROOM 362
		-NISUS WRITER 4.1J			
JEXPERT96174		SOFTWARE	1 pce	1 JULY 1996	EXPERT ROOM 362
		-CLARIS WORKS PREMIUM			
JEXPERT96175	Takaharu KURODA	PERSONAL COMPUTER	1 set	1 JULY 1996	EXPERT ROOM 362
	(Robotics)	-APPLE POWERBOOK 5300c/100			
JEXPERT96176		ZIP DRIVE with SCSI ADAPTER	1 pce	1 JULY 1996	EXPERT ROOM 362
JEXPERT96177		BALL SCREW	2 pces	1 JULY 1996	ROBOTICS LAB
JEXPERT96178		DC MOTOR	2 pces	1 JULY 1996	ROBOTICS LAB
JEXPERT96179	Haruo TAKAHASHI	MICROCOMPUTER ACT-80ZII	1 pce	14 JULY 1996	SENSOR LAB 357
JEXPERT96180	(Sensor Technology)	SIRIAL I/O BOARD ACT-RST	1 pce	14 JULY 1996	SENSOR LAB 357
JEXPERT96181		KEY BOARD ACT-KEY	1 pce	14 JULY 1996	SENSOR LAB 357
JEXPERT96182	Tadayoshi FURUYA	SOFTWARE	1 set	23 JULY 1996	EXPERT ROOM 362
	(Automatic Control)	-MAPLE V			
JEXPERT96183		OVER DRIVE PROCESSOR	2 pces	23 JULY 1996	EXPERT ROOM 361
		-ODP 83MHZ S			
JEXPERT96184		SOFTWARE	1 set	23 JULY 1996	EXPERT ROOM 362
		-MS WINDOWS 95 UPG(JAPANESE)			
JEXPERT96185		SOFTWARE	1 set	23 JULY 1996	EXPERT ROOM 362
		-MS OFFICE PRO UPG			
JEXPERT96186		E-IDE HARDDISK(1GB)	1 pce	23 JULY 1996	EXPERT ROOM 361
JEXPERT96187		ZIP DRIVE(PARALLE)	1 pce	23 JULY 1996	EXPERT ROOM 361
JEXPERT96188	Tetsutaro HOSHI	CLAMP SET HL3514T	2 pces	30 JULY 1996	CNC LAB
JEXPERT96189	(CNC)	HOLDER HA40-T35	1 pce	30 JULY 1996	CNC LAB
JEXPERT96190		CHACK MCT35-32	4 pces	30 JULY 1996	CNC LAB.
JEXPERT96191		TAP CORRET	4 pces	30 JULY 1996	CNC LAB
JEXPERT96192		TAC MILL EFP4063R	1 pce	30 JULY 1996	CNC LAB

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
JEXPERT96193		HOSOI MILL HMR50-8145	1 pce	30 JULY 1996	CNC LAB
JEXPERT96194		END TIPPER SL-ECSPR-161S20	1 pce	30 JULY 1996	CNC LAB
JEXPERT96195		BIG TIPPER DBC-35-2N	1 pce	30 JULY 1996	CNC LAB
JEXPERT96196	Shoichi OKAMOTO	Upgrade MainBoard for CAD Lab.	20 set	15 October 1996	CAD LAB
	(Chief Advisor)	-CPU AMD5X86 133Mhz			
		-Cache 256Kb			
JEXPERT96197	Katsumi ISHIHARA	KANJI SERIAL PRINTER	1 set	7 January 1997	ROBOTICS LAB
	(Instrumentation)	-NEC PC-PR201GE-2			
JEXPERT96198		PARALLEL I/O BOARD	1 set	7 January 1997	ROBOTICS LAB
		-PCL-812PG			
		-PCLD780			
JEXPERT96199		ANALOG I/O BOARD	1 set	7 January 1997	ROBOTICS LAB
		-AX-5212			
JEXPERT96200	Masayuki IKEDA	"HITACHI" MODEL V-252	1 pce	27 January 1997	SENSOR LAB
	(Instrumentation)	OSCILLOSCOPE			
JEXPERT96201		"GOOD WILL" MODEL GFG-8019G	1 pce	27 January 1997	SENSOR LAB
		SWIIP FUNTION GENERAL			
JEXPERT96202		"GOOD WILL" MODEL GPR-3030	1 pce	27 January 1997	SENSOR LAB
JEXPERT96203		DC. POWER SUPPLY			
		"WAVETEK"MODEL DM-27XT	6 pce	27 January 1997	SENSOR LAB
JEXPERT96204	Tomoju OIZUMI	CIC-100 BASIC COMPUTER INTERFACE	3 pcs	31 March 1997	SENSOR LAB
JEXPERT96205	(Digital Control)	CI-13001 STEPPING MOTOR CONTROL	1 pc	31 March 1997	SENSOR LAB
		MODULE			
JEXPERT96206		CI-13002 KEY-PADMATRIX AND	1 pc	31 March 1997	SENSOR LAB
		TRAFFIC LIGHT MODULE			
JEXPERT96207		CI-13003 ADC MODULE	1 pc	31 March 1997	SENSOR LAB
JEXPERT96208		CI-13004 DAC MODULE	1 pc	31 March 1997	SENSOR LAB
JEXPERT96209		CI-18001 CIC-PSM POWER MODULE	3 pcs	31 March 1997	SENSOR LAB
JEXPERT96210	Haruaki KISHIGE	LIQID CRYSTAL DIGITAL CAMERA	1 set	11 June 1997	EXPERT ROOM 362
	(Fluid Power Control)	-QV300			
		-ADAPTER WITH TRANSFORMER			
		-SOFT WARE LS-2M			

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
		-RINK CABLE			
JEXPERT96211		VIDEO DECK	1 set	11 June 1997	EXPERT ROOM 362
		-HV MXISH			
JEXPERT96212		SOFTWARE	1 set	11 June 1997	EXPERT ROOM 362
		-MICRO AVS			
JEXPERT96213		HARD DISK	1 pc	11 June 1997	EXPERT ROOM 362
		-DSC A2000S 2GB SCSI			
JEXPERT96214	Yoshiichi YAMAMOTO	INTERFACE CARD	2 pcs	11 June 1997	EXPERT ROOM 362
	(Robotics)	-AT 25			
JEXPERT96215		INTERFACE CARD	2 pcs	11 June 1997	EXPERT ROOM 362
		-AT 15			
JEXPERT96216		INTERFACE CARD	2 pcs	11 June 1997	EXPERT ROOM 362
		-AT 03			
JEXPERT96217		INTERFACE CARD	2 pcs	11 June 1997	EXPERT ROOM 362
		-AT 24			
JEXPERT96218		INTERFACE CARD	1 pc	11 June 1997	EXPERT ROOM 362
		-AISA S14			
JEXPERT96219	Shoji YAMAUCHI	MOTER CONTROL UNIT FOR CNC	1 set	11 June 1997	EXPERT ROOM 362
	(Process Control)	-CPU			
		-POWER SUPPLY			
		-MC20			
		-32P DC INPUT			
		-MOUNT BASE			
		-16P RELAY OUTPUT			
		-COMMUNICATION CABLE			
		-32P I/O CABLE			
		-TERMINAL			
		-CABLE			
		-PROGRAMING SOFT			
		-SERVO PACK			
		-SERVO MOTER			
JEXPERT96220	Kaname SATO	ELECTRIC SLIDER	1 set	11 June 1997	EXPERT ROOM 362
	(Microcomputer)	-SPF86T10-6PD			
		-TRANSFORMER, CABLE			

LIST OF EQUIPMENT PROVIDED WITH JICA EXPERT

Code	Name of Expert	Name of Equipment	Qty.	Delivered date	Place
JEXPERT96221		ELECTRIC SLIDER	1 set	11 June 1997	EXPERT ROOM 362
		-SPF60T10-4PD			
		-TRANSFORMER, CABLE			
JEXPERT96222		ELECTRIC SLIDER	1 set	11 June 1997	EXPERT ROOM 362
		-SPF86T10-6PD			
		-TRANSFORMER, CABLE			
JEXPERT96223		BRACKET	1 set	11 June 1997	EXPERT ROOM 362
		-PAB 3			
JEXPERT96224		SERVO MOTER	2 set	11 June 1997	EXPERT ROOM 362
		-AIP030-AA2			
JEXPERT96225	Ritsu KAGAWA	TEACHING MATERIAL	1 set	15 July 1997	MECHATRO LAB 351
	(Digital Control)	-SKYTR2			
JEXPERT96226	Haruo TAKAHASHI	PERSONAL COMPUTER.	1 set	23 July 1997	
	(Sensor Technology)	-NOTEBOOK THINK PAD 380			

4-3. Equipment purchased by local cost

LIST OF EQUIPMENT PURCHASED BY JICA LOCAL COST

Code	Name of Equipment	Supplier	Qty.	Date of deliver	Place or User
JLOCAL93001	PERSONAL COMPUTER	M.A.T.Co.,Ltd.	1 set	16-Jul-93	Methology Lab
	Fujitsu MY320ST(5 MB)	Tel:261-5100			
	-CPU386SX-20MHz				
	-5Mb Ram,40Mb Harddisk				
	-14"Color CRT,Mouse				
	-Keyboard				
JLOCAL93002	PRINTER	M.A.T.Co.,Ltd.	1 unit	19-Jul-93	Expert Room(361)
	Star printer XB2425	Tel:261-5100			
	-24 Pin Dot Matrix				
JLOCAL93003	PERSONAL COMPUTER	M.A.T.Co.,Ltd.	1 set	4-Aug-93	Expert Room(361)
	Fujitsu MY320ST(1 MB)	Tel:261-5100			
	-CPU386SX-20MHz				
	-1Mb Ram,40Mb Harddisk				
	-14"Color CRT,Mouse				
	-Keyboard				
	-Printer Switch				
JLOCAL93004	AUTOMATIC DOCUMENT FEEDER	FMA Co.,Ltd.	1 unit	9-Aug-93	Expert Room(361)
	Canon ADF for NP-2020	Tel:235-0156			
JLOCAL93005	PERSONAL COMPUTER	M.A.T.Co.,Ltd.	1 set	4-Sep-93	Expert Room(361)
	Fujitsu MY320ST(1 MB)	Tel:261-5100			
	-CPU386SX-20MHz				
	-1Mb Ram,40Mb Harddisk				
	-14"Color CRT,Mouse				
	-Keyboard				
	-Printer Switch				
JLOCAL93006	SORTER	FMA Co.,Ltd.	1 unit	17-Sep-93	Expert Room(361)
	Canon MS-A1 for NP-2020	Tel:235-0156			
JLOCAL93007	PRINTER	M.A.T.Co.,Ltd.	1 unit	9-Nov-93	Expert Room(361)
	Star printer XB2425	Tel:261-5100			
	-24 Pin Dot Matrix				
JLOCAL93008	PRINTER	M.A.T.Co.,Ltd.	1 set	13-Dec-93	Expert Room(361)
	HP Laserjet 4ML	Tel:261-5100			
	-Apple Talk Cable				
JLOCAL93009	FACSIMILE	FMA Co.,Ltd.	1 unit	17-Jan-94	Expert Room(361)
	Canon T-301	Tel:235-0156			
JLOCAL94010	PERSONAL COMPUTER	M.A.T.Co.,Ltd.	1 set	19-Jan-94	Expert Room(361)
	MAT 386DX-40C	Tel:261-5100			

LIST OF EQUIPMENT PURCHASED BY JICA LOCAL COST

Code	Name of Equipment	Supplier	Qty.	Date of deliver	Place or User
	-CPU 386DX-40MHzCache128KB				
	-4MB Ram, FDD3.5"x1, 5.25"x1				
	-130MB HDD, SVGA Graphic				
	-SVGA 14" Color CRT				
	-Keyboard, Mouse				
	-DOS/V, Windows preloaded				
JLOCAL93011	PRINTER	M.A.T.Co., Ltd.	1 unit	25-Jan-94	Expert Room(361)
	Star printer XB2425	Tel:261-5100			
	-24 Pin Dot Matrix				
JLOCAL93012	TELEPHONE	F.T.Sales and	1 set	26-Jan-94	Expert Room(361)
	Mobila Cityman 200	Services Co.			
	-Battery, 800MHz, 1100MHz	Tel:279-4115			
JLOCAL93013	COLOR MONITOR	M.A.T.Co., Ltd.	1 unit	19-Feb-94	Expert Room(361)
	DEC 14"Color crt.	Tel:261-5100			
JLOCAL93014	PERSONAL COMPUTER	M.A.T.Co., Ltd.	1 set	21-Feb-94	Expert Room(361)
	DECpc LPv425SX	Tel:261-5100			
	-CPU 486SX-25MHz				
	-8MB RAM, FDD 3.5"x1				
	-170MB HDD, S3 Graphic				
	-Keyboard, Mouse				
	-DOS/V, Windows preloaded				
JLOCAL93015	COPIER	FMA Co., Ltd.	1 unit	25-Feb-94	Expert Room(361)
	Canon PC-11 Copier	Tel:235-0156			
JLOCAL93016	POCKET COMPUTER	SHARP CO., LTD.	1 unit	31-Mar-94	Expert Room(361)
	SHARP PC-E500	Tel:236-0170			
JLOCAL94017	POCKET COMPUTER	SHARP CO., LTD.	1 unit	25-Apr-94	Mr.Pramot S.
	SHARP PC-E500	Tel:236-0170			
JLOCAL94018	HARD DISK 250MB	AND COMPUTER	1 unit	25-Apr-94	Expert Room(362)
		CO., LTD.			on DECpc Lpv466
JLOCAL94019	MODEM	BYFAR(THAILAND)	1 unit	16-May-94	Expert Room(362)
	GVC High Speed Modem(14400)	CO., LTD.			
JLOCAL94020	COMPUTER SOFTWARE	M.A.T.Co., Ltd.	1 set	6-Jun-94	Expert Room(361)
	Ichitaro Ver5 for Windows	Tel:261-5100			
JLOCAL94021	PRINTER		1 pc	8-Jun-94	Expert Room(361)
	HP Leaser Jet 4L				
JLOCAL94022	PRINTER SWITCH	AND COMPUTER CO	1 pc	20-Jul-94	Expert Room(362)
	Auto Cross 410	Tel:254-9797	1 pc		

LIST OF EQUIPMENT PURCHASED BY JICA LOCAL COST

Code	Name of Equipment	Supplier	Qty.	Date of deliver	Place or User
JLOCAL94023	CD-ROM DRIVE	BYFAR(THAILAND)	1 pc	7-Sep-94	Expert Room(361)
	Sony CDU33A-01 internal type	CO.,LTD.			on IBM PS/V
JLOCAL94024	OVER DRIVE PROCESSOR(CPU)	M.A.T.Co.,Ltd.	1 pc	7-Sep-94	Expert Room(361)
	Intel ODP 486DX/66	Tel:261-5100			on DECpc Lpv425
JLOCAL94025	MODEM	AND COMPUTER CO	1 pc	7-Sep-94	Expert Room(361)
	GVC Fax/Data Modem(14400)	Tel:254-9797			
JLOCAL94026	LAN ADAPTER CARD	M.A.T.Co.,Ltd.	4 pc	20-Sep-94	Expert Room(361)
	Intel Etherexpress 16 TP	Tel:261-5100			(362) on PC
JLOCAL94027	PRINTER	BYFAR(THAILAND)	1 pc	26-Sep-94	Expert Room(361)
	HP Leaser Jet 4L	CO.,LTD.			
JLOCAL94028	A/D BOARD	M.A.T.Co.,Ltd.	1 pc	13-Oct-94	Expert Room(362)
	Canopus A/D Board ADXM-AT10	Tel:261-5100			
JLOCAL94029	PERSONAL COMPUTER	ATEC COMPUTER	1 pc	10-Jan-95	Mechatronics Eng
	ATEC Prestage(Pentium90MHz)	CO.,LTD.			
	8MB RAM,739MB HDD	Tel:251-2667			
JLOCAL94030	COLOR MONITOR	ATEC COMPUTER	1 pc	11-Jan-95	Mechatronics Eng
	14" Super VGA	CO.,LTD.			
JLOCAL94031	PRINTER	METRO SYSTEM CO	1 pc	26-Jan-95	Mechatronics Eng
	HP Laserjet 4Plus	Tel:226-0022			
JLOCAL94032	PERSONAL COMPUTER	BUSINESS PUBLIC	1 pc	26-Jan-95	Mechatronics Eng
	DELL OptiPLEX 466/Le	CO.,LTD.			
	i486DX2 66MHz	Tel:253-5000			
	8MB RAM,520MB HDD				
	14 Color Monitor				
JLOCAL94033	DIGITAL THERMOMETTER	YOKOGAWA	1 pc	22-Feb-95	Sensor Lab(357)
	"YOKOGAWA"756301-A-7/F	(THAILAND)LTD.			
	OPTION: D/A CONVERTER	Tel:3810071	1 pc		
JLOCAL94034	PROGRAMMABLE SCANNER	YOKOGAWA	1 pc	22-Feb-95	Expert Room(361)
	"YOKOGAWA"750101-A/F	(THAILAND)LTD.			
		Tel:3810071			
JLOCAL94035	RELAY CARD	YOKOGAWA	1 pc	22-Feb-95	Expert Room(361)
	"YOKOGAWA"7506111	(THAILAND)LTD.			
		Tel:3810071			
JLOCAL94036	GPIB CARD "NI" P/N:776113-01	YOKOGAWA	1 pc	22-Feb-95	Expert Room(361)
		(THAILAND)LTD.			
		Tel:3810071			
JLOCAL94037	COLOR SCANNER	METRO SYSTEM CO	1 pc	1-Mar-95	Expert Room(361)

LIST OF EQUIPMENT PURCHASED BY JICA LOCAL COST

Code	Name of Equipment	Supplier	Qty.	Date of deliver	Place or User
	HP SCANJET II CX	Tel:226-0022			
JLOCAL94038	PROTRACTOR EYEPIECE 375-043	J. SRI RUN RUENG	1 pc	16-Mar-95	Mechatronics Eng
		IMPEX CO., LTD			
		Tel:225-2830-2			
JLOCAL94039	ROTARY TEMPLATE EYEPIECE 176	J. SRI RUN RUENG	1 pc	16-Mar-95	Mechatronics Eng
	-357	IMPEX CO., LTD			
		Tel:225-2830-2			
JLOCAL94040	SWIVEL CENTER SUPPORT 172-197	J. SRI RUN RUENG	1 pc	16-Mar-95	Mechatronics Eng
		IMPEX CO., LTD			
		Tel:225-2830-2			
JLOCAL95041	IEEE-488 GPIB CABLE	SHOKU ENGINEER	6 pc	10-Apr-95	Expert Room(362)
		-ING LTD., PART.			
		Tel:566-3459			
JLOCAL95042	8MB RAM MEMORY FOR COMPUTER	M. A. T. Co., Ltd.	2 pc	9-May-95	Expert Room(362)
		Tel:261-5100			(on IBM PS/V)
JLOCAL95043	COLOR PRINTER	METRO SYSTEM CO	1 set	22-Jun-95	Expert Room(362)
	EPSON INKJET STYLUS COLOR	Tel:226-0022			
JLOCAL95044	SOFTWARE	M. A. T. Co., Ltd.	1 set	28-Jun-95	Expert Room(362)
	HP VEE FOR WINDOWS	Tel:261-5100			
JLOCAL95045	8MB RAM MEMORY FOR MACHINTOSH	UTO-MAX CO., LTD	2 pc	29-Jun-95	Expert Room(362)
		Tel:214-0171			
JLOCAL95046	TRANSFORMER	S. P. ELECTRONICS	1 pc	7-Aug-95	Expert Room(362)
		Tel:217-9549			
JLOCAL95047	COLOR MONITOR	M. A. T. Co., Ltd.	1 pc	18-Sep-95	Expert Room(362)
	21" SUPER VGA	Tel:261-5100			
JLOCAL95048	SOFTWARE	N. R. AUTOMATION	1 set	21-Sep-95	Expert Room(362)
	DISIGNER Ver, 1. 2	SYSTEM CO., LTD.			
	AUTOSURF FOR R. 13	Tel:748-7303			
JLOCAL95049	SOFTWARE	N. R. AUTOMATION	1 set	22-Sep-95	Expert Room(362)
	AUTOCAD R. 13 FOR WINDOWS	SYSTEM CO., LTD.			
		Tel:748-7303			
JLOCAL95050	SOFTWARE	FAMOUS COMPUTER	1 set	29-Sep-95	Expert Room(361)
	WINDOWS 95(ENGLISH)	CO., LTD.			Mechatro. Dept.
		Tel:255-4122			
JLOCAL95051	4x SPEED CD-ROM DRIVE	FAMOUS COMPUTER	2 pcs	29-Sep-95	Expert Room(362)
		CO., LTD.			
		Tel:255-4122			

LIST OF EQUIPMENT PURCHASED BY JICA LOCAL COST

Code	Name of Equipment	Supplier	Qty.	Date of deliver	Place or User
JLOCAL95052	REMOVABLE HARDDISK	M.A.T.Co.,Ltd.	1 set	8-Dec-95	CNC Lab.
	SYQUEST 270MB DRIVE	Tel:261-5100			
JLOCAL95053	TELEPHONE	DATAMATION OA	1 set	16-Feb-96	Expert Room(361)
	PANASONIC MODEL NO.:KX-T3971BX	SUPER STORE			
		Tel:612-3969			
JLOCAL95054	TELEVISION(25" SONY COLOR TV)	TOKYU DEPT.	1 set	21-Feb-96	Expert Room(361)
	SUPER WOOFER A2 STEREO	STORE			
JLOCAL95055	SONY VIDEO RECORDER	TOKYU DEPT.	1 set	27-Feb-96	Expert Room(361)
		STORE			
JLOCAL95056	UPS POWER GARD	FAMOUS COMPUTER	2 pcs	20-Mar-96	Expert Room(361)
		CO.,LTD.			Mechatro. Dept.
		Tel:255-4122			
JLOCAL95057	PC MONITER SWITCH	FAMOUS COMPUTER	1 pce	27-Mar-96	Expert Room(362)
	-MASTER VIEW CS104	CO.,LTD.			
		Tel:255-4122			
JLOCAL96058	WELDON SIDE LOCK HOLDER	PACIFIC TOOLS	2 pcs	30-Aug-96	CNC LAB.
	BT400 D=32 A=100	CO.,LTD.			
		Tel:313-1199			
JLOCAL96059	DIGITAL MULTIMATER	Jem Electronics	1 pc	9-Sep-96	Sensor Lab. (367)
	-YUGO MY-62	Tel:221-2810			
JLOCAL96060	TOOL KIT	Mataphong Sales	1 set	21-Oct-96	Sensor Lab. (367)
		and Service Co.			
		Tel:225-0094			
JLOCAL96061	INTERNAL SCSI CD-ROM 8X	Bara Advance	1 pce	28-Feb-97	CNC LAB.
	-ADAPTEC TOTAL CD	Info Tech Co.			
		Tel:637-5454			
JLOCAL96062	COLOR PRINTER	AND Computer Co	1 unit	19-Mar-97	Expert Room(361)
	-CANON BJC-210S	Tel:251-9008			
JLOCAL96063	MODEM	UTOPIA Computer	3 sets	21-Mar-97	Expert Room(362)
	-HAYES ACCURA 33.6V.34	& Comm. Co.,Ltd			
		Tel:216-6513			
JLOCAL96064	AIR COMPRESSOR	APIMUKKONKARN	1 set	24-Jan-97	Methology Lab
		Tel:468-9106			
JLOCAL97065	MODEM	UTOPIA Computer	1 set	22-Apr-97	Expert Room(361)
	-HAYES ACCURA 33.6V.34	& Comm. Co.,Ltd			
JLOCAL97066	EXTERNAL CD-ROM(IDE 8X)	AND Computer Co	1 pce	23-Apr-97	Expert Room(362)
		Tel:251-9008			(山内)

LIST OF EQUIPMENT PURCHASED BY JICA LOCAL COST

Code	Name of Equipment	Supplier	Qty.	Date of deliver	Place or User
JLOCAL97067	HARD DISK 635MB	AND Computer Co	1 pce	22-Apr-97	Expert Room(362)
		Tel:251-9008			(山内)
JLOCAL97068	HARD DISK 1.2GB	FAMOUS COMPUTER	1 pce	30-Apr-97	Expert Room(362)
		Tel:255-4122			(山本)
JLOCAL97069	HARD DISK 635MB	AND Computer Co	1 pce	30-Apr-97	Expert Room(362)
		Tel:251-9008			(山内)
JLOCAL97070	HARD DISK 1.2GB(3.5")	AND Computer Co	1 pce	27-May-97	Expert Room(362)
		Tel:251-9008			(山本/Satian)
JLOCAL97071	UPS 1.5KVA	SILIC STABLE	2 pcs	28-May-97	CAM/CAE Lab(1F)
	-MODEL TPSII-1500	SERVICE CO.,LTD			
		Tel:616-7766			
JLOCAL97072	ROBOT CONTROL MICROCOMPUTER	ETC Co.,Ltd.	1 set	30-May-97	Expert Room(362)
	SET	Tel:391-7215			(山本/Satian)
	-CP-88				
	-CP-68HC11				
	-SPEP PLUS				
	-MICRO-C 68HC11				
	-ET BASIC 88				

Number of Classes Given by Teachers in Mechatronics Eng. Dep., PTC.

(Comparative Data of the Number of Credit given by Mechatronics Staff and the other Staff)

(The First Semester, 1997)

	1st year	2nd year	3rd year	4 th year
Mechatronics Staff	24 (29%)	48 (84%)	28 (70%)	4 (18%)
Staff of the other Dep. in PTC	60 (71%)	9 (18%)	6 (15%)	3 (14%)
Staff of the other Institute	0 (0%)	0 (0%)	6 (15%)	15 (68%)
Total of Credit	84	57	40	22
No. of Students	74	48	32	14
No. of Class	4	3	2	1

Research Activities in Mechatronics Eng. Dep., PTC.

(Apr. 1993 – July 1997)

	Year					
	1993	1994	1995	1996	1997	Total
Number of Res. Works	0	1	0	2	6	9
Number of Presentation of Res. Works	0	0	0	0	2	2
Number of Seminar on Result of Res. Works	0	0	0	0	0	0
Number of Publication	0	0	0	0	0	0

List of Subject on Res. Work in Mechatronics Eng. Dep., PTC.
(Apr. 1993 - July 1997)

	Year	Subject	C/P	Advisor	JICA Expert
1	1994	Solar Car	Montree (B. Ind. Ed) Suriya (B. Ind. Ed)	I. Mori Chief Adv. JICA Team	Y. Sorimachi Nagaoka Kosen
2	1996	Economy Car	Montree (B. Ind. Ed.)	I. Mori Chief Adv.	I. Mori Chief Adv.
3	1996	DC Motor Speed Control with PID Cont. (Ms. Res. Work)	Boonruang (Will be Ms. in '97)	S.Miyagawa Kisarazu Kosen	S.Miyagawa Kisarazu Kosen
4	1997	Fuzzy Logic Control of Inverted Pendulum (Ms. Res. Work)	Boonruang (Will be Ms. in '97)	---	---
5	1997	Forecasting System on Lotus 1-2-3 for Industry	Pramote (Ms.)	---	K.Sato Ichinoseki Kosen
6	1997	Exp. Invest. onThermal Annealing Effect under Sun-light for Amorphous Solar module	Santi (Will beDr. in '00)	H.Takahashi Nara Kosen	H.Takahashi Nara Kosen
7	1997	Heat Transfer by EHD on Fluid Using Hi-Volt. 0 - 30KV DC (Dr. Work)	Santi (Will be Dr. in '00)	Prof. Tanonkiat, Changmai Univ.	---
8	1997	Application of Multi Blended Refrigerant to Heat Pump and/or Refrigeration System	Tiab (Dr.)	Prof. Tanongkiat Changmai Univ.	H.Kishige Nara Kosen
9	1997	Development of the Fixture of CNC Machine to use Workpiece zero Point Command (Ms. Res.Work)	Witoon (Will be Ms. in '97)	Prof.T.Hoshi, Toyohashi Univ.of Technology	---

List of Presentation on Research Works in Mechatronics Eng. Dep., PTC.

(Apr. 1993 – July 1997)

	Year	Title of Paper Conference	C/P	Expert	Co-worker
1	1997	Numerical Studies of Shock/Vortex Ring Interaction 7th Asian Congress of Fluid Mechnics, 8 - 12 Dec., '97, Madras, India.	Tiab Euakit	H.Kishige	Prof. M.Nishida, Kyushu Univ. T. Minota Ariake National Coll. of.Tech.
2	1997	Forecast. Sys. on Lotus1-2-3 for Industry IEEE Int. Conf.on Eng. Syst. 15-17, Sep. '97 Butapest, Hungary	Pramote Srinoi	K,Sato	Prof. A.Ohsato, Nagaoka Univ. of Tech. Prof. E.Shayan Swinburn Univ. of Tech. Australia

7. Frequency of committee of teaching staff hold

Frequency of the Committee of Teaching Staff held

The meeting was held periodically once a week every Monday during 10.00 - 12.00 a.m. The attendance consist of administrators, staff of Mechatronics Engineering Department and Japanese experts.

The Frequency of meeting as follows

Year	Times
1994	10
1995	12
1996	16
1997	21

The agenda of meeting concluded as followings :

1. Implementation of the project
2. Progress of Vocational Bill
3. Allocation of Staff
4. Seminar on making teaching plan, semester 5 - 6 , 7 - 8
5. Annual plan of teaching staff
6. On the Job-training of 4th year students
7. Student activities
8. Cooperation between PTC and Private Sector
9. The scholarship for further studies
10. Extension of the project
11. Preparation of Joint Committee Conference

8. List of Teaching Material produced/secured

List of the Teaching Material

1. TEXTBOOK

No.	Title	Author	Field
JFY 1993			
1	Physics for Mechatronics	Linachit Klinphongsa Kane Bontob	Instrumentation
2	Mathmatics for Mechatronics	Prawpisut Chuntade	Instrumentation
JFY 1994			
3	State Space Analysis	Patsada Pukdee Panya Minyoug	Automatic Control
4	Engineering Measurement I	Montri Mungkalasawad Kosuchon Satayotin Prasert Prachprayoon	Instrumentation
5	Engineering Measurement II	Montri Mungkalasawad Kosuchon Satayotin Prasert Prachprayoon	Instrumentation
JFY 1995			
6	How to use Auto CAD	Yanyong Chantawirote	CAD
7	Engineering Measurement Reference BooK	Katsumi ISHIHARA	Instrumentation
8	Physics for Mechatronics II	Linachit Klinphongsa Kane Bontob	Instrumentation
9	Physics for Mechatronics Laboratory Guidance Book	Linachit Klinphongsa Kane Bontob	Instrumentation
10	Guidance of Microcomputer	Attapol Kanganatep	Microcomputer
11	Digital Control	Sriya Warin	Digital Control
JFY 1996			
12	Factory Automation and Computer Integrated Manufacturing	Montree Mungkalasawad	Factory Automation
13	Basic Sensor Technology	Santi Wangnipránto	Sensor technology

No.	Title	Author	Field
14	Operation Manual FANUC MODEL-5	Montree Mungkalasawad	Factory Automation
15	Operation Theory FANUC MODEL-5	Montree Mungkalasawad	Factory Automation
16	ECONO-CAR	Montree Mungkalasawad	Factory Automation
17	Descriptive Geometry	Yasuaki Hiroo	CAD
18	Introduction to the Laser	Katsumi Ishihara	Instrumentation
19	Factory Automation Flexible Assemble System	Montree Mungkalasawad Kunio Kawakatsu	Factory Automation
20	Standards for Technical Drawing	Kosuchon Satayotin Prasert Prachprayoon Yasuaki Hiroo	CAD/CNC

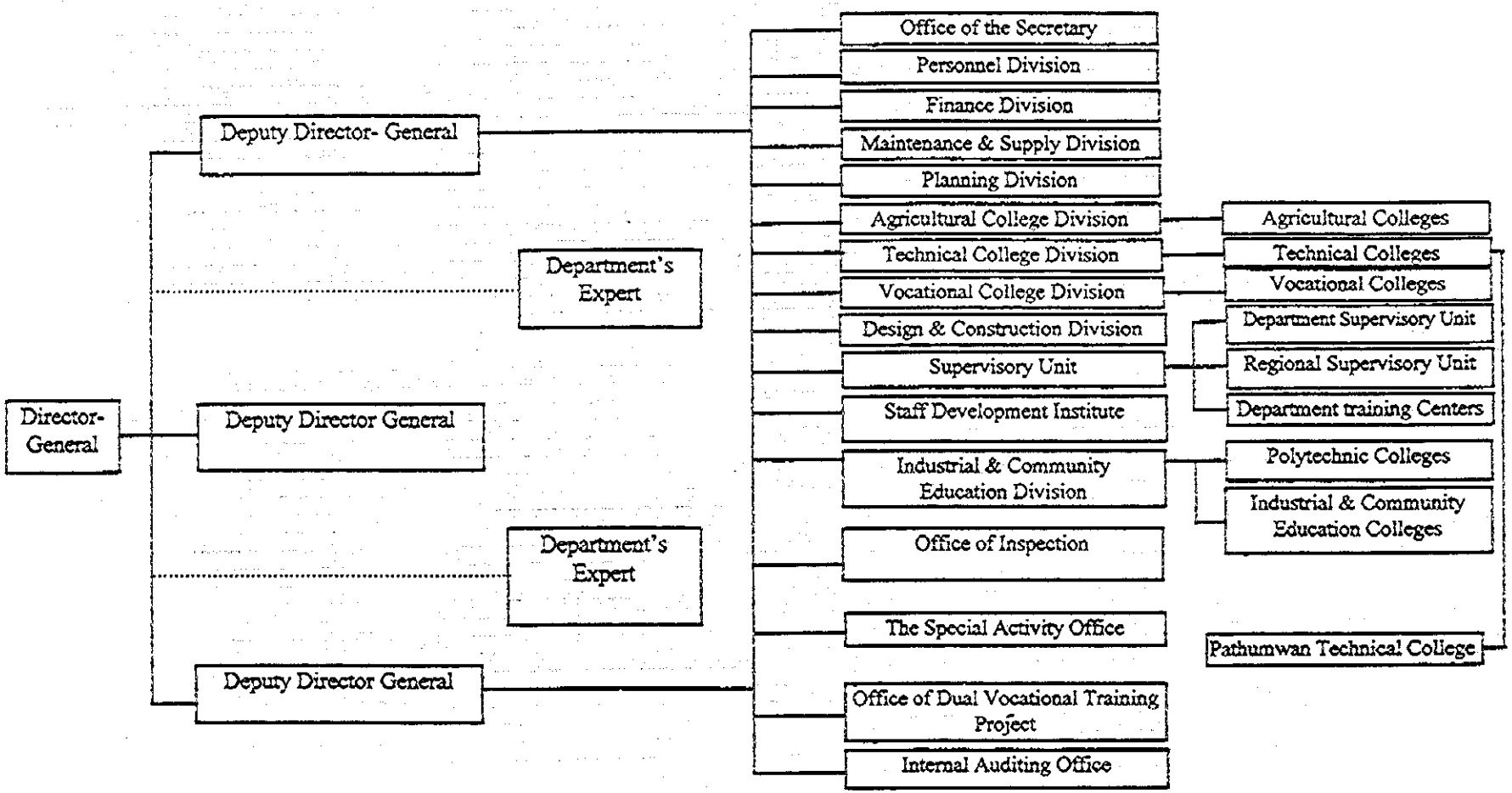
JFY (Japanese Fiscal Year)

2. EQUIPMENT PRODUCED

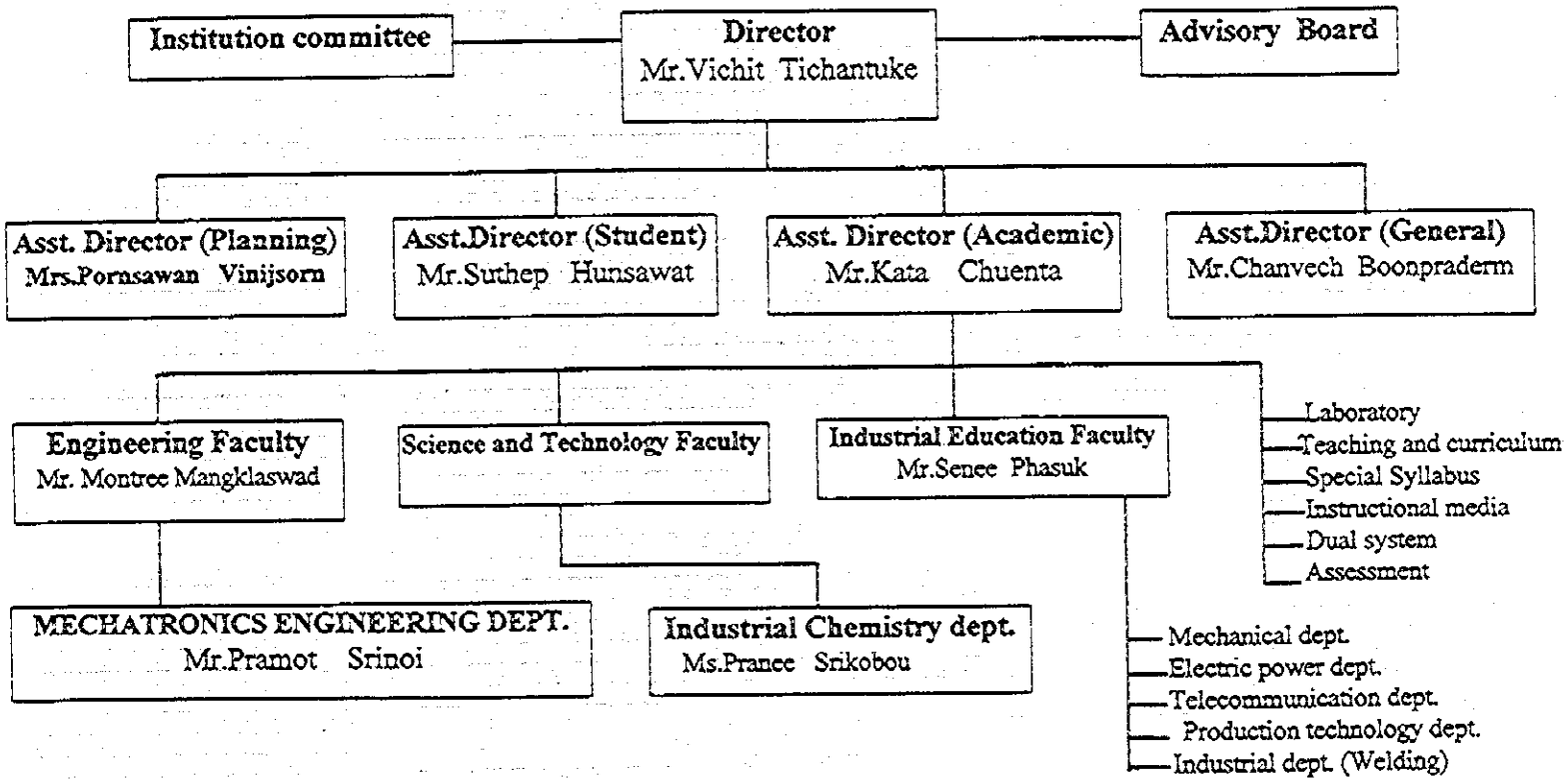
No.	Name	Field	Expert	Counterpart	Year
1	Solar Car				'93, '95
		Mechatronics	Inosuke Mori	Montri Mangklasawatd	
		Microcomputer	Yoshio Sorimachi	Attapol Kanganatep	
		Digital Control	"	Suriya Warin	
2	Functional Testing System in Electronics Circuits				'95
		Microcomputer	Yoshio Sorimachi	Attapol Kanganatep	
3	Economic Car				'95
		Mechatronics	Kazuyoshi Takahashi	Montri Mangklasawatd	
4	Mechatronics Basic Training Circuit I				'95
		Digital Control	Ritsu Kagawa	Attapol Kanganatep	
5	X-Y Stage				'96
		Robotics	Takaharu Kuroda	Boonruen Wnngsilabatra	
		CAD/CNC	Yasuaki Hiroo	Prasert Prachprayoon	
				Kosuchon Satayotin	
		Factory Automation	Kunio Kawakatu	Montri Mangklasawatd	
		Sensor Technology	Toshiya Sakabe	Santi Wangnipranto	
6	Mechatronics Basic Training Circuit II				'97
		Digital Control	Ritsu Kagawa	Boonruen Wnngsilabatra	
				Attapol Kanganatep	
7	Mechatronics General Training Equipment				'97
		Microcomputer	Kaname Sato	Pramot Srinoi	
			Kiyotada Sato		

9. Organization structure of DOVE, PTC

Organization Structure of The Department of Vocational Education (1997)



Organization Chart Of Pathumwan Technical College
(Present Status)



10. List of counterparts and number of staff

Allocation of Teaching Staff and Counterparts in Mechatronics Engineering Department During 1993 - 1997 totally 15 person

Name	Degree	Actual status/Teaching subject in Mechatronics Eng. Dept.	Training fields in Japan/year
Mr.Montree Mungkalasawat	B.I.Tech.(Industrial Engineering	- Head of Faculty of Engineering - Engineering Measurement - Engineering Mechanics	Factory Automation 1995
Mr.Pramot Srinoi	M.Eng.(CIM)	- Head of Department of Mechatronics Engineering - Introduction to Mechatronics Engineering - Computer Aided Design - Student's Project	Microcomputer 1996
Mr.Santi Wangnippanto	M.Eng.(Energy Technology)	-Thermo dynamic and Fluid Mechanic(1995) - Sensor Technology (1996) - On leave for further studying in Docterate of Engineering (1997)	Sensor Technology 1995
Mr.Suriya Warin	B.S.I.Ed.(Electrical Engineering)	- Electric circuit (1996) - Digital Control - On leave for further studying in Master of Engineering (1997)	Digital Control 1994

Name	Degree	Actual status/Teaching subject in Mechatronics Eng. Dept.	Training fields in Japan/year
Mr.Attapron Kranchanathep	B.S.I.Ed.(Electrical Engineering)	- Electronics circuit - Digital circuit - Further studying in Master of Engineering (1997)	Microcomputer 1994
Mr.Prasert Prachprayoon	Higher Dip.Tech.(Production Tech.)	-Computer Aided Design - On leave for further studying in Master of Engineering (1997)	CAD 1995
Mr.Kosuchon Satayotin	B.S.I.Ed.(Industrial Tech.)	- Engineering Measurements - On leave for further studying in Master of Engineering (1997)	CAM/CIM 1995
Mr.Boonrueng Wangsilabut	B.S.I.Ed.(Electrical Engineering)	- Power electronic (1996) - Electrical Engineering - Further studying in Master of Engineering	Robotics (1995)
Mr.Panya Minyong	B.I.Tech.(IPC)	- automatic control (1995) - On leave for further studying in Master of Engineering (1996)	
Mr.Witoon Obrom	Higher Dip.Tech.(Production Tech.)	- Manufacturing Process (1997) - Industrial Study - On leave for further studying in Master of Engineering (1995)	
Mr.Tieb Eurkit	D.Eng.(Energy Technology)	-Thermo dynamic and Fluid Mechanic - Solid Mechanic	Fluid Power Control 1996

Name	Degree	Actual status/Teaching subject in Mechatronics Eng. Dept.	Training fields in Japan/year
Mr.Sateaan Tanyasrirut	M.S.Tech..Ed. (Electrical Engineering)	- Microprocessor (1997) - Electrical Mesurement (1997)	Robotics No.2 1996
Mr.Arkom Maneekantro	B.I.Tech.(IPC)	- CAD (1997)	Process control 1996
Mr. Punyaput Chafabandit	Higher Dip.Tech. (Telecommunication Tech.)	-	CAM/CNC 1997
Mr.Wichian Taweesuk	B.S.I.Ed. (Telecommunication)	-	Digital Control 1997

Pathumwan Technical College - Number of Staff

FY Year	Permanent PTC Staff	Temporary Staff	Total	Remarks
1993	138	30	168	
1994	134	32	166	
1995	138	29	165	
1996	139	30	169	
1997	158	28	186	

* in Planning

Number of Student and Teacher in Mechatronics Engineering Department

Year	No. of Student				Total	No. of Teacher			Total	No. of Teacher for Further Studies		
	1st year	2nd year	3rd year	4th year		B.	M.	Dr.		M.Eng.	D.Eng.	Total
1994	14	-	-	-	14	5	1	-	6	-	-	-
1995	35	14	-	-	49	9	2	-	11	1	-	1
1996	53	35	14	-	102	11	3	1	15	4	1	5
1997	74	48	32	14	168	11	3	1	15	7	1	8
1998	80	74	48	32	234	12	5	1	18	7	2	9
1999	80	80	74	48	282	14	7	1	22	7	3	10
2000	80	80	80	74	314	15	9	2	26	4	2	6
2001	80	80	80	80	320	13	10	3	26	4	1	5
2002	80	80	80	80	320	11	11	4	26	5	-	5

B = Bachelor Degree
M = Master Degree
Dr. = Doctorate Degree

Pathumwan Technical College

Budget FY 1993 - 1997

Object of Expenditure	1993	1994	1995	1996	1997
Temporary Wages	1,925,760	2,027,040	2,172,720	2,502,500	2,453,700
Remuneration	2,500,000	3,500,000	5,000,000	4,348,000	4,650,000
Services other than personal and supplies	4,610,000	5,839,200	1,991,000	2,982,000	3,657,000
Public Utilities	770,000	1,203,000	1,203,000	1,203,000	1,203,000
Equipment	14,039,600	19,803,000	8,529,500	12,097,200	11,656,200
Properties and Construction	4,000,000	28,880,000	36,520,000	-	-
Other expenses	-	9,650,000	8,135,800	-	-
Total	27,854,3660	70,902,240	6,355,020	23,132,700	23,619,900

Budget of Ministry of Education

(1993-1997)

(Baht)

Department	1993	1994	1995	1996	1997
1. Office of the Permanent Secretary for Education	1,493,447,600	2,760,910,300	3,604,535,700	4,076,367,600	4,245,170,600
2. Rajapat Institute	1,980,073,700	2,342,526,000	2,714,315,400	3,530,903,300	5,318,499,200
3. The Religious Affairs Department	923,742,300	1,524,909,700	1,856,497,300	2,142,321,100	2,424,355,000
4. Department of Non-formal Education	1,601,494,700	1,809,137,800	1,983,515,500	2,812,634,100	2,841,017,000
5. Department of Physical Education	734,462,100	802,028,800	956,834,300	1,311,927,200	1,996,272,900
6. Department of Curriculum and Instruction Development	232,735,3020	260,873,300	291,247,500	392,531,600	374,265,400
7. The Fine Arts Department	811,935,800	915,601,600	1,041,425,300	1,307,446,400	1,809,211,300
8. Department of General Education	19,773,580,700	22,405,121,200	24,327,220,300	28,960,699,500	32,533,510,000
9. Department of Vocational Education	**5,832,541,200**	**6,902,531,100**	**7,760,491,900**	**9,643,877,000**	**11,747,284,300**
10. Rajamangala Institute of Technology	1,854,323,900	2,025,375,200	2,278,221,100	2,771,186,900	3,781,026,500
11. Office of the National Primary Education Commission	50,327,247,800	55,227,050,400	60,223,776,200	72,070,252,600	86,537,223,400
12. Office of the Private Education Commission	2,346,616,500	3,179,202,200	3,229,736,500	3,513,012,100	3,899,266,100
13. Office of the Teacher Civil Service Commission	70,651,400	75,611,600	82,912,600	94,617,800	113,205,800
14. Office of the National Culture Commission	194,088,500	255,090,300	307,107,400	344,284,600	352,220,000
Total	88,177,244,500	100,485,969,500	110,657,837,000	132,971,561,800	157,972,527,500

2.2 Thai Budget

1. Thai Budget for Thai - Japan Cooperation Project 1993 - 1997 Total 37,504,864 Baht (Baht)

NO.	Descriptions	Budget				
		1993	1994	1995	1996	1997
1	Per-dium for instructors	-	60,000	60,000	72,000	200,000
2	Wage for Typist	-	63,150	68,880	-	-
3	Wage for officers of chemical Laoratory	-	63,150	68,880	-	-
4	building cleanliness cost	518,000	480,000	479,500	548,000	380,160
5	Traveling allowance for training in Japan	-	190,000	190,000	-	-
6	Travelling allowance for study tour in Japan	337,600	892,500	993,300	603,750	603,750
7	Expense for Research work in advance Technology	100,000	444,000	494,940	200,000	231,400
8	Expense for supporting new technology research project	-	350,000	643,290	427,025	83,190
9	Laboratory materials	1,176,000	1,260,000	1,260,000	1,840,000	1,884,000
10	Electricity Cost	900,000	1,200,000	750,000	300,000	110,000
11	Purchasing equipment	4,292,000	2,450,000	2,648,810	-	-
12	Installation for Student Project Laboratory	-	361,000	-	-	-
13	Installation for FMS Laboratory	-	70,000	-	-	-
14	Wage for driver	-	-	28,200	-	-
15	Wage for Security guard	-	-	382,200	440,400	440,400

(Baht)

NO.	Descriptions	Budget				
		1993	1994	1995	1996	1997
16	Elevator Maintenance cost	-	-	66,564	72,000	72,000
17	Study Tour Cost In Country	-	-	-	145,000	-
18	Machine maintenance cost	-	252,000	-	397,525	100,000
19	Water supply cost	30,000	-	-	100,000	100,000
20	Over time for Typist	-	-	-	-	522,000
21	Remunaration for Lecturers	-	-	-	-	12,000
22	Training cost for Instructous	-	-	-	-	261,000
23	Machine cost for machine installation	817,020	-	-	-	-
24	Six stories Maintenance cost for building	2,918,180	-	-	-	-
	Total	11,088,800	8,135,800	8,134,564	5,145,700	5,000,000

Remark : Thai Fiscal Year : from October to September

12. List of equipment purchased by Thai budget

List of Equipment purchased by Thai Budget

1994 (Total 936,245 Baht)

No.	Code No.	Name of Equipment	Qty.	Price (Baht)	Location	Remark
1	2320-004-0002	- Utility car with cab: - Nissan Big-M 1.6, Gasoline DX - Load capacity : 1 ton - Color : white	1 unit	295,000	PTC	
2	2310-004-006-371-01	Van with 11 seats: - Toyota Hi-Ace RZS 112-RBMRS - Color white	1 unit	479,895	PTC	
3	581-012-003-371-01	Fax machine	1 unit	24,750	Store	
4	4110-001-0004-371-01	Refrigerator : - DR-461A - 5.9 ft^3	1 unit	5,600	Director office	
5	9925-009-004-371-01-30	Buddha's praising set : - pieces/set	3 set	45,000	director room conference room	
6	7430-001-0032-371-01	Electric typewriting machine : - IBM Model personal wheel writer 2	1 unit	25,000	Thai coordinator office	
7	7440-001-0010-371-01	Personal computer and printer : - Computer : LEO 80486 DX2-66 - Printer : Epson LQ-1170I	1 set	61,000	Thai coordinator office	

1995 (Total 2,614,557 Baht)

No.	Code No.	Name of Equipment	Qty.	Price (Baht)	Location	Rmark
8	7440-042-0001-381-01	Microcomputer for CNC machining workshop ; each set consist of : Personal computer, Dell XMT 590 - CPU Pentium 90 mhz - 16 Mb RAM, 1 GB HDD - 17 inch SVGA - CD-ROM Drive Laser Printer, HP Laserjet 4 Plus	5 set 1 unit	649,947	CNC workshop (Machatronic)	
9	66930-031-0001-381-01-95	Equipment for project training laboratory ; each set consist of : - Computer table - working table - chair - cabinet	20 set	330,400	Project room (Machatronic)	
10	7110-007-0054-381-01-03 7110-007-0054-381-01-02 7110-007-0054-381-01-03 3442-002-0006-381-01	Equipment for FMS laboratory : - Computer table - Working table (for robotics) - Small computer table - Pump	1 set	66,500	Robotics & FMS Lab. (Mechatronic)	
11		Equipment for experts room - Computer table - Working table - Chair - Cabinet	1 set	167,810	Mechatronic Staff room	

No.	Code No.	Name of Equipment	Qty.	Price (Baht)	Location	Rmark
12	7440-0466-0001-381-01	Microcomputer laboratory : Server, Dell power Edge 590 PXE - CPU ip 5 - 90 mhz - Mb RAM, 2 GB HDD - SVGA - CD-ROM drive - Tape Drive Station , DELL optiPLEX 466/Le - CPU Intel i486DX2-66mhz - Mb RAM (10 unit) , 16 Mb RAM - (10 unit) - SVGA Laser Printer, HP Laserjet 4 plus Color Inkjet printer UPS Lan system	 1 unit 20 unit 	1,399,900	Project room (Mechatronic)	

1996 (Total 285,000 Baht)

No.	Code No.	Name of Equipment	Qty.	Price (Baht)	Location	Rmark
13		Equipment for CAD Laboratory - Computer table - Chair - Cabinet - UPS - Electrical system	1 set	285,000	CAD Lab.	

13. Curriculum of Mechatronics Engineering

Teaching Plan
Higher Diploma of Engineering in Mechatronics Engineering

1 ST Semester

No.	Code	Subjects	Credits Hrs/Week (Lect. - Lab.)
1	110101	Report Writing and Library Usage	1 (2 - 1)
2	110102	Foundation English I	3 (2 - 2)
3	111102	General Physics I	3 (3 - 0)
4	111104	General Physics Lab I	1 (0 - 3)
5	111106	Linear Algebra	3 (3 - 0)
6	113101	Introduction to Mechatronics Engineering	3 (2 - 3)
7	116101	Computer Programming	3 (3 - 0)
8	118102	Computer Programming Lab	1 (0 - 3)
		Total	**18 (15 - 12)**

2 ND Semester

No.	Code	Subjects	Credits Hrs/Week (Lect. - Lab.)
1	110203	Foundation Enginlish II	3 (2 - 2)
2	111201	General Chemistry	3 (3 - 0)
3	111203	General Physics II	3 (3 - 0)
4	111205	General Physics Lab II	1 (0 - 3)
5	111207	Calculus and Analysis I	3 (3 - 0)
6	114201	Electric Circuit Theory	3 (3 - 0)
7	114202	Electric Measurements and Instrumentation	3 (3 - 0)
8	118201	Electric Circuit Lab.	1 (0 - 3)
		Total	20 (17 - 8)

3 RD Semester

No.	Code	Subject	Credits Hrs/Week (Lect. - Lab.)
1	111308	Calculus and Analysis II	3 (3 - 0)
2	112301	Computer Aided Design	3 (2 - 3)
3	113303	Engineering Mechanics	3 (3 - 0)
4	113304	Fluid Mechanics and Thermodynamic	3 (3 - 0)
5	114303	Electronic Circuit	3 (3 - 0)
6	113302	Engineering Measurements	3 (2 - 3)
7	118303	Electronic Circuit Lab.	1 (0 - 3)
		Total	*19 (16 - 9)*

4 TH Semester

No.	Code	Subject	Credits Hrs/Week (Lect. - Lab.)
1	111409	Mechatronics Engineering Mathematics	3 (3 - 0)
2	113405	Mechanics of Machinery	3 (3 - 0)
3	114404	Electromagnetic Fundamental	3 (3 - 0)
4	114405	Digital Electronics	3 (3 - 0)
5	114406	Electrical Engineering Technology	3 (3 - 0)
6	115401	Automatic Control	3 (3 - 0)
7	118404	Digital Electronics lab.	1 (0 - 3)
8	118405	Automatic Control lab.	1 (0 - 3)
		Total	*20 (18 - 6)*

5 TH Semester

No.	Code	Subject	Credits Hrs/Week (Lect. - Lab.)
1	113506	Mechanics of Solid	3 (3 - 0)
2	113507	Mechanical Vibration	3 (3 - 0)
3	114507	Power Electronics	3 (3 - 0)
4	115502	Digital Control System	3 (3 - 0)
5	1166502	Introduction to Microprocessors	3 (3 - 0)
6	113508	Manufacturing Process	3 (2 - 3)
7	118506	Microprocessors Lab	1 (0 - 3)
8	118507	Power Electronics Lab	1 (0 - 3)
		Total	*20 (17 - 9)*

6 TH Semester

No.	Code	Subjects	Credits Hrs/Week (Lect. - Lab.)
1	111610	Numerical Methods	3 (3 - 0)
2	114608	Sensor Technology	3 (3 - 0)
3	115603	Sequence Control Systems	3 (3 - 0)
4	116603	Mechatronics System Engineering	3 (3 - 0)
5	117601	Tool Engineering	3 (2 - 3)
6	118608	Sensor Technology Lab	1 (0 - 3)
7	118609	Sequence Control Lab	1 (0 - 3)
		Total	*17 (14 - 9)*

Summer

No.	Code	Subjects	Credit Hrs/Week (Lect. - Lab)
1	119701	Industrial Training	2 (0 - 8)
		Total	*2 (0 - 8)*

7 TH Semester

No.	Code	Subjects	Crdits Hrs/Week (Lect. - Lab)
1	110704	Man and Society	3 (3 - 0)
2	113709	CNC Mechanics and Applications	3 (2 - 3)
3	115704	Digital Signal Processing	3 (3 - 0)
4	116704	Microcomputer Systems	3 (3 - 0)
5	117-02	Industrial Management	3 (3 - 0)
6	117-04	Production Planning and Control	3 (3 - 0)
7	118710	Industrial Study	1 (0 - 3)
8	119702	Mechatronics Engineering Project I	1 (0 - 3)
		Total	*20 (17 - 9)*

8 TH Semester

No.	Code	Subjects	Crdits Hrs/Week (Lect. - Lab)
1	110805	Industrial Psychology	3 (3 - 0)
2	115805	Industrial Robotics	3 (2 - 3)
3	117-22	Hydraulics and Pneumatic	3 (2 - 3)
4	11-----	Free Elective	3 (3 - 0)
5	119803	Mechatronics Engineering Project II	2 (0 - 6)
		Total	*14 (10 - 12)*

14. Process of student admission

Process of New Students Admission (1997)

Selection System

By means of quota system, only a qualified student (mentioned in the syllabus) of each field in a college is nomination to be selected by 5 Regions of Vocational Education of Thailand. The total number of selected students was 250 . These 250 nominated students took a entrance examination at PTC. After being interviewed. The 87 students were admitted, and only 74 registered to be Mechatronics Engineering Student in PTC.

Basic Knowledge

The first year students must be study basic subjects (mathematics, Physic, computer) during 21 April - 2 May 1997. To adjusting their knowledge before study on Mechatronics Engineering course.

Orientation

The Mechatronics Engineering Students joined the program of orientation at Themmakay Temple, Pathumthani, on May 1997 (duration 5 days). The training to be in the Budthaism Philosophy.

Accommodation

the First year students will be staying at the PTC. Dorm and look after by two teachers of Mechatronics Eng. Dept.

15. Number of student enrolled and dropout

Number of Student enrollment and Dropouts

Year	Expected Number	Enrollment				Total	Dropouts	Remarks
		1st year	2nd year	3rd year	4th year			
1994	20	20	-	-	-	20		
1995	40	35	14	-	-	49	5	One student has got Monbusho Scholarship to study in Japan for 6 years
1996	60	53	35	14	-	102	-	
1997	80	74	48	32	14	168	8	
1998	80	-	-	-	-	-	-	

16. List of laboratories

Laboratory and rooms of Mechatronics Engineering Department. (July, 1997)

Krom Phrasawat - wattanavisit Building

Floor No.	Room's name	Space	Room	responsible person
1	Engineering Measurement Lab.	10 x 10	313	Mr.Kohsuchon Mr.Montree
	CNC Workshop	30 x 10	314	Mr.Kohuchon Mr.Witoon
	Laser Lab.	10 x 5	312	Mr.Punyaput
	CAD/CAM/CAE lab. (EWS)	10 x 5	315	Mr.Pramot Mr.Prasert
	Office of Mechatronics Eng. Dept.	10 x 12.5	311	Mr.Montree Mr.Pramot
2	Conference and Staff Room	10 x 12.5	325	Mr.Montree
	Staff Rooms	10 x 5	322	Mr.Witoon
3	Computer Aided Design Lab. (CAD1)	10 x 12.5	338	Mr.Yanyong
	Computer Aided Design Lab. (CAD 2)	10 x 12.5	331	Mr.Prasert Mr. Arkom
5	Sensor Technology and Digital Control Lab.	10 x 10	357	Mr.Santi Mr.Suriya
	Robotics & FMS Lab.	10 x 10	353	Mr.Satian Mr.Boonrueng
	Automatic Control Lab.	10 x 10	354	Mr.Satian
	Mechatronics Training Lab.	10 x 12.5	351	Mr.Pramot Mr.Witoon
	Short term expert room	10 x 5	352	Mr.Pramot
	Staff room	10 x 5	355	Mr.Satian

The Library, Office, Conference room, and Staff rooms of Mechatronic Eng. Dept.

Item	Name of Room	Space	Room No.	Responsible person	Year
1	Library	10 x 12.5	363*	Mr.Witoon	1998*
2	Office of Mechatronics Eng. Dept.	10 x 12.5	311	Mr.Montree Mr.Pramot	1997
3	Conference and Staff Room.	10 x 12.5	325	Mr.Montree	1995
4	Staff Rooms	10 x 5	322*	Mr.Witoon	1997
5	Staff Room	10 x 5	332* 333*		1998*
6	Short term expert room	10 x 5	352 355	Mr.Pramot	1997
7	Staff room	10 x 5	335	Mr.Satian	1997

Remark* These laboratories will be setup after telecommunication Department moved to the new building in 1998.

Necessary Laboratory and Research room for Mechatronics Eng. Dept.

Item	Name of Room	Space	Room No.	Responsible person	year
1	Electric & Electronic circuits Lab.	10 x 10	337*	Mr.Suriya , Mr.Attapon	1998*
2	Power Electronics & Drive Lab.	10 x 10	356	Mr.Boonrueng	1997
3	Digital & Microprocessor Lab.	10 x 10	334*	Mr.Attapon	1998*
4	Microcomputer Lab.	10 x 10	335*	Mr.Pramot Mr.Satian	1998*
5	Computer Aided Design Lab. (CAD 1)	10 x 12.5	338	Mr.Yanyong	1994
6	Computer Aided Design Lab. (CAD 2)	10 x 12.5	331	Mr.Prasert Mr. Arkom	1996
7	Computer Programming and Simulation Software Lab.	10 x 10	336*	Mr.Yanyong Mr.Prasert	1998*
8	Sensor Technology and Digital Control Lab.	10 x 10	357	Mr.Santi Mr.Suriya	1997
9	Robotics & FMS Lab.	10 x 10	353	Mr.Satian Mr.Boonrueng	1994
10	Fluid Power Control Lab.	10 x 10	347*	Mr.Teiab	1998*
11	Engineering Measurement Lab.	10 x 10	313	Mr.Kohsuchon Mr.Montree	1994
12	CNC Workshop	30 x 10	314	Mr.Kohsuchon Mr.Witoon	1994
13	Automatic Control Lab.	10 x 10	354	Mr.Satian	1997
14	Sequence Control Lab.	10 x 12.5	348*	Mr.Arkom	1998*
15	Factory Automatic Lab.	10 x 12.5	348*	Mr.Montree	1998*
16	Process Control lab.	10 x 10	344	Mr.Arkom	1998*
17	Laser Lab.	10 x 5	312	Mr.Punyaput	1998*
18	Mechatronics Training Lab.	10 x 12.5	351	Mr.Pramot Mr.Witoon	1996
19	CAD/CAM/CAE Lab. (EWS)	10 x 5	315	Mr.Pramot Mr.Prasert	1994

Remark* These laboratories will be setup after Telecommunication Department moved to the new building in 1998.