

ANNEX 1

List of Attendants

JAPANESE SIDE

1. Embassy of Japan

Mr. Michihiro KISHIMOTO First Secretary

2. Final Evaluation Team

Mr. Yoshihide IERANISHI	Leader
Mr. Senri OKADA	Technology Transfer Planning
Ms. Chikako YAMAUCHI	Training Planning
Mr. Minoru YAMADA	Cooperation Planning
Mr. Hiromichi HARA	Evaluation Management
Ms. Shinobu MAMIYA	Evaluation Analysis

3. JICA Indonesia Office (Jakarta)

Mr. Keiichi KATO	Resident Representative
Mr. Toru HOMMA	Assistant Resident Representative

4. JICA Expert Team in MIDC (Bandung)

Mr. Jitsuo SAKAKIBARA	Chief Advisor
Mr. Tadashi MIYAZAKI	Project Coordinator
Mr. Yoshiaki TAKEMOTO	Expert (Moulding /Manufacturing Technology)

5. JICA Individual Expert (Jakarta)

Mr. Tsutomu NAGAE	Expert (Advisor, Bureau of Planning, MOIT)
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6. Industry

Mr. Takao Kanai	Engineering Director P.T. Toyota Motor Manufacturing Indonesia
Mr. Kazuo Makino	Division Head P.T. Toyota Motor Manufacturing Indonesia
Mr. Sadao Kikuchi	Technical Advisor Bakrie Tosanjaya

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ANNEX 2

List of Attendants

INDONESIAN SIDE

1. Ministry of Industry and Trade (MOIT)

(1) Directorate General of Small and Medium Industries and Trade

Mr. Agus Ijahajana	Director General
Mr. Nurdin Noor	Leader of Indonesian Evaluation Team
	Secretary to the Directorate General
Mr. Effendi Sirait	Deputy Director
Mr. Ramon Bangun	Head of Division for Extension Services and International Cooperation
	Directorate General of Small and Medium Industries and Trade
Ms. Roosalinga Marthiany Loebis	Head of Sub Division for International Cooperation

(2) Agency for Research and Development of Industry and Trade

Mr. Sudarmasto	Head
Mr. Imam Haryono	Secretary
Mr. Abdul Wahid	Head, Centre for Industry and Trade, Technology R&D
Mr. Achmad Sjafudin I.	Balai Besar Bahan Dan Bahan Teknik (B4T) Head of Business Development Division

(3) Bureau of Planning

Mrs. Hj. Kusni Pangestuti	Head of Technical Assistance Sub Division
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(4) Metal Industries Development Center (MIDC)

Mr. Taufiq Rochim	Head
Mr. Hadi Nugroho	Head, Administration Division
Ms. Williany Aminuddin	Head, Program and Reporting Division
Mr. Mochamad Furqon	Head, Foundry Department

2. Indonesian Evaluation Team

Mr. Yos Rizal Anwar	Member of Supervisory Board of Indonesian Foundry Industries Association (hereinafter referred to as "APLINDO") CEO of Bakrie Tosanjaya
Mr. A. Safiun	President of APLINDO
Mr. Cuk Sutoyo	Agrindo
Mr. Soejitno	Head of Ceper Laboratory
Prof. Dr. Rachim Suratman	Institute of Technology of Bandung

3. Industry

Mr. Dikdik Kusmayadi	Manager, Maintenance and Engineering Bakrie Tosanjaya
Mr. Thomas Hanan Thoha	Chairman Himpunan Ahli Pengecoran Logam Indonesia(HAPLI)
Mr. Adi Taruli	Director of Commerce Himpunan Ahli Pengecoran Logam Indonesia(HAPLI)
Mr. L. Armansjah	Expert Staff Himpunan Ahli Pengecoran Logam Indonesia(HAPLI)
Dr. Slameto Wiryolukito	Metallurgical Laboratory Department of Mechanical Engineering Institute of Technology of Bandung
Dr. Supono Adi Dwiwanto	Metallurgical and Technology Foundry Institute of Technology of Bandung



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Project Design Matrix (PDM)

Dec 15, 1998

Project on Supporting Industries Development for Casting Technology in the Republic of Indonesia

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
(Overall Goal) Small and medium scale foundry industries will be able to provide domestic assembly industries with casting products to meet their quality level	1 Increase of production delivered to assembly industries 2 Improvement of quality of products 3 Improvement of productivity and efficiency	1,2,3 Survey reports on foundry industries, questionnaires to and interviews with related industries	a There is no drastic change in the politic and economic situation in Indonesia b Supporting industries development policy will continue to be stable c Demand for Indonesian casting products will continue to be stable.
(Project Purpose) Technical services for small and medium scale foundry industries extended by MIDC will be improved	1 Level of satisfaction of present and former service beneficiaries 2 Level of satisfaction of industries 3 Number of newly improved services and targeted group	1,2 Questionnaires to and interviews with related industries 3 MIDC records	a. Indonesian foundry industries will utilize the technology obtained from MIDC b Linkage between assembly and supporting industries will be established.
(Outputs of the Project) 0. Project operation unit will be enhanced 1 Machinery and equipment will be provided, installed, operated and maintained properly. 2 Technical capability of the counterpart personnel (hereinafter referred to as "C/P") will be upgraded. 3 Trial prototyping services will be implemented systematically 4 Technical dissemination services will be implemented systematically. 5 Information services will be implemented systematically	0 Number and capability of staff, budget, established management system 1 Contents and conditions of machinery and equipment, route to get spare parts and situation to secure spare parts 2 Assessment by the Japanese experts, number of achieved Target Products for Technology Transfer 3 Number of implemented trial prototyping services 4 Number of implemented technical dissemination services, number of clients 5 Number of implemented information services, number of beneficiaries, number of participants	0 Organization chart, personnel record, accounting record and administration record 1 Machinery and equipment list, operation and maintenance record 2,3,4,5 MIDC records	a Trained C/P will remain at MIDC
(Activities) 0-1 Allocate necessary personnel 0-2 Make plans of activities 0-3 Make budget plan and execute properly. 0-4 Establish and operate management system 1-1 Make facility refurbishment plan and implement as planned. 1-2 Provide and install machinery and equipment 1-3 Operate and maintain the machinery and equipment properly 2-1 Make Technical Cooperation Program. 2-2 Implement technology transfer to the C/P 2-3 Monitor and evaluate the technology transfer to the C/P. 3-1 Make plan of trial prototyping services 3-2 Implement the trial prototyping services 3-3 Monitor and evaluate the trial prototyping services. 4-1 Make plan of technical dissemination services 4-2 Implement the technical dissemination services 4-3 Monitor and evaluate the technical dissemination services 5-1 Make plan of information services. 5-2 Collect and compile technical information and material 5-3 Provide industries with technical information and material 5-4 Monitor and evaluate the information services.	Inputs		C/P will remain at MIDC
	Indonesian side	Japanese side	
	1 Renovation, provision and maintenance of building and facilities 2 Allocation of C/P and administrative personnel 2-1 C/P a Administrative C/P b. Technical C/P 2-2 Supporting staff a Technical staff b Administrative staff c. Any other personnel for smooth implementation of the Project 3. Provision and maintenance of machinery and equipment 4 Budgetary allocation of local cost necessary for implementation of the Project	1. Dispatch of Japanese experts 1-1 Long-term experts a Chief advisor b Coordinator c. Experts on casting 1-2. Short-term experts in the specific fields of technology may be dispatched, if necessary. 2 Indonesian C/P training in Japan - A certain number of C/P per fiscal year 3 Provision of machinery and equipment 4 Budgetary allocation for supporting local cost	(Preconditions) a Utilities of the Project site will be stably provided b Foundry industries will be cooperative to the Project

Plan of Operations (PO)

Project on Supporting Industries Development for Casting Technology in the Republic of Indonesia

as of September 30, 2003

Calendar Year	1999				2000				2001				2002				2003				2004		
Project Year / Japanese Fiscal Year	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I
Term of Technical Cooperation	Signing of P/D																						
0. Project operation unit will be enhanced.																							
0-1 Allocate necessary personnel																							
0-2 Make plans of activities																							
0-3 Make budget plan and execute properly																							
0-4 Establish and operate management system																							
1. Machinery and equipment will be provided, installed, operated and maintained properly																							
1-1 Make facility refurbishment plan and implement as planned.																							
1-2 Provide and install machinery and equipment																							
1-3 Operate and maintain the machinery and equipment properly																							
2. Technical capability of the counterpart personnel (hereinafter referred to as "C/P") will be upgraded.																							
2-1 Make Technical Cooperation Program																							
2-2 Implement technology transfer to the C/P																							
2-3 Monitor and evaluate the technology transfer to the C/P																							
3. Trial prototyping services will be implemented systematically.																							
3-1 Make plan of trial prototyping services.																							
3-2 Implement the trial prototyping services																							
3-3 Monitor and evaluate the trial prototyping services																							
4. Technical dissemination services will be implemented systematically.																							
4-1 Make plan of technical dissemination services																							
4-2 Implement the technical dissemination services																							
4-3 Monitor and evaluate the technical dissemination services																							
5. Information services will be implemented systematically																							
5-1 Make plan of information services.																							
5-2 Collect and compile technical information and material																							
5-3 Provide industries with technical information and material																							
5-4 Monitor and evaluate the information services																							

Note:

- 1 This schedule is subject to change in accordance with the progress of the Project
- 2 The line of — means that the respective activities will be implemented during the corresponding term
- 3 The line of --- means that the respective activities will be implemented during the corresponding term if necessary
- 4 The line of - - - means that the respective activities were implemented during the corresponding term

Technical Cooperation Program (TCP)

Project on Supporting Industries Development for Casting Technology in the Republic of Indonesia

Progress as of Sep. 30, '03, Plan was revised on Sep. 30, '03

Calendar Year	1998				1999				2000				2001				2002				2003							
Fiscal Year	1998				1999				2000				2001				2002				2003							
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Term of Technical Cooperation																												
(P02-2) Implement technology transfer to the C/P																												
1. Casting Plan																												
1-1 Understanding of drawings including procedure																												
1-2 Pattern and mould plan																												
1-3 Riser and gating system plan																												
1-4 Utilization of Casting Flow and Solidification Simulation System																												
1-5 Casting specification																												
2. Pattern Making																												
2-1 Understanding of drawings including procedure																												
2-2 Pattern making design and full scale drawing																												
2-3 Operation and maintenance of machinery and equipment																												
2-4 Handling and maintenance of hand tools																												
2-5 Wooden pattern making																												
2-6 Inspection of pattern																												
2-7 Mending and storage of patterns																												
3. Moulding																												
3-1 Sand preparation																												
3-1-1 Selection and preparing of green mould sand																												
3-1-2 Selection and preparing of organic mould sand																												
3-1-3 Sand reclamation																												
3-1-4 Testing of sand and mould																												
3-2 Moulding and core making																												
3-2-1 Hand moulding with green mould sand																												
3-2-2 D/S Machine moulding with green mould sand																												
3-2-3 J/S Machine moulding with green mould sand																												
3-2-4 Moulding with organic mould sand																												
3-2-5 Core making (Hand & Blowing)																												
3-2-6 Coating																												
4. Melting																												
4-1 Selection and storage of materials																												
4-2 Mixing ratio calculation of charging																												
4-3 Materials charging and melting operation																												
4-4 Molten metal treatment																												
4-5 Foundry test for monitoring molten metal characteristics																												
4-6 Pouring practice																												
4-7 Lining maintenance of furnace/ladle, and ladle preheat																												
5. Examination and Quality Control																												
5-1 Selection and operation of finishing process																												
5-2 Chemical analysis																												
5-3 Mechanical test (Hardness)																												
5-4 Mechanical test (Tensile)																												
5-5 Metallurgical examination																												
5-6 Scribing and dimensional inspection																												
5-7 Surface defect inspection visually																												
5-8 Surface defect inspection (PT and MT)																												
5-9 Internal defect inspection (UT and RT film review)																												
5-10 Defects analysis and its countermeasure																												
5-11 Statistical quality control																												

LIST OF JAPANESE EXPERTS DISPATCHED (1/3)
 JICA/MIDC Project on Supporting Industries Development for Casting Technology in Indonesia

as of Aug. 31, 2003

ID No.	Name	Title	Assignment	M/M	Remarks
L01	Hidehito YASUI	Chief Advisor	Apr. 05, 99 – Apr. 04, 01	24.0	Terminated
L02	Toru HOMMA	Coordinator and SME Development	Apr. 05, 99 – Aug. 04, 02	40.0	Terminated
L03	Ryozo HASHIDA	Casting Technology Management	Apr. 15, 99 – Apr. 14, 03	48.0	Terminated
L04	Tsuneto NONAKA	Pattern Making	Sep. 01, 99 – Aug. 31, 01	24.0	Terminated
L05	Teiji SUZUKI	Moulding	Feb. 01, 00 – Jan. 31, 02	23.0	Terminated
L06	Jitsuo SAKAKIBARA	Chief Advisor	Apr. 01, 01 – Mar. 31, 04	36.0	In Service
L07	Tadashi MIYAZAKI	Coordinator	Mar. 31, 02 – Mar. 31, 04	24.0	In Service
L08	Yoshiaki TAKEMOTO	Moulding / Manufacturing Technology	May. 30, 02 – Mar. 31, 04 (Long-term, Total M/M)	22.0	In Service (Avg.30.13/M th)
Long-term					
S01	Toshio YAMAGATA	Layout of Machinery	Apr. 15 – May 12, 99	0.9	
S02	Kenichi YAMADA	Facilities Design (Moulding System)	Apr. 18 – Apr. 25, 99	0.2	
S03	Katsushige ISHIKURO	Facilities Design (Moulding System)	Apr. 18 – Apr. 25, 99	0.2	
S04	Katsuki YOROIZUKA	Facilities Design (Moulding System)	Apr. 18 – Apr. 25, 99	0.2	
S05	Seichi SHIRAIISHI	Machinery Installation and Facilities Maintenance	Nov. 01 – Dec. 23, 99	1.8	
S06	Isao NATORI	Machinery Installation (Organic Sand Moulding System)	Nov. 14 – Dec. 23, 99	1.3	
S07	Yoshihiko UCHIYAMA	Machinery Installation (Organic Sand Moulding System)	Nov. 14 – Dec. 23, 99	1.3	
S08	Toyoji KOBAYASHI	Machinery Installation (Moulding System)	Dec. 01 – Dec. 23, 99	0.8	
S09	Toyoji KOBAYASHI	Machinery Installation (Moulding System)	Jan. 23 – Mar. 31, 00	2.3	
S10	Akihiro KATO	Sand Preparation	Feb. 01 – Mar. 31, 00	2.0	
S11	Seiichi SHIRAIISHI	Machinery Installation and Facilities Maintenance	Feb. 03 – Mar. 31, 00	1.9	
S12	Isao NATORI	Machinery Installation (Organic Sand Moulding System)	Feb. 06 – Feb. 25, 00	0.7	
S13	Yoshihiko UCHIYAMA	Machinery Installation (Organic Sand Moulding System)	Feb. 06 – Feb. 25, 00	0.7	
S14	Minoru YOSHIDA	Machinery Installation (Organic Sand Moulding System)	Feb. 06 – Feb. 25, 00	0.7	
S15	Eisuke NIYAMA	Foundry Technology (Seminar Presentation)	Feb. 27 – Mar. 04, 00	0.2	
S16	Yasuoki ISHIHARA	Foundry Technology (Seminar Presentation)	Feb. 27 – Mar. 04, 00	0.2	
S17	Katsuki TAKAHASHI	Machinery Installation (Moulding System)	Mar. 05 – Mar. 31, 00	0.9	
S18	Fumio OBATA	Ductile Cast Iron Melting	Apr. 11 – Jul. 29, 00	3.6	
S19	Tetsuya KIBE	Machine Moulding	Apr. 11 – Sep. 22, 00	5.4	
S20	Seiichi SHIRAIISHI	Machinery Maintenance	May 14 – Jul. 29, 00	2.5	
S21	Toyoji KOBAYASHI	Machinery Operation (Moulding System)	May 14 – Jun. 8, 00	0.8	
S22	Nobuhiro KONDO	Casting Technology (Seminar Presentation)	Jul. 20 – Jul. 29, 00	0.3	
S23	Hiroshi NAGAFUCHI	Casting Design Drawing	Sep. 24 – Dec. 15, 00	2.7	
Short-term					

LIST OF JAPANESE EXPERTS DISPATCHED (2/3)
 JICA/MIDC Project on Supporting Industries Development for Casting Technology in Indonesia

as of Aug. 31, 2003

S24	2000-S07	Fumio OBATA	Ductile Cast Iron Melting	Jan. 14-Apr. 20, 01	3.2
S25	2000-S08	Seiichi SHIRAIISHI	Facilities Maintenance	Jan. 14-Apr. 20, 01	3.2
S26	2000-S09	Noboru YAMANAKA	Casting Technology (Seminar Presentation)	Mar. 18 - Mar. 31, 01	0.4
S27	2000-S10	Masatake ICHIKI	Casting Technology (Seminar Presentation)	Mar. 18 - Mar. 24, 01	0.2
S28	2000-S11	Chuichi SAITO	Dimensional Inspection	Mar. 26 - Jun. 29, 01	3.1
S29	2001-S01	Shigeru TOYOSHIMA	Non Destructive Testing	May 8 - Aug. 8, 01	3.0
S30	2001-S02	Shigeki KAJIWARA	Moulding Sand Control / Machine Moulding	Jun. 6 - Aug. 30, 01	2.8
S31	2001-S03	Eizo MAEDA	Technical Extension Consultation (Defect Analysis and Countermeasures)	Aug. 12 - Sep. 27, 2001	1.5
S32	2001-S04	Seiichi SHIRAIISHI	Facilities Maintenance	Aug. 26 - Nov. 2, 2001	2.2
S33	2001-S05	Yoshinori KOBAYASHI	Melting	Aug. 26 - Nov. 24, 2001	2.9
S34	2001-S06	Hiroshi NAGAFUCHI	Casting Design	Aug. 26 - Dec. 7, 2001	3.4
S35	2001-S07	Shigeru TOYOSHIMA	Destructive Analysis and Testing Technology	Jan. 27 - Apr. 10, 2002	2.5
S36	2001-S08	Eizo MAEDA	Technical Extension Consultation (Defect Analysis and Countermeasures)	Feb. 3 - Apr. 19, 2002	2.6
S37	2001-S09	Seiichi SHIRAIISHI	Facilities Maintenance	Feb. 18 - Apr. 19, 2002	2.0
S38	2001-S10	Yoshiaki TAKEMOTO	Casting Technology (Seminar Presentation)	Mar. 3 - Mar. 9, 2002	0.2
S39	2001-S11	Yoshinori KOBAYASHI	Melting	Mar. 10 - Jun. 29, 2002	3.6
S40	2001-S12	Hiroshi NAGAFUCHI	Casting Design	Mar. 10 - Sep. 20, 2002	6.4
S41	2002-S01	Yoshinori KOBAYASHI	Melting / Quality Control	Aug. 24 - Nov. 29, 2002	3.2
S42	2002-S02	Eizo MAEDA	Technical Extension Consultation (Defect Analysis and Countermeasures)	Sep. 15 - Nov. 29, 2002	2.5
S43	2002-S03	Seiichi SHIRAIISHI	Facilities Maintenance	Oct. 13 - Nov. 29, 2002	1.6
S44	2002-S04	Masatake ICHIKI	Casting Design Defect Solution (Seminar Presentation)	Oct. 27 - Nov. 9, 2002	0.4
S45	2002-S05	Hiroshi NAGAFUCHI	Casting Design	Jan. 19 - Jul. 16, 2003	5.9
S46	2002-S06	Seiichi SHIRAIISHI	Facilities Maintenance	Jan. 26 - Mar. 8, 2003	1.4
S47	2002-S07	Yoshinori KOBAYASHI	Melting / Quality Control	Feb. 2 - May 24, 2003	3.8
S48	2002-S08	Shinichiro KOBAYASHI	Organic Sand Moulding / Technical Extension Consultation	Feb. 2 - May 31, 2003	3.9
S49	2002-S09	Shigeru TOYOSHIMA	Destructive Analysis and Testing Technology	Mar. 9 - Jun. 7, 2003	3.0
S50	2002-S10	Hideo OKADA	Pattern Making	Mar. 9 - Jun. 7, 2003	3.0
S51	2003-S01	Toshio UCHIDA	Casting Design Simulation	Jun. 1 - Aug. 2, 2003	2.0
S52	2003-S02	Tsukasa YAMAGATA	Software Maintenance for Casting Simulation	Jun. 1 - Jun. 7, 2003	0.2
S53	2003-S03	Seiichi SHIRAIISHI	Facilities Maintenance	Jun. 22 - Aug. 2, 2003	1.5
S54	2003-S04	Yoshinori KOBAYASHI	Melting / Quality Control	Jul. 27 - Oct. 25, 2003	3.0
S55	2003-S05	Shinichiro KOBAYASHI	Organic Sand Moulding	Jul. 27 - Oct. 25, 2003	3.0
S56	2003-S06	Shigeru TOYOSHIMA	Non Destructive Testing Technology	Jul. 27 - Oct. 25, 2003	3.0
S57	2003-S07	Nobuhiro YANO	Technical Extension Consultation	Jul. 27 - Oct. 25, 2003	3.0
S58	2003-S08	Yoshio IGARASHI	Casting Laboratory Technology	Aug. 10 - Aug. 30, 2003	0.7

LIST OF JAPANESE EXPERTS DISPATCHED (3/3)
 JICA/MIDC Project on Supporting Industries Development for Casting Technology in Indonesia

as of Aug. 31, 2003

		(Short-term, Total M/M)	119.9	(Avg. 2.07/M th)
C01	1999-C01 Naofumi HATTORI	Electric Consultant (Management Consultation I)	0.7	
C02	1999-C02 Naofumi HATTORI	Electric Consultant (Management Consultation II-1)	1.2	
C03	1999-C03 Naofumi HATTORI	Electric Consultant (Management Consultation II-2)	1.0	
Others		(Consultant, Total M/M)	2.9	(Avg.0.97/Mth)

MACHINERY AND EQUIPMENT PROVIDED BY JICA for the Project on Supporting Industries Development for Casting Technology

as of May 31, 2003

(1/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification	Qty. to be Kept	Value(¥)	Value(Rp./\$)	Delivered	Remarks
J	[JICA Equipment procured in Japan]								
<J01>	Procurement in Japan in FY1998					194,696,250			
J0101	HICASS Flow & Solidification Simulation System	Hitachi Kwowa Eng.	Hitachi Kwowa Eng.	Flow-T for PC, FLORA 350, Display, Tablet, Printer	1 JICA Room	3,963,750		Jun-99	
J0102	Double Squeeze High Pressure Green Sand Moulding System (KDM-5)	Kanamori Sinto	Hato Bussan	KDM-5, Squeeze Pressure 4-10 kg/cm ²	1 Moulding	139,650,000		Nov-99	
J0102-01	1. Automatic Moulding Machine (KDM-5)								
	1) Upper Portion for Moulding Machine								
	2) Platform for Moulding Machine								
	3) Ladder & Piping for Moulding Machine								
	4) Lower Portion for Moulding Machine								
	5) Squeeze Cylinder for Moulding machine								
	6) Oil Compressor (Hydraulic Unit)								
	7) Mineral Oil for Oil Compressor								
J0102-02	2. Moulding Line								
	1) Flask Pushing Device								
	2) Mould Turn-over Device								
	3) Sand Cutter								
	4) Sprue Cutter								
	5) Mould Closer								
	6) Traversor (Truck, Rail and Support								
	7) Roller Conveyors (RU)								
	8) Roller Conveyors (RM)								
	9) Castings Take-out Device								
	10) Platform & Ladder								
J0102-03	3. Control Panel								
	1) Power Board								
	2) Operating Board								
J0102-04	4. Accessories								
	1) Carrier Plates								
	2) Metallic Pattern Sprue								
	3) Pattern Plates								
	4) Liners								
	5) Test Pattern								
	6) Iron Flasks								
	7) Pins & Bushes for Iron Flasks								
	8) Carriages								
	9) Weights								

MACHINERY AND EQUIPMENT PROVIDED BY JICA
for the Project on Supporting Industries Development for Casting Technology

(2/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification	Qty. to be Kept	Value(¥)	Value(Rp./\$)	Delivered	Remarks
	10) Wooden Pattern for Iron Flask								
	11) Wooden Pattern for Carriage								
	12) Wooden Pattern for Weight								
J0102-05	5. Peripherals								
	1) Sand Hopper with Sand Feeder								
	2) Belt Feeder								
	3) Stand for Belt Feeder								
	4) Sand Feeding Shatter								
	5) Hoist (Iron)								
	6) Mono-rail & Lifting Tools								
	7) Pillar for Mono-rail								
	8) Portable Conveyors								
	9) Collecting Hopper of Spill Sand								
	10) Flat Belts for Existing Belt Conveyors								
	11) Climber Belt for Existing Belt Conveyor								
	12) Wiring & Piping Tools								
	13) Air Dryer								
J0103	α / β Alkali Phenol Organic Sand Moulding System	Koel	Koel		1 Moulding	51,082,500		Oct-99	
J0103-01	i. Core Making System by Beta-set Process								
	1) Core Blower, Sand Hopper & Accessories								
	2) Gassing Cabinet								
	3) Gas Generator with Bulk Tank								
	4) Gas Controller								
J0103-02	2. Mould Making System by Alpha-set								
	1) Continuous Mixer with Base								
	2) Binder Supply Unit								
	3) Bucket Elevator No.4								
	4) New Sand Bin								
	5) Reclaimed Sand Bin No.2								
J0103-03	3. Return & Reclamation System of Organic Binder Sand								
	1) Shake-out Crusher with Dust Hood & Control Panel								
	2) Bucket Elevator No.1								
	3) Rotary Screen								
	4) Used Sand Bin with Magnetic Separator, Shooting Pipe & Dust Boxes								
	5) Bucket Elevator No.2								

MACHINERY AND EQUIPMENT PROVIDED BY JICA
for the Project on Supporting Industries Development for Casting Technology

as of May 31, 2003

(3/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification	Qty. to be Kept	Value(¥)	Value(Rp./\$)	Delivered	Remarks
	6) Sand Reclaimer								
	7) Fluidized Sand Separator								
	8) Bucket Elevator No.3 with Belt								
	9) Belt Conveyor No.1								
	10) Reclaimed Sand Bin No.1								
	11) Belt Conveyor No.2 with Shooting Duct & Hangers								
	12) Platforms, Legs and Braces								
J0103-04	4. Control Panels								
J0103-05	5. Dust Collector								
	1) Main Body (Roof, Hopper, Legs, Braces, Monkey Step, Suction Pipe, Connection Pipe, Accessories)								
	2) Fan with Structure, Silencer, and Bend								
	3) Control Panel								
J0103-06	6. Wooden Pattern								
	1) Test Piece								
	2) Model								
	3) Core Box								
J0103-07	7. Compression Strength Tester								
J0103-08	8. Raw Materials (Sand)								
J0103-09	9. Tools and Sub-materials								
	1) Tools and Sub-materials (Balancers, Vessels, Vent-holes & Cleaner, Drills, Electric Drill, Electric Thunder, Standard Tool-set, Hammer, Wooden Hammer, Vises, Gassing Plates & Rubber, Files & Sand Paper, Hand Saw, Scales, Bond, Separator, Stamp/Scrapers/Spatulas)								
	2) Working Tables								
J0103-10	10. Wiring, Piping and Accessories								
	1) Wire, Wiring Pipes, Wiring Racks, Supporting Pieces								
	2) Air Pipes, Hoses, Supporting Pieces, Pneumatic Control Parts								
J0103-11	11. Attached Facilities (Peripherals)								
	1) Duct, Brackets, Supporting Poles								
	2) Landings, Handrails, Steps, Monkey Steps,								
	3) Chain Hoists with Structures and Rails								
	4) Paint and Thinner								
J0103-12	12. Resin for α / β (Ester, Resin)							(Feb-00)	

MACHINERY AND EQUIPMENT PROVIDED BY JICA
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as of May 31, 2003

(4/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification	Qty.	to be Kept	Value(¥)	Value(Rp./\$)	Delivered (Feb-00)	Remarks
J0103-13	13. Resin for α/β (Methyl Formate)									
<J11>	Procurement in Japan in FY1999 (Phase 1)									
<J11>	Pattern Making Equipment						3,864,000			
J1101	1. Polishing Machine Buff Type	Fujikyu	Sirius	TF Type	1	Pattern	220,500			
J1102	2. Wood Trimmer with Legs	Fujikyu	Sirius	T-21 Delux	1	Damaged on Delivery	420,000			
J1103	3. Bites for Wood Lathe Machine	Fujikyu	Sirius		1 set	Pattern	384,930		May-00	
J1104	4. Portable Band Saw	Ryowa	Sirius	BSW-200, with Welding Machine	1	Pattern	582,750			
J1105	5. Automatic Single Surface Planer	Tayo	Sirius	PQ-500	1	Damaged on Delivery	1,869,000			
J1106	6. Wood Vice	Teranishi	Sirius		5	Pattern	131,250			
J1107	7. Pattern Making Tools	Fujikyu	Sirius		1 set	Pattern	255,570			
<J12>	Procurement in Japan in FY1999 (Phase 2)						8,213,500			
<J12>	Testing and Inspection Equipment						8,213,500			
J1201	1. Ultrasonic FCD Spheroidization Analyzer	KusakabeRareMetal	Ogawa Seiki	ND-3	1	Melting	4,935,000			
J1202	2. Immersion Pyrometer	Chino	TokyoDenkiSangyo	IND511-RNN, 1700C, with 200 tips	1	Melting	273,000		Mar-00	
J1203	3. CE Meter	Nakayama	Hato Bussan	QC Recorder Mini	1	Melting	1,619,100			
J1204	4. Electronic Mould Strength Meter	Hisagoya/GF	Hato Bussan	PFP, 0.2-34.5 N/cm2	1	Moulding	302,400			
J1205	5. Measuring Tools			Tilting Rotary Table, Gauges, Calipers, Cranving Kit etc.	1 set	Pattern	1,084,000		Jan-00	
<J13>	Procurement in Japan in FY1999 (Phase 3)						190,000			
J1301	Used Moulding Sand	Hisagoya		Hitachi Metals Moka Works		Moulding	190,000		Mar-00	
<J21>	Procurement in Japan in FY2000 (Phase 1)						79,800			
J2101	Immersion Pyrometer		Tec International	for Chino ND511-RNN		Melting	79,800		Aug-00	
J2101-01	1. Portable Holder				1					
J2101-02	2. Contact Block				5					
J2101-03	3. Thermal Electrode				100					
<J22>	Procurement in Japan in FY2000 (Phase 2)						2,289,000			
<J22>	Pattern Making Equipment (Re-procured)						2,289,000		Sep-00	
J2201	1. Wood Trimmer with Legs	Fujikyu	Sirius	T-21 Delux	1	Pattern	420,000			
J2202	2. Automatic Single Surface Planer	Tayo	Sirius	PQ-500	1	Pattern	1,869,000			

MACHINERY AND EQUIPMENT PROVIDED BY JICA
for the Project on Supporting Industries Development for Casting Technology

(5/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification	Qty. to be Kept	Value(¥)	Value(Rp./\$)	Delivered	Remarks
<J2>	Procurement in Japan in FY2000 (Phase 3)					4,589,970			
J2301	System Back Up CD-ROM	Hitachi Kyowa Eng.	Hitachi Kyowa Eng.	HICASS, PC-UNIX, X-window	1 JICA Room	61,425			
J2302	Materials for α/β Organic Sand Moulding System	Koei	Koei						
J2302-01	1. β Resin	Koei	Koei	BSR-114	40kg Moulding	10,920		Dec-00	
J2302-02	2. β Hardener	Koei	Koei	BSh-10	20kg Moulding	21,525			
J2303	Spare Parts for D/S Green Sand Moulding System	Kanamori Sinto	Hato Bussan						
	1. Parts for Moulding Machine Squeeze Head	Kanamori Sinto	Hato Bussan	Liner, Rail etc.	Moulding				
	2. Parts for Moulding Machine Piping	Kanamori Sinto	Hato Bussan	Oil Hose, Joint etc.	Moulding				
	3. Parts for Career Plate	Kanamori Sinto	Hato Bussan	Liner, Pin, Bush etc.	Moulding	3,362,100			
	4. Electronic Sensor	Kanamori Sinto	Hato Bussan	Limit Switch, Sensor etc.	Moulding				
	5. Electric Parts	Kanamori Sinto	Hato Bussan	Inverter, CPU, Breaker etc.	Moulding				
	6. Parts for Hydraulic Oil Unit	Kanamori Sinto	Hato Bussan	Solenoid Valve, Controller etc.	Moulding				
J2304	Spare Parts for α/β Organic Sand Moulding System	Koei	Koei					Apr-01	
	1. Heat Resisting Belt (with Belt)	Koei	Koei	For Bucket Elevator No1	Moulding				
	2. Roller A'ssy	Koei	Koei	For Sand Reclaimer	Moulding				
	3. Blade for Mixing	Koei	Koei	For Continuous Sand Mixer	Moulding				
	4. Pneumatic Actuated Ball Valve (3position)	Koei	Koei	For Continuous Sand Mixer	Moulding	1,134,000			
	5. Gear Pump	Koei	Koei	For Binder Supply Unit	Moulding				
	6. Bag Filter	Koei	Koei	For Dust Collector	Moulding				
	7. Electric Parts	Koei	Koei	Breaker, Power Unit etc.	Moulding				
<J31>	Procurement in Japan in FY2001 (Phase 1)					51,398			
J3101	Adjusting Tools for Automatic Surface Planer		Toyo Keiryoki	Magnet Block, Wrench, Blade etc.	Pattern	51,398		Aug-01	
<J32>	Procurement in Japan in FY2001 (Phase 2)					41,780			
J3201	Materials for α/β Organic Sand Moulding System	Koei	Koei						
J3201-01	1. β Resin	Koei	Koei	BSR-114	40kg Moulding	16,590		Dec-01	
J3201-02	2. β Hardener	Koei	Koei	BSh-10	20kg Moulding	25,200		Jan-02	
<J33>	Procurement in Japan in FY2001 (Phase 3)					2,087,100			
J3301	Green Sand Preparation Facilities (Magnet Separator)	Kanamori Sinto	Hato Bussan	Magnet Pulley, Geared Motor	Moulding	1,333,500			
J3302	Spare Parts for D/S Green Sand Moulding System	Kanamori Sinto	Hato Bussan						
J3302-01	1. Solenoid Valve for Air (VSP4244-002TLZ)	Kanamori Sinto	Hato Bussan	VSP4244-002TLZ	2 Moulding				
J3302-02	2. Solenoid Valve for Air (VSP4144-002TLZ)	Kanamori Sinto	Hato Bussan	VSP4144-002TLZ	2 Moulding	472,500			
J3302-03	3. Deba Metal (Oilless Bush) for Mould Traveler	Kanamori Sinto	Hato Bussan	for Mould Traveling	2 Moulding				
J3302-04	4. Cushion Cylinder for Traverser	Kanamori Sinto	Hato Bussan	CC-040A-100A	1 Moulding				
J3303	Spare Parts for α/β Organic Sand Moulding System	Koei	Koei						
J3303-01	1. Level Switch (Paddle Type, HL-100)	Koei	Koei	for Collect Used Sand Bin	1 Moulding	77,700			

MACHINERY AND EQUIPMENT PROVIDED BY JICA
for the Project on Supporting Industries Development for Casting Technology

(6/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification for Collect Used Sand Bin	Qty.	to be Kept	Value(¥)	Value(Rp./\$)	Delivered	Remarks
J3303-02	2. Level Switch (Paddle Type, HL-101-300)	Koei			1	Moulding			Mar-02	
J3304	Coating Material and Tool						(162,450)			
J3304-01	1. Magnesite/Graphite Coating Material	Okazaki Kosanbutsu	Hato Bussan			Moulding	(51,450)			
	(1)Alcohol Soluble			Oka-Super 934KD 25kg/Can	100kg		27,300			
	(2)Water Soluble			Oka-Super 785NewC 25kg/Can	100kg		24,150			
J3304-02	2. Zircon / Graphite Coating Material	Osaka Zircon	Hato Bussan			Moulding	(111,000)			
	(1)Alcohol Soluble (Paste Type)			Kneadmix ASA-SS 20kg/Can	100kg		39,000			
	(2)Alcohol Soluble (Powder Type)			Kneadmix 200 25kg/Bag	100kg		35,000			
	(3)Water Soluble			Kneadmix YH-3 20kg/Bag	100kg		37,000			
J3304-03	3. Coating Spray Gun			Spray, Container, Hose, Joint		Moulding	40,950		Jun-02	
[J3304-01(1), -02(1) out of <J33>]→										
	Procurement in Japan in FY1998						194,886,250			
	Procurement in Japan in FY1999						12,267,500			
	Procurement in Japan in FY2000						6,958,770			
	Procurement in Japan in FY2001						2,180,288			
	Total (Procured in Japan)						216,102,808 (=US\$1,785,974)			
								(=Rp.15,436 mil.)		

MACHINERY AND EQUIPMENT PROVIDED BY JICA
for the Project on Supporting Industries Development for Casting Technology

as of May 31, 2003

(7/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification	Qty. to be Kept	Value(¥) *Equivalent*	Value(Rp./\$)	Delivered	Remarks
	[JICA Equipment procured in Indonesia]								
<L11>	Local Procurement in FY1999 (Phase 1)					38,651,920			
L1101	1. High Frequency Induction Furnace	Inductotherm	Makmur Meta	500kg*200kg, 300kW, 1000Hz	1 Melting	28,137,000	US\$249,000	Mar-00	
L1101-01	1) Power and Control System								
L1101-02	2) Auto-transformer (345kVA, 380/460 V)								
L1101-03	3) 200kg Hydraulic Tilting Furnace								
L1101-04	4) 500kg Hydraulic Tilting Furnace								
L1101-05	5) Prefabricated Furnace Busbar								
L1101-06	6) Water Cooled Leads								
L1101-07	7) Hydraulic Module / Melter's Console								
L1101-08	8) 200kg Refractory Lining with Former								
L1101-09	9) 500kg Refractory Lining with Former								
L1101-10	10) Vibrator and Hand Ramming Tools								
L1101-11	11) Closed Circuit Cooling System								
L1101-12	12) Replacement 200kg Furnace Coil								
L1101-13	13) Replacement 500kg Furnace Coil								
L1101-14	14) Spare Parts								
L1102	2. Overhead Crane	Verlinde	Tira Austenite	2.0t, Pendant, Anti-Collision	1 Foundry	2,129,383	US\$18,844.1	Feb-00	
L1103	3. Forklift	Komatsu	United Tractors	FD25JC-12, 2.5t	1 Foundry	2,486,000	US\$22,000	Oct-99	
L1104	4. Vehicle	Toyota	Antusiaptia	Kijang LGX, 1800cc	1 Machining	1,802,350	US\$15,950	Nov-99	
L1105	5. Photocopy Machine	Canon	Samafitro	NP6850, with Sorter B1	1 JICA Room	1,402,350	Rp.93,490,000	Oct-99	
L1106	6. Computer Peripherals	HP etc.	Harrisma	Printer, Scanner, Hubs etc.	1 set JICA Room	694,837	US\$6,149	Oct-99	
<L12>	Local Procurement in FY1999 (Phase 2)					9,659,170			
L1201	1. Dust Collector (for Sand Preparation System)	Silika Foundry	Silika Foundry	50m ³ /min	2 Moulding	1,072,500	Rp.71,500,000	Mar-00	
L1202	2. Shot Blast Machine (with Dust Collector)	Nicchu	Antusiaptia	LNF-1, Bag Filter NBF-1	1 Melting	7,014,550	US\$66,175	Mar-00	
L1203	3. Induction Furnace Coil	Inductotherm	Makmur Meta	for Elphiac 80kg	1 Melting	489,720	US\$4,620	Jul-00	
L1204	4. Swing Grinder (with Dust Collector / Frame)	Alcorindo	Alcorindo	for Cutting, Dia. 400mm	1 Melting	1,082,400	Rp.72,160,000	Mar-00	
<L13>	Local Procurement in FY1999 (Phase 3)					10,432,242			
L1301	1. Ladle	Alcorindo	Alcorindo	Pouring Ladle (500kg, 200kg), Ductile Treatment Ladle (500kg, 200kg)	4 Melting	588,225	Rp.39,215,000	Mar-00	
L1302	<Melting Material>								
L1302	2. Pig Iron for Cast Iron		Makmur Meta	3300kg for FC, 800kg for FCD	1 set Melting			Mar-00	
L1303	3. Ferro Alloy		Makmur Meta	Fe-Si, Fe-Mn, Fe-Mo, HC Fe-Cr	1 set Melting			Mar-00	
L1304	4. Ferro Nickel		Makmur Meta	500kg	1 set Melting			Mar-00	
L1305	5. Additives for Molten Metal		Makmur Meta	Inoculant, Fe-Si-Mg, Recarburizer	1 set Melting			Mar-00	

MACHINERY AND EQUIPMENT PROVIDED BY JICA
for the Project on Supporting Industries Development for Casting Technology

as of May 31, 2003

(8/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification	Qty. to be Kept	Value(¥)	Value(Rp./\$)	Delivered	Remarks
L1306	6. Consumable Tip		Makmur Meta	Tem Tip, Tec Tip (1000pcs each)	1 set			Mar-00	
L1307	7. Isothermic Material		Makmur Meta	Thermex 200H(Korea), 250kg	1 set	3,874,860	Rp.258,324,000	Mar-00	
L1308	8. Slag Remover		Makmur Meta	Slax (Japan), 1000kg	1 set			Mar-00	
L1309	9. Alumina Lining		Makmur Meta	ex Finland, 3500kg	1 set			Mar-00	
L1310	10. Silica Lining		Makmur Meta	ex Finland, 3500kg	1 set			Mar-00	
L1311	11. Plastic Refractory		Makmur Meta	ex Indonesia, 750kg	1 set			Mar-00	
L1312	12. Mica Sheet		Makmur Meta	Ceramic Fiber Paper (UK), 20m ²	1 set			Mar-00	
L1313	13. Steel Shot		Makmur Meta	SSI S330 (Korea), 500kg	1 set			Mar-00	
	<Material for Moulding>								
L1314	14. Silica Sand		Makmur Meta	SM5-SM6 (Local), 15000kg	1 set	133,650	Rp.8,910,000	Mar-00	
L1315	15. Additives (Bentonite, Sea Coal)		Makmur Meta	Sodium Bentonite (Geiko) 1500kg, Sea Coal (Ecosil, Korea), 150kg	1 set			Mar-00	
	<Air Grinder>								
L1316	16. Air Grinder for Rough Grinding	Atlasopco	Atlasopco	Straight Grinders, Couplings etc.	1 set	1,425,882	US\$13,710.4	Mar-00	
L1317	17. Air Grinder for Finishing	Atlasopco	Atlasopco	Die Grinders, Vertical Grinders, Angle Grinders	1 set			Mar-00	
L1318	18. Surface Table	Ostenco	Ostenco	1200 x 1200 x 700, FC250	2	990,000	Rp.66,000,000	May-00	
L1319	19. Magnetic Particle Testing Machine	Tiede	Mitra Global	Magnetizing Device, Cables, Electrodes, Handles, UV Light, Transformer, Magnetic Particle, Darkened Room	1 set	1,622,764	US\$15,603.5	Mar-00	
	<Material for Pattern Making>								
L1320	20. Wood for Pattern		Enecha Pacific	Pinus 3m3 etc.	1 set			Mar-00	
L1321	21. Plywood for Pattern		Enecha Pacific	18, 15, 12, 6, 4, 3mm	1 set			Feb-00	
L1322	22. Resin for Pattern		Enecha Pacific	Resin & Hardener (Gel Coat, Casting, Laminating), Release Agent	1 set	769,803	Rp.51,320,225	Feb-00	
L1323	23. Books		Antusiacipta	AFS etc.	1 set	624,903	US\$6,008.68	May-00	
L1324	24. Facsimile	Canon	Antusiacipta	F-250, with Cartridge	1	188,250	Rp.12,650,000	Feb-00	
L1325	25. Copyboard	Panasonic	Antusiacipta	KX-B630, with Stand etc.	1	213,905	US\$2,056.78	Feb-00	
<L21>	Local Procurement in FY2000 (Phase 1)					7,648,820			
L2101	1. Carbon/Sulphur Determinator	Leco	Magna Sardo	CS-200	1	7,594,720	US\$67,810.00	May-01	
L2102	2. α Resin	Borden	Makmur Meta	A-9048	250kg	53,900	US\$481.25	Feb-01	
<L22>	Local Procurement in FY2000 (Phase 2)					3,195,330			
L2201	1. Maintenance Tools		Kawan Lama	61 items		1,357,262	US\$11,405.56	Sep-01	
L2202	2. Overhead Crane Maintenance and Parts		Tira Austenite	for Verlinde Crane 2t		581,065	US\$4,882.90	Mar-01	
L2203	3. α / β Organic Sand Moulding System Extension Monorail	Alcorindo	Alcorindo	for α / β System		263,120	Rp.20,240,000	Jun-01	

MACHINERY AND EQUIPMENT PROVIDED BY JICA
for the Project on Supporting Industries Development for Casting Technology

(9/9):

No.	Name of Equipment	Maker	Supplier	Type / Specification	Qty. to be Kept	Value(¥)	Value(Rp./\$)	Delivered	Remarks
L2204	4. Post Crane for Swing Grinder	Alcorindo	Alcorindo	Jib Crane, Turn Table		404,690	Rp.31,130,000	Sep-01	
L2205	5. Ladle Heating Oil Burner	Ostenco	Ostenco	Burner, Blower, Tank etc.		357,500	Rp.27,500,000	Jul-01	
L2206	6. Personal Computer for Casting Design		Multicom	Mugen 5200, Desktop		231,693	US\$1,947	Mar-01	
<L31>	Local Procurement in FY2001 (Phase 1)					4,026,766			
L3101	1. Standard Sample for Spectrometer	Hilger	Ostenco	11 items	1 set	734,563	US\$ 5,401.20	May-02	
L3102	2. Standard Sample for C/S Determinator	Leco	Magna Sardo	6 items	1 set	485,649	US\$ 3,578.30	Mar-02	
L3103	3. Metal Processing Machine for Testing		Multiguna Ciptasentosa	Hacksaw, Bandsaw, Lathe, chipper	1 set	605,800	Rp.46,600,000	Aug-02	
L3104	4. Flask		Restu Ibu	Small 15 sets, Medium 10 sets	1 set	825,500	Rp.63,500,000	Feb-03	
L3105	5. Spare Parts for Double Squeeze & α/β Moulding System		Mulindo	23 items	1 set	1,374,254	Rp.98,161,000	Jun-02	
<L32>	Local Procurement in FY2001 (Phase 2)					221,000			
L3201	1. KWH Meter for Furnaces and Others		Pri Mandiri	2 Meters	1 set	221,000	Rp.17,000,000	Mar-02	
<L33>	Local Procurement in FY2002					4,505,697			
L3301	1. Portable Metal Analyzer	ARUN	Kanbutsu Ind.	Metal Scan 2560	1 set	4,505,697	US\$ 37,863-	Apr-03	
	Local Procurement in FY1999					56,743,332			
	Local Procurement in FY2000					10,843,950			
	Local Procurement in FY2001					4,247,766			
	Local Procurement in FY2002					4,505,697			
	Total (Local Procurement in Indonesia)					76,340,745	(=US\$630,915)		
							(=Rp.5,453 mil.)		
	Grand Total of Procurement in FY1998					194,696,250			
	Grand Total of Procurement in FY1999					69,010,832			
	Grand Total of Procurement in FY2000					17,802,720			
	Grand Total of Procurement in FY2001					6,428,054			
	Grand Total of Procurement in FY2002					4,505,697			
	Grand Total (Procurement in Japan & in Indonesia)					292,443,553	(=US\$2,416,889)		
							(=Rp.20,889 mil.)		
	Latest Official Rate (as of May '03 \$1=¥121, \$1=Rp.8,325, Rp.1=¥0.014)								↑ Latest Official Rate

*1: in JICA Official Rate in the month approved by JICA HDQ ↑

LIST OF TRAINING FOR MIDC COUNTERPART PERSONNEL (C/P) IN JAPAN

JICA/MIDC Project on Supporting Industries Development for Casting Technology in Indonesia

As of September 30, 2003

ID No.	Name	Training Subject	Position in MIDC	Assignment	M/M	Remarks
01	1998-1 J. Suyono	Project Management	Head, MIDC	Mar. 07 – Mar. 20, 99	0.5	
02	1998-2 Abdurahim	Project Management	Head, Research Division (at the time)	Mar. 07 – Mar. 20, 99	0.5	
03	1999-1 Achmad	Casting Design	Staff, Engineering Group, Foundry Section	Jun. 27 – Oct. 02, 99	3.2	
04	1999-2 Rahmat	Wood Pattern Making	Staff, Pattern Making Group, Foundry Section	Jun. 27 – Oct. 02, 99	3.2	
05	1999-3 Juanda	Moulding	Staff, Moulding Group, Foundry Section	Jun. 27 – Oct. 02, 99	3.2	
06	2000-1 Agus Hermawan	Casting Inspection Technique	Staff, Engineering Group, Foundry Section	Aug. 24 – Nov. 24, 00	3.0	
07	2000-2 Sudarman	Moulding Sand Quality Control	Staff, Foundry Section	Aug. 24 – Oct. 31, 00	2.2	
08	2000-3 Roslina	Chemical and Metallurgical Quality Control	Staff, Foundry Section	Aug. 24 – Oct. 31, 00	2.2	
09	2000-4 Purbaja Adi Putra	Casting Design	Staff, Engineering Group, Foundry Section	Mar. 10 – Jun. 16, 01	3.2	
10	2001-1 Suhama	Facilities Maintenance	Staff, Foundry Section	May 13 – Aug. 01, 01 (Plan – Aug. 11, 01)	2.6 (2.9)	
11	2001-2 Boimin	Moulding	Staff, Moulding Group, Foundry Section	Aug. 26 – Nov. 23, 01	2.9	
12	2001-3 Dedi Supriatna	Pattern Making	Staff, Pattern Making Group, Foundry Section	Aug. 26 – Nov. 23, 01	2.9	
13	2002-1 M. Furqon	Measure against Casting Defects	Head of Foundry Section	Aug. 19 – Oct. 19, 02	2.0	
14	2002-2 Nuryantoro	Moulding	Staff, Moulding Group, Foundry Section	Aug. 19 – Oct. 19, 02	2.0	
15	2002-3 Sri Bimo Pratomo	Casting Design and Evaluation	Staff, Engineering Group, Foundry Section	Aug. 19 – Nov. 16, 02	2.9	
16	2003-1 Taufiq Rochim	Project Management	Head, MIDC	Aug. 24 – Sep. 06, 03	0.5	
17	2003-2 Dadang Supriatna	Melting	Staff, Melting Group, Foundry Section	Aug. 19 – Oct. 11, 03	1.8	
18	2003-3 Ganda Rosita	Pattern Making	Staff, Pattern Making Group, Foundry Section	Aug. 19 – Oct. 11, 03	1.8	
				(Total M/M)	40.6	

JICA Budget Allocation
MIDC/JICA Project on Supporting Industries Development for Casting Technology in Indonesia

as of the end of September, 2003
 (Unit: Japanese Yen)

Japanese Fiscal Year	1998		1999		2000		2001		2002		2003		Total	
	Allocation	Actual	Allocation	Actual	Allocation	Actual	Allocation	Actual	Allocation	Actual	Allocation	Actual	Allocation	Actual(-Sep.)
1 JICA Local Budget														
(1) Ordinary			23,119,000	25,665,655	4,111,000	5,118,744	2,886,000	2,886,000	3,039,000	3,254,000	4,618,000	1,951,000	37,773,000	38,875,399
(2) Extraordinary Electric Power Extension			5,119,000	5,119,000	3,461,000	4,459,000	2,886,000	2,886,000	3,039,000	3,254,000	4,618,000	1,951,000	19,123,000	17,669,000
(3) Extraordinary Machinery Installation			18,000,000	18,282,655	-	-	-	-	-	-	-	-	18,000,000	18,282,655
(4) Technical Exchange			-	2,264,000	-	-	-	-	-	-	-	-	650,000	2,264,000
			-	-	650,000	659,744	-	-	-	-	-	-	650,000	659,744
2 Machinery & Equipment														
(1) Procured in Japan	176,000,000	194,696,250	92,600,000	69,010,832	14,000,000	17,802,720	3,550,000	6,428,054	0	4,505,697	0	0	0	286,150,000
(2) Procured Locally in Indonesia	176,000,000	194,696,250	24,250,000	12,267,500	1,000,000	6,958,770	900,000	2,180,288	0	0	0	0	0	202,150,000
	-	-	68,350,000	56,743,332	13,000,000	10,843,950	2,650,000	4,247,766	0	4,505,697	0	0	84,000,000	76,340,745

<Note> 1. "Allocation" means amount of budget allocated when each annual plan was approved.

MIDC/JICA Project on Supporting Industries Development for Casting Technology in Indonesia

Project Management	Name of C/P	Date of Birth	Age	Spouse	Position	Japanese Fiscal Year Indonesian Fiscal Year	Project Year												Remarks
							FY 1999 (FY H11) 1999	FY 2000 (FY H12) 2000	FY 2001 (FY H13) 2001	FY 2002 (FY H14) 2002	FY 2003 (FY H15) 2003	FY 2004 (FY H16) 2004	FY 2005 (FY H17) 2005	FY 2006 (FY H18) 2006	FY 2007 (FY H19) 2007	FY 2008 (FY H20) 2008	FY 2009 (FY H21) 2009		
						Calendar Year	1	2	3	4	5	6	7	8	9	10	11	12	
	out (Mr. J. Supriatno (Ir.))				(CS) (Head, M/D)														
	out (Mr. Abrahim (Ir.))				(CS) (Ex. Head, Process Dev. Div.)														
	1. Mr. Taufiq Rochim (DR. Ir.)	31-May-48	55		CS (Head of MIDC)														Former Project Manager Former Project Coordinator Joined MIDC since Jan '03
	2. Mr. Soeparto Nugroho (Ir.)				(CS) (Head, Process Dev. Div.)														Moved to Head of Calibration Centre in Jan. '03
	3. Mr. Moehamad Furgan (Ir.)	7-Jun-54	49		CS (Head, Foundry Dev.)														Assigned to Head of F/S in Jan. '01 Moved to B&PP
	out (Mr. Abdul Wahid (Dr. MS., Ir.))				(CS) (Head, Research Div.)														
	4. Mr. Hadi Nugroho (Dr.)	11-Dec-48	54		CS (Head, Administrative Div.)														
	5. Drs. William Amriandih				CS (Head, Production System Sec.)														
	out (Mr. A. Satriawan T. (M.Eng. Ir.))				(CS) (Head, Heat Treatment & Metal Finishing sec.)														Former Head, Foundry Sec.
	out (Ms. Lili Yuliaselawati (Ir.))																		Will retire on August 1, 2005
	6. Mr. Adhmad	6-Jul-49	55		CS (Engineering Group, Foundry Sec.)														
	7. Mr. Agus Hermawan (Ir.) (also covers Training)	17-Dec-55	38		CS (Engineering Group, Foundry Sec.)														
	8. Mr. Fungki Adi Putra (Ir.) (also covers Molding)	28-Sep-59	34		CS (Engineering Group, Foundry Sec.)														
	9. Mr. Sri Bimo Pratomo (Ir.)	17-Sep-59	34		CS (Engineering Group, Foundry Sec.)														
	10. Mr. Helmi Herdadi (Ir.)	20-Apr-59	44		CS (Engineering Group, Foundry Sec.)														
	11. Mr. Hadi Subianto (Ir.)	23-Dec-75	28		PH (Engineering Group, Foundry Sec.)														Moved to F/S on May 1, '01
	out (Mr. Rudi Sutardi (MS., Ir.))	17-Jul-63	40		CS (Research Div.)														Joined F/S on May 28, '01
	out (Mr. Mardjo Dipo Purnomo (MS., Ir.))	2-Oct-51	42		CS (CAD/CAM Group, Research Div.)														Study in Japan until Jun. '01
	out (Mr. Tegang Tegayman (Ir.) (also covers Training))				(CS) (Melting Group, Foundry Sec.)														
	out (Mr. Ari Yulia Basti (Ir.))				(CS) (Research Div.)														
	12. Mr. Dedi Supriana	10-Dec-60	43		CS (Pattern Making Group, Foundry Sec.)														
	13. Mr. Ihs Sidiq	29-Apr-64	39		CS (Pattern Making Group, Foundry Sec.)														
	14. Mr. Ganita Roelia	4-Jan-55	48		CS (Pattern Making Group, Foundry Sec.)														
	15. Mr. Dudi Kusnandar (Ir.)	7-Sep-72	31		PH (Pattern Making Group, Foundry Sec.)														Joined F/S on Jul 7, '01
	16. Mr. Yayan Hendrayana	6-Feb-58	45		DW (Pattern Making Group, Foundry Sec.)														Joined F/S on Aug. 1, '01
	17. Mr. Ona Wijaya	4-Oct-78	25		DW (Pattern Making Group, Foundry Sec.)														Joined F/S on Aug. 6, '01
	18. Mr. Ngurni Idris Setiawan	7-Mar-76	27		DW (Pattern Making Group, Foundry Sec.)														Joined F/S on June, '03
	out (Mr. M. Ibrahim)	6-Feb-58	45		(CS) (Marketing Sec.)														
	19. Mr. Dading Supriatna (Ir.) (also covers Casting part)	19-Jun-65	38		CS (Melting Group, Foundry Sec.)														
	20. Mr. Ruhast	1-Jan-50	44		CS (Melting Group, Foundry Sec.)														Will retire on September 1, 2005
	21. Mr. Uun Sulaiman	24-Aug-48	54		CS (Melting Group, Foundry Sec.)														
	22. Mr. Raimat (Ir.)	28-Apr-64	39		CS (Melting Group, Foundry Sec.)														
	23. Mr. Usa	31-Dec-51	52		CS (Felling Group, Foundry Sec.)														
	24. Mr. Nana Jhenna	9-Nov-81	22		DW (Felling Group, Foundry Sec.)														Joined F/S on Jun. 5, '01
	25. Mr. Gunan	9-Sep-81	22		DW (Felling Group, Foundry Sec.)														Joined F/S on Sep. 2, '02
	26. Mr. Dian Harmanan	26-Aug-83	20		DW (Felling Group, Foundry Sec.)														Joined F/S on Jun. '03
	out (Mr. Pungki Adi Putra (Ir.) (Casting Plan C/P))				(CS) (Engineering Group, Foundry Sec.)														
	out (Mr. Deat Kurniadi)				(CS) (Melting Group, Foundry Sec.)														Retired
	27. Mr. Juanda	2-Apr-48	54		CS (Moulding Group, Foundry Sec.)														Will retire on May 1, 2005
	28. Mr. Nuryantoro	27-Feb-49	54		CS (Moulding Group, Foundry Sec.)														Will retire on March 1, 2005
	29. Mr. Bonim	26-Nov-51	46		CS (Moulding Group, Foundry Sec.)														
	30. Mr. Aji Padli	12-Apr-53	50		CS (Moulding Group, Foundry Sec.)														
	31. Mr. Wahid Ahmad	9-Apr-78	24		PH (Moulding Group, Foundry Sec.)														Joined F/S on May 1, '01
	32. Mr. Aifih				DW (Moulding Group, Foundry Sec.)														
	33. Mr. Pudin				DW (Moulding Group, Foundry Sec.)														
	out (Mr. Rachmat Setiawan Sutisna (Wawa))				DW (Moulding Group, Foundry Sec.)														Joined F/S on July, '03
	out (Mr. George Zaenal Fedy (BE))				(CS) (Research Div.)														Joined F/S on Sept. 1, '01
	34. Mr. Sudarn	12-Dec-47	56		CS (Sand Laboratory, Foundry Sec.)														Will retire on January 1, 2004
	35. Mr. Asadani	11-Mar-49	54		CS (Sand Laboratory, Foundry Sec.)														
	36. Ms. Shinta Vichiani (Ir.)	27-Jul-78	25		CS (Sand Laboratory, Foundry Sec.)														Joined F/S on July 7, '03
	37. Mr. Roelia	29-Dec-69	49		CS (Chemical & Metallurgy Lab., F.S.)														
	38. Ms. Eva Afilicia (Ir.)	23-Apr-77	26		PH (Chemical & Metallurgy Lab., F.S.)														Joined F/S on May 1, '01
	out (Mr. Agus Hermawan, Casting Plan C/P)				(CS) (Engineering Group, Foundry Sec.)														
	out (Mr. Tegang Tegayman (Ir.) (Casting Plan C/P))				(CS) (Heat Treatment & Metal Finishing Sec.)														
	39. Mr. Suharna	10-Feb-58	45		CS (Maintenance Group, Foundry Sec.)														
	40. Mr. Gertje Rajagayuk				Maintenance Group, Foundry Sec.														

Legend: CS: Civil Servant, PH: Project, DW: Daily Worker

Allocation, Training in Japan

**BUDGETARY ALLOCATION OF MIDC
YEAR PERIODE : 2000 — 2003**

NO.	DESCRIPTION	2000		2001		2002		2003	
		ALLOCATION	SPENT	ALLOCATION	SPENT	ALLOCATION	SPENT	ALLOCATION	SPENT
I	<u>ROUTINE:</u>	1,231,314,000	1,810,726,363	1,899,401,000	3,226,687,288	1,905,913,000	3,082,695,611	2,195,444,000	
1	Wage/Salary Stationeries/	896,768,000	1,487,715,747	1,424,359,000	2,753,156,743	1,533,225,000	2,711,875,149	1,768,473,000	
2	Office Equipment	20,183,000	19,497,600	13,370,000	12,923,775	14,833,000	14,748,800	17,225,000	
3	Electricity & Telephone	127,622,000	154,773,195	276,688,000	276,631,036	196,000,000	194,778,631	224,869,000	
4	Material	64,242,000	28,197,650	50,419,000	50,400,000	38,000,000	37,921,556	43,516,000	
5	Others	38,000,000	36,441,171	30,174,000	29,566,584	32,211,000	32,128,950	26,300,000	
6	Maintenance								
	- Building	25,087,000	25,050,000	18,948,000	18,889,530	33,948,000	33,717,000	49,038,000	
	- Machine & Equipment	43,777,000	43,424,200	62,033,000	61,725,870	37,350,000	37,263,275	42,770,000	
7	Travelling	15,635,000	15,626,800	23,410,000	23,393,750	20,346,000	20,262,250	23,253,000	

**BUDGETARY ALLOCATION OF MIDC
YEAR PERIODE : 2000 — 2003**

NO.	DESCRIPTION	2000				2001				2002				2003 PLAN / PROPOSAL
		REVENUE		EXPENSES	REVENUE		EXPENSES	REVENUE		EXPENSES	REVENUE		EXPENSES	
		TARGET	ACTUAL		TARGET	ACTUAL		TARGET	ACTUAL		TARGET	ACTUAL		
II	<u>SERVICES</u>	1,272,194,000	1,130,418,852	1,130,418,852	1,800,000,000	1,799,144,903	1,799,144,903	2,060,000,000	1,915,897,502	1,915,897,502	1,915,897,502	1,915,897,502	793,935,000	
1	Remaining Budget	-	93,406,997	190,169,510	-	190,169,510	121,037,787	-	121,037,787	231,035,719	-	-	-	
2	R & D	151,500,000	43,727,500	-	102,045,000	94,950,900	-	150,000,000	102,078,110	-	-	-	75,907,000	
3	Training	225,000,000	247,572,000	-	550,000,000	737,330,800	-	600,000,000	348,812,500	-	-	-	134,030,000	
4	Consultation	366,000,000	285,941,595	-	450,000,000	350,071,160	-	275,000,000	333,121,500	-	-	-	122,853,000	
5	Testing & Calibration	175,000,000	416,807,760	-	347,955,000	242,034,500	-	610,000,000	756,707,555	-	-	-	438,890,000	
6	Others (Product Mfg.)	364,694,000	42,963,000	-	350,000,000	184,588,033	-	415,000,000	254,140,050	-	-	-	22,255,000	
1	Wage/Salary	-	-	242,615,190	-	-	599,503,970	-	-	-	-	668,518,920	-	
2	Material	-	-	211,517,705	-	-	611,427,866	-	-	-	-	491,560,882	-	
3	Electricity	-	-	170,818,397	-	-	146,735,780	-	-	-	-	42,163,321	-	
4	Maintenance	-	-	4,984,000	-	-	8,500,000	-	-	-	-	2,505,300	-	
5	Travelling	-	-	310,314,050	-	-	311,939,500	-	-	-	-	480,113,360	-	

In Rupiah

**BUDGETARY ALLOCATION FOR MIDC DEVELOPMENT
YEAR PERIODE : 2000 — 2003**

NO.	FOR THE PROJECT	2000			2001			2002		2003
		ALLOCATION	SPENT	ALLOCATION	SPENT	ALLOCATION	SPENT *)	ALLOCATION	BUDGET ALLOCATION	
I	<u>Project Administration</u>									
	1 Wage/Salary	40,100,000	38,200,800	47,064,000	46,508,000	54,502,000	53,547,920	117,414,000		
	2 Material	4,905,000	4,905,000	6,024,000	6,024,000	10,992,000	10,992,000	19,770,000		
	3 Travelling	10,500,000	10,477,175	13,200,000	13,030,050	12,900,000	12,898,530	10,000,000		
	4 Others	10,560,000	10,539,500	12,000,000	11,995,000	15,570,000	15,505,500	57,644,000		
		14,135,000	12,279,125	15,840,000	15,458,950	15,040,000	14,151,890	30,000,000		
II	<u>Procurement of Equipment</u>	65,000,000	62,638,000			430,195,000	416,778,000	2,521,070,000		
III	<u>Maintenance of Building and Others</u>									
	1 Maintenance of Machining Machine			125,959,000	120,300,500	39,890,000	26,324,000	2,783,196,000		
	2 Maintenance of Foundry Machine							790,190,000		
	3 Maintenance of Calibration Machine							233,000,000		
	4 Maintenance of Office Building etc.							102,750,000		
								1,657,256,000		
IV	<u>Development of Institution</u>									
1	JICA									
	1 Wage/Salary	324,848,000	318,643,650	208,307,000	199,861,400	274,225,000	268,864,894	739,525,000		
	2 Material	44,342,000	44,190,000	32,976,000	32,976,000	50,850,000	50,850,000	78,000,000		
	3 Travelling	40,500,000	40,189,450	114,341,000	112,612,500	159,385,000	156,168,694	95,941,000		
	4 Others	23,606,000	23,175,600	52,490,000	48,109,500	51,640,000	50,261,800	102,584,000		
	5 Training of Foundry	216,400,000	211,088,600	8,500,000	6,163,400	12,350,000	11,584,400	6,000,000		
	6 Workshop at West & East Java							60,000,000		
	7 International Seminar							40,000,000		
	8 Domestic Seminar							45,000,000		
	9 Others Training							20,000,000		
								292,000,000		

2	<u>Research of Product</u>	65,284,000	64,604,050	576,186,000	543,686,250	557,926,000	538,467,140	-
3	<u>Design & Manufacturing of Equipment</u>	137,040,000	135,807,150	368,314,000	339,547,940	38,632,000	35,163,250	-
4	<u>Implementation of Equipment</u>	42,128,000	61,820,850	73,644,000	59,352,500	50,130,000	28,210,000	-
5	<u>Mach. Optimization, Proc. of Mach. Tools</u>			-	-	-	-	77,780,000
6	<u>Technical Assistance for UPT</u>			-	-	-	-	169,610,000
7	<u>Development of Manpower for MIDC</u>			-	-	-	-	370,240,000
8	<u>Redesign & Training of Agric. Mach.</u>			-	-	-	-	231,256,000
TOTAL		674,400,000	681,714,500	1,399,474,000	1,309,256,590	1,445,500,000	1,367,355,204	7,010,091,000

*) Status : December 2002

List of Equipment Current Existing and Prepared by MIDC 1/10

31st August 2003
Pattern Shop

No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume (Unit)	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks
1	Circular Saw	France	Kamro SK	0 circular 400 ml	4.05 kwh	1 unit	1974	5 days/week		Available	
2	Band Saw Machine	Belgium	DANKAERT	Length 5450 mm	4.00 kwh	1 unit	1974	5 days/week		Available	
3	Combined Planning Machine	France	Durem	Width 400mm	4.05 kwh	1 unit	1974	5 days/week		Available	
4	Milling Machine	Belgium	Vertongen	Max.cutter Size 250 mm	3.45 kwh	1 unit	1974	Temporary		Available	
5	Disk Sander	France	Ducuroir			1 unit	1974	5 days/week		Available	
6	Horizontal Drilling Machine	France	Ducuroir			1 unit	1974	Temporary		Available	Not used
7	Spindel Sander	France	Ducuroir	Max 150x		1 unit	1974	5 days/week		Difficult	
8	Vertical Drilling Machine	Italy	Gloria			1 unit	1974	Temporary		Available	
9	Abrasive Band Machine	England	Sheer			1 unit	1974	Temporary		Difficult	Not used
10	Dust Collector	Belgium	Vertegen			1 unit	1974	5 days/week		Difficult	
11	Automatic Grinding Machine	France	Ducuroir			1 unit	1974	Temporary		Not Available	
12	Tools Grinding Machine	Belgium	Vertegen			1 unit	1974	5 days/week		Available	
13	Vertical Abrasive Machine	Belgium	Elan			1 unit	1974	Temporary		Available	Not used
14	Hot Melt Hand Gun	England	AD 25			1 unit	1974			Not Available	Not used

List of Equipment Current Existing and Prepared by MIDC 2/10

Pattern Shop

No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume (Unit)	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks
15	Electric Band Saw Grinder	W. Germany	Ideal			1 unit	1974	Temporary		Not Available	
16	Electric Band Saw Welder	W. Germany	Ideal			1 unit	1974	Temporary		Not Available	
17	Portable Router	W. Germany	Ideal			1 unit	1974	Temporary		Available	
18	Universal Milling Machine	England	WADKIN			1 unit	1983	Temporary	Available	Not Available	
19	Wood Lathe Machine	Germany	JIMMERMAN			1 unit	1983	5 days/week	Available	Ditto	
20	Planing Cutter Grinder	Belgium	Vertongen			1 unit	1974	Temporary		Available	
21	Work Bench	Belgium				2 unit	1974	5 days/week	Available	Ditto	
22	Contraction Ruller	Germany			1000 mm	3 unit	1974	5 days/week		ditto	
23	Vernier Caliper	England	Preisser		300 mm	2 unit		5 days/week		ditto	
24	Height Gauge	England	Keisser		1000 mm	1 unit	1974	Temporary		ditto	
25	Depth Gauge	England	INNOX		300 mm	1 unit	1974	5 days/week		ditto	
26	Level Protactor	England	INNOX			1 unit	1974	5 days/week		ditto	
27	Iron Work Bench	Belgium			1.5 x 2 m	2 unit	1974	5 days/week		ditto	
28	Hand Tools (Hammer, Chisel, File, Screwdriver, Planer etc.)	China				2 unit	1985	5 days/week		ditto	

List of Equipment Current Existing and Prepared by MIDC 3/10

Melting

No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume (UNIT)	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks
1	Cupola	Belgium	Cold Blast	1,5 ton/hr	550 mm (dia.)	1	1974	Temporary		Available	Not used
2	Shot Blast	France	Hanger Type	1 ton	Sisson Leman	1	1974	4 days/week		Available	
3	Ladle Heating	Belgium	Monometer	3 ladles	Oil burner	1	1974	5 days/week		Available	
4	Fuel Pump	Belgium		150 ltr/hr	Axial type	1	1974	5 days/week		Available	
5	Induction F/C	USA	Elphiac	75 kg	2000 Hz	1	1974	5 days/week		Not Available	
6	Bale Out F/C	England	Monometer	100 kg	Oil Burner	1	1974	temporary		Available	Not used
7	Shake Out	Belgium	AM 100 LVA	500 kg	Vibrator type	1	1974	4 days/week		Available	
8	Tilting F/C	England	Monometer	300 and 150 (kg)	Oil burner	2	1974	Temporary		Available	
9	Grinding M/C	Belgium	REMA		500 mm (dia)	1	1974	5 days/week		Available	
10	Ladles	Belgium	Open Ladle Tea pot Ladle Open Ladle Open Ladle	100 Kg 750 Kg 500 Kg 750 Kg		2 2 1 1	1974 1974 1974 1974	5 days/week Temporary Temporary Temporary		Available	Not used Not used Not used Not used
11	Gantry Crane	German	Verlinde	2 tons	2 speed	1	1974	5 days/week		Available	
12	Work Bench	Belgium	PRAM		0,75x2 m	1	1974	5 days/week		Available	
13	Rotary F/C	England	Monometer	500 kg	25 gal/hr	1	1982	Temporary		Available	

List of Equipment Current Existing and Prepared by MIDC 4/10

Melting

No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume (UNIT)	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks
14	Pyrometer Optic	USA	L&N		2000 °C	1	1974	Temporary		Available	
15	Pyrometer Digital Thermocouple	Belgium	Mark III Electro Nite		1800 °C	1	1983	5 days/week		Available	Out of order
16	Thermocouple	USA	L&N			1	1974	Temporary		Not Available	Out of order
17	Crucible F/C	Belgium	Salamander	60 kg	Oil burner	1	1974	Temporary		Available	
18	CE Meter Computer	Japan	Nakayama			1	1986	5 days/week		Not Available	
19	Digital CE Meter	Japan	YAHAGI EEC			1	1983	Temporary		Not Available	Out of order (%C Problem)
20	Steel Analyses Digital	USA	L&N			1	1974	Temporary		Not Available	
21	CE Meter Grafic	USA	L&N			1	1974	Temporary		Not Available	Out of order
22	Electro Nite CE Meter	Belgium	QUICK LAB II			1	1974	Temporary		Not Available	Out of Order (Printer Problem)
23	Digital CE Meter	Belgium	L & N			1	1974	Temporary		Not Available	Not used
24	Balance	England	Berkel	500 Kg		1	1974	5 days/week		Available	
25	Balance	Belgium	Rhewa	25 Kg		1	1980	5 days/week		Available	
26	Balance	Belgium	Hanger type	500 Kg		1	1974	Temporary		Available	
27	Small Grinder M/C	Japan	HITACHI	150 (dia)		2	1985	5 days/week		Available	

List of Equipment Current Existing and Prepared by MIDC 5/10

Moulding

No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume (Unit)	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks
1	Sand Preparation	Belgium	Conveyor type	5 tons/hr		1	1974	5 days/week		Available	
2	Moulding M/C	Belgium	5.600 B	30 flask/hr	Jolt and squeeze	1	1974	-		Not available	Out of order
3	Moulding M/C	Belgium	5.600 B2	30 flask/hr	Jolt and squeeze	1	1974	-		Not available	Out of order
4	Ribon flow Mixer	Belgium	L 22	2 tons/hr	Screw type	1	1974	-		Not available	Out of order
5	Sand Mixer	Belgium	GIETART	250 Kg	Muller	1	1974	5 days/week		Available	
6	Core Making M/C	Belgium	Varcel		Hot Box	1	1974	-		Not available	Out of order
7	Drying Oven	Belgium		1.8 x 2 x 2 mtr		1	1974	Temporary		Available	
8	Hoist Compressed Air System	Belgium				1	1974	Temporary		Available	Not used
9	Compressor	Sweden	KAESER	7 Bar	Screw Type	1	1997	5 days/week		Available	Not used
10	Core Work Bench	Belgium	PRAM			1	1974	5 days/week		Available	
11	Sand Dryer	Belgium	L 42	1 ton/hr		1	1974	Temporary		Available	

List of Equipment Current Existing and Prepared by MIDC 6/10

Moulding

No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume (Unit)	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks
12	Mixer 75 kg	Japan	SINTO	75 kg	Muller	1	1983	5 days/week		Available	
13	Mixer 25 kg	Japan	SINTO	25 kg	Muller	1	1983	5 days/week		Available	Out of order
14	Pneumatic	Sweden	ATLASCOPO	-	-	4	1974	Temporary		Available	
15	Core Mixer	Belgium	Mixer	50 kg	Mixer	1	1974	Temporary		Available	
16	Flask	Germany			45x45x10 cm	30 pcs	1974	5 days/week			10 pcs out of order
17	Flask	Germany			75x55x15 cm	30 pcs	1974	5 days/week			6 pcs out of order
18	Flask	Germany			83x83x20 cm	10 pcs	1974	Temporary			
19	Flask	Germany			112x112x30 cm	4 pcs	1974	Temporary			
20	Flask	Germany			172x172x40 cm	2 pcs	1974	Temporary			
21	Roller Conveyor	Belgium			Small	1 unit	1974	5 days/week		Available	Not used
22	Roller Conveyor	Belgium			Big	1 unit	1974	5 days/week		Available	Not used

List of Equipment Current Existing and Prepared by MIDC 7/10

Sand Laboratory												
No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume (Unit)	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks	
1	Laboratory Shifter	Switzerland (GF)	PSA			1 unit	1974	Temporary	-	Not Available		
2	Jolt Squeeze	Switzerland (GF)				1 unit	1974	Temporary	-	Not Available		
3	Wet Tensile Strength	Switzerland (GF)	PMF			1 unit	1974	Temporary	-	Not Available	Out of order	
4	Central Controller	Switzerland (GF)	PZS			1 unit	1974	Temporary	-	Not Available	,"	
5	Compressive Stress	Switzerland (GF)	PDA			1 unit	1974	Temporary	-	Not Available	,"	
6	Dilato Meter	Switzerland (GF)				1 unit	1974	Temporary	-	Not Available	,"	
7	Universal Strength Machine	Switzerland (GF)	PFA			1 unit	1974	Temporary	-	Not Available		
8	Sintering Furnace	Switzerland (GF)	PSO			1 unit	1974	Temporary	-	Not Available	Out of order	
9	Checking Device	Switzerland (GF)	PKV			1 unit	1974	Temporary	-	Not Available		
10	Agitator	Switzerland (GF)	PED			1 unit	1974	Temporary	-	Not Available		
11	Rammer	Switzerland (GF)	PRA			1 unit	1974	Temporary	-	Not Available		
12	Accessories to Sand Rammer	Switzerland (GF)	PRA-PRA.E			1 unit	1974	Temporary	-	Not Available		
13	Hygro Meter	Switzerland (GF)	PRAM			1 unit	1974	Temporary	-	Not Available		
14	Permeability Meter	Switzerland (GF)	PDN			1 unit	1974	Temporary	-	Not Available		
15	Infra Red Rapid Dryer	Switzerland (GF)	PIT			1 unit	1974	Temporary	-	Not Available		

List of Equipment Current Existing and Prepared by MIDC 8/10

Sand Laboratory												
No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume (Unit)	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks	
16	Stereoscopic Microscopic	Switzerland (GF)	46/RT/428			1 unit	1974	Temporary	-	Not Available		
17	Drying Oven	Switzerland (GF)	Eihret			1 unit	1974	Temporary	-	Not Available		
18	Mettler Balance	Switzerland (GF)	P200N			1 unit	1974	Temporary	-	Not Available		
19	Flowability Test	Switzerland (GF)	PFS			1 unit	1974	Temporary	-	Not Available		
20	Labo Mixer	Switzerland (GF)	PRAM	1,5 kg		1 unit	1974	Temporary	-	Not Available		
21	Laboratory Mixer	Switzerland (GF)	PLK	6 kg		1 unit	1974	Temporary	-	Not Available		
22	Sand Sampler	Switzerland (GF)	PSN			1 unit	1974	Temporary	-	Not Available		
23	Continuous Clay Washer	Switzerland (GF)	PKA			1 unit	1974	Temporary	-	Not Available		
24	Green Tensile Strength	Switzerland (GF)	PZS			1 unit	1974	Temporary	-	Not Available		
25	Core Hardness	Switzerland (GF)	PKE			1 unit	1974	Temporary	-	Not Available		
26	Mould Hardness	Switzerland (GF)	PFN			1 unit	1974	Temporary	-	Not Available		
27	Sand Rammer	JAPAN	SINTO-KOGIO			1 unit	1974	Temporary	-	Not Available		
28	Permeability Meter	JAPAN	SINTO-KOGIO			1 unit	1986	Temporary	-	Not Available		
29	Rot-Tap Shaker	JAPAN	SINTO-KOGIO			1 unit	1986	Temporary	-	Not Available		
30	Moisture Teller	JAPAN	SINTO-KOGIO			1 unit	1986	Temporary	-	Not Available		
31	Universal Strength Machine	JAPAN	SINTO-KOGIO			1 unit	1986	Temporary	-	Not Available		

List of Equipment Current Existing and Prepared by MIDC 9/10

Metal Laboratory											
No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks
1	Surfmet Grinder Abrasive	USA	Buchler LTD	-	-	1	1974	Temporary	-	Available	
2	Polishing Machine	DENMARK	Struers	-	-	1	1974	Temporary	-	Available	
3	Polishing Machine	DENMARK	API	-	-	1	1974	Temporary	-	Available	
4	Water Distillation	GERMANY	EXELO	2.5 l/hr	Electrical heater	1	1974	Temporary		Available	
5	Orsat Analysis Gas for O ₂ & N ₂	GERMANY	STROCHLEIN	-	-	1	1974	Out of Order	-	Not Available	
6	Magnetic Mixer	GERMANY	HEILDOLPH	-	-	1	1974	Temporary	-	Available	
7	Heater/Cook Plate	INDONESIA	Kalorik	-	-	1	1990	Temporary	-	Available	
8	Carbon & Sulfur Determinator	GERMANY	STROCHLEIN	-	-	1	1974	Out of order	-	Not Available	
9	Heating Furnace	BELGIUM	ANALIS	-	1200° C	1	1974	Temporary	-	Not Available	
10	Drying Oven	GERMANY	MEMERT	-	200° C	1	1974	Temporary	-	Available	
11	Balance	FRANCE	METLER	1200 gr	-	1	1974	Temporary	-	Available	
12	Balance	GERMANY	BOSCH	1200 gr	-	1	1974	Out of order	-	Available	

List of Equipment Current Existing and Prepared by MIDC 10/10

Metal Laboratory											
No	Name of equipment Machinery	Maker Country of origin	Model	Capacity	Specification	Volume	Date of Installation	Current usage and its frequency	Status of spare part stored	Available of spare part in Indonesia	Remarks
13	Microscope Metapan	AUSTRIA	REICHRET	-	50-800 time	1	1974	Temporary	-	available	Camera out of order
14.	Hardness Tester	SPAIN	HOYTOM	-	HRC;HRB	1	1974	Temporary	-	Available	
15.	Electro Lyseur	France	Etehm	-	-	1	1974	Temporary	-	Available	
16.	Electro Analysis apparatus	USA	EBERBACH	-	-	1	1981	Out of order	-	Not available	
17.	Carbon Determinator	USA	Leco	-	-	1	1983	Temporary	-	Not available	
18.	Sulfur Determinator	USA	Leco	-	-	1	1983	Temporary	-	Available	
19.	Spectrometer	England	Hilger	14 element	Ferrous Test	1	1995	Temporary	-	Available	
20.	Spectro Grinder Specimen	England	Huston	-	Ø 120 mm	1	1992	Temporary	-	Available	
21.	Spectro Polishing Specimen	England	Herzog	-	70 mm width	1	1992	Temporary	-	Available	
22.	Argon Prifier	England	Sircal	-	7,5 amper	1	1992	Temporary	-	Available	
23.	Micro Hardness	Japan	Shimadzu	-	Micro Vikers	1	1987	Temporary	-	Available	
24.	Mocroscope Metallography	Japan	Nikon	-	50 - 400 time	1	1987	Temporary	-	Available	
25.	Mocroscope Metallography	Japan	Nikon	-	50 - 1000 time	1	1992	Temporary	-	Available	

Achievement of the Project (based on PDM-0):

Project on Supporting Industries Development for Casting Technology in the Republic of Indonesia

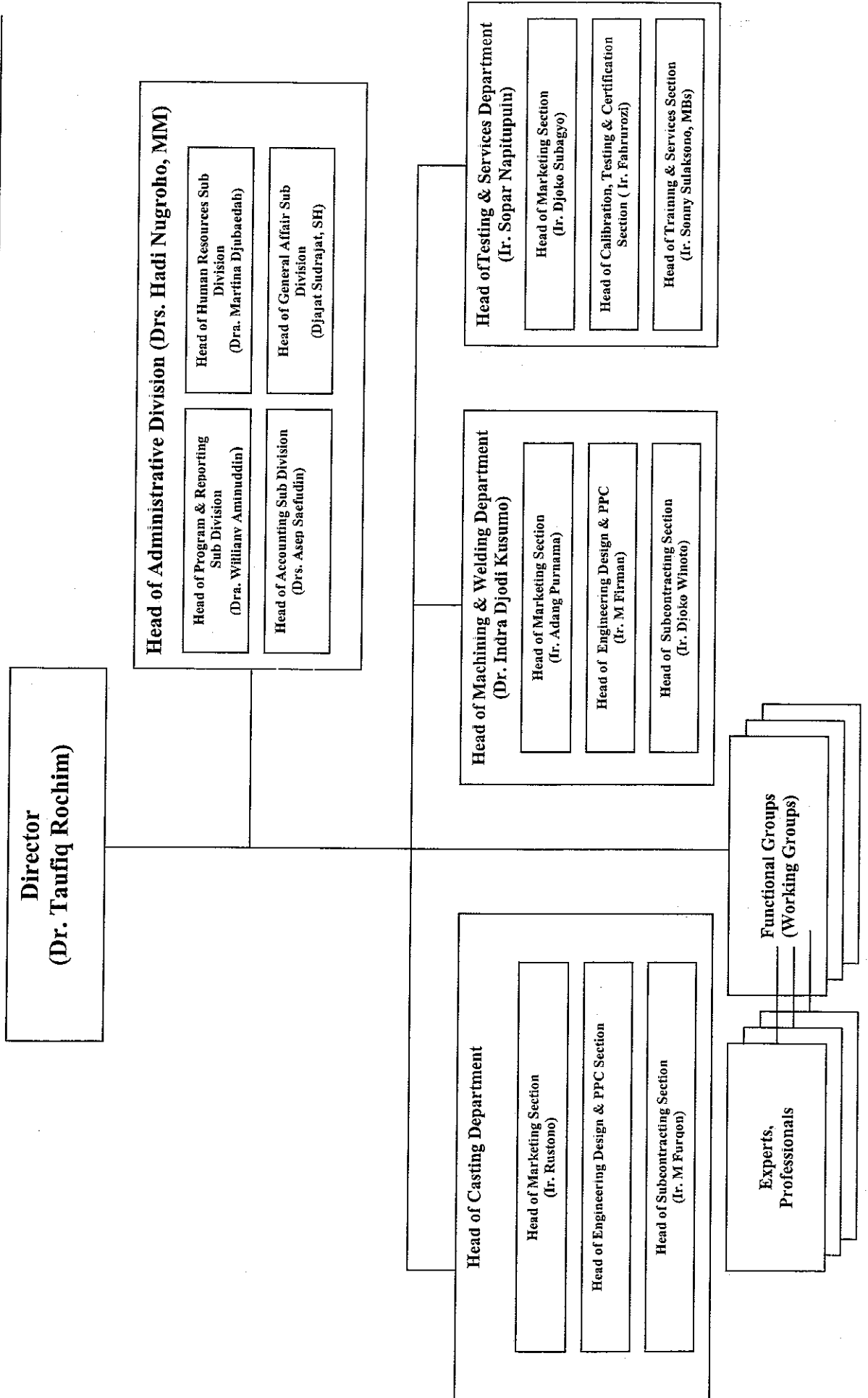
Annex 12

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS (OVIs)	ACTUAL PERFORMANCE OF OVIs	DATA SOURCE
<p>OVERALL GOAL Small and medium scale industries will be able to provide domestic assembly products to meet their quality level.</p>	<p>1 Increase of production delivered to assembly industries.</p>	<p>1-1 Annual production of automobile, the largest user of casting products, increased from 123,244 in 1999 to 299,257 in 2002. 1-2 Annual production of casting product in Indonesia - As the reliable data is not available, this indicator cannot be examined. 1-3 Annual average casting production of surveyed 15 companies. -As the reliable data is not available, the performance of this indicator is only partly described by the trend of total production of 12 selected Indonesian foundries. The annual average casting production of 12 surveyed companies increased from 154t. in 2000 to 366t. in 2002. 2-1 Reject ratio in surveyed 15 companies. As the reliable data is not available, the performance of this indicator is only partly described by the reject ratio in selected 12 companies. The reject ratio of 12 surveyed companies improved from 11.3% in 2000 to 8.7% in 2002. 2-2 The surveys and interviews were conducted for six companies in foundry industries. However, it is difficult to judge the level of improvement for products' quality.</p>	<p>GAIKINDO, 2002 Data not available Survey on Productivity and Expectation of Indonesian Foundries Survey on Productivity and Expectation of Indonesian Foundries Interviews and questionnaires</p>
<p>2 Improvement of quality of products.</p>	<p>3 Improvement of productivity and efficiency</p>	<p>3-1 Labor productivity index (used in the Project. Monthly Production (t) / Number of Technical Personnel (person)) in 15 surveyed companies. As reliable data is not available, the performance of this indicator cannot be examined. 3-2 Energy Efficiency Index (used in the Project. Monthly Production (t) / Monthly Induction Furnace Electric Power Consumption (kwh)) in 15 surveyed companies As reliable data is not available, the performance of this indicator cannot be examined.</p>	<p>Data not available Data not available</p>
<p>PROJECT PURPOSE Technical services for small and medium scale foundry industries extended by MIDC will be improved.</p>	<p>1 Level of satisfaction of present and former service beneficiaries</p>	<p>1-1 Average satisfaction ratio of the participants for seminars achieved over 4.0 out of 5.0. (4.19 in 2001 and 4.03 in 2003) (Data source - Questionnaires for seminar participants conducted in 2001 and 2003) 1-2 Average satisfaction ratio of the participants for the training courses achieved over 4.0 out of 5.0 (4.23 in 2001 and 4.08 in 2003) (Data source - Questionnaires for seminar participants conducted in 2001 and 2003)</p>	<p>Questionnaires Questionnaires</p>
<p>2 Level of satisfaction of industries</p>	<p>3 Number of newly improved services and targeted group</p>	<p>2-1 Breakdown of expectation for each technical services surveyed in 2001 were : (Answered in multiple choice) Seminar, Publications - 72% , Extension Services - 67% Training Courses in MIDC - 53% , Prototyping Service - 29% Breakdown in 2003 are: Seminar, Publications - 68% , Extension Services - 42% Training Courses in MIDC - 42% , Prototyping Service - 16% (Data source - Questionnaires for seminar participants conducted in 2001 and 2003) 3-1 Number of targeted beneficiaries -For extension services, the number of visit increased each year and total number of visit as of Sep. 2003 reached to 192 times. - For training services, the number of trainees participated in the training courses has increased every year. As of Sep. 2003, the total number of 235 trainees received the training course provided by MIDC. - As for seminars, more than 100 people participated in each seminar. The total number of seminar participants reached to 980 as of Sep. 2003.</p>	<p>Questionnaires interviews with industries MIDC Documents, interviews</p>
<p>4 Income received through providing services</p>	<p>5 Quality of product produced by the foundry division of MIDC</p>	<p>3-2 Number of newly improved services Services for Casting Design Simulation, Sand Testing, and Metal Analysis have been newly established and are expected to incur the income for MIDC. 4-1 Annual Income earned by the foundry division through production manufacturing was Rp. 8.8million in 2000, and the amount increased to Rp.35.2 million in 2002. For the year 2003, the annual income accumulated up to Sep. marks Rp. 24.5 million. 5-1 The trend of defect ratio indicates the improvement of quality of product produced by the foundry division of MIDC. In 2000, the average reject ratio was 9.0% per month, this ratio decreased to 3.5% per month in 2003 (as of Sep. 2003)</p>	<p>MIDC Documents MIDC Documents, interviews MIDC Documents MIDC Documents</p>

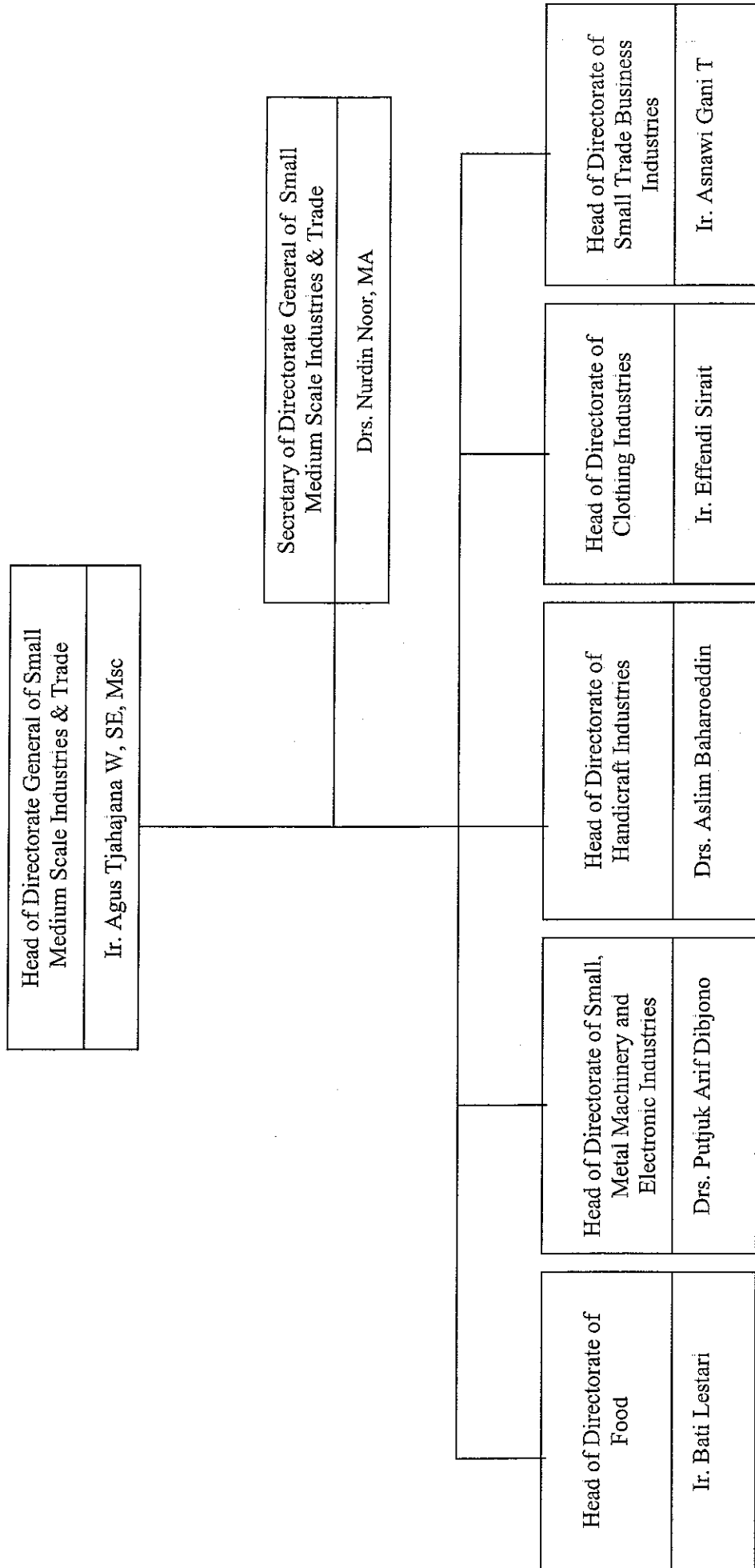
OUTPUTS	0 Project operation unit will be enhanced.	0 Number and quality of staff, budget, established management system.	MIDC documents Interviews with CP
1 Machinery and equipment will be provided, installed, operated and maintained properly.	1 Contents and conditions of machinery and equipment, route to get spare parts and situation to secure spare parts.	1-1 Condition of machinery and equipment - 78 items (28 items procured locally in Indonesia) of equipment and machinery were provided by JICA amounting for 292 million yen (equivalent of Rp. 20, 889 million). Equipment and machinery have been properly maintained and kept in good condition. 1-2 Equipment maintenance system (monitoring system) - Each section is responsible to monitor the condition of equipment and for maintenance. And in case of repair, the maintenance section takes responsibilities. 1-3 Procurement of spare parts - The list of spare parts and specified vendors in local market are used as reference and it facilitates the procedure for local procurement. For the two most valuable, important and crucial equipment, that is, Double Squeeze Moulding System and ab Organic Sand Moulding System, approximately 160 kinds of spare parts have been already secured (provided) by JICA. 1-4 Management of cost for equipment maintenance - Further consideration should be required to constantly obtain the budget for equipment maintenance, especially after the completion of the Project.	MIDC documents Interviews with CP, experts Project documents Interviews with CP, experts MIDC document Interviews with CP, experts MIDC document Interviews with CP
2 Technical capability of the counterpart personnel (hereinafter referred to as "C/P") will be upgraded.	2 Assessment by the Japanese experts, number of achieved Target Products for Technology Transfer.	2-1 Assessment result - According to the TCP conducted by the Japanese experts, the skill level of each counterpart has been drastically improved. Most of counterparts have reached to the targeted level of skill improvement. The progress of average skill improvement in the scale from 0 to 4 in each year is shown below. Skill type 1st year 2nd year 3rd year 4th year 5th year Overall average 0.66 → 1.26 → 2.22 → 2.59 → 3.95 1. Casting Plan 0.6 0.8 1.6 2.0 3.6 2. Pattern Making 1.0 2.0 2.7 3.0 3.6 3. Moulding 0.9 1.1 2.2 2.9 3.8 4. Melting 0.3 1.6 2.9 3.0 3.6 5. Examination and Quality Control 0.5 0.8 1.7 2.1 3.2	Project documents MIDC documents Interviews with CP, experts
3 Trial prototyping services will be implemented systematically.	3 Number of implemented trial prototyping services.	2-2 Number of achieved target products for technology transfer: As of Oct. 2003, total number of 38 target casting have been achieved for technology transfer, which has compared favorably with the number of planned (15) at the beginning of the Project. 3-1 Number of prototypical products made and implemented are: Two hundred forty-two (242) trial prototypical products have been made and implemented as trial prototyping services. The number of each product type is shown below. - 77 Automotive components - 9 Agricultural machinery components - 20 Electrical components - 48 Textile machinery components - 20 Castings for Jig and Fixture for automotive assembling - 12 Industrial machinery components for multiantral industries - 56 Others	Project documents MIDC documents Interviews with CP, experts
4 Technical dissemination services will be implemented systematically.	4 Number of implemented technical dissemination services, number of clients.	3-2 Management system in the process of prototyping products: The collaboration of each section in foundry division is essential for producing the prototyping products. The Project helped to strengthen the teamwork among foundry department through technical transfer, thus to facilitate to increase the efficiency in production process. 4-1 Extension Services - 71 foundries / companies have been visited by the Project totally 192 times mainly for the purpose of technical consultation by Japanese experts and their counterparts. 14 foundries/companies have been designated as the target companies (clients for MIDC) and continuous services have been provided to them. 4-2 Training Courses - 18 training courses have been carried out for small and medium scale foundry industries, and total number of 229 trainees have benefited by the Project. - 3 training courses have been carried out for large-scale companies such as Joint Venture companies and Universities on a charged basis, and totally 6 trainees have participated in the course. - During the course, texts and manuals were prepared by MIDC and distributed to the trainees. 4-3 Management (logistics) of extension services and training services Both services were properly managed by Program Division, however due to the change of organizational structure, the marketing section of foundry division now takes the responsibility to manage the administrative procedure, the performance of marketing section has not yet been evaluated.	MIDC documents Interviews with CP, experts MIDC documents Interviews with CP, experts MIDC documents Interviews with CP, experts MIDC documents Interviews with CP, experts
5 Information services will be implemented systematically.	5 Number of implemented information services, number of beneficiaries, number of participants.	5-1 Seminars - 5 seminars on Iron Casting Technology and 1 Opening Ceremony with Commemorative Seminar have been carried out during the project period. The total number of 950 participants have attended these seminars. 5-2 Publications - Five publications (project leaflet, project pamphlet, casting technology handbook, Metal Indonesia, Iron Casting Technology Edition and the introductory video for the Project) were completed during the project period. These publications were widely distributed to seminar participants, related organizations, and visitors, etc. 5-3 Management (logistics) of organizing seminars and issue of publications Both services were properly managed by Program Division, however due to the change of organizational structure, the marketing section of foundry division now takes the responsibility to manage the administrative procedure. The performance of marketing section has not yet been evaluated.	MIDC documents Interviews with CP, experts MIDC documents Interviews with CP, experts MIDC documents Interviews with CP, experts MIDC documents Interviews with CP, experts

MIDC

Organization



ORGANIZATION CHART OF DIRECTORATE GENERAL OF SMALL MEDIUM SCALE INDUSTRIES AND TRADE (IDKM)
(August 31, 2003)



List of Person in Charge for Each Equipment

No.	to be Kept	Name of Main Equipment	Person in charge (Checker)	Maintenance	Check List	Maintenance Manual
1	Moulding	Double Squeeze High Pressure Green Sand Moulding System (KDM-5)	Boimin	Suharna	<input type="checkbox"/>	<input type="checkbox"/>
2	Moulding	α / β Alkali Phenol Organic Sand Moulding System	Nuryantro		<input type="checkbox"/>	<input type="checkbox"/>
3	Moulding	Green sand System	Juanda		<input type="checkbox"/>	<input type="checkbox"/>
4	Melting	High Frequency Induction Furnace	Dadang		<input type="checkbox"/>	<input type="checkbox"/>
5	Pattern Making	Pattern Making Equipments (Single Surface Plainer etc.)	Dedi		<input type="checkbox"/>	<input type="checkbox"/>
6	Metal Labo	Testing and Inspection Equipments (Portable Metal Analyzer etc.)	Roslina Eva	Agus	<input type="checkbox"/>	<input type="checkbox"/>
7	Fettling	Fettling Machine (Table Type Shot Blast machine etc.)	Dadang	Suharna	<input type="checkbox"/>	<input type="checkbox"/>
8	Foundry	Overhead Crane	Dadang Juanda		<input type="checkbox"/>	<input type="checkbox"/>

JICA/MIDC, SIDCAST

List of Ordered Casing Products

Page 1

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
1		BPPT	End Core (Air Craft Model)	Al-Si Casting	1	1	α Resin Process	
2			Nose (Air Craft Model)		2	1		
3			Rear (Air Craft Model)		3	1		
4		Trimuda Pratama	Bearing Case	FCD600	503L×200W×150H	25.0	Hand Mould with Green Sand	
5		Bp. Adi	Bearing House Unit, Cover #1	FCD600	φ 325×60H	13.0		
6			Bearing House Unit, Cover #2		φ 323×95H	15.5		3
7		Ceper, BPPT	Bearing House Unit, Ring	FC200	350OD×245ID×95H	39.0	3	
8			Brake Drum		φ 308×67H	13.0	10	
9		MIDC, Trial	Fly Wheel	Ni-Hard IV	φ 300×70H	30.0	10	
10			Disc Refiner (Sugar Mill)		335L×215W×38H	8.0	---	D/S Process



Fig. 1a



Fig. 1b



Fig. 2a

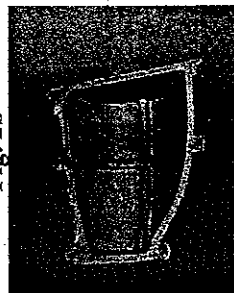


Fig. 2b

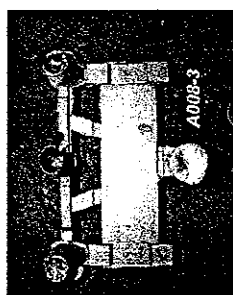


Fig. 3a

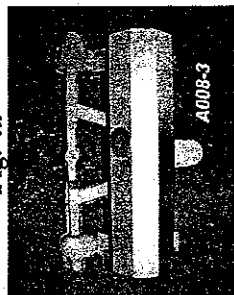


Fig. 3b

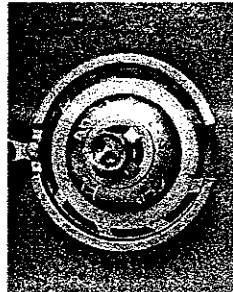


Fig. 4a

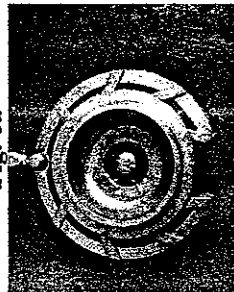


Fig. 4b

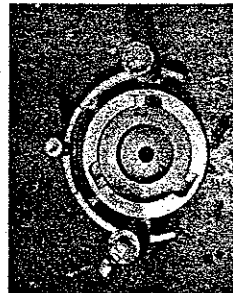


Fig. 5



Fig. 6a

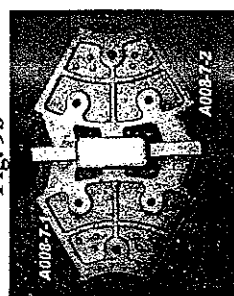


Fig. 6b

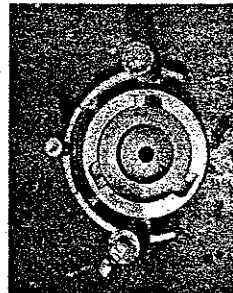


Fig. 7

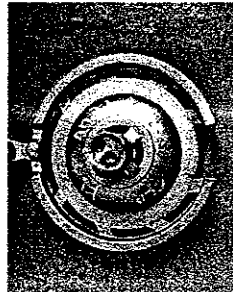


Fig. 8a

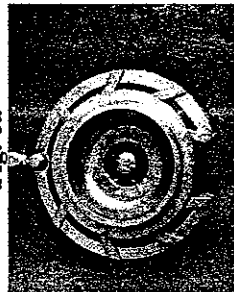


Fig. 8b

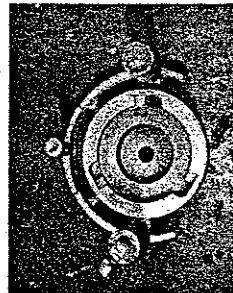


Fig. 9a

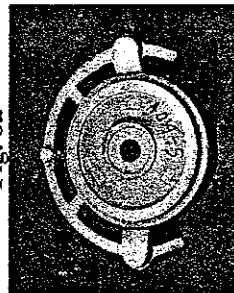


Fig. 9b

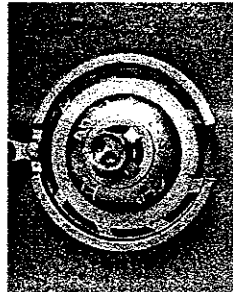


Fig. 10a

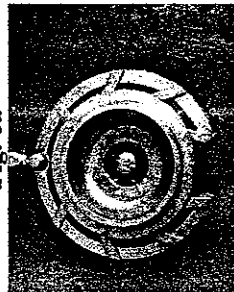


Fig. 10b

JICA/MIDC, SIDCAST

List of Ordered Casting Products

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
11		MIDC Foundry	Weight (D/S Equipment)	850L×630W×115H		11	α Resin Process for Skin Sand	
12			Carriage (D/S Equipment)	870L×590W×70H		12		
13			Lower Flask (D/S Equipment)	775L×775W×219H		13		
14			Upper Flask (D/S Equipment)	775L×775W×219H		14		
15			Roller (D/S Equipment)	φ 174×65H	5.0	15		α Resm Process
16		MIDC Foundry	Imp. Vane (Hanger Shot Blast)	85L×53W×13H	0.4	16	Hand Mould with Green Sand	
17			Stator (Hanger Shot Blast)	φ 75×47H	1.2	17		
18			Rotor (Hanger Shot Blast)	φ 110×67H	0.45	18		
19			Cover (Hanger Shot Blast)	400L×60W×5T	1.9	19		
20			Liner (Hanger Shot Blast)	430L×82W×5T	4.8	20		

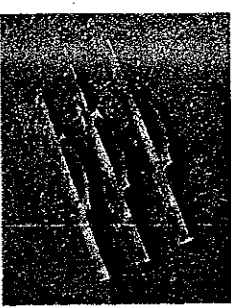


Fig. 11a

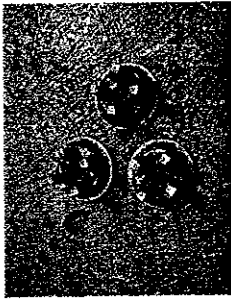


Fig. 11b

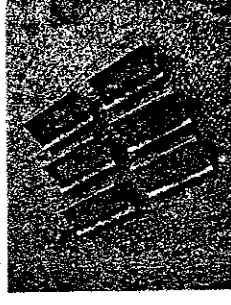


Fig. 12a

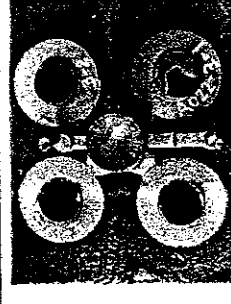


Fig. 12b



Fig. 13

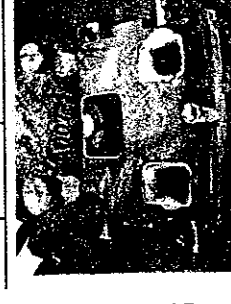


Fig. 14

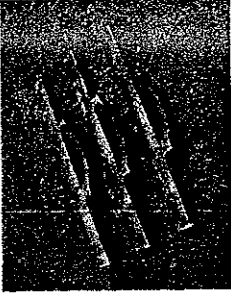


Fig. 15a

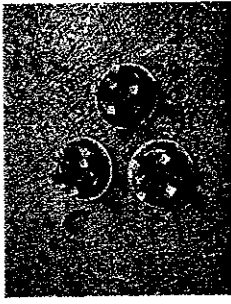


Fig. 15b

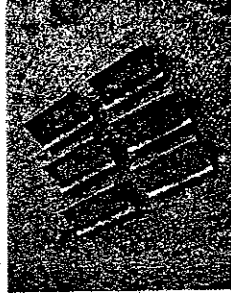


Fig. 16a

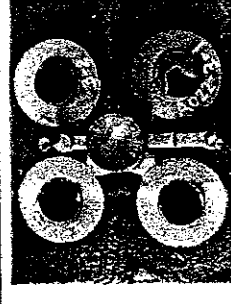


Fig. 16b



Fig. 17a

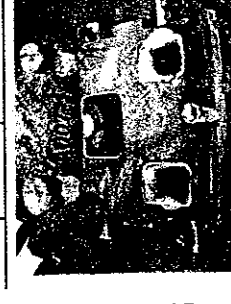


Fig. 17b

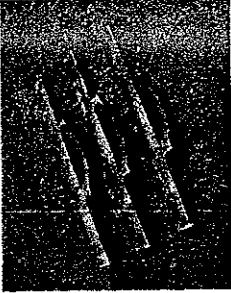


Fig. 18a

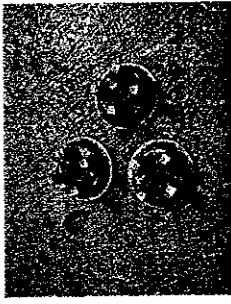


Fig. 18b

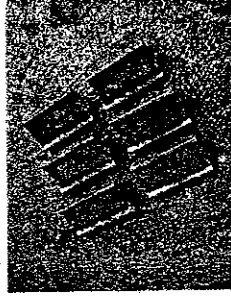


Fig. 19a

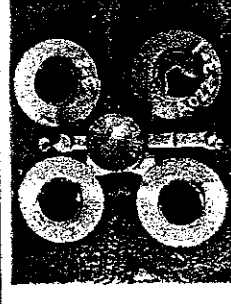


Fig. 19b



Fig. 20a

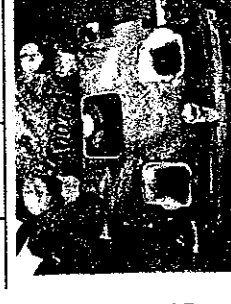


Fig. 20b

JICA/MIDC, SIDCAST

List of Ordered Casting Products

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
21		SIDCAST, Target Step 1	Puller	φ 164 x 34H	3.3	4	Hand Mould with Green Sand	
22		SIDCAST, Target Step 1	Gear	φ 164 x 34H	6.5	4		
23		SIDCAST, Target Step 1	Puller	φ 164 x 34H	3.3	4	J/S Process	
24		SIDCAST, Target Step 1	Gear	φ 164 x 34H	6.5	4		
25		MIDC Welding	Hammer Tip (Sugar Mill)	93L×93W×25T	1.6	30	α Resin Process	
26		MIDC Foundry	Ingot Moulds	615L×160W×115H	33.5	3		
27		Silika Foundry Utama	Wheel Gear, 1 st Trial	φ 630×90H	70.0	1	Hand Mould with Green Sand	
28		SIDCAST, Target Step 1	Brake Disc	φ 243 x 13H	5.8	5		
29		SIDCAST, Target Step 1	Fly Wheel	φ 272 x 31H	11.0	5	α Resin Process	
30		MIDC Foundry	Middle Cramp	140L×60W×50H	2.0	10		

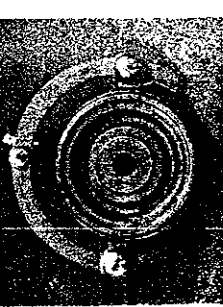


Fig. 27b



Fig. 26a

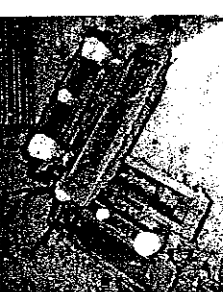


Fig. 24b

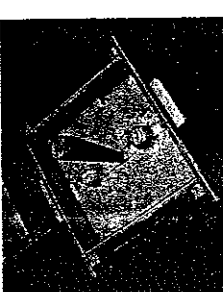


Fig. 23b

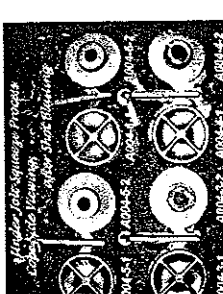


Fig. 22b

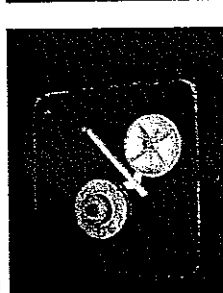


Fig. 21a

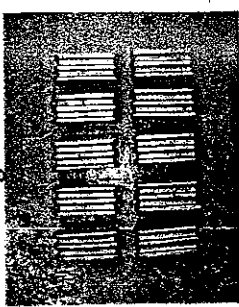


Fig. 27a



Fig. 26b

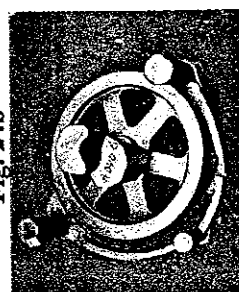


Fig. 25a

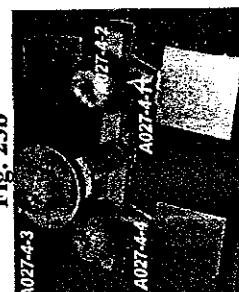


Fig. 23c

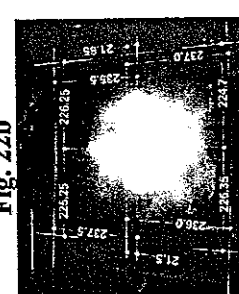


Fig. 22c

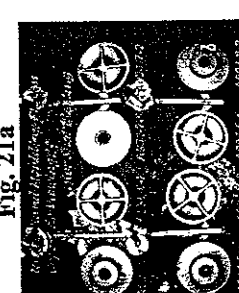


Fig. 21b

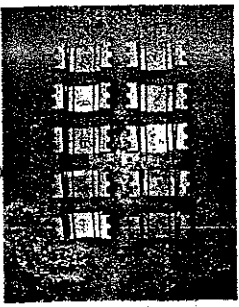


Fig. 28a

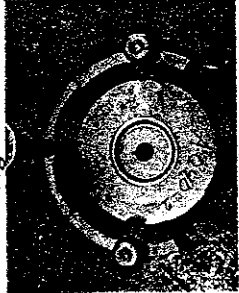


Fig. 27a

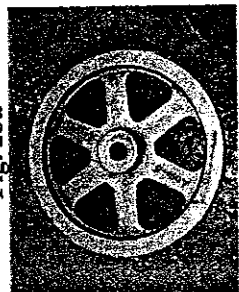


Fig. 25b

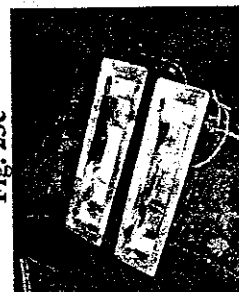


Fig. 24a



Fig. 23a



Fig. 22a

List of Ordered Casting Products (as of Oct. 17)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
31		Silika Foundry Utama	φ 120 Impeller (CR Pump)	FC250	φ 120 × 30H	0.8	6000	D/S Process
32			φ 96 Impeller (CR Pump)	FC250	φ 96 × 40H	0.6	6000	
33			Permanent Mould	FC250	530L × 235W × 85H	7.5	2	
34			Wheel Gear, 2 nd Trial	FCD600	φ 630 × 90H	70.0	1	α Resin Process
35		Balai Ind., - Medan	Al Nozzle (Al Smelting)	Mechanite	1440L × 140W × 110H		3	Hand Mould with GS
36		MIDC Foundry	Weight for Moulds	FCD500/600	550L × 550W × 90H	140	10	α Resin Process
37		Nata Teknik	Jack Lever #1 (Textile)	FCD500	350L × 60W × 6T	0.9	320	J/S Process
38			Jack Lever #2 (Textile)	FCD500	312L × 145W × 6T	1.0	320	
39		A & W	Incline Wheel Gear (Textile)	FCD600	φ 160 × 45H	5.0	20	Hand Mould with Green Sand
40			Sprocket Wheel Gear (Textile)	FCD600	φ 555 × 30H	20.0	10	

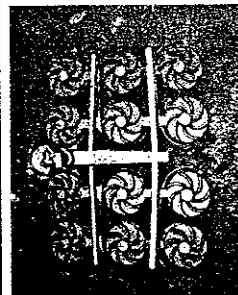


Fig. 29a

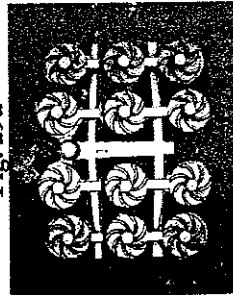


Fig. 29b

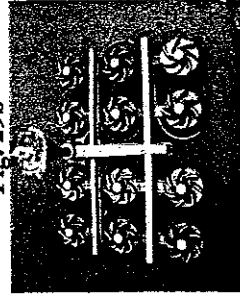


Fig. 30a

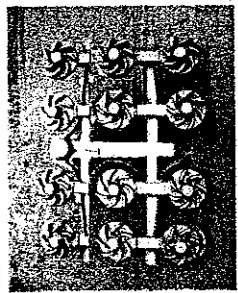


Fig. 30b

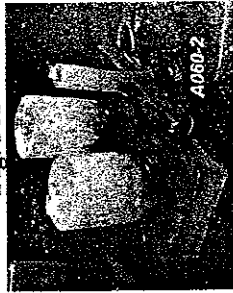


Fig. 31a

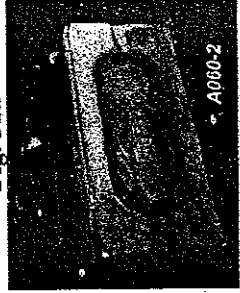


Fig. 31b

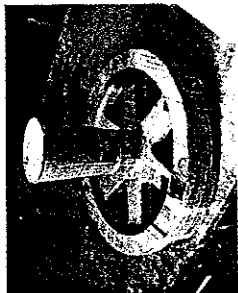


Fig. 32a

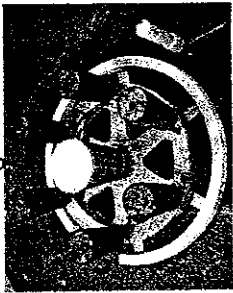


Fig. 32b

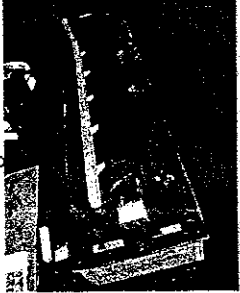


Fig. 33a



Fig. 33b



Fig. 34a



Fig. 34b

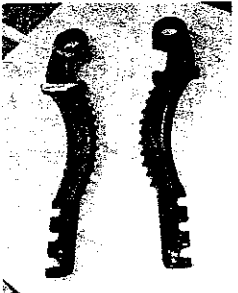


Fig. 35



Fig. 36



Fig. 37a



Fig. 37b



Fig. 38a

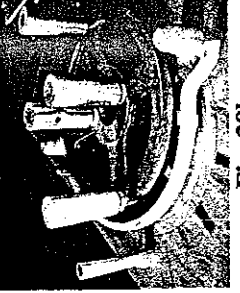


Fig. 38b

List of Ordered Casting Products (as of Feb. 28)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
41		MIDC Foundry	Small Cramp	FCD500	100L x 58W x 27H	1.0	39	α Resin Process
42			Circle Double Cam (Textile)		185L x 148W x 70H	4.5	40b(R) 40c(L)	Hand Mould with GS
43			Oval Double Cam (Textile)	FCD600	185L x 148W x 70H	4.0	40b(L) 40c(R)	
44		Kurnia Teknik	Open Lever Roller (Textile)		62L x 63W x 36H	0.2	41	α Resin Process
45			Cutter Holder (Textile)		79L x 62W x 35H	0.2	42	
46			Jack Lever #3 (Textile)	FC250	360L x 250W x 5T	1.3	43	J/S Process
47			Jack Lever #4 (Textile)		315L x 210W x 5T	1.5	44	Hand Mould with GS
48	Jan. 15	Indokarya Bandung	Handle	FCD500	φ 40 x 720L	10.0	45	Hand Mould with GS

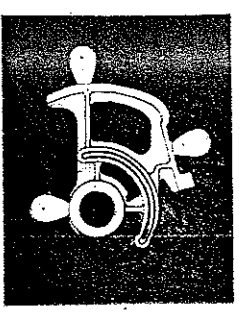


Fig. 39a

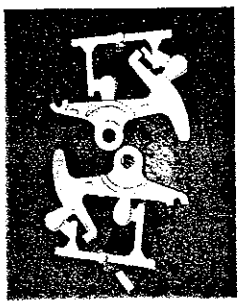


Fig. 40a

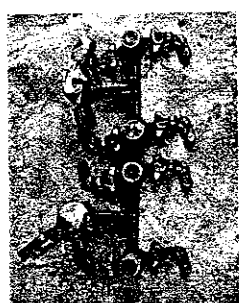


Fig. 40b



Fig. 40c

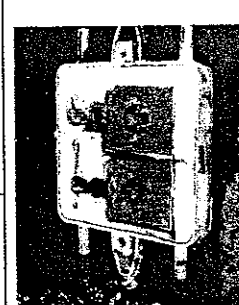


Fig. 41a



Fig. 41b

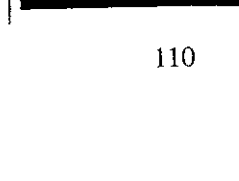


Fig. 42a



Fig. 42b

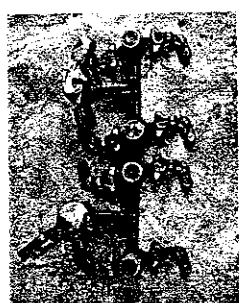


Fig. 43a

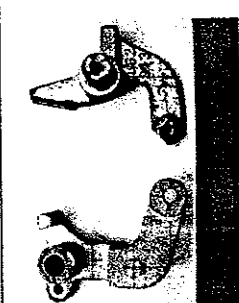


Fig. 43b

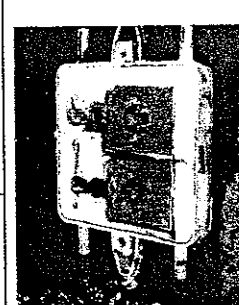


Fig. 43c



Fig. 44a

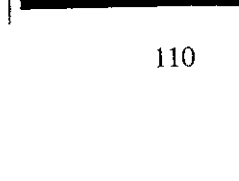


Fig. 44b

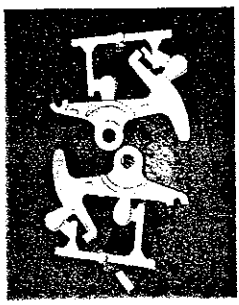


Fig. 44c

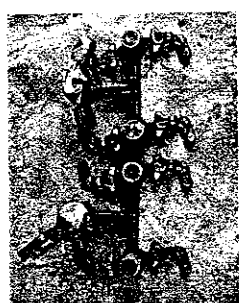


Fig. 45a

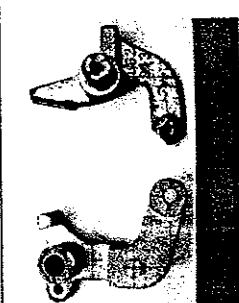


Fig. 45b

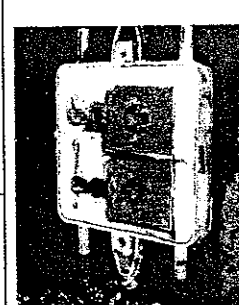


Fig. 45c



Fig. 45d

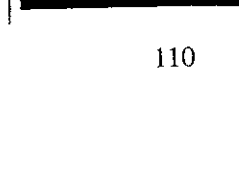


Fig. 45e

List of Ordered Casting Products (as of Feb. 28)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
49	Jan. 15	Indokarya Bandung	Flange	FCD500	φ 215 × 33H	4.0	46	Hand Mould with GS
50	Jan. 15	CV. Setia Teknik Ba.	Gear	FCD500	φ 218 × 30H	3.5	47	
51	Jan. 15	Indo Pattern Lestari	Burner	FC150	130L × 195W × 95H	5.0	48	α Resin Process
52	Feb. 05	Lapan Jakarta	Blower Impeller	FC150	φ 180 × 88H(× 8T)	5.0	49	
53	Feb. 09	Paparti Pertama Suka.	Bearing House	FCD600	395L × 364W × 140H	100.0	50	Hand Mould with GS
54			Bracket #1	FCD600	198L × 183W × 154H	8.0	51	
55			Bracket #2	FCD600	133L × 183W × 149H	7.0	52	
56	Feb. 19	Indo Pattern Lestari	Bracket #3	FCD450	250L × 138W × 222H	5.0	53	
57			Bracket #4	FCD450	233L × 130W × 222H	16.5	54	
58			Bracket #5	FCD450	198L × 157W × 96H	11.0	55	

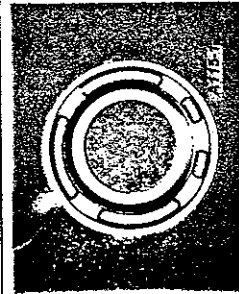


Fig. 46a



Fig. 46b

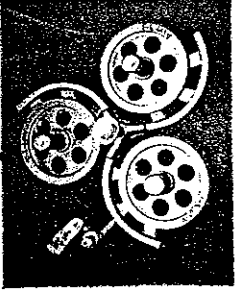


Fig. 47

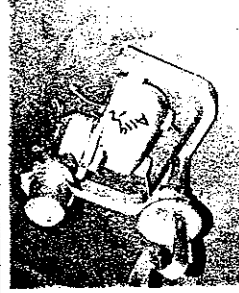


Fig. 48a



Fig. 48b

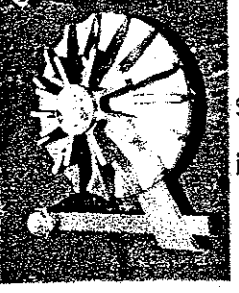


Fig. 49

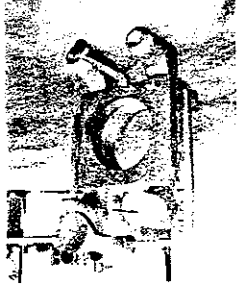


Fig. 50a

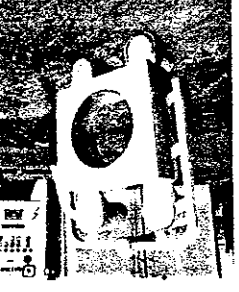


Fig. 50b

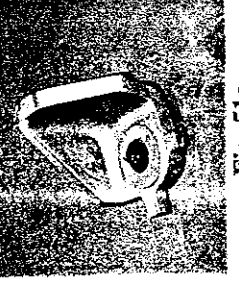


Fig. 51a



Fig. 51b



Fig. 52a

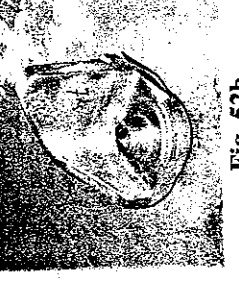


Fig. 52b



Fig. 53a

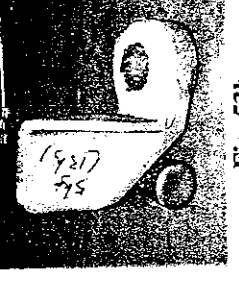


Fig. 53b



Fig. 54a

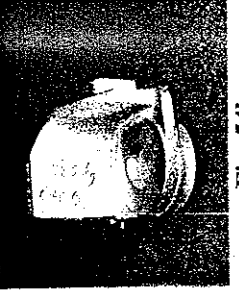


Fig. 54b

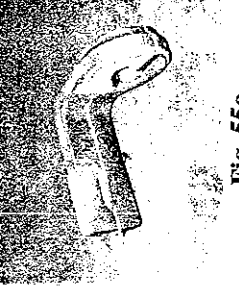


Fig. 55a

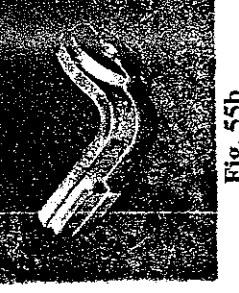
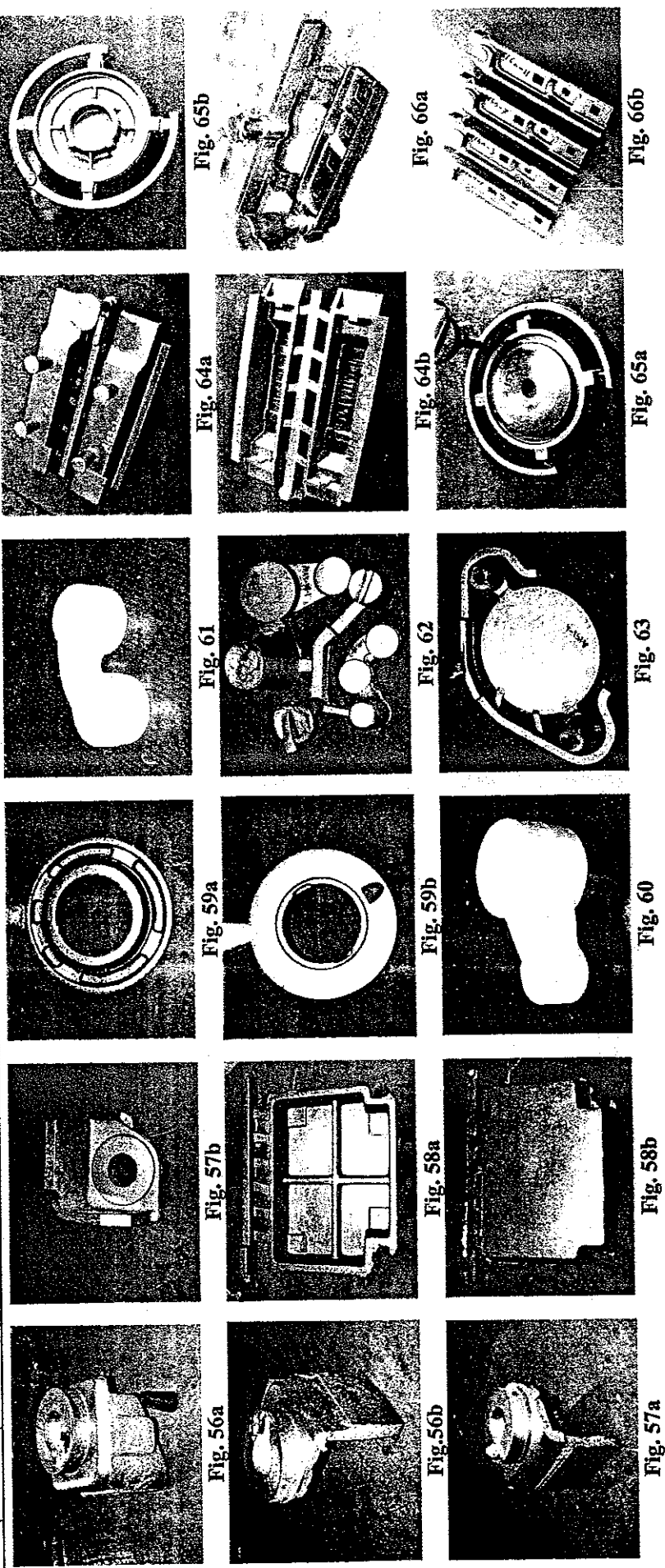


Fig. 55b

JICAMIDC, SIDCAST *List of Ordered Casting Products (as of June 30)* **Page 7 Rev. 1**

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
59	Feb. 19	Indo Pattern Lestari	Bracket #6	FCD450	205L × 185W × 207H	16.5	1	Hand Mould with GS
60			Bracket #7	FCD450	226L × 197W × 205H	17.5	1	
61		MIDC	Support Base for Tilting Table	FCD500	425L × 300W × 80H	20	1	
62		Indo Karuya Bdg	Flange	FCD500	Φ 215 × 33H	4	5	Hand Mould with α Resin
63			Shoe	FC250	260L × 134W × 90H	45	18	
64		Plta Kracak	Brill	FC250	165L × 80W × 32H	3	18	Hand Mould with α Resin
65		MIDC	Round Table for Tilting Table	FCD500	Φ 360 × 35H	28	1	
66		PT Huhtomag	Ingot Case	FC250	576L × 170W × 137H	13	50	Hand Mould with α Resin
67		MIDC	End Bracket	FC250	Φ 230 × 45H	8	1	
68		Kurnia Teknik	Toggle	FCD600	280L × 70W × 70H	2	20	



List of Ordered Casting Products (as of September 30)

JICA/MIDC, SIDCAST

No	Date	Customer	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
69	May 04	MIDC	Table for Chill Test	FC250	300L×250W×35H	25	2	Hand Mould with α Resin
70	May 15	CV Akur	Pulley Hub B	FC250	Φ265×135H	9.8	300	D/S with GS
71			Pulley Hub C		Φ265×105H	10	300	
72	May 23		Pulley Hub A		Φ235×122H	6	300	
73	May 30	Aryono	Cam 11/22	FCD700	250L×205W×20H	3.5	40	Hand Mould with GS
74			Cam 1/3	FCD700	250L×165W×20H	3.5	40	
75	Aug. 02	CV Castiar	Nozzle	FC250	Φ60×300L	5	2	Hand Mould with α Resin
76	Aug. 09	CV Castiar	Pulley 440	FC250	Φ440×260H	65	1	Hand Mould with α Resin
77	Aug. 09	JICA Diary Project	Pulley	FC250	Φ70×100H	1	4	Hand Mould with GS
78	Aug. 14	PT PRN	Impeller	FC250(BC)	Φ440×100H	35(42)	2	Hand Mould with α Resin



Fig. 75

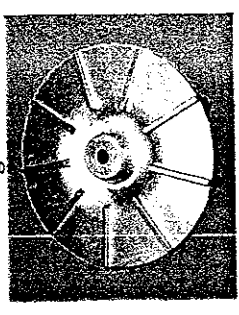


Fig. 76a

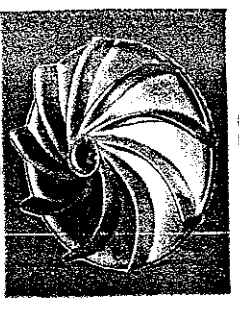


Fig. 76b

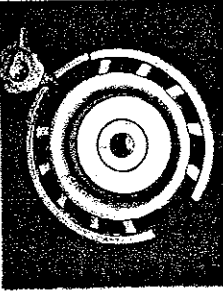


Fig. 74a

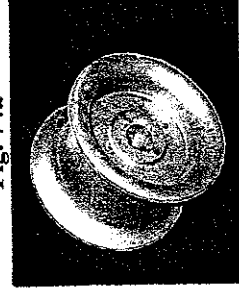


Fig. 74b



Fig. 74c

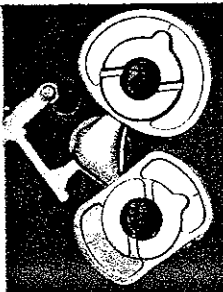


Fig. 72

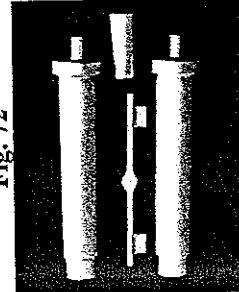


Fig. 73a



Fig. 73b

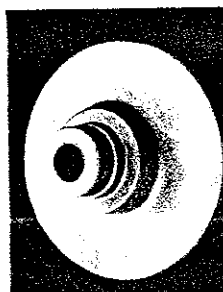


Fig. 70a

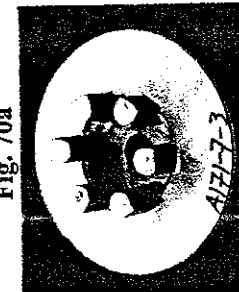


Fig. 70b

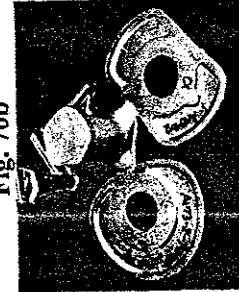


Fig. 71

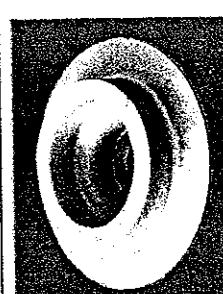


Fig. 68b

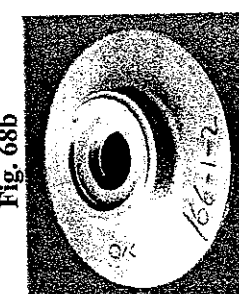


Fig. 69a

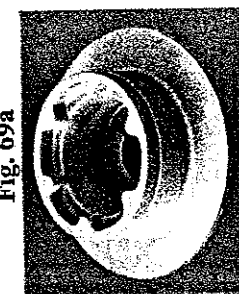


Fig. 69b

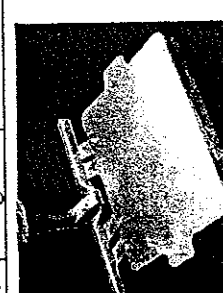


Fig. 67a

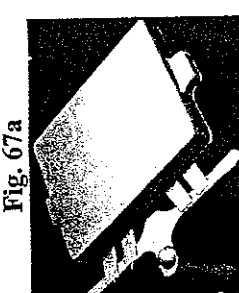


Fig. 67b

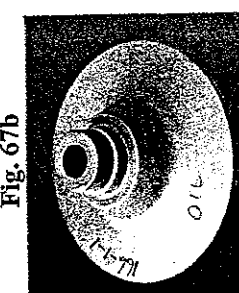


Fig. 68a

List of Ordered Casting Products (as of September 30)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
79	Aug. 06	Shinwa	Front Case #FC1-1	FC300	516L × 326W × 216H	160	1	Hand Mould with α Resin
80	Aug. 26	CV Castar	Sprocket 540	FCD500	Φ 540 × 294H	227	1	Hand Mould with α Resin
81	Aug. 26		Sprocket 356					
82	Sep. 03	Shinwa	Rear Gear Case #RC1-1	FC300	506L × 326W × 85H	62	13	Hand Mould with α Resin
83	Sep. 06		Rear Case #RC1-2	FC300	506L × 326W × 92H	70	1	Hand Mould with α Resin
84	Sep. 07	PT Polypin	Motor Cover	FC250	Φ 300 × 60H	15	10	Hand Mould with GS
85	Sep. 13	Shinwa	Rear Case #RC1-3	FC300	506L × 326W × 85H	70	1	Hand Mould with α Resin
86	Sep. 19	CV Castar	Dies for Suspension	FCD500	380L × 150W × 80H	86	6	Hand Mould with α Resin
87	Sep. 19	PT Adly Kreaasi	Wheel	FC300	Φ 60 × 50H	0.8	4	Hand Mould with α Resin
88	Sep. 19	Shinwa	Front Case #FC1-2	FC300	506L × 326W × 300H	157	2	Hand Mould with α Resin

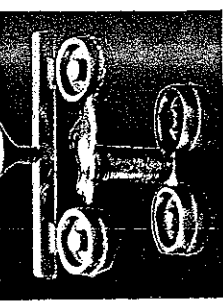


Fig. 85



Fig. 83a

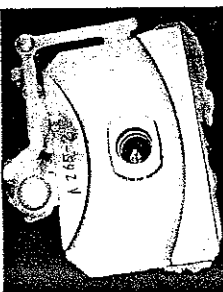


Fig. 81b

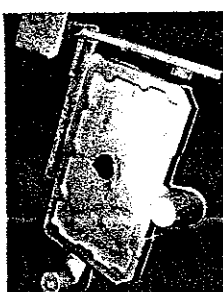


Fig. 80a

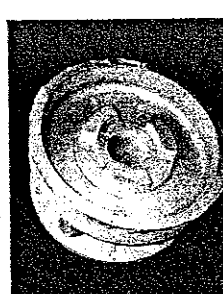


Fig. 78b

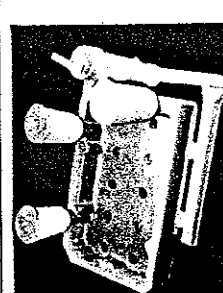


Fig. 77a

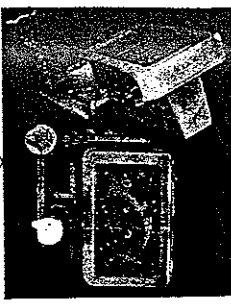


Fig. 86b

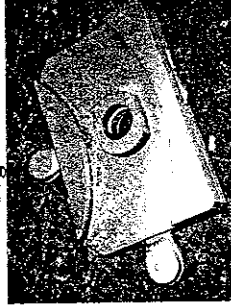


Fig. 83b

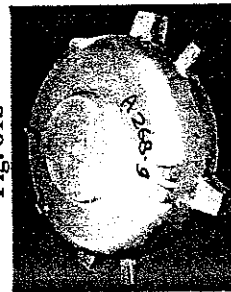


Fig. 82a

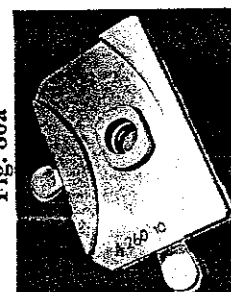


Fig. 80b

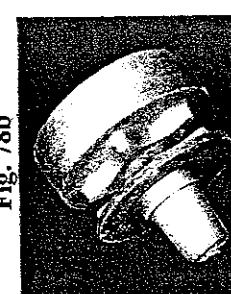


Fig. 79a

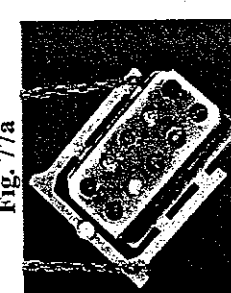


Fig. 77b

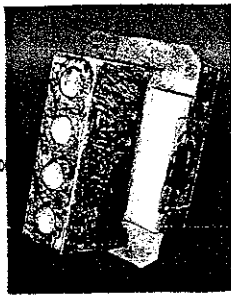


Fig. 86a



Fig. 84

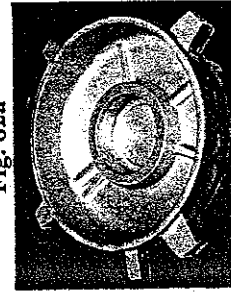


Fig. 82b

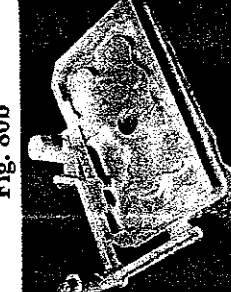


Fig. 81a

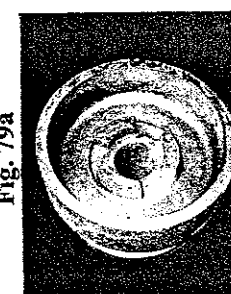


Fig. 79b

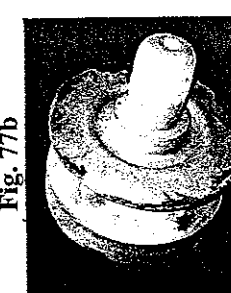


Fig. 78a

List of Ordered Casting Products (as of December 31)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
89	Sep. 19	Shinwa	Front Case #FC1-3	FC300	506L × 326W × 317H	175	1	Hand Mould with α Resin Sand
90	Sep. 20	Cipta Nusa Castech	Die for Suspension Cover	FCD500	180L × 105W × 35H	10	4	Hand Mould with α Resin Sand
91	Sep. 20	Aryono	Cam 11/11	FCD700	250L × 165W × 25H	3.5	40	Hand Mould with Green Sand
92	Sep. 20	CV Castar	Die for Printing Holder	FCD500	500L × 125W × 38H	15	2	Hand Mould with Furan Resin Sand
93	Sep. 24	IPIN	Impeller	Bronze	Φ 260×95H	12.5	2	CO ₂ with Organic Resin Sand Core
94	Oct. 01	Shinwa	Front Case #FC1-4	FC300	506L × 326W × 303H	171	1	Hand Mould with α Resin Sand
95	Oct. 04	Yogi Saptra	Stopper Pins	FC300	140L × 90W × 10H	0.2	100	Hand Mould with α Resin Sand
96	Oct. 04	Shinwa	Front Case #FC2-2	FC300	509L × 326W × 321H	142	1	Hand Mould with α Resin Sand
97	Oct. 04		Rear Gear Case #RC2-2	FC300	506L × 326W × 131H	81	1	Hand Mould with α Resin Sand
98	Oct. 04	MIDC	Sampling Spoon	FCD500	Φ95×60H	1	10	Hand Mould with α Resin Sand

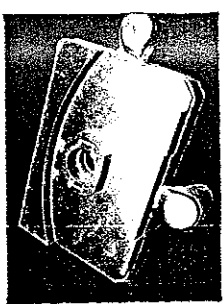


Fig. 87a

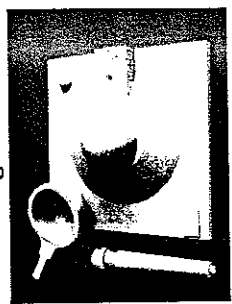


Fig. 87b

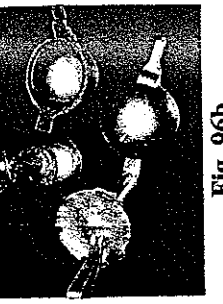


Fig. 88



Fig. 89a



Fig. 89b

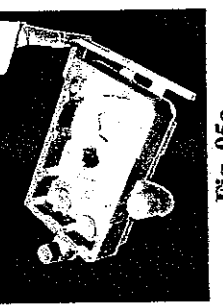


Fig. 90

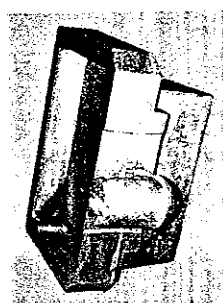


Fig. 91a



Fig. 91b



Fig. 92a



Fig. 92b

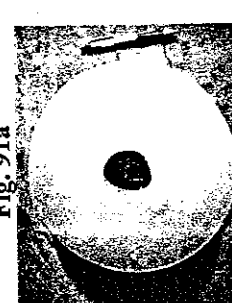


Fig. 93a

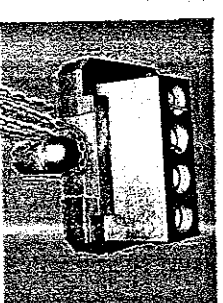


Fig. 93b

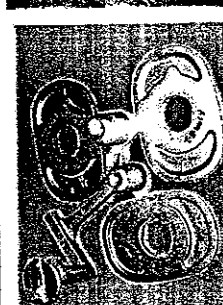


Fig. 94a

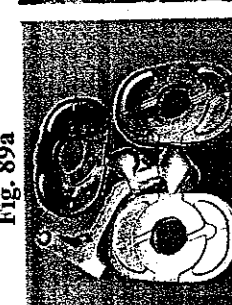


Fig. 94b



Fig. 95a

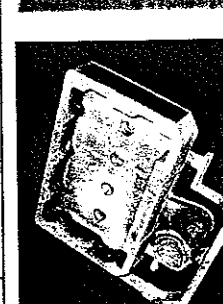


Fig. 95b

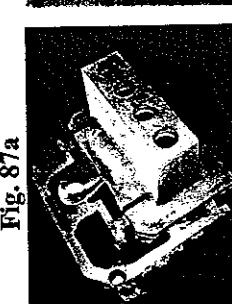


Fig. 96a

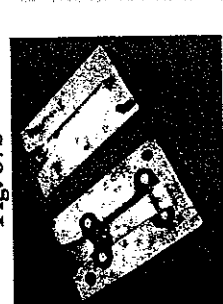


Fig. 96b

List of Ordered Casting Products (as of December 31)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
99	Oct. 04	PT Adly Kreasi	Wheel 80	FC300	Φ60×50H	0.8	40	Hand Mould with α Resin Sand
100	Oct. 09	Pibdurohini	Gas Manifold	FC300	400L × 85W × 45H	8	5	Hand Mould with Green Sand
101	Oct. 16	Shinwa	Rear Case #RC2-1	FC300	506L × 326W × 139H	73	1	Hand Mould with α Resin Sand
102	Oct. 16	Shinwa	Rear Gear Case #RC2-5	FC300	506L × 326W × 140H	75	1	Hand Mould with α Resin Sand
103	Oct. 17	Cipna Nusa Castech	Dies for Cover Suspension	FC300	30L × 105W × 190H	3.5	2	Shell Mould
104	Oct. 17	Shinwa	Front Case #FC2-1	FC300	506L × 326W × 227H	161	1	Hand Mould with α Resin Sand
105	Oct. 18	CV Castar	Dies for Adjustable Printer	FC300	50L × 110W × 310H	10.5	1	Hand Mould with α Resin Sand
106	Oct. 19	CV Castar	Part A, B and C for Adjustable Printer	FC300	65L × 100W × 140H	1.25	2	Hand Mould with Green Sand
107	Oct. 19	CV Castar		FC300	65L × 100W × 140H	1.25	2	Hand Mould with Green Sand
108	Oct. 19	CV Castar		FC300	350L × 65W × 16H	2.1	2	Hand Mould with α Resin Sand

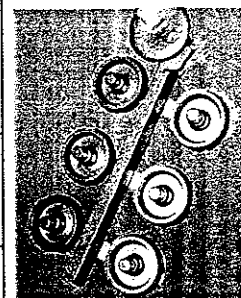


Fig. 97a



Fig. 98b



Fig. 100a

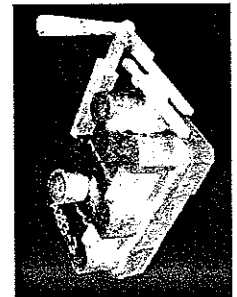


Fig. 102a

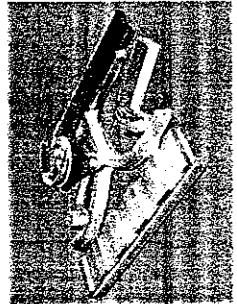


Fig. 104a

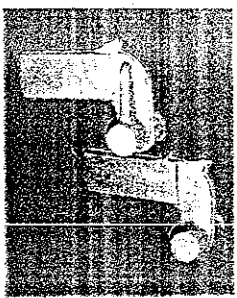


Fig. 105b

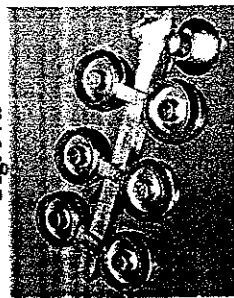


Fig. 97b

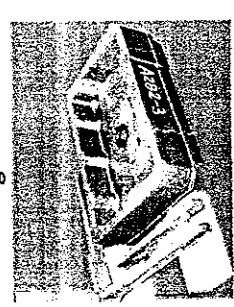


Fig. 98a



Fig. 100b

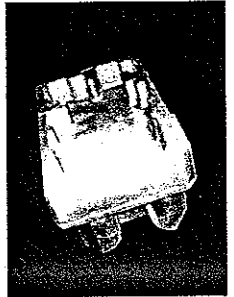


Fig. 102b

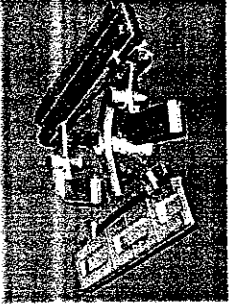


Fig. 104b

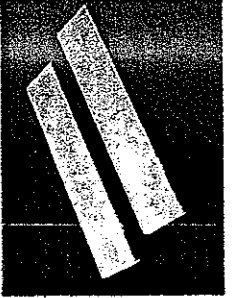


Fig. 106a

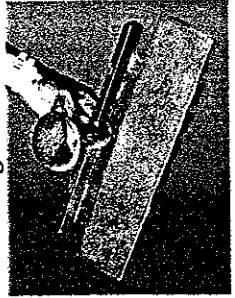


Fig. 99a



Fig. 99b

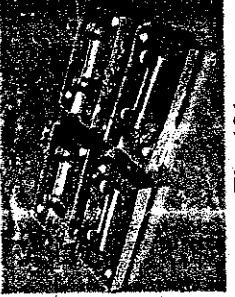


Fig. 101

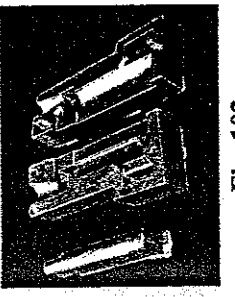


Fig. 103



Fig. 105a

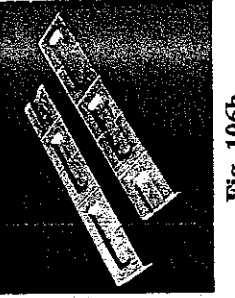
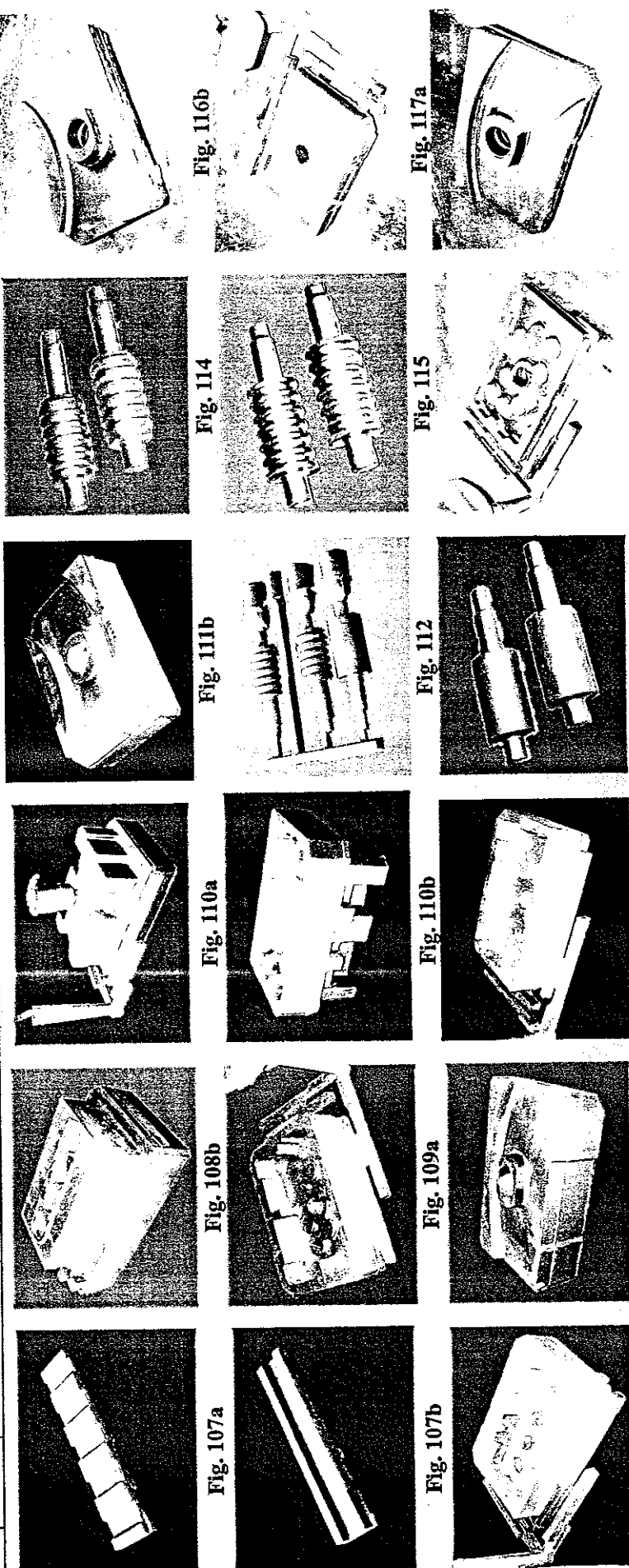


Fig. 106b

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
109	Oct. 19	C/V Caster	Part D for Adjustable Printer	FC300	350L × 65W × 35H	4.5	104&107	Hand Mould with α Resin Sand
110	Oct. 18	Shinwa	Front Case #FC2-3	FC300	506L × 326W × 221H	145	108	Hand Mould with α Resin Sand
111			Rear Gear Case #RC2-4	FC300	506L × 326W × 140H	78	109	Hand Mould with α Resin Sand
112	Oct. 19	Shinwa	Front Gear Case #FC2-5	FC300	506L × 326W × 226H	149	110	Hand Mould with α Resin Sand
113	Oct. 22	Shinwa	Rear Case #RC2-3	FC300	506L × 326W × 139H	73	111	Hand Mould with α Resin Sand
114	Oct. 26	MIDC	Upper Roller	FC300	Φ75×290L	5	112&113	Hand Mould with Green Sand
115			Medium Roller	FC300	Φ82×290L	8	112&114	Hand Mould with Green Sand
116			Lower Roller	FC300	Φ75×270L	5	112&115	Hand Mould with Green Sand
117	Oct. 27	Shinwa	Rear Case #RC2-6	FC300	506L × 326W × 85H	75	116	Hand Mould with α Resin Sand
118			Rear Case #RC2-7	FC300	506L × 326W × 95H	75	117	Hand Mould with α Resin Sand



List of Ordered Casting Products (as of December 31)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
119	Oct. 27	Shinwa	Rear Case #RC2-8	FC300	506L × 326W × 100H	75	118	Hand Mould with α Resin Sand
120	Oct. 31	Shinwa	Front Gear Case #FC2-4	FC300	506L × 326W × 226H	150	119	Hand Mould with α Resin Sand
121	Nov. 02	MIDC (UKNT)	Rocker Arms	FC300	70L × 20W × 30H	0.1	120	Lost Wax Process
122	Nov. 02	MIDC (BPPT)	Impeller (Water Pump)	Bronze	Φ62 × 16H	0.2	121	Lost Wax Process
123	Nov. 08	Haryono	Top Lever	FC300	395L × 100W × 18H	2.5	122&123	Hand Mould with Green Sand
124	Nov. 21	Gamma Epsilon	Disc	FC300	180L × 120W × 10H	0.8	122&124	Hand Mould with Green Sand
125	Nov. 21	MIDC	Flask Holder	SC410	170L × 112W × 62H	4.5	125	Hand Mould with α Resin Sand
126	Nov. 30	MIDC	Dies (Water Valve Body)	FC250	210L × 120W × 53H	6.0	126	Hand Mould with α Resin Sand
127	Dec. 06	Pranata Jaya	Side Lever #1	FC250	420L × 126W × 27H	3.8	127	Hand Mould with Green Sand
128	Dec. 06	Kurnia Teknik	Jack Lever #4 (2 nd Pattern)	FC250	315L × 210W × 5T	1.5	128	Hand Mould with Green Sand

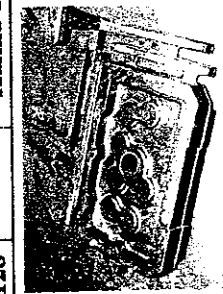


Fig. 118a

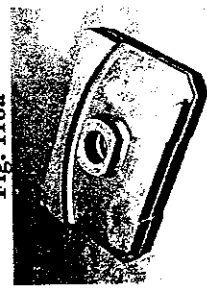


Fig. 118b

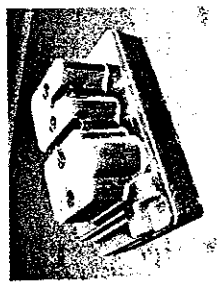


Fig. 119b



Fig. 120

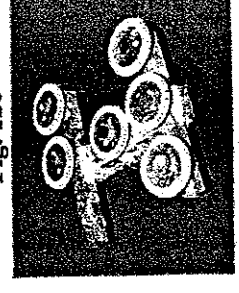


Fig. 121

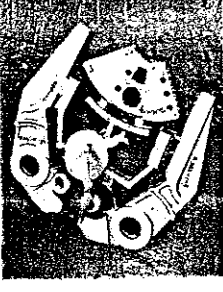


Fig. 122a



Fig. 122b

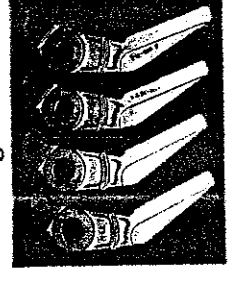


Fig. 123

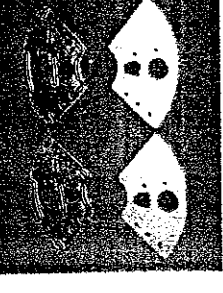


Fig. 124

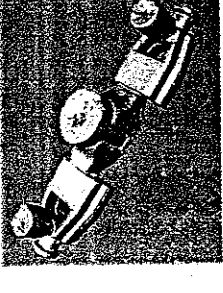


Fig. 125a



Fig. 125b



Fig. 126a

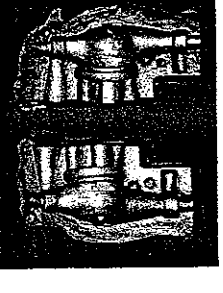


Fig. 126b

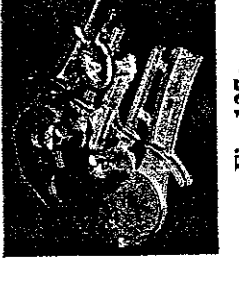


Fig. 127a

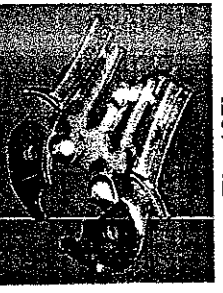


Fig. 127b

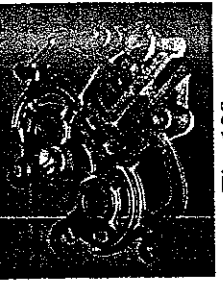


Fig. 128a

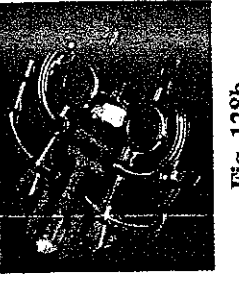


Fig. 128b

List of Ordered Casting Products (as of March 31, 02)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
129	Jan. 14	PT Anggada Jaya Perkasa	Fly Wheel A (Mobil)	FC250	Φ484 × 129H	47	129	Double Squeeze with G/S
130	Jan. 15	PT Anggada Jaya Perkasa	Fly Wheel B (Mobil)	FC250	Φ484 × 100H	42	130	Double Squeeze with G/S
131			Cylinder #3 (Mobil)(Trial)	0.5CrFC	Φ91(Φ60) × 195L	6	131	Hand Mould with G/S
132	Feb. 12	Granando Teknik Utama	Cylinder #1 (Mobil)(Trial)		Φ107(Φ75) × 195L	6	132	
133			Cylinder #2 (Mobil)(Trial)		Φ102(Φ70) × 195L	6	133	
134	Feb. 13	Meka Daya	Liner (Sugar Mill)	FCD700	750L × 580W × 50H	120	134&135	Hand Mould with α/S
135	Feb. 27	MIDC	Leveling Gauge	FCD700	170W × 70H × 1000L	22	136	Hand Mould with α/S
136			Gear #1	FCD700	Φ155 × 20H(20H)	5	137&138	Hand Mould with G/S
137	Mar. 08	Haryono	Gear #2	FCD700	Φ150 × 20H(34H)	5	137&139	
138			Gear #3	FCD700	Φ150 × 20H(45H)	5	137&140	



Fig. 129a

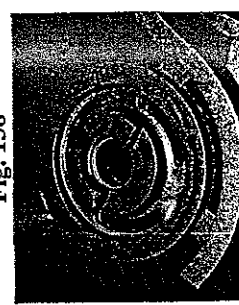


Fig. 129b



Fig. 129c

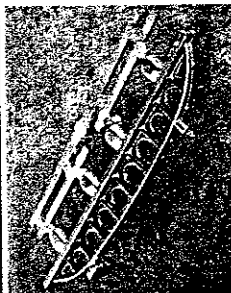


Fig. 130a

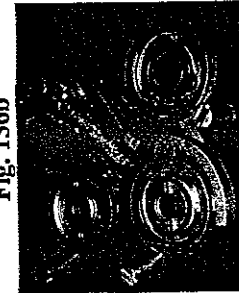


Fig. 130b

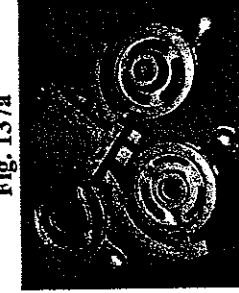


Fig. 130c



Fig. 131a

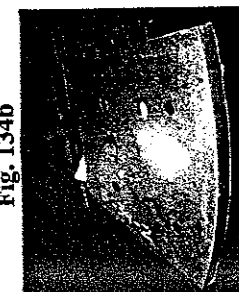


Fig. 131b

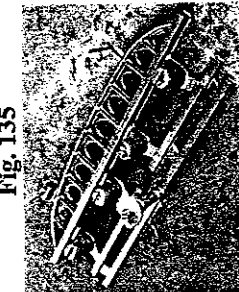


Fig. 131c

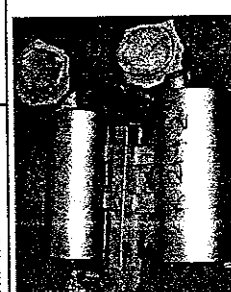


Fig. 132

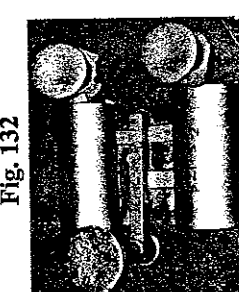


Fig. 133

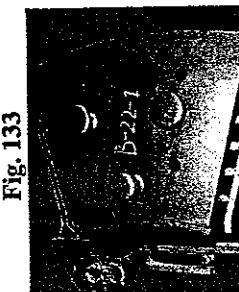


Fig. 134a

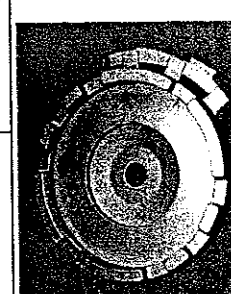


Fig. 134b

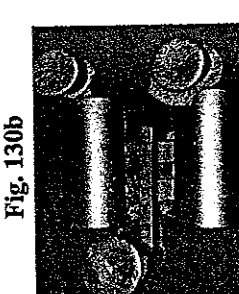


Fig. 135

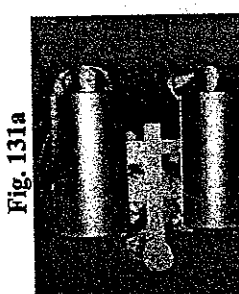


Fig. 136a

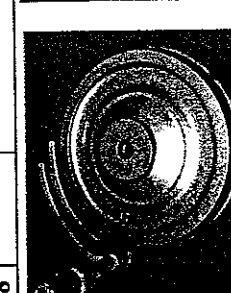


Fig. 136b

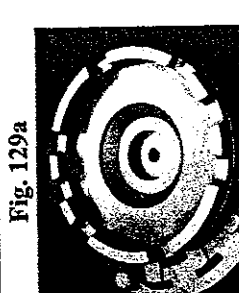


Fig. 137a

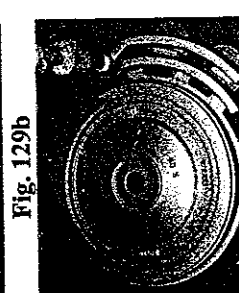


Fig. 137b

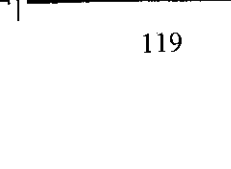


Fig. 138



Fig. 139

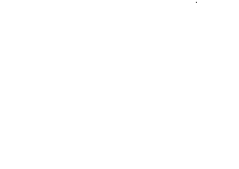


Fig. 140

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
139	Mar. 08	Pranata Jaya	Side Lever #2 (Textile)	FCD500	420L × 126W × 27H	3.8	141	Hand Mould with G/S
140	Mar. 28	Granando Teknik Utama	Cylinder Liner #6 (Mobil)	0.5CrFC	Φ75(Φ55) × 195L	3.5	142	Hand Mould with G/S
141	Apr. 05	Haryono	Gear #1 (2 nd Design)	FCD700	Φ155 × 20H(20H)	5	143	Hand Mould with G/S
142			Gear #2 (2 nd Design)	FCD700	Φ150 × 20H(34H)	5		Hand Mould with G/S
143			Gear #3 (2 nd Design)	FCD700	Φ150 × 20H(45H)	5		Hand Mould with G/S
144	Apr. 18	Granando Teknik Utama	Cylinder Liner #1 (Mobil)	0.5CrFC	Φ102(Φ75) × 195L	5.3	144&145	Hand Mould with G/S
145			Cylinder Liner #2 (Mobil)	0.5CrFC	Φ99(Φ70) × 195L	5.4	144&146	Hand Mould with G/S
146			Cylinder Liner #3 (Mobil)	0.5CrFC	Φ102(Φ70) × 195L	6.1	144&147	Hand Mould with G/S
147	Apr. 19	Bengpuspal	Manifold A (Mobil)	FCD500	150L × 140W × Φ96	5	148&149	Hand Mould with G/S
148			Manifold B (Mobil)	FCD500	200L × 110W × Φ96	5	148&150	Hand Mould with G/S

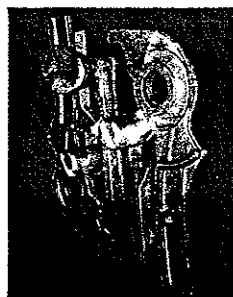


Fig. 141a



Fig. 142b

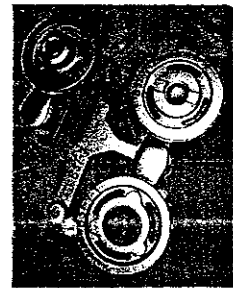


Fig. 143b

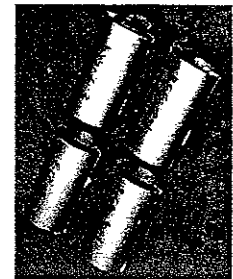


Fig. 145



Fig. 148a



Fig. 149b

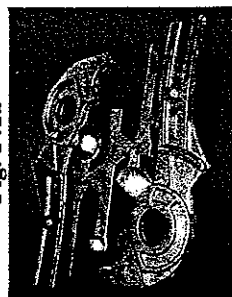


Fig. 141b



Fig. 142c



Fig. 144a



Fig. 146



Fig. 148b



Fig. 150b

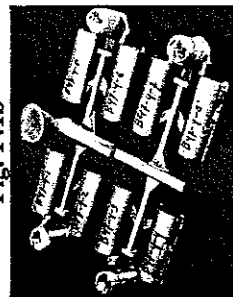


Fig. 142a

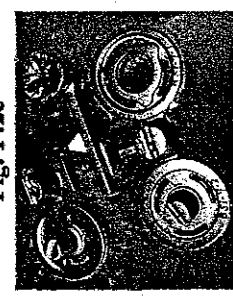


Fig. 143a

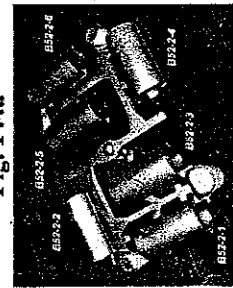


Fig. 144b

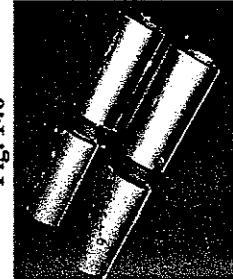


Fig. 147

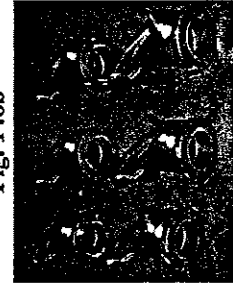


Fig. 149a



Fig. 150a

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
149	Apr. 19	Ciptanusa Castech PT	Spacer Dies #1	FC2500	50W × 100L × 30H	2	151	Shell Mould
150	Apr. 29	PT Maya Pratama	Sea Horse Lever, R & L	FC250	390W × 235L × 20H	3	152	Hand Mould with G/S
151	May 02	Grañando Teknik Utama	Cylinder Liner #4	0.5CrFC	Φ99(Φ70) × 195L	5.4	153&154	Hand Mould with G/S
152			Cylinder Liner #5	0.5CrFC	Φ87(Φ60) × 195L	4.4	153&155	Hand Mould with G/S
153	May 06	PT. DI	Impeller	Bronze	Φ330 × 60H	7.0	156	Hand Mould with α Sand
154	May 13	Ciptanusa Castech PT	Spacer Dies #2	FC250	185L × 115W × 75H	6.0+5.7	157	Shell Mould
155			Spacer Dies #3	FC250	120L × 90W × 43H	2.7+2.3	158	Shell Mould
156			Spacer Dies #4	FC250	115L × 83W × 30H	2.1+1.8	159	Shell Mould
157			Spacer Dies #5	FC250	90L × 65W × 30H	1.0+0.9	160	Shell Mould
158			Piston Dies #1 & #2	FC250	343L × 115W × 83H	20.1+0.8	161	Each 3

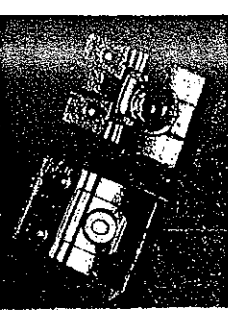


Fig. 160

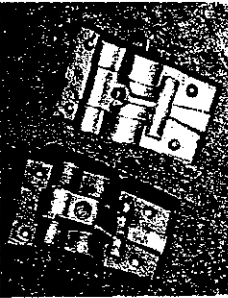


Fig. 157

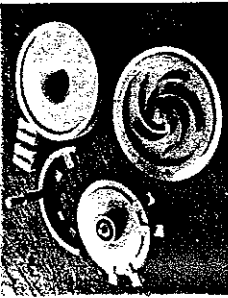


Fig. 156a

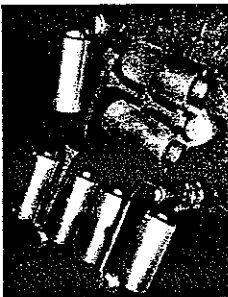


Fig. 153b



Fig. 152c

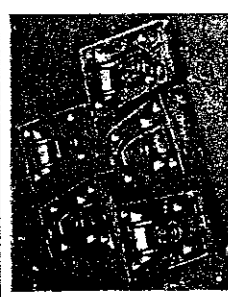


Fig. 151



Fig. 161a

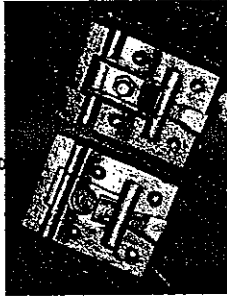


Fig. 158



Fig. 156b



Fig. 154



Fig. 152d

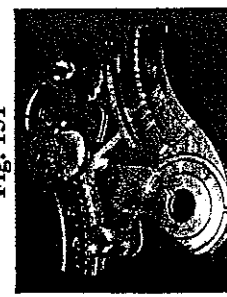


Fig. 152a

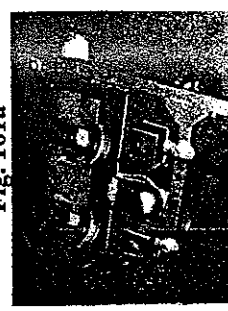


Fig. 161b

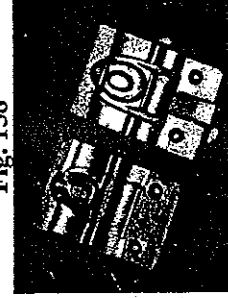


Fig. 159



Fig. 156c



Fig. 155

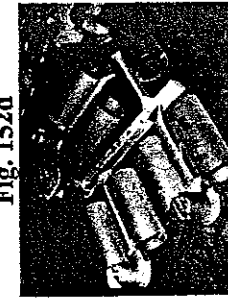


Fig. 153a

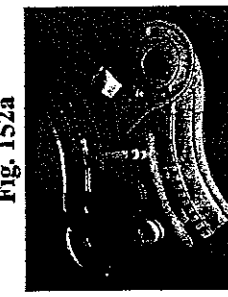


Fig. 152b

List of Ordered Casting Products (as of Sep. 30, 02)

JICA/MIDC, SIDCAST

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
159	May 14	Pranata Jaya	Arm (2 nd Design)	FCD500	Ø 25 × 170L × 115W	1.1	162	Hand Mould with G/S
160	May 30	Metrology	Counter Weight	FC200	240L × 123W × 133H	20	163	Hand Mould with G/S
161	June 06	MIDC	Ingot Case	FCD500	437L × 333W × 255H	45	164	Hand Mould with G/S
162	June 19	Welding Séc (MIDC)	Bearing Housing	FCD700	100L × 100W × 47H	3.0	165	Hand Mould with G/S
163	June 27	Ciptanusa Castech	Ball Eye Horn Holder	FCD700	165L × 55W × 40H	0.6	166	Stacked Shell Mould
164	June 27		Socket Eye Horn Holder	FCD700	160L × 60W × 60H	0.9	167	Stacked Shell Mould
165	June 27	B. I. Semarang	Ø460 Impeller	18Cr-8Ni	Ø 460 × 195H	50	168	Hand Mould with G/S
166	July 03	Granando Teknik Utama	Bushing #2-1	0.5CrFC	Ø 61(34.5) × 195L	3.0	169	Hand Mould with G/S
167	July 15		Double Socket Eye Horn Holder	FCD700	165L × 60W × 50H	1.0	170	Stacked Shell Mould
168	July 17	Ciptanusa Castech	Shackle Type Horn Holder	FCD700	123L × 65W × Ø 16	0.6	171	Stacked Shell Mould

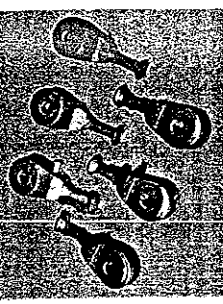


Fig. 170b

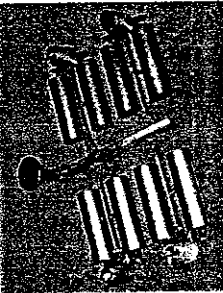


Fig. 169a

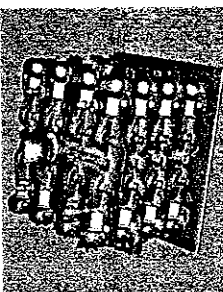


Fig. 167a

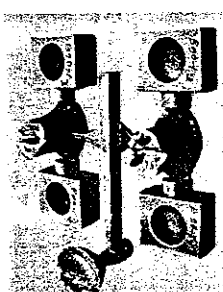


Fig. 165



Fig. 163b



Fig. 162a

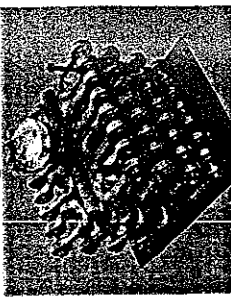


Fig. 170a

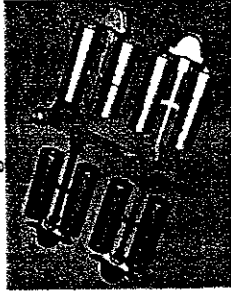


Fig. 169b



Fig. 167b

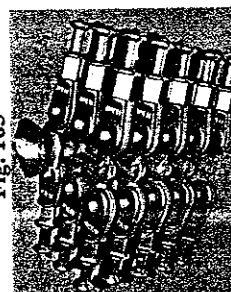


Fig. 166a

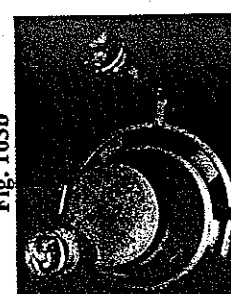


Fig. 164a

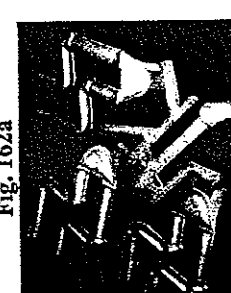


Fig. 162b

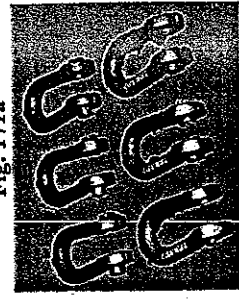


Fig. 171a

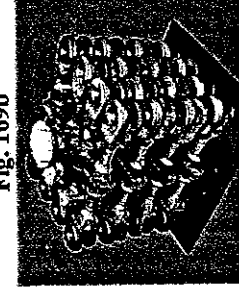


Fig. 170a

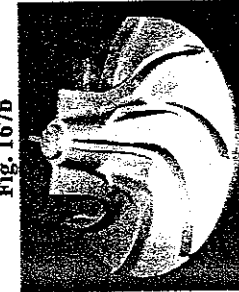


Fig. 168

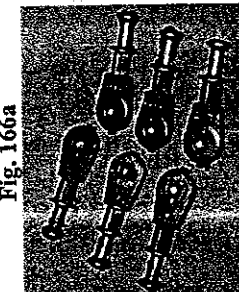


Fig. 166b

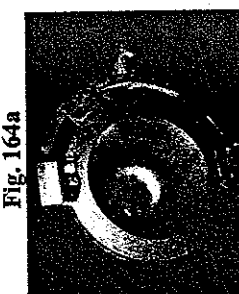


Fig. 164b

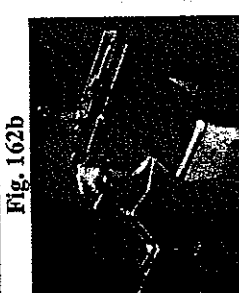


Fig. 163a

JICA/MIDC, SIDCAST
List of Ordered Casting Products (as of Sep. 30, 02)

No	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
169	July 18	Granando Teknik Utama	Bushing #2-2	0.5CrFC	Ø 60(29.5) × 195H	3.0	172	Hand Mould with G/S
170	July 22	Granando Teknik Utama	Cylinder Liner #1-6(2 nd Pattern)	0.5CrFC	Ø 75(55) × 195H	3.2	173	Hand Mould with G/S
171	July 24	Niaya Pratama CV	φ 500 Gear	FCD800	Ø 500 × 50H	30	174	Hand Mould with α Sand
172	July 25	Granando Teknik Utama	Bushing #2-8	0.5CrFC	Ø 100(63.5) × 195H	6.6	175	D/S Mould with G/S
173	July 30	Granando Teknik Utama	Bushing #2-3	0.5CrFC	Ø 54(29.5) × 195H	2.3	176	Hand Mould with G/S
174	Aug 15	Granando Teknik Utama	Bushing #2-4	0.5CrFC	Ø 54(24.5) × 195H	2.6	177(L)	D/S Mould with G/S
175	Aug 15	Granando Teknik Utama	Bushing #2-9	0.5CrFC	Ø 77(49.5) × 195H	3.9	177(S)	D/S Mould with G/S
176	Aug 21	PT Taruna Teknik	Roll Bar (4 items)	FC250	Ø 57,68,87,109 × 400H	27.2 total	178	Hand Mould with G/S
177	Aug 26	Granando Teknik Utama	Bushing #2-5	0.5CrFC	Ø 80(54.5) × 195H	3.8	179&180	D/S Mould with G/S
178	Aug 26	Granando Teknik Utama	Bushing #2-6	0.5CrFC	Ø 67(39.5) × 195H	3.2	179&181	D/S Mould with G/S
179			Bushing #2-7		Ø 64(39.5) × 195H	2.8	179&182	D/S Mould with G/S

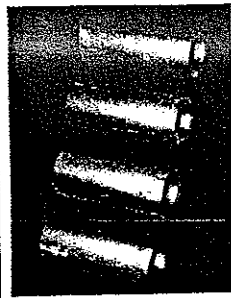


Fig. 180



Fig. 181

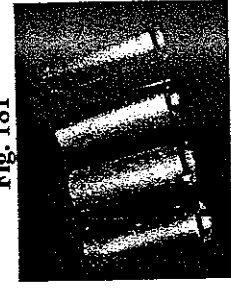


Fig. 182

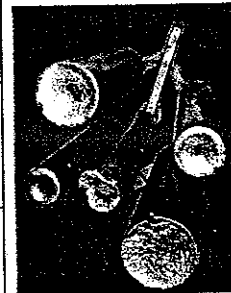


Fig. 178

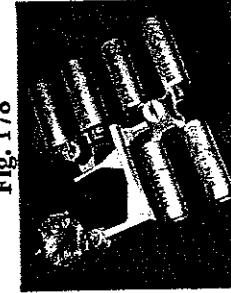


Fig. 179a

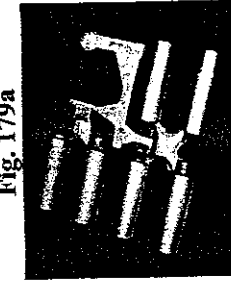


Fig. 179b

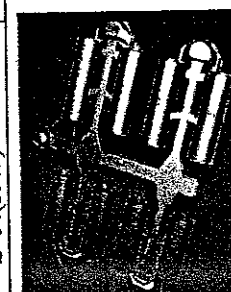


Fig. 176b

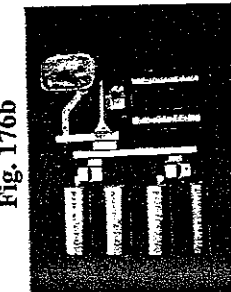


Fig. 177a

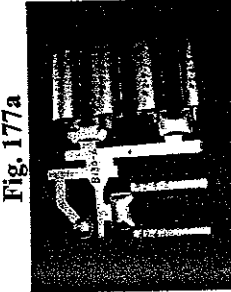


Fig. 177b

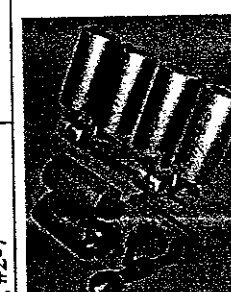


Fig. 175a

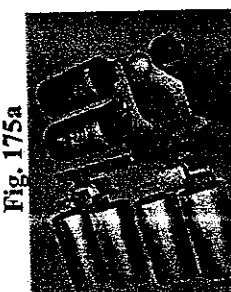


Fig. 175b

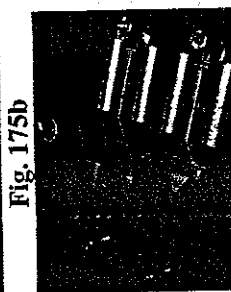


Fig. 176a

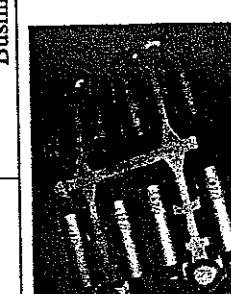


Fig. 173b

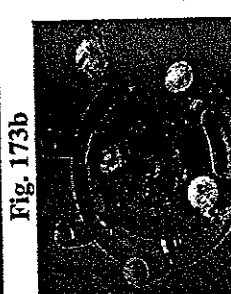


Fig. 174a

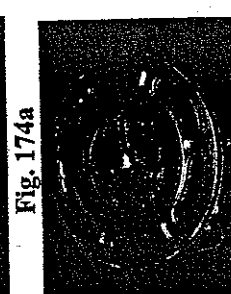


Fig. 174b

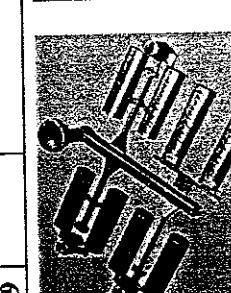


Fig. 172a

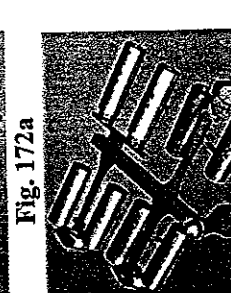


Fig. 172b

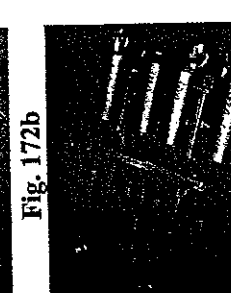


Fig. 173a

List of Ordered Casting Products (as of Dec. 31, 02)

JICA/MIDC, SIDCAST

No.	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
180	Aug 30	PT Meka Daya	Wheel (Transfer Car)	FCD700	Ø 410 × 230H	80	4	Hand Mould with α Sand
181	Sep 30	PT Gunning Sart	Compressor Casing	FC250	350L × 270W × 240H	42	1	Hand Mould with Green Sand
182	Oct 01	Ciptanusa Castech	Metal Dies (Electric Parts)	FCD700	80L × 120W × 20H	2	1 set	Shell Moulds
183			Metal Dies (Electric Parts)	FCD700	60L × 150W × 20H	2	1 set	Shell Moulds
184	Oct 07	MIDC	Crane Wheel	FCD700	Ø 300/90 × 145H	45	4	Hand Mould with α Sand
185		Haryono	Cam 11/22 (with 11/1) (Textile)	FCD700	250L × 165W × 22T	3	50	Hand Mould with Green Sand
186	Oct 15	PT Pranata Jaya	Jack Lever #5 (with #3) (Textile)	FCD500	300L × 125W × 20T	2.5	100	Hand Mould with Green Sand
187	Nov 08	Suharto	Large Cam (Match Factory)	FC250	400L × 320W × 87H	26	3	Hand Mould with α Sand
188	Nov 11	Suharto	Housing (Electric Motor)	FC250	Ø 235 × 105H	8	2	Hand Mould with α Sand
189	Nov 18	CV Granando TU	Bushing #1-2 (Automotive)	0.5C+FC	Ø 99/70 × 195L	5.4	100	Hand Mould with Green Sand
190			Bushing #1-3 (Automotive)		Ø 102/70 × 195L	6.1	100	Hand Mould with Green Sand



Fig. 191b



Fig. 192a

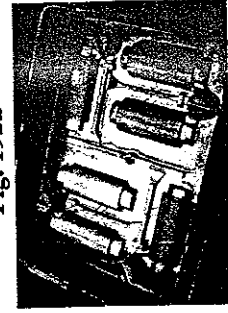


Fig. 192b



Fig. 190a



Fig. 190b

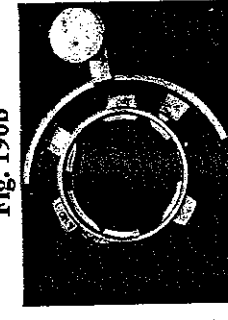


Fig. 191a

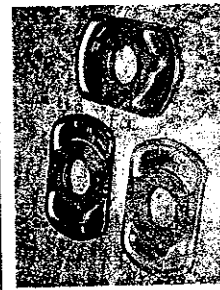


Fig. 188b

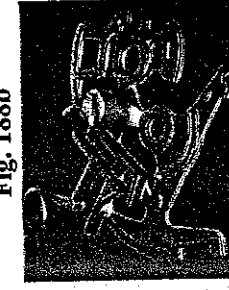


Fig. 189a

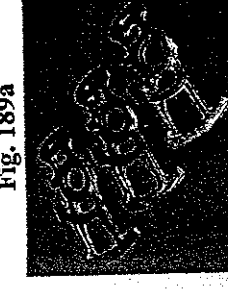


Fig. 189b



Fig. 187a

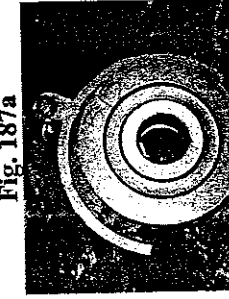


Fig. 187b

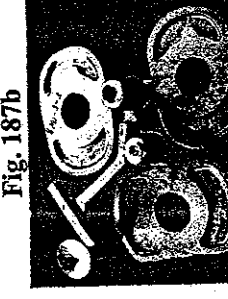


Fig. 188a



Fig. 184b

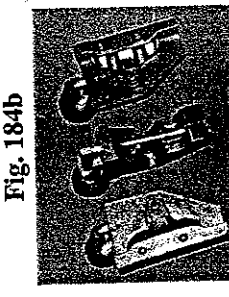


Fig. 185

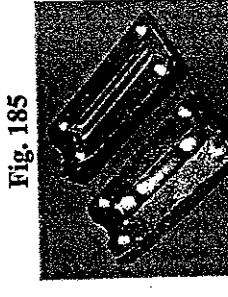


Fig. 186

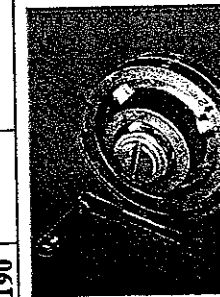


Fig. 183a

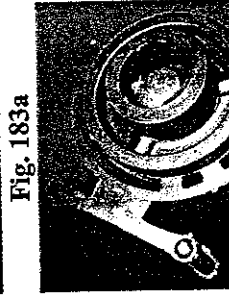


Fig. 183b

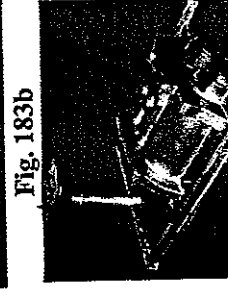


Fig. 184a

List of Ordered Casting Products (as of Mar. 31, 03)

JICA/MIDC, SIDCAST

No.	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
191	Nov 18	CV Granando TU	Bushing #2-4 (Automotive)	0.5CrFC	Ø 54/24.5 × 195L	2.7	193(S)	D/S Mould with Green Sand
192			Bushing #2-9 (Automotive)	0.5CrFC	Ø 77/49.5 × 195L	4.0	193(L)	
193	Dec 19	PT Pranata Jaya	Roller (Textile)	0.5CrFC	Ø 80/28 × 35H	1.0	194	Hand Mould with α Sand
194	Dec 31	CV Granando TU	Bushing #2-10 (Automotive)	0.5CrFC	Ø 57/24.5 × 195L	3.0	195	Hand Mould with Green Sand
195			Tractor Gear No.1 (Automotive)	FCD700	Ø 178/92 × 71H	8.0	196&197	Hand Mould with Green Sand
196	Jan 10	Bengpuspal	Tractor Gear No.2 (Automotive)	FCD700	Ø 182/48 × 58H	7.0	196&198	
197			Tractor Gear No.3 (Automotive)	FCD700	Ø 182/48 × 58H	7.0	196&199	
198			Tractor Gear No.4 (Automotive)	FCD700	Ø 206/48 × 60H	9.0	196&200	
199	Jan 10	PT Mega Teknik	Track Shoe (Catapiller)	FCD700	200W × 150L × 58H	3.7	201	Hand Mould with α Sand
200	Jan 13	CV Granando TU	Bushing #3-1 (Automotive)	0.5CrFC	Ø 75/45 × 195L	4.0	202	D/S Mould with Green Sand
201	Feb 07	CV Granando TU	Bushing #3-3 (Automotive)	0.5CrFC	Ø 95/60 × 195L	5.8	203	D/S Mould with Green Sand



Fig. 193a

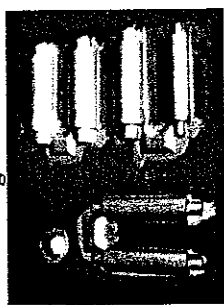


Fig. 193b

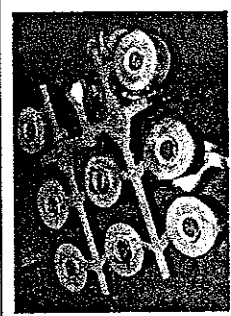


Fig. 194a

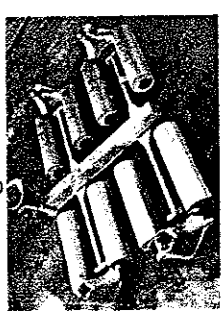


Fig. 194b

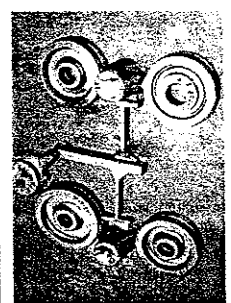


Fig. 196a

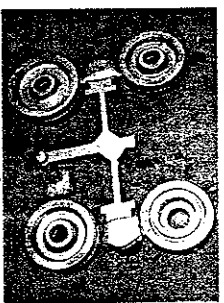


Fig. 196b

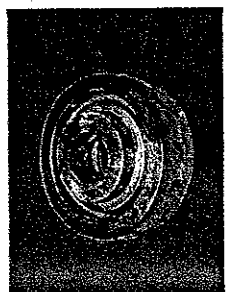


Fig. 198

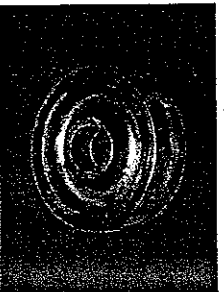


Fig. 199



Fig. 201a



Fig. 201b

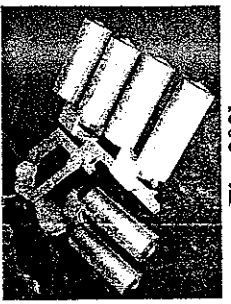


Fig. 202b



Fig. 203a

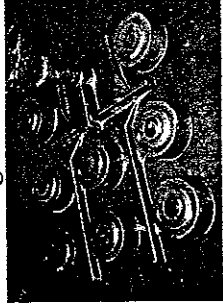


Fig. 194a

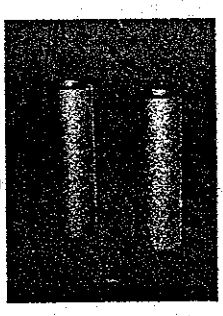


Fig. 195a

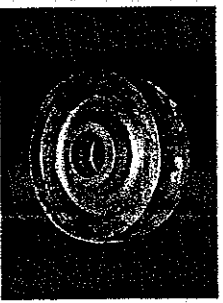


Fig. 197

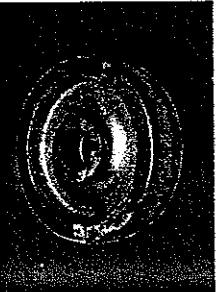


Fig. 200



Fig. 202a

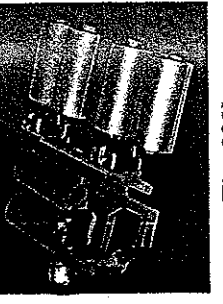
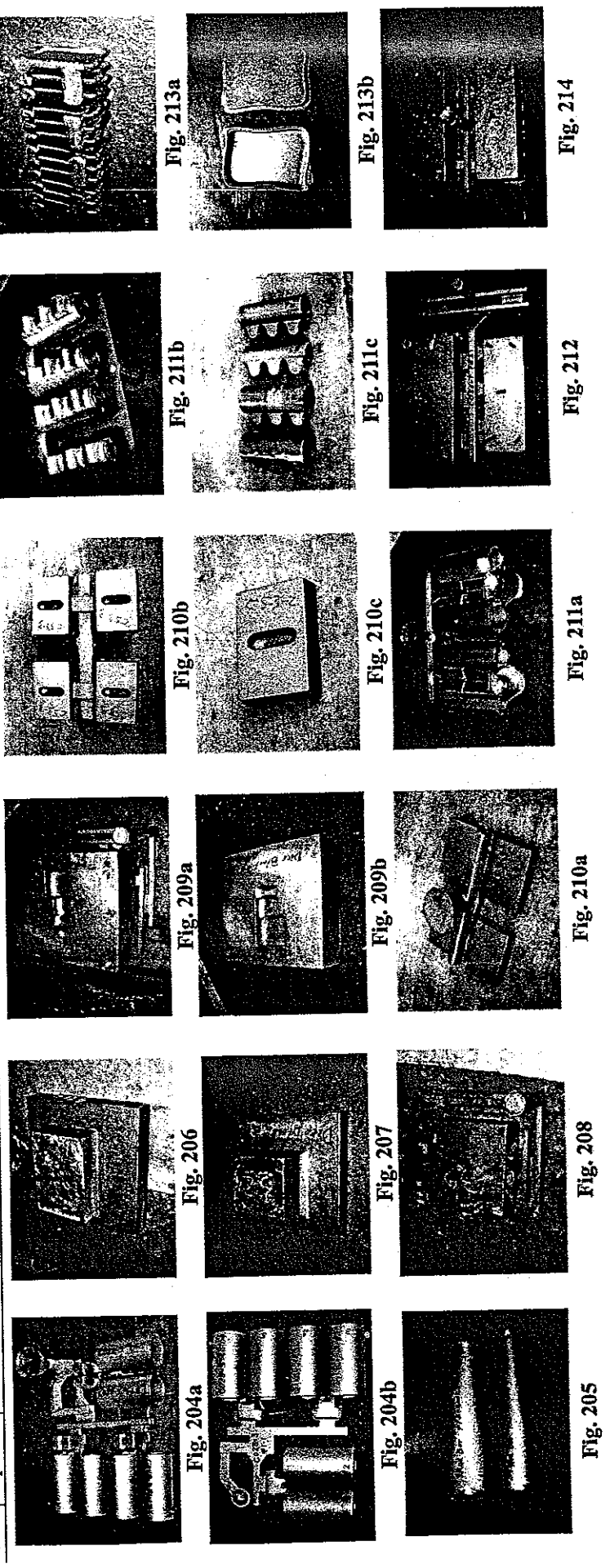


Fig. 203b

JICA/MIDC, SIDCAST *List of Ordered Casting Products (as of Apr. 30, 03)* **Page 21**

No.	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
202	Feb. 19	CV Granando TU	Bushing #1-1 (New Pattern)	0.5CrFC	φ 102/75 × 195L	5.3	200	D/S Mould with Green Sand
203	Mar. 24	CV Aditiya	Rod Bar (2 items)	FC150	φ 75.65 × 400L	23.0/2items	20	Hand Mould With G/S
204			Dies Block #1		550 × 550 × 185H	273.0	1	α Resin Process
205	Apr. 10	CV NEFA	Dies Block #3	FC200	270 × 280 × 115H	32.0	1	
206			Dies Block #4		270 × 280 × 120H	63.0	1	
207	Apr. 11	CV NEFA	Dies Block #2	FC200	550 × 550 × 190H	410.0	1	α Resin Process
208	Apr. 11	University	Sample	FC200	120L × 80W × 30H	2.0	12	Hand Mould With G/S
209	Apr. 14	CV Granando	Bush Clamp #1,2,3,4	FCD500	φ 110/85, 102/75, 70/44, 92/67 × 255L	33.6 (4 items)	27	Hand Mould With G/S
210	Apr. 16	PT Federal Izumi	Block #A,B	FC250	410L × 140W × 125H 350L × 130W × 100H	52.0 34.0	4 6	α Resin Process
211	Apr. 22	CV Pribadi	Hot Plate	FC250	230 × 160 × 17	1.3	20	Stacked Shell Mould
212	Apr. 29	PT Federal Izumi	Block #C	FC200	350L × 115W × 85H	24.0	4	α Resin Process



List of Ordered Casting Products (as of Jun. 14, 03)

JICA/MIDC, SIDCAST

No.	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt. kg		
213	Apr.29	PT. PLN JP	Debris Valve	FC200	310×440×70H	29.0	2	α Resin Process
214	Apr.29	PT. PLN JP	Debris Valve	FC200	200×450×150H	25.5	1	α Resin Process
215	Apr.29	PT. Pindad	Air Brake Casing	FC200	160×250×150H	10.0	216	α Resin Process
216	May.23	PT. Granando	Bushing #3-2	0.5CrFC	φ 90/55×195L	5.7	217	D/S Mould With G/S
217	May.28	PT. Yogi Saputra	Gear φ 685	FCD700	φ 685×60H	60.0	218	Hand Mould With G/S
218	May.28	PT. Agrind	Crank Shaft	FCD700	311L×187W×154H	15.0	219	D/S Mould With G/S
219	May.28	PT. Agrind	Can Shaft	FCD700	235L×φ 41	1.5	220	D/S Mould With G/S
220	6/10	PT. Mirambi	Impeller No.1-No.4		φ 241×61H		221	Pattern Make
221	6/12	CV. Ekadia Pratama	Goose Neck	FC250		17.5	222	α Resin Process
222	6/14	CV. Mirambi Turbotec	Manifold #232	FCD500	φ 260/φ 230×680L	127.0	223	H/M With β Resin & G/S

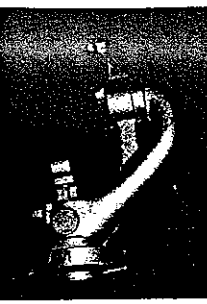


Fig.222

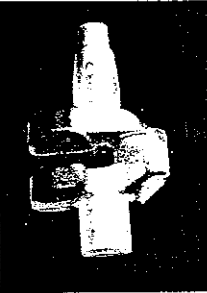


Fig.219



Fig.218



Fig.217

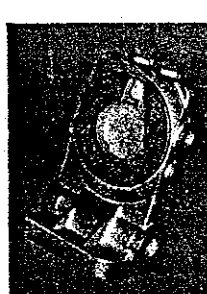


Fig.216

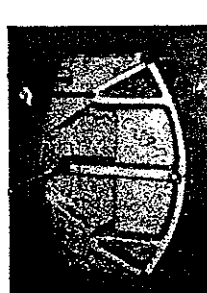


Fig. 215 a

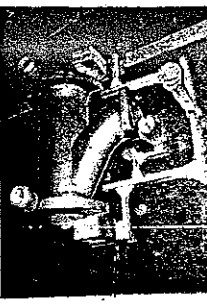


Fig.223a



Fig.220

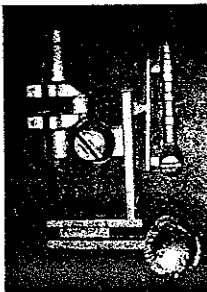


Fig.219



Fig.217

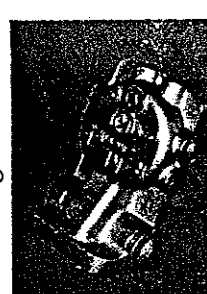


Fig.216

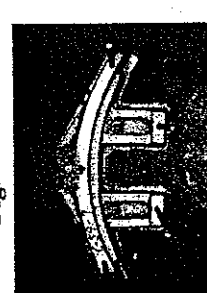


Fig. 215 b



Fig.223b

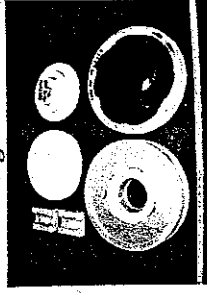


Fig.221

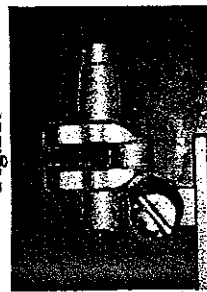


Fig.219

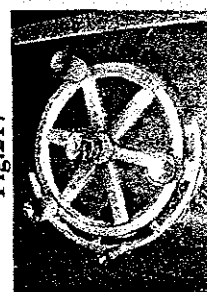


Fig.218



Fig.216



Fig. 215 a,b

List of Ordered Casting Products (as of July. 30, 03)

JICA/MIDC, SIDCAST

No.	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks	
				Material	Size, mm	Wt, kg			
223	6/20	CV. Granando	Bushing #2-6	FC250	φ 67(39.5) × 195H	3.2	150	D/S Mould With G/S	
224	7/01	CV. Granando	Clamping Bush #2-1,2,3	FC250	#2-1= φ 84(φ 44) × 255	9.0	3	Hand Mould With Green Sand	
225					#2-2= φ 88(φ 52) × 255	10.0			6
226					#2-3= φ 100(φ 64) × 255	11.0			27
227	7/04	CV. Nuri Teknik	Housing Dial	FC250	φ 500 × 200W	33.0	9	α Resin Process	
228		CV. Nuri Teknik	Frame Dial	FC250	120W × 100H × 340L	7.0	14	Hand Mould With G/S	
229	7/09	CV. Granando	Bushing #3-2	FC250	φ 90(55) × 195H	5.6	100	D/S Mould With G/S	
230	7/10	PT. PINDAD	Air Brake Casing	FC250	251L × 160W × 150H			Hand Mould With G/S	
231	7/15	PT. Pranata JAYA	Racet	FC250	φ 67(39.5) × 195H	5.2	30	Hand Mould With G/S	
232	7/15	PT. Pranata JAYA	Clamping (Coupling)	FC250	φ 190 × 57.5H	3.5	25	Hand Mould With G/S	

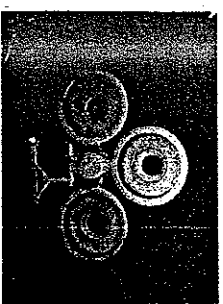


Fig. 231 b

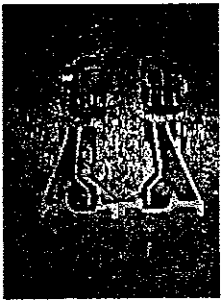


Fig. 230 d

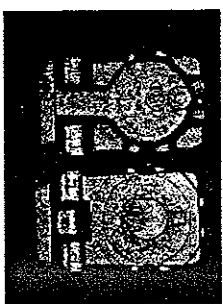


Fig. 230 a

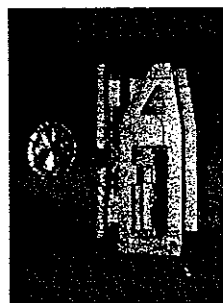


Fig. 228 a

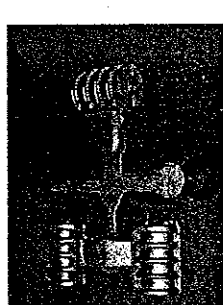


Fig. 224 c

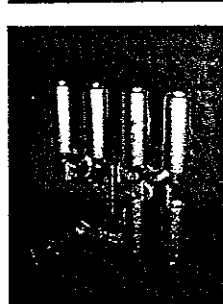


Fig. 223



Fig. 231 a



Fig. 230 e

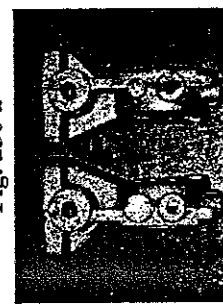


Fig. 230 b



Fig. 228 b

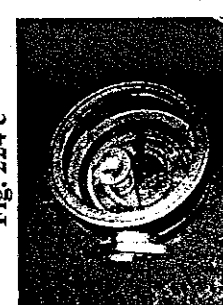


Fig. 227 a



Fig. 224 a

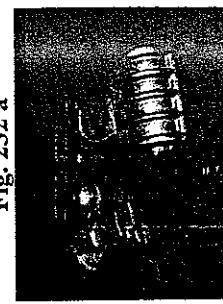


Fig. 232 a

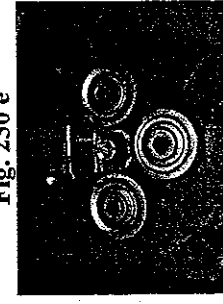


Fig. 231 a

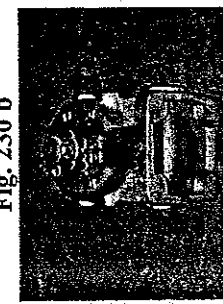


Fig. 230 c

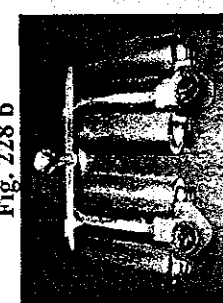


Fig. 229

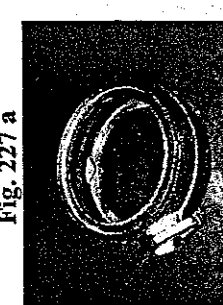


Fig. 227 b

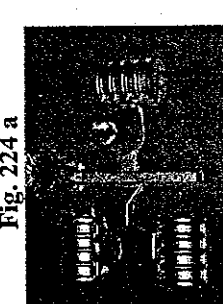


Fig. 224 b

No.	Date	Customer Name	Product Name (Applicable Field)	Characteristics of Product			Qty, pcs	Remarks
				Material	Size, mm	Wt, kg		
233	7/17	PT. Yogi Saputra	Pulley	FCD500	φ 300 × 170H	12	10	Hand Mould With G/S
234	7/21	PT. Yogi Saputra	Ball Eggs Clevis	FCD700	50Lx30H	1	260	Shell Mold
235	7/31	PT. KIGATA	Fly Wheel	FC250	φ 300 × 50H	20	25	Hand Mould With G/S
236	7/31	PT. KIGATA	Ring Wheel	FC250	φ 300 × 20H	10	25	Hand Mould With G/S
237	8/5	PT. KIGATA	Pulley	FC250	φ 200 × 40H	6	25	Hand Mould With G/S
238	8/14	PT. KIGATA	Balancer	FC250	100Lx50W	2	25	Hand Mould With G/S
239	8/26	PT. Nugaraha Putar Jaya	Pallet Bush	FCD500	φ 68(26) × 125H	2	24	D/S Mould With G/S
240	9/1	PT. Granando	Bushing #2-5	FC250	φ 80(50) × 195H	4.3	100	Hand Mould With G/S
241	9/4	PT. KIGATA	Manifold	FC250	φ 40(30) × 200H	2	10	Hand Mould With G/S
242	9/4	MIDC(Target)	Cylinder Head	FC250	160x160x250H	15	242	α Resin Process

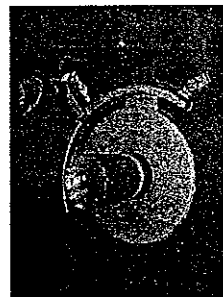


Fig. 233 a

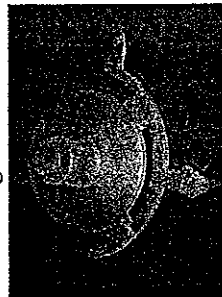


Fig. 233 b



Fig. 235,236 a, 238

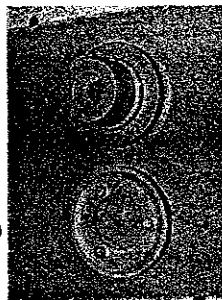


Fig. 235,236 b

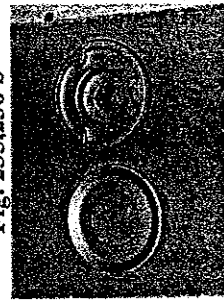


Fig. 235,236 c

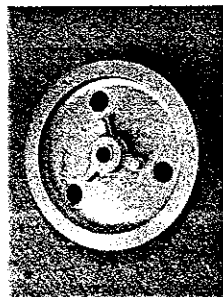


Fig. 237 a

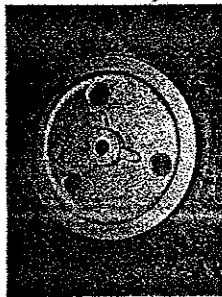


Fig. 237 b

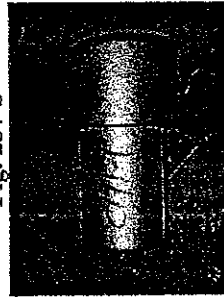


Fig. 239

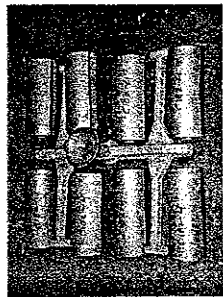


Fig. 240

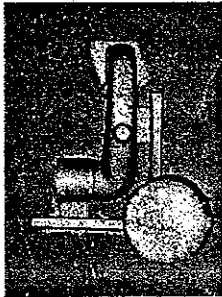


Fig. 241 a



Fig. 241 b

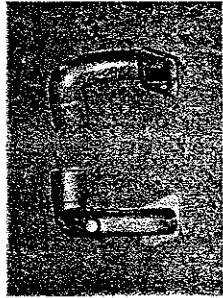


Fig. 241 c

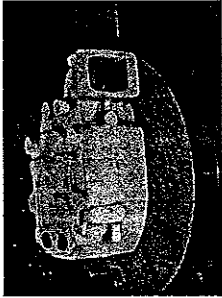


Fig. 242 a

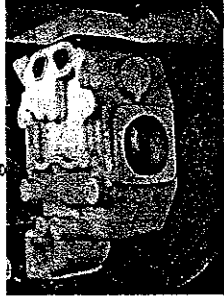


Fig. 242 b

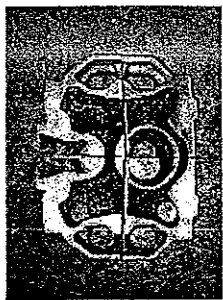


Fig. 242 c

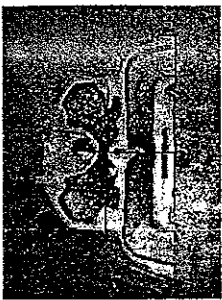


Fig. 242 d

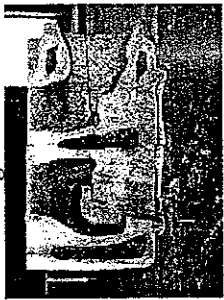
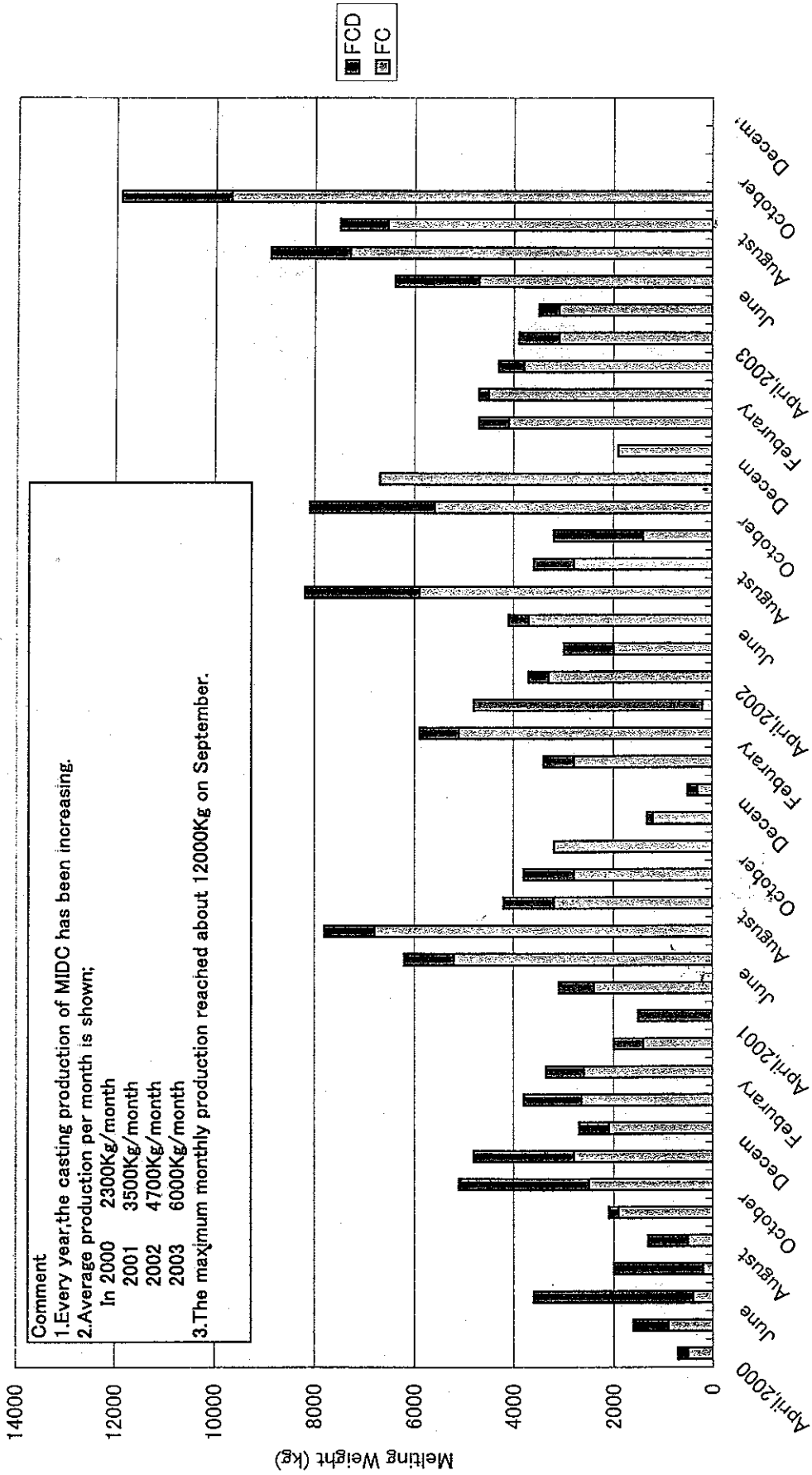
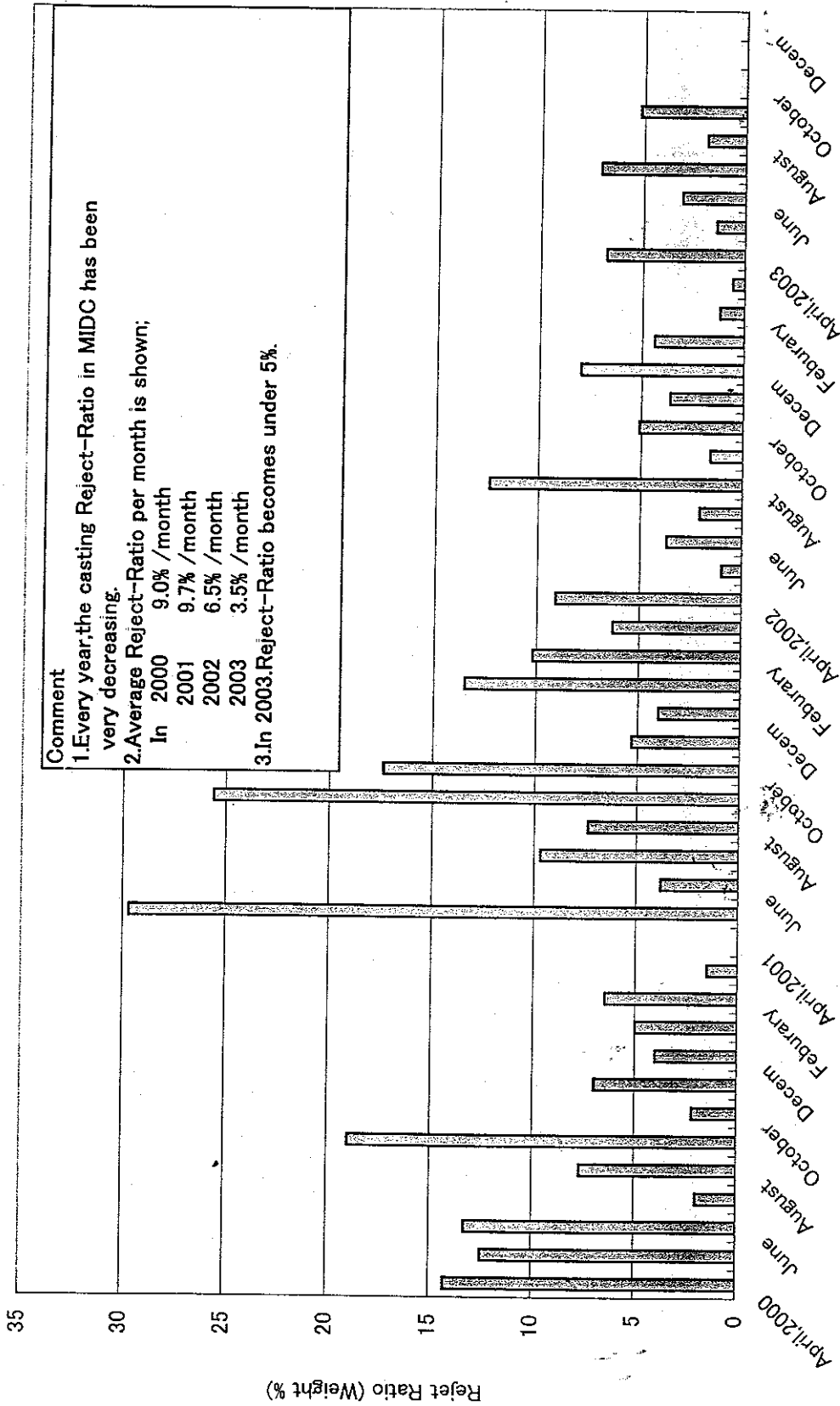


Fig. 242 e

Melting Weight in MIDC



Reject Ratio in MIDC



List of "KAIZEN - TT" on Process and Equipment

- (1) Improving the Organic Sand Mixing System at MIDC
- (2) Improving the Return Sand System at MIDC
- (3) Improving the Fettling and Inspection Line at MIDC
- (4) Optimization of Double-Squeeze Moulding Process
- (5) Application of Alkaline Phenol Self-Hardening and CO2 Process
- (6) Improving the Melting Process - 1
- (7) Improving the Melting Process - 1

KAIZEN 7 : Improving the Melting process at MIDC-2 2003 9 MIDC

1. Improvement (KAIZEN)

(1). Rapid heating and high temperature melting

Matters to be improved and KAIZEN	
Before	It takes about 140 min for cast iron melting in 200 kg furnace. This means that oxidation of materials will be likely to occur and also melting efficiency is low.
After	Melting procedure was change to following sequence shown in Fig 1.

Return Steel scrap
Return Steel scrap
Starting block

→

Caburizer
Fe-Si
Fe-Mn
other alloy

Return Caburizer
Starting block

→

Steel scrap

→

Caburizer
Fe-Si
Fe-Mn
other alloy

Temperature °C

Time min

Fig. 1 The partition wall was installed

(2). Decreasing the slag defects in iron castings

Matters to be improved and KAIZEN	
Before	Slag defects in iron castings was main defects in MIDC. The slag in a pouring ladle comes into cavities in the mould during pouring process. However Slag inclusions could not be protected by MIDC ladles which are open type shape.
After	Slag inclusions were able to be protected by using ceramic fiber as shown in Fig 2.

Ladle

Ceramic fiber

Molten iron

Moulds

Ceramic fiber

Fig2 The position of ceramic fiber in pouring ladle
Fig 3 Pouring with ceramic fiber in the pouring ladle

2. Effect of KAIZEN

Items	Qualitative Effect	Quantitative Effect
1. Rapid heating and high temperature melting		<ul style="list-style-type: none"> • The decrease of casting defects like shrinkage and gas holes • The increase of melting efficiency like electric consumption
2. Decreasing the slag defects in iron castings		<ul style="list-style-type: none"> • The decrease of slag inclusions

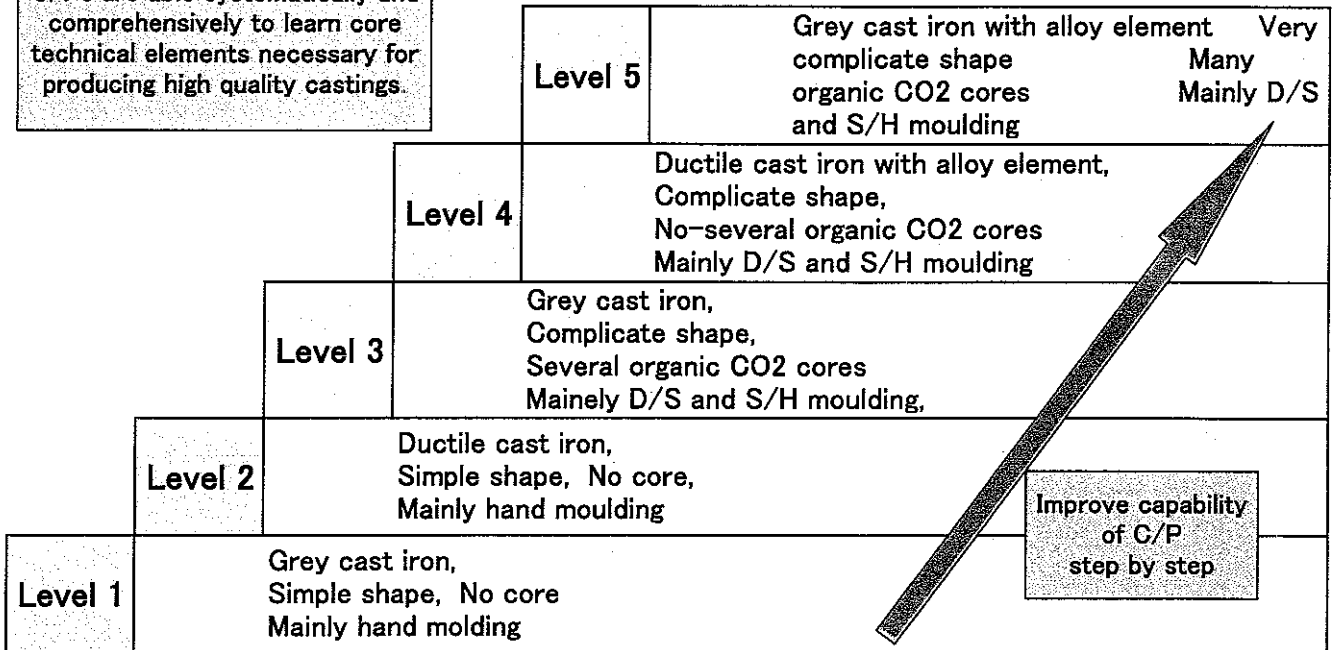
132

Target Casting Program

Annex 19
as of Oct. 11, '03

Purpose

C/Ps are able systematically and comprehensively to learn core technical elements necessary for producing high quality castings.



SIDCAST JICA/MIDC

Map of Target-Casting Products

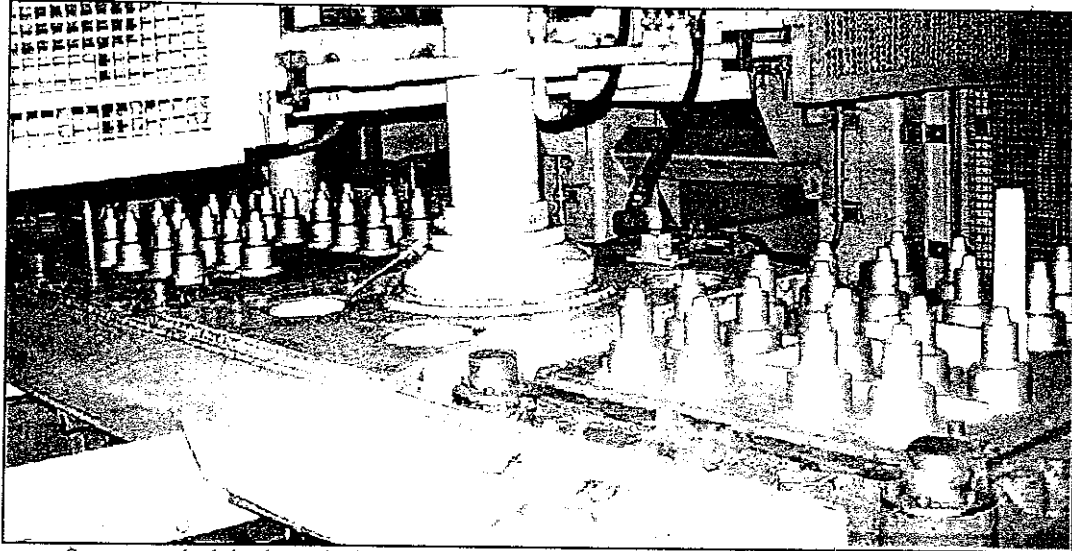
Level	Contents					
Level 1	1 Pully H/M, G/S	2 Pully J/S, G/S	3 Disc Brake H/M, G/S	4 Shoe & Brill H/M, G/S	5 Flywheel H/M, G/S	6 Top Lever H/M, G/S
	7	8	9	10	11	12
	Ingot Case Self	Pully Hub A D/S, Green	Pully Hub B,C D/S, Green			
Level 2	1 Gear A H/M, G/S	2 Gear B J/S, G/S	3 Cir. Double Cam H/M, G/S	4 Cam 11/11 H/M, G/S	5 Obal Double Cam H/M, G/S	6 Cam 11/22 & 1/3 H/M, G/S
	7	8	9	10	11	12
	Bearing Housing H/M, G/S					
Level 3	1 Motor Cover H/M, G/S	2 Roller Self	3 Toggle Self	4 Impeller ϕ 96 D/S, G/S	5 Impeller ϕ 120 D/S, G/S	6 Counter Weight H/M, G/S, CO ₂
	7	8	9	10	11	12
	Rear Case Self	Front Case Self	Bushing H/M, Green, CO ₂	Bushing D/S, Green, CO ₂	Burner H/M, G/S	Stick Cup D/S, CO ₂ (Shell)
Level 4	1 Gear Self	2 Clamping Bush H/H, G/S, CO ₂	3 Cam Shaft (Agrindo) D/S, G/S	4 Crankshaft (Agrindo) D/S, G/S	5 Cam Shaft (BPPT) H/M (D/S), G/S	6 Crankshaft (BPPT) H/M (D/S), G/S
	7	8	9	10	11	12
	Manifold H/M, Self					
Level 5	1 Stick Cup (Grananando) D/S, CO ₂ (Shell)	2 Air Brake Housing (KAI) Self (D/S), CO ₂	3 Cylinder Head (Agrindo) Self (D/S), CO ₂	4	5	6
	7	8	9	10	11	12

Foot notes : H/M : Hand moulding D/S : Double-squeeze automatic moulding. G/S : Green sand process.
Self : Phenolic estel self-hardening process CO₂ : CO₂ cured alkaline phenolic process Shell : Shell moulding process

Casting Defects encountered in STICK CUP and its Countermeasure

Oct. '03

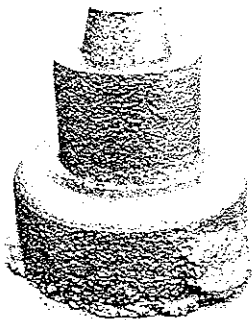
*Pattern for Double squeeze moulding mac



Corp at behind and drag in front. 40 castings are cast in a mould

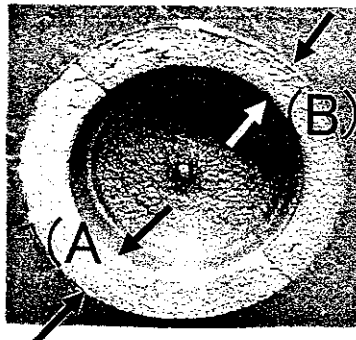
*Defects

Mould crash



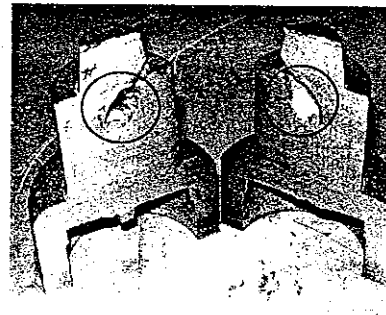
It encountered with lack of sand mixing and sand compaction.

Uneven thickness



It encountered at random

Shrinkage

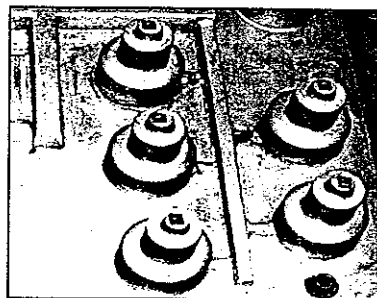


In a some 'lot castings, in her shrinkage having round

*Cause of the defect and countermeasure

Mould crash

Improve sand compacting condition



Prevent core movemnet

Uneven thickness

Shrinkage



Decrease charging ratio of electro-magnetic

Monitoring and Evaluation Sheet for TCP – Current Status–

Revised on Oct.20, 2003.

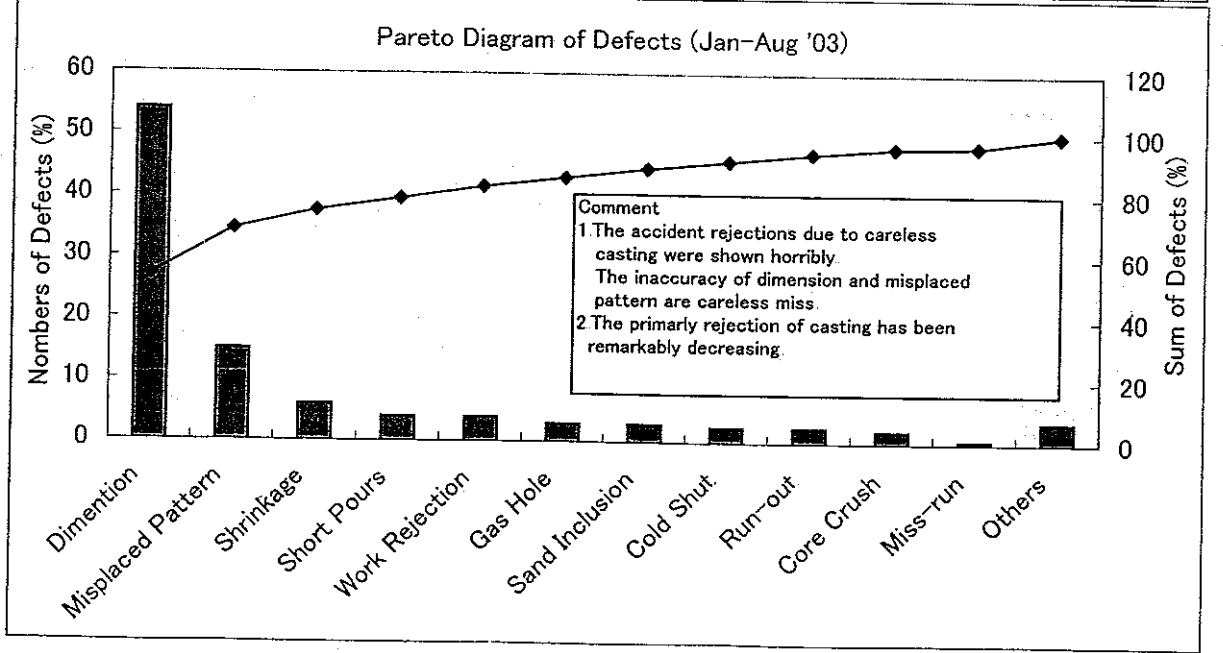
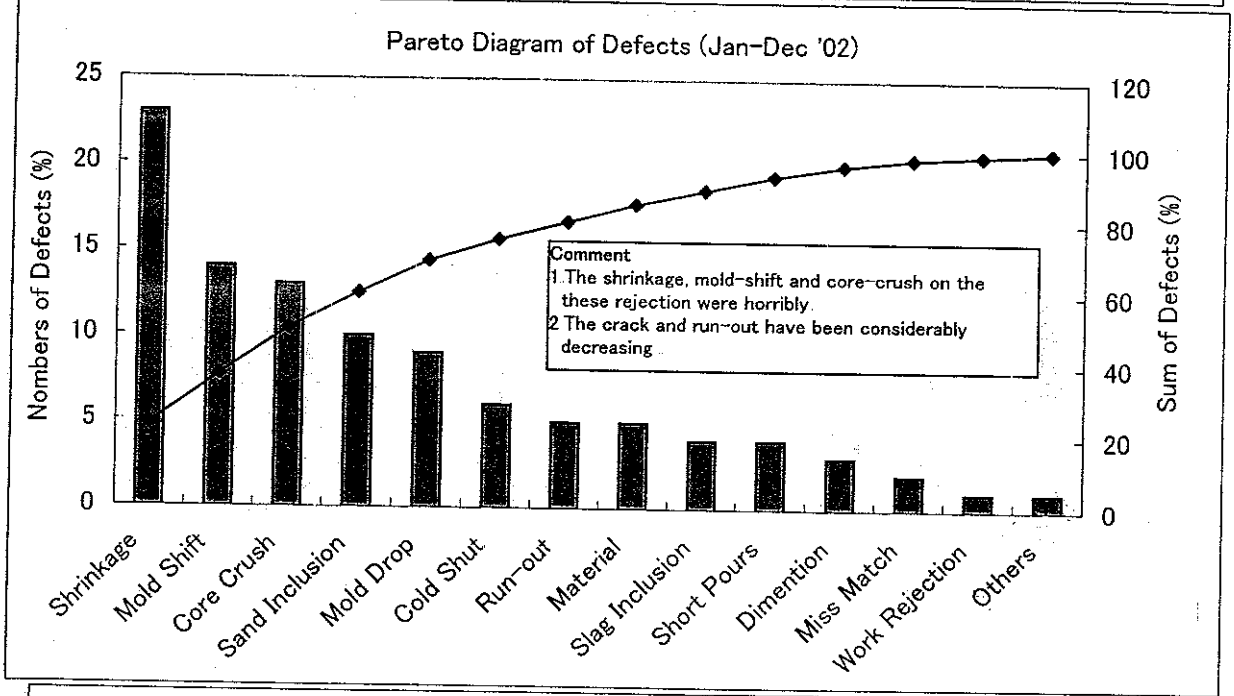
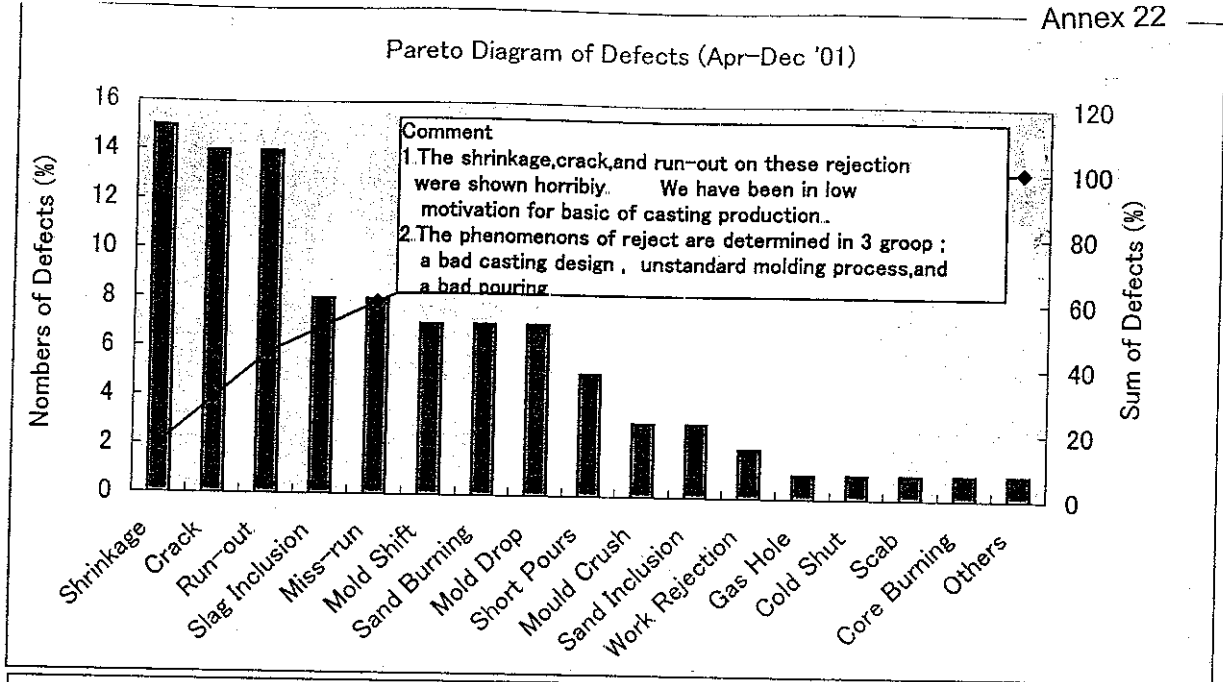
Subject of TCP	Final Status Point	Annual Progress Status (Current/Target)					TT Methodology of TT	TT Implemented Input from Japanese Side	TT Plan from Now Input from Japanese Side	Comments by Japanese Experts	Final Products
		1st	2nd	3rd	4th	5th					
1. Casting Plan											
1-1 Understanding of drawings including procedure	4	0/1	1/2	2/2	3/3	4/4		LE/SE	LE/SE/SP	-Worker at the job site became able to advance a proposal on an improvement of casting design. -Order of simulation can be received with the help of Adstefan. -3-D drawing is possible. -Though importance of casting specification is recognized, it has not reach the level that makes specification by their own.	Lecture Document (15+8) Work Record Format (2+1), Casting Design Dwg (6+60), Check List (0+2), Standard Procedure (0+12), Operation Manual (0+6)
1-2 Pattern and mould plan	3	1/1	1/2	2/2	3/3	3/3		LE/SE			
1-3 Riser and gating system plan	3	1/1	1/2	2/2	2/3	4/3		LE/SE/CPTJ/ EQ			
1-4 Utilization of casting flow & solidification simulation system	3	1/1	1/1	1/2	1/2	4/3		LE/SE/CPTJ/ EQ			
1-5 Casting specification	4	0/0	0/1	1/2	1/3	3/4					
2. Pattern Making											
2-1 Understanding of drawings including procedure	4	1/2	2/3	3/4	3/4	4/4		LE/CPTJ/ MAT	LE/SP	-Leader of patternG has the capability accepted in Japan. -Understanding of design and drawing is possible sufficiently. -Drawing by using computer has started. -The improvement is still needed for storage way and management of pattern. -Instruction for company has been done.	Lecture Document (1+3) Pattern Mant. Manual (2+0), Machine Mainten. Manual (9+0) Work Record Format (1+0) Machine Maints. Record Format(1+0) Manufacturing Report (1+6) Training Course (3+3)
2-2 Pattern making design and full scale drawing	4	1/2	2/3	3/3	3/4	4/4					
2-3 Operation and maintenance of machinery and equipment	4	1/2	2/3	3/3	3/4	4/4					
2-4 Handling and maintenance of hand tools	4	1/1	2/2	2/3	3/4	3/4		LE/CPTJ/ EQ			
2-5 Wooden pattern making	4	1/2	2/3	3/3	3/4	4/4					
2-6 Inspection of pattern	4	1/1	2/2	2/3	3/4	3/4					
2-7 Mending and storage of patterns	4	1/2	2/3	3/3	3/4	3/4					
3. Moulding											
3-1 Sand preparation	4	1/0	1/1	2/2	3/3	4/4		LE/SE/CPTJ/ EQ	LE/SE/SP	- Procedure of mixing sand can be done in accordance with result of control chart. -C/P became able to select the sand process according to moulding pattern. -Measurement of LOI can be done by C/P. C/P can grasp the condition of sand reclaimed. -Various sand test can be done and the result of them can be shown on the control chart by C/P.	Work Record Format (3+0) Lecture Document (5+6) Standard Procedure (5+9), Operation Manual (0+8) Sand/Resin Test Record Format (2+1), Characteristic Control Table Format (2+0), Tool Drawing (5+0)
3-1-1 Selection and preparing of green mould sand	4	1/0	2/2	2/2	3/3	4/4					
3-1-2 Selection and preparing of organic mould sand	4	1/0	2/2	3/3	3/4	4/4					
3-1-3 Sand reclamation	4	1/0	1/1	3/3	3/4	4/4					
3-1-4 Testing of sand and mould	4	1/0	1/2	3/3	3/4	4/4					
3-2 Moulding and core making	4	0/0	1/1	2/2	3/3	3/4		LE/SE/CPTJ	LE/SP	-J/S moulding machine has been dormant since last year. C/P came to be able to mould complicated core like cylinder head jacket with organic resin sand. -C/P came to be acquainted with reclamation and mixing equipment and troubles relevant to facility can be prevented in advance. -Density of coating is not sufficiently controlled. It needs a little more practice.	
3-2-1 Hand moulding with green mould sand	4	0/0	1/1	2/2	3/3	3/4					
3-2-2 D/S machine moulding with green mould sand	4	1/0	1/2	2/2	3/3	4/4		LE/SE/CPTJ	LE/SP		
3-2-3 J/S machine moulding with green mould sand	4	1/0	1/2	2/2	3/3	4/4		LE/SE/CPTJ/ EQ	LE/SP		
3-2-4 Moulding with organic mould sand	4	1/0	1/2	2/2	3/3	4/4		LE/SE/CPTJ/ EQ	LE/SP		
3-2-5 Core making (Hand and Blowing)	4	1/1	1/2	2/2	3/3	4/4		LE/SE/CPTJ	LE/SE/CPTJ		
3-2-6 Coating	4	1/1	1/2	2/2	2/3	3/4					
4. Melting											
4-1 Selection and storage of materials	4	1/0	1/1	2/3	3/4	3/4					
4-2 Mixing ratio calculation of charging materials	4	0/0	2/3	3/4	3/4	4/4					
4-3 Materials charging and melting operation	4	0/0	2/3	3/3	3/4	4/4					
4-4 Molten metal treatment	4	0/0	2/3	3/3	3/4	3/4		LE/SE/ EQ	LE/SP	-As for the selection of raw material, it is still insufficient with the circumstances of the market and others. Instruction is still needed in respect of acceptance of inappropriate materials. -Concerning the storage of raw materials, the scrap yard is newly divided positively. -Except for the melting of FCD, it is quite satisfactory in respect of melting skill.	Lecture Document (15+21), Standard Procedure (12+7), Work Record Format (7+0), Check Sheet Format (1+0), Tool Drawing (5+0), Crane Maints. Format (2+0) Training Course (0+1)
4-5 Foundry test for monitoring molten metal characteristics	4	0/0	1/1	3/3	3/4	4/4					
4-6 Pouring practice	4	0/0	2/2	3/3	3/4	3/4					
4-7 Lining maintenance of furnaceladle, and ladle preheat	4	1/1	1/2	3/3	3/4	4/4					
5. Examination and quality control											
5-1 Selection and operation of suitable finishing process	4	1/0	1/2	3/4	3/4	4/4		LE/SP	LE/SP	-As for PT, TT has already ended. C/P can execute it by their own.	Lecture Document (2+19) Chemical Composition Recording Format (1+1) Tool Drawing (2+0), Microstructure Samples (6+0) QC Control Chart (0+4), Training Course (0+1) Standard Procedure (0+12), Operation Manual (2+11) Check List (0+9)
5-2 Chemical analysis	4	1/1	1/2	2/3	2/4	3/4					
5-3 Mechanical test (Hardness Test)	4	1/1	1/2	2/3	3/4	4/4					
5-4 Mechanical test (Tensile Test)	4	1/1	1/2	1/3	1/4	3/4					
5-5 Metallurgical examination	4	1/1	1/2	1/3	1/4	3/4					
5-6 Scribing and dimensional inspection	4	0/1	1/1	2/2	2/3	3/4		LE/SE/SP	LE/SE/SP	-As for MT, Trial has been done with standard test piece but the objects products are quite few. -Concerning metallographic structure observation, C/P came to be able to do photographing including cutting, polishing and microscopic observation. - It is possible to decide state and size of defect with wavetform of UT. -Determining the ratio of graphite spheroidization is possible with the help of UT.	
5-7 Surface defect inspection (VT)	3	0/0	1/1	2/2	2/3	4/3					
5-8 Surface defect inspection (PT & MT)	3	0/0	0/1	1/2	1/2	2/3					
5-9 Internal defect inspection (UT and RT film review)	4	0/0	0/1	1/2	1/2	3/3					
5-10 Defects analysis and its countermeasure	4	0/0	1/1	2/2	2/3	3/4					
5-11 Statistical quality control	3	0/0	1/1	1/2	2/2	3/3					

Note 2) Status Point
0: not started.
1: not satisfied
2: fair
3: satisfied
4: well satisfied

Note 1) Abbreviation
VT: Visual Test,
PT: Liquid Penetrant Test,
MT: Magnetic Particle Test,
UT: Ultrasonic Test,
RT: Radiographic Test,
TT: Technology Transfer

CPTJ: C/P Training in Japan
EQ: Equipment
MAT: Materials
EXT: External Training
LE: Long-term Expert,
SE: Short-term Expert,

OUT: on the Job Training
SP: Self-Practice
LEC: Lecture,



Metal Industries Development Center
Services of Casting Simulation Consultations to Company

Table 1. List of Company Name

No	Company Name	Product Name	Purpose	Manufacture Process
1	PT. Indo Techno Mandiri, Bandung	Gear Case	Made gating system design of metal mold aid by simulation	1. Aluminum casting AC4B 2. Permanent mold by gravity casting machine
		Head Cover	Made gating system design of metal mold aid by simulation	
2	PT Banu Sakti, Surabaya	Shroud	Made gating system design of green sand mold aid by simulation	1. FCD 700 2. Gravity casting by green sand mold
		Inlet	Made gating system design of green sand mold aid by simulation	
3	PT. Wijaya Karya	Inlet manifold	Improvement of gating system to avoid shrinkage defect aid by simulation	1. Aluminum casting AC2B 2. Permanent mold by gravity casting machine
		Clamping (In Process)	Analyze injection die casting dies from customer aid by simulation to achieve optimum design	

Table 1 The required melting time (min/charge) in case of 200kgHF

	Aug-01	Nov-01	Jun-02	Nov-02	Mar-03	Aug-03
40						///
50		//	///	////	////////	//////////7//
60	/	////////	//////////	//////////	//////////	//////////
70		////////	////////	///	////////	////
80		////	///	////	//	
90			////	/		
100		/		/		
110		/				
120		/				
130	/					
140	//					
150	/					
160						
170						
180						
190						
200	/					
n	7	22	35	35	27	30
x	141.4	72.4	67.4	64.4	62.2	58
σ	36	17.4	11.8	11.9	10.6	8.8

Comment

1. The target of required melting-time sets on one hour per one charge.
2. We have reached the target on Aug-03.
3. The required melting-time has become 1/2 compare to the former method.
And then standard deviation has become about 1/4 than before.

LIST OF PROTOTYPICAL PRODUCTS (1/5)

MIDC/JICA Project on Supporting Industries Development for Casting Technology in Indonesia

No.	No.	No.	Product Name	Material	Customer	Remarks
Automotive Components						
1	At-01	8	Brake Drum	FC	Ceper BPPT	
2	At-02	9	Fly Wheel	FC	Ceper BPPT	
3	At-03	31	φ 120 Impeller (for Car Radiator Pump)	FC	Silika Foundry Utama	
4	At-04	32	φ 96 Impeller (for Car Radiator Pump)	FC	Silika Foundry Utama	
5	At-05	54	Bracket #1	FCD	Indo Pattern Lestari	
6	At-06	55	Bracket #2	FCD	Indo Pattern Lestari	
7	At-07	56	Bracket #3	FCD	Indo Pattern Lestari	
8	At-08	57	Bracket #4	FCD	Indo Pattern Lestari	
9	At-09	58	Bracket #5	FCD	Indo Pattern Lestari	
10	At-10	59	Bracket #6	FCD	Indo Pattern Lestari	
11	At-11	60	Bracket #7	FCD	Indo Pattern Lestari	
12	At-12	70	Pulley Hub B	FC	CV. Akur	
13	At-13	71	Pulley Hub C	FC	CV. Akur	
14	At-14	72	Pulley Hub A	FC	CV. Akur	
15	At-15	76	Pulley 440 (for Ship)	FC	CV. Castar	
16	At-16	80	Sprocket 540 (for Ship)	FCD	CV. Castar	
17	At-17	81	Sprocket 356 (for Ship)	FCD	CV. Castar	
18	At-18	121	Rocker Arm	FC	UKNT	
19	At-19	129	Fly Wheel A (Mobil)	FC	PT Anggada Jaya Perkasa	
20	At-20	130	Fly Wheel B (Mobil)	FC	PT Anggada Jaya Perkasa	
21	At-21	131	Cylinder #3 (Mobil)(Trial)	FC	Granando Teknik Utama	
22	At-22	132	Cylinder #1 (Mobil)(Trial)	FC	Granando Teknik Utama	
23	At-23	133	Cylinder #2 (Mobil)(Trial)	FC	Granando Teknik Utama	
24	At-24	140	Cylinder Liner #6 (Mobil)	FC	Granando Teknik Utama	
25	At-25	144	Cylinder Liner #1 (Mobil)	FC	Granando Teknik Utama	
26	At-26	145	Cylinder Liner #2 (Mobil)	FC	Granando Teknik Utama	
27	At-27	146	Cylinder Liner #3 (Mobil)	FC	Granando Teknik Utama	
28	At-28	147	Manifold A (Mobil)	FCD	Bengpuspal	
29	At-29	148	Manifold B (Mobil)	FCD	Bengpuspal	
30	At-30	151	Cylinder Liner #4	FC	Granando Teknik Utama	
31	At-31	152	Cylinder Liner #5	FC	Granando Teknik Utama	
32	At-32	166	Bushing #2-1	FC	Granando Teknik Utama	
33	At-33	169	Bushing #2-2	FC	Granando Teknik Utama	
34	At-34	170	Cylinder Liner #1-6(2 nd Pattern)	FC	Granando Teknik Utama	
35	At-35	172	Bushing #2-8	FC	Granando Teknik Utama	
36	At-36	173	Bushing #2-3	FC	Granando Teknik Utama	
37	At-37	174	Bushing #2-4	FC	Granando Teknik Utama	
38	At-38	175	Bushing #2-9	FC	Granando Teknik Utama	
39	At-39	177	Bushing #2-5	FC	Granando Teknik Utama	
40	At-40	178	Bushing #2-6	FC	Granando Teknik Utama	
41	At-41	179	Bushing #2-7	FC	Granando Teknik Utama	
42	At-42	181	Compressor Casing	FC	PT Gunnung Sart	
43	At-43	189	Bushing #1-2 (Automotive)	FC	CV Granando TU	
44	At-44	190	Bushing #1-3 (Automotive)	FC	CV Granando TU	
45	At-45	191	Bushing #2-4 (Automotive)	FC	CV Granando TU	
46	At-46	192	Bushing #2-9 (Automotive)	FC	CV Granando TU	
47	At-47	194	Bushing #2-10 (Automotive)	FC	CV Granando TU	
48	At-48	195	Tractor Gear No.1 (Automotive)	FCD	Bengpuspal	
49	At-49	196	Tractor Gear No.2 (Automotive)	FCD	Bengpuspal	
50	At-50	197	Tractor Gear No.3 (Automotive)	FCD	Bengpuspal	
51	At-51	198	Tractor Gear No.4 (Automotive)	FCD	Bengpuspal	

LIST OF PROTOTYPICAL PRODUCTS (2/5)

MIDC/JICA Project on Supporting Industries Development for Casting Technology in Indonesia

No.	No.	No.	Product Name	Material	Customer	Remarks
52	At-52	200	Bushing #3-1 (Automotive)	FC	CV Granando TU	
53	At-53	201	Bushing #3-3 (Automotive)	FC	CV Granando TU	
54	At-54	202	Bushing #1-1 (New Pattern)	FC	CV Granando TU	
55	At-55	204	Dies Block #1	FC	CV NEFA	
56	At-56	205	Dies Block #3	FC	CV NEFA	
57	At-57	206	Dies Block #4	FC	CV NEFA	
58	At-58	207	Dies Block #2	FC	CV NEFA	
59	At-59	209	Bush Clamp #1,2,3,4	FC	CV Granando	
60	At-60	210	Block #A,B	FC	PT Federal Izumi	
61	At-61	212	Block #C	FC	PT Federal Izumi	
62	At-62	215	Air Brake Casing	FC	PT. Pindad	
63	At-63	216	Bushing #3-2	FC	PT. Granando	
64	At-64	218	Crank Shaft	FCD	PT. Agrind	
65	At-65	219	Cam Shaft	FCD	PT. Agrind	
66	At-66	223	Bushing #2-6	FC	CV. Granando	
67	At-67	224	Clamping Bush #2-1	FCD	CV. Granando	
68	At-68	225	Clamping Bush #2-2	FCD	CV. Granando	
69	At-69	226	Clamping Bush #2-3	FCD	CV. Granando	
70	At-70	229	Bushing #3-2	FC	CV. Granando	
71	At-71	230	Air Brake Casing	FC	PT. PINDAD	
72	At-72	235	Fly Wheel	FC	PT. KIGATA	
73	At-73	236	Ring Wheel	FC	PT. KIGATA	
74	At-74	237	Pulley	FC	PT. KIGATA	
75	At-75	238	Balancer	FC	PT. KIGATA	
76	At-76	240	Bushing #2-5	FC	PT. Granando	
77	At-77	241	Manifold	FC	PT. KIGATA	
Agricultural Machinery Components						
78	Ag-01	4	Bearing Case (for Marmer Cutter)	FCD	Trimuda Pratama	
79	Ag-02	27	Wheel Gear (for Sugar Mill)	FCD	Silika Foundry Utama	
80	Ag-03	34	Wheel Gear (for Sugar Mill)	FCD	Silika Foundry Utama	
81	Ag-04	53	Bearing House (for Wood Processing M	FCD	Paparti Pertama Suka.	
82	Ag-05	75	Nozzle	FC	CV CasterFC	
83	Ag-06	77	Pulley (for Grass Cutting Machine)	FC	Dairy Project	
84	Ag-07	114	Upper Roller (for Pulp Machine)	FC	(MIDC)	
85	Ag-08	115	Medium Roller (for Pulp Machine)	FC	(MIDC)	
86	Ag-09	116	Lower Roller (for Pulp Machine)	FC	(MIDC)	
Electrical Components						
87	EI-01	63	Shoe	FC	Plta Kracak	
88	EI-02	64	Brill	FC	Plta Kracak	
89	EI-03	78	Impeller (for Power Plant)	FC	PRN	
90	EI-04	84	Motor Cover	FC	Polypin	
91	EI-05	86	Die for Suspension	FCD	CV. Castar	
92	EI-06	90	Die for Suspension Cover	FCD	Cipta Nusa Castech	
93	EI-07	103	Die for Suspension Cover	FCD	Cipta Nusa Castech	
94	EI-08	149	Spacer Dies #1	FCD	Ciptanusa Castech PT	
95	EI-09	154	Spacer Dies #2	FC	Ciptanusa Castech PT	
96	EI-10	155	Spacer Dies #3	FC	Ciptanusa Castech PT	
97	EI-11	156	Spacer Dies #4	FC	Ciptanusa Castech PT	
98	EI-12	157	Spacer Dies #5	FC	Ciptanusa Castech PT	
99	EI-13	163	Ball Eye Horn Holder	FCD	Ciptanusa Castech	
100	EI-14	164	Socket Eye Horn Holder	FCD	Ciptanusa Castech	

LIST OF PROTOTYPICAL PRODUCTS (3/5)

MIDC/JICA Project on Supporting Industries Development for Casting Technology in Indonesia

No.	No.	No.	Product Name	Material	Customer	Remarks
101	EI-15	167	Double Socket Eye Horn Holder	FCD	Ciptanusa Castech	
102	EI-16	168	Shackle Type Horn Holder	FCD	Ciptanusa Castech	
103	EI-17	182	Metal Dies (Electric Parts)	FCD	Ciptanusa Castech	
104	EI-18	183	Metal Dies (Electric Parts)	FCD	Ciptanusa Castech	
105	EI-19	188	Housing (Electric Motor)	FC	Suharto	
106	EI-20	234	Ball Eggs Clevis	FCD	PLN J & P	
Textile Machinery Components						
107	Tx-01	37	Jack Lever #1	FCD	Nata Teknik	
108	Tx-02	38	Jack Lever #2	FCD	Nata Teknik	
109	Tx-03	39	Incline Wheel Gear	FCD	A & W	
110	Tx-04	40	Sprocket Wheel Gear	FCD	A & W	
111	Tx-05	42	Circle Double Cam	FCD	Kurnia Teknik	
112	Tx-06	43	Oval Double Cam	FCD	Kurnia Teknik	
113	Tx-07	44	Open Lever Roller	FCD	Kurnia Teknik	
114	Tx-08	45	Cutter Holder	FCD	Kurnia Teknik	
115	Tx-09	46	Jack Lever #3	FC	Kurnia Teknik	
116	Tx-10	47	Jack Lever #4	FC	Kurnia Teknik	
117	Tx-11	48	Handle	FCD	Indokarya Bandung	
118	Tx-12	49	Flange	FCD	Indokarya Bandung	
119	Tx-13	50	Gear	FCD	Setia Teknik	
120	Tx-14	68	Toggle	FCD	Kurnia Teknik	
121	Tx-15	73	Cam 11/22	FCD	Aryono	
122	Tx-16	74	Cam 1/3	FCD	Aryono	
123	Tx-17	91	Cam 11/11	FCD	Aryono	
124	Tx-18	92	Die for Printing Holder	FCD	CV. Castar	
125	Tx-19	95	Stopper Pin	FC	Yogi Saptra	
126	Tx-20	105	Die for Adjustable Printer	FC	CV. Castar	
127	Tx-21	106	Part A for Adjustable Printer	FC	CV. Castar	
128	Tx-22	107	Part B for Adjustable Printer	FC	CV. Castar	
129	Tx-23	108	Part C for Adjustable Printer	FC	CV. Castar	
130	Tx-24	109	Part D for Adjustable Printer	FC	CV. Castar	
131	Tx-25	123	Top Lever	FC	Haryono	
132	Tx-26	124	Disc	FC	Gamma Epsilon	
133	Tx-27	127	Side Lever #1	FC	Pranata Jaya	
134	Tx-28	128	Jack Lever #4 (2 nd Pattern)	FC	Kurnia Teknik	
135	Tx-29	136	Gear #1	FCD	Haryono	
136	Tx-30	137	Gear #2	FCD	Haryono	
137	Tx-31	138	Gear #3	FCD	Haryono	
138	Tx-32	139	Side Lever #2 (Textile)	FCD	Pranata Jaya	
139	Tx-33	141	Gear #1 (2 nd Design)	FCD	Haryono	
140	Tx-34	142	Gear #2 (2 nd Design)	FCD	Haryono	
141	Tx-35	143	Gear #3 (2 nd Design)	FCD	Haryono	
142	Tx-36	150	Sea Horse Lever, R & L	FC	PT Maya Pratama	
143	Tx-37	159	Arm (2 nd Design)	FCD	Pranata Jaya	
144	Tx-38	171	φ 500 Gear	FCD	Niaya Pratama CV	
145	Tx-39	176	Roll Bar (4 items)	FC	PT Taruna Teknik	
146	Tx-40	185	Cam 11/22 (with 11/11) (Textile)	FCD	Haryono	
147	Tx-41	186	Jack Lever #5 (with #3) (Textile)	FCD	PT Pranata Jaya	
148	Tx-42	193	Roller (Textile)	FC	PT Pranata Jaya	
149	Tx-43	203	Rod Bar (2 items)	FC	CV Aditiya	
150	Tx-44	217	Gear φ 685	FCD	PT. Yogi Saputra	

LIST OF PROTOTYPICAL PRODUCTS (4/5)

MIDC/JICA Project on Supporting Industries Development for Casting Technology in Indonesia

No.	No.	No.	Product Name	Material	Customer	Remarks
151	Tx-45	231	Racet	FCD	PT. Pranata JAYA	
152	Tx-46	232	Clamping (Coupling)	FCD	PT. Pranata JAYA	
153	Tx-47	233	Pulley	FCD	PT. Yogi Saputra	
154	Tx-48	239	Pallet Bush	FCD	PT. Nugaraha Putar Jaya	
Industrial Machinery Components for Automotive Manufacturing						
155	IA-01	79	Front Case #FC1-1	FC	Shinwa Engineering	
156	IA-02	82	Rear Gear Case #RC1-1	FC	Shinwa Engineering	
157	IA-03	83	Rear Case #RC1-2	FC	Shinwa Engineering	
158	IA-04	85	Rear Case #RC1-3	FC	Shinwa Engineering	
159	IA-05	88	Front Case #FC1-2	FC	Shinwa Engineering	
160	IA-06	89	Front Case #FC1-3	FC	Shinwa Engineering	
161	IA-07	94	Front Case #FC1-4	FC	Shinwa Engineering	
162	IA-08	96	Front Case #FC2-2	FC	Shinwa Engineering	
163	IA-09	97	Rear Gear Case #RC2-2	FC	Shinwa Engineering	
164	IA-10	101	Rear Case #RC2-1	FC	Shinwa Engineering	
165	IA-11	102	Rear Gear Case #RC2-5	FC	Shinwa Engineering	
166	IA-12	104	Front Case #FC2-1	FC	Shinwa Engineering	
167	IA-13	110	Front Case #FC2-3	FC	Shinwa Engineering	
168	IA-14	111	Rear Gear Case #RC2-4	FC	Shinwa Engineering	
169	IA-15	112	Front Gear Case #FC2-5	FC	Shinwa Engineering	
170	IA-16	113	Rear Case #RC2-3	FC	Shinwa Engineering	
171	IA-17	117	Rear Case #RC2-6	FC	Shinwa Engineering	
172	IA-18	118	Rear Case #RC2-7	FC	Shinwa Engineering	
173	IA-19	119	Rear Case #RC2-8	FC	Shinwa Engineering	
174	IA-20	120	Front Gear Case #FC2-4	FC	Shinwa Engineering	
Industrial Machinery Components for Multivarious Industries						
175	IM-01	51	Burner	FC	Indo Pattern Lestari	
176	IM-02	52	Blower Impeller (for Turbine Case)	FC	Lapan Jakarta	
177	IM-03	62	Flange	FCD	Indo Karuya	
178	IM-04	66	Ingot Case	FC	Huhtomag	
179	IM-05	87	Pallet Wheel	FC	Adly Kreasi	
180	IM-06	99	Pallet Wheel 80	FC	Adly Kreasi	
181	IM-07	100	Gas Manifold	FC	Pibdurohini	
182	IM-08	180	Wheel (Transfer Car)	FCD	PT Meka Daya	
183	IM-09	187	Large Cam (Match Factory)	FC	Suharto	
184	IM-10	134	Liner (Cement Mill)	FCD	Meka Daya	
185	IM-11	199	Track Shoe (Catapiller)	FCD	PT Mega Teknik	
186	IM-12	222	Manifold #232	FCD	CV. Mirambi Turbotec	
Others						
187	O-01	1	End Core (Air Craft Model)	Al-Si Casting	BPPT	
188	O-02	2	Nose (Air Craft Model)	Al-Si Casting	BPPT	
189	O-03	3	Rear (Air Craft Model)	Al-Si Casting	BPPT	
190	O-04	5	Bearing House Unit, Cover #1	FCD	Bp.Adi	
191	O-05	6	Bearing House Unit, Cover #2	FCD	Bp.Adi	
192	O-06	7	Bearing House Unit, Ring	FCD	Bp.Adi	
193	O-07	10	Disc Refiner (Sugar Mill)	Ni- Hard IV	MIDC, Trial	
194	O-08	11	Weight (D/S Equipement)	FCD	MIDC Foundry	
195	O-09	12	Carriage (D/S Equipement)	FCD	MIDC Foundry	
196	O-10	13	Lower Flask (D/S Equipement)	FCD	MIDC Foundry	
197	O-11	14	Upper Flask (D/S Equipement)	FCD	MIDC Foundry	

LIST OF PROTOTYPICAL PRODUCTS (5/5)

MIDC/JICA Project on Supporting Industries Development for Casting Technology in Indonesia

No.	No.	No.	Product Name	Material	Customer	Remarks
198	O-12	15	Roller (D/S Equipement)	FCD	MIDC Foundry	
199	O-13	16	Imp. Vane (Hanger Shot Blast)	Ni- Hard IV	MIDC Foundry	
200	O-14	17	Stator (Hanger Shot Blast)	Ni- Hard IV	MIDC Foundry	
201	O-15	18	Rotor (Hanger Shot Blast)	Ni- Hard IV	MIDC Foundry	
202	O-16	19	Cover (Hanger Shot Blast)	Ni- Hard IV	MIDC Foundry	
203	O-17	20	Riner (Hanger Shot Blast)	Ni- Hard IV	MIDC Foundry	
204	O-18	21	Pulley	FC	SIDCAST,Target Step1	
205	O-19	22	Gear	FC	SIDCAST,Target Step1	
206	O-20	23	Pulley	FC	SIDCAST,Target Step1	
207	O-21	24	Gear	FC	SIDCAST,Target Step1	
208	O-22	25	Hammer Tip (Sugar Mill)	CL-15Cr	MIDC Welding	
209	O-23	26	Ingot Moulds	FC	SIDCAST,Target Step1	
210	O-24	28	Brake disc	FC	SIDCAST,Target Step1	
211	O-25	29	Fly Wheel	FC	Adly Kreasi	
212	O-26	30	Middle Cramp	FCD	MIDC Foundry	
213	O-27	33	Permanent Mould	FC	Silika Foundry Utama	
214	O-28	35	Al Nozzle (Al Smelting)	Meehanite	Balai Ind.,-Medan	
215	O-29	36	Weight for Moulds	FCD	MIDC Foundry	
216	O-30	41	Small Cramp	FCD	MIDC Foundry	
217	O-31	61	Support Base for Tilting Table	FCD	MIDC	
218	O-32	65	Round Table for Tilting Table	FCD	MIDC	
219	O-33	67	End Blacket	FC	MIDC	
220	O-34	69	Table for Chill Test	FC	MIDC	
221	O-35	93	Impeller	Bronze	IPTN	
222	O-36	98	Sampling Spoon	FCD	MIDC	
223	O-37	122	Impeller (Water Pump)	Bronze	MIDC(BPPT)	
224	O-38	125	Flask Holder	SC	MIDC	
225	O-39	126	Dies (Water Valve Body)	FC	MIDC	
226	O-40	135	Leveling Gauge	FCD	MIDC	
227	O-41	153	Impeller	Bronze	PT. DI	
228	O-42	158	Piston Dies #1 & #2	FC	PT DI (Aitem)	
229	O-43	160	Counter Weight	FC	Metrology	
230	O-44	161	Ingot Case	FCD	MIDC	
231	O-45	162	Bearing Housing	FCD	Welding Sec (MIDC)	
232	O-46	165	Ø460 Impeller	18Cr-8Ni	B. I. Semarang	
233	O-47	184	Crane Wheel	FCD	MIDC	
234	O-48	208	Sample	FC	University	
235	O-49	211	Hot Plate	FC	CV Pribadi	
236	O-50	213	Debris Valve	FC	PT. PLN JP	
237	O-51	214	Debris Valve	FC	PT. PLN JP	
238	O-52	220	Impeller NO.1-4		PT. Mirambi	
239	O-53	221	Goose Neck	FC	CV. Ekadia Pratama	
240	O-54	227	Housing Dial	FC	CV. Nuri Teknik	
241	O-55	228	Frame Dial	FC	CV. Nuri Teknik	
242	O-56	242	Cylinder Head	FC	MIDC(Target)	

*1: Refer to the "List of Ordered Casting Products"

RECORD OF SERVICES TO INDUSTRIES
MIDC/JICA Project on Supporting Industries Development for Casting Technology in Indonesia

ANNEX 26

as of Aug. 2003

EXTENSION SERVICE (VISIT TO INDUSTRIES) (1/8)

No.	Date	Name of Companies / Organizations	Project Staff visited	Remarks
1	May 5, 1999	<Bandung> HANCO	Yasui, Hashida, Homma, Abdurahim	
2	Jun.13-16, 1999	<CEPER / KLATEN / YOGYAKARTA>	Yasui, Hashida, Homma, (Sato), Abdurahim	
2-1	Jun.14, 1999	<CEPER> Laboratorium Uji Logam dan Mini Foundry Ceper		
2-2	Jun.14, 1999	<CEPER> UPT Ceper		
2-3	Jun.14, 1999	<CEPER> CV. Sinar Super Baja		
2-4	Jun.14, 1999	<CEPER> Aneka Megah Alloy Corporation (AMAC)		
2-5	Jun.14, 1999	<CEPER> Aneka Adhilogam Karya		
2-6	Jun.14, 1999	<CEPER> Mitra Karya Utama		
2-7	Jun.15, 1999	<KLATEN> PT. Itokoh Ceperindo		
2-8	Jun.15, 1999	<YOGYAKARTA> CV. Karya Hidup Sentosa (KHS)		
3	Aug.10, 1999	<JAKARTA>	Yasui, Hashida, Homma, (Sato), Abdurahim	
3-1		<JAKARTA> ASPEP		
3-2		<JAKARTA> Inter Satria		2nd Visit
4	Sep.15-18, 1999	<SURABAYA / GERSIK / SIDOARJO / PASURUAN>	Hashida, Nonaka, Homma, Abdurahim	
4-1	Sep.16, 1999	<GERSIK> PT. Agrindo		
4-2	Sep.16, 1999	<GERSIK> PT. Barata Indonesia		
4-3	Sep.17, 1999	<SIDOARJO> PT. Pakarti Riken		
4-4	Sep.17, 1999	<PASURUAN> PT. Aneka Banusakti		
5	Nov.19, 1999	<BANDUNG>	Hashida, Homma, Nonaka, Abdurahim, Sjaifudin	
5-1		<BANDUNG> PT. Baminusa Indonesia		
5-2		<BANDUNG> Silika Foundry Utama		2nd Visit
6	Feb.28, 2000	<JAKARTA> Inter Satria	Hashida, Homma, Niyama, Ishihara	
7	Mar.3, 2000	<BANDUNG> Bara Multi Metalika	Niyama, Ishihara, Yasui, Nonaka, Suzuki, Homma, Kato, Furqon	
8	Mar.15, 2000	<BANDUNG>	Nonaka, Suzuki, Homma, Kobayashi, Takahashi, (Sugaya), Sjaifudin	
8-1		<BANDUNG> Berdikali Metal Engineering		
8-2		<BANDUNG> Silika Foundry Utama		
9	Apr.25, 2000	<BANDUNG> Kopinkra Sugih Mukti	Homma, (Nishita, Kanokogi), Maman	
10	Jun.29, 2000	<TANGERANG/BEKASI>	Nonaka, Homma, Obata, Kibe, Abdurahim, Dedi, Adi	
10-1		<TANGERANG> Bina Usaha Mandiri Mizusawa (BUMM)		
10-2		<BEKASI> Bakrie Tosarjaya		
11	Jul.5, 2000	<BANDUNG> Politeknik Manufaktur (Polman)	Hashida, Homma, Obata, Abdurahim	

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EXTENSION SERVICE (VISIT TO INDUSTRIES) (2/8)

No.	Date	Name of Companies / Organizations	Project Staff visited	Remarks
12	Jul.6, 2000	<CIREGON> Indah Kiat	Suzuki, Homma, Kibe, Abdurahim, Furqon, Achmad	
13	Jul.26, 2000	<BANDUNG> Pindad	Kondo, Yasui, Nonaka, Homma, Obata, Kibe, Abdurahim	
13-1		<BANDUNG> Bara Multi Metalika		2nd Visit
13-2		<KARAWANG / JAKARTA>	Kondo, Nonaka, Homma, Obata, Kibe, shiraishi, Abdurahim, Dadang, Adi	
14	Jul. 27-28, 2000	<KARAWANG> PT. AT Indonesia		
14-1	Jul.27, 2000	<JAKARTA> PT. Komatsu Indonesia	Hashida, Nonaka, Suzuki, Homma, Kibe, Abdurahim, Sjaifudin, Dedi	
14-2	Jul.28, 2000	<BANDUNG>		3rd Visit
15	Sep.1, 2000	<BANDUNG>	Hashida, Nonaka, Suzuki, Yasui, Homma, Kibe, Sjaifudin, Dedi, Bimo	
15-1	31	<BANDUNG> Bara Multi Metalika		4th Visit
15-2	32	<BANDUNG> Indo Pattern Lestari		2nd Visit
16	Sep.8, 2000	<BANDUNG>	Nonaka, Homma, Nagafuchi, Dedi	3rd Visit
16-1	33	<BANDUNG> Bara Multi Metalika		4th Visit
16-2	34	<BANDUNG> Indo Pattern Lestari		2nd Visit
17	Nov.16, 2000	<BANDUNG> Indo Pattern Lestari	Nonaka, Homma, Nagafuchi, Dedi	3rd Visit
18	Nov.24, 2000	<BANDUNG>	Hashida, Nonaka, Homma, Nagafuchi, Sopar, Hadi, Dadang, Dedi	
18-1	36	<BANDUNG> Indo Pattern Lestari		4th Visit
18-2	37	<BANDUNG> Bara Multi Metalika		5th Visit
19	Dec.6, 2000	<SUKABUMI>	Yasui, Homma, Hashida, Suzuki, Nagafuchi, Hadi, Sjaifudin, Juanda	
19-1	38	<SUKABUMI> Logam Makmur Saluyu		
19-2	39	<SUKABUMI> Aghnia Kreasi Maju Bersama		
20	Jan.24, 2001	<BANDUNG> Pindad	Obata, Shiraishi, Furqon, Agus	2nd Visit
21	Mar.19, 2001	<BEKAS> Bakrie Tosanjaya	Ichiki, Yamanaka, Nonaka, Homma, Obata, Hadi, Sopar, Dedi	2nd Visit
22	Mar.23, 2001	<BANDUNG>	Ichiki, Yamanaka, Hashida, Nonaka, Obata, Achmad, Dedi, Idis	
22-1	42	<BANDUNG> Bara Multi Metalika		6th Visit
22-2	43	<BANDUNG> Indo Pattern Lestari		5th Visit
23	Mar.28, 2001	<BANDUNG> Bara Multi Metalika	Yamanaka, Hashida, Obata, Bimo	7th Visit
24	Mar.29, 2001	<BANDUNG>	Yamanaka, Hashida, Obata, Shiraishi, Agus	
24-1	45	<BANDUNG> Baminusa Indonesia		2nd Visit

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EXTENSION SERVICE (VISIT TO INDUSTRIES) (3/8)

No.	Date	Name of Companies / Organizations	Project Staff visited	Remarks
24-2		<BANDUNG> Pindad		3rd Visit
25	Mar.30, 2001	<BANDUNG> Hanco	Yamanaka, Hashida, Nonaka, Obata, Dadang, Dedi	2nd Visit
26	Apr.22-26, 2001	<EAST JAVA: SURABAYA / PASURUAN / GERSIK / MALANG / SIDOARJO>	Sakakibara, Homma, Nonaka, Suzuki, Saito, Sopar, Furqon, Wilson	
26-1	Apr.23, 2001	<SURABAYA> Balai Industri Surabaya		
26-2	Apr.23, 2001	<PASURUAN> Aneka Banusakti		2nd Visit
26-3	Apr.23, 2001	<PASURUAN> Berlin		
26-4	Apr.23, 2001	<PASURUAN> Boma Bisma Indra		
26-5	Apr.24, 2001	<SURABAYA> Madju Warna Steel		
26-6	Apr.24, 2001	<GERSIK> Barata Indonesia		2nd Visit
26-7	Apr.24, 2001	<GERSIK> Agrindo		2nd Visit
26-8	Apr.25, 2001	<MALANG> Bumi Brake Drum		
26-9	Apr.25, 2001	<SIDOARJO> Pakarti Riken		2nd Visit
26-10	Apr.25, 2001	<SIDOARJO> Koperasi Waru Buana Putra		
27	May 13-16, 2001	<CENTRAL JAVA: CEPER / KLATEN / YOGYAKARTA>	Sakakibara, Hashida, Nonaka, Homma, Furqon	
27-1	May 14, 2001	<CEPER> Ceper Laboratorium		2nd Visit
27-2	May 14, 2001	<CEPER> Baja Tunggal		
27-3	May 14, 2001	<CEPER> Mitra Rekatama Mandiri		
27-4	May 14, 2001	<KLATEN> Itokoh Ceperindo		2nd Visit
27-5	May 15, 2001	<CEPER> Baja Kurnia		
27-6	May 15, 2001	<CEPER> Aneka Adhi Logam Karya		2nd Visit
27-7	May 15, 2001	<CEPER> Persuda		
27-8	May 15, 2001	<CEPER> Suyuti Sido Maju		
27-9	May 16, 2001	<YOGYAKARTA> Karya Hidup Sentosa (KHS)		2nd Visit
28	Jun.13, 2001	<BANDUNG>	Nonaka, Toyoshima, Dedi, (Kanamori)	
28-1		<BANDUNG> Bara Multi Metalika		8th Visit
28-2		<BANDUNG> Indo Pattern Lestari		6th Visit
29	Aug.13, 2001	<TANGERANG / BEKASI>	Maeda, Hashida, Homma, Kajiwara, Furqon, Dadang	
29-1		<TANGERANG> Alcorindo Sejahtera		
29-2		<BEKASI> Bakrie Tosanjaya		3rd Visit
30	Aug.15, 2001	<BANDUNG>	Maeda, Sakakibara, Hashida, Nonaka, Kajiwara, Dedi, Hadi(F/S)	
30-1		<BANDUNG> Bara Multi Metalika		9th Visit
30-2		<BANDUNG> Indo Pattern Lestari		7th Visit
31	Aug.19-25, 2001	<EAST JAVA: SURABAYA / PASURUAN / GERSIK / MALANG>	Maeda, Hashida, Nonaka, Furqon, Agus	
31-1	Aug.20, 2001	<PASURUAN> Aneka Banusakti		3rd Visit

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EXTENSION SERVICE (VISIT TO INDUSTRIES) (4/8)

No.	Date	Name of Companies / Organizations	Project Staff visited	Remarks
31-2	74 Aug.21, 2001	<GERSIK> Agrindo		3rd Visit
31-3	75 Aug.21, 2001	<GERSIK> Barata Indonesia		3rd Visit
31-4	76 Aug.22, 2001	<MALANG> Bumi Brake Drum		2nd Visit
31-5	77 Aug.23, 2001	<PASURUAN> Aneka Banusakti		4th Visit
32	Sep.3, 2001	<BANDUNG> Bara Multi Metalika	Maeda, Hashida, Nagafuchi, Adi	10th Visit
33	Sep.5-6, 2001	<BEKASI>		
33-1	Sep.5, 2001	<BEKASI> Bakrie Tosanjaya	Maeda, Hashida, Dadang, Adi	4th Visit
33-2	Sep.6, 2001	<BEKASI> Bakrie Tosanjaya		5th Visit
34	Sep.11-15, 2001	<EAST JAVA: SURABAYA / PASURUAN / GERSIK / MALANG>		
34-1	81 Sep.12, 2001	<GERSIK> Agrindo	Maeda, Hashida, Furqon, Agus	4th Visit
34-2	82 Sep.13, 2001	<PASURUAN> Aneka Banusakti		5th Visit
34-3	83 Sep.14, 2001	<MALANG> Bumi Brake Drum		3rd Visit
35	Sep.16-19, 2001	<CENTRAL JAVA: CEPER / KLATEN / YOGYAKARTA>		
35-1	84 Sep.17, 2001	<CEPER> Ceper Laboratorium	Maeda, Homma, Sopar, Hadi, Juanda, Bimo, Dadang, Adi	3rd Visit
35-2	85 Sep.17, 2001	<CEPER> Mulya Jaya		
35-3	86 Sep.17, 2001	<CEPER> Baja Tungal		2nd Visit
35-4	87 Sep.18, 2001	<CEPER> Teknik Utama		
35-5	88 Sep.18, 2001	<KLATEN> Itokoh Ceperindo		3rd Visit
35-6	89 Sep.18, 2001	<YOGYAKARTA> Karya Hidup Sentosa (KHS)		3rd Visit
35-7	90 Sep.19, 2001	<YOGYAKARTA> Karya Hidup Sentosa (KHS)		4th Visit
36	Oct.30, 2001	<JAKARTA>	Hashida, Furqon, Agus	
36-1	91	<Jakarta> Shinwa Engineering Indonesia		
36-2	92	<Jakarta> Daikin Clutch Indonesia		
37	Nov.11-13, 2001	<MEDAN>		
37-1	93 Nov.12, 2001	<Medan> Multi Mineral	Homma, Suyono, Furqon	
37-2	94 Nov.13, 2001	<Medan> Karya Deli Steelindo		
37-3	95 Nov.13, 2001	<Medan> Balai Logam (Balai Industri Medan)		
37-4	96 Nov.13, 2001	<Medan> Baja Pertiwi Industri		
38	Feb. 6, 2002	<BANDUNG>	Maeda, Hashida, Furqon, Agus, Dedi	
38-1	97	<BANDUNG> Bara Multi Metalika		11th Visit
38-2	98	<BANDUNG> Indo Pattern Lestari		8th Visit
39	Feb.11-14, 2002	<EAST JAVA: SURABAYA / PASURUAN / TUBAN GERSIK / MALANG>		
39-1	99 Feb.11, 2002	<MALANG> Bumi Brake Drum	Maeda, Hashida, Furqon, Agus	4th Visit

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EXTENSION SERVICE (VISIT TO INDUSTRIES) (5/8)

No.	Date	Name of Companies / Organizations	Project Staff visited	Remarks
39-2	100	<TUBAN> Jaya Silica		
39-3	101	<PASURUAN> Aneka Banusakti		6th Visit
39-4	102	<GERSIK> Agrindo		5th Visit
40	103	<BANDUNG> Kopo Metal	Maeda, Hashida, Sakakibara, Homma, Toyoshima, Shiraishi, Furqon, Dedi	
41		<CEPER>	Maeda, Hashida, Toyoshima, Dadang, Adi	
41-1	104	<CEPER> Ceper Laboratorium		4th Visit
41-2	105	<CEPER> Mitra Karya Utama		2nd Visit
41-3	106	<CEPER> Baja Kurnia		2nd Visit
41-4	107	<CEPER> Baja Tunggal		3rd Visit
41-5	108	<CEPER> Mitra Rekatama Mandiri		2nd Visit
42	109	<BANDUNG> Bara Multi Metalika	Takemoto, Hashida, Sudarman	12th Visit
43		<BEKASI / JAKARTA>		
43-1	110	<BEKASI> Bakrie Tosanjaya	Maeda, Sakakibara, Homma, Dadang	6th Visit
43-2	111	<Jakarta> Shinwa Engineering Indonesia	Hashida, Agus	2nd Visit
43-3	112	<Jakarta> Geteka Foundindo	Maeda, Sakakibara, Homma, Furqon	
43-4	113	<Jakarta> KSB Indonesia	ditto	
43-5	114	<Jakarta> Komatsu Indonesia	ditto	2nd Visit
44	115	<SUKABUMI> Logam Makmur	Maeda, Kobayashi, Toyoshima, Furqon	2nd Visit
45		<EAST JAVA: PASURUAN / MALANG / GERSIK>		
45-1	116	<PASURUAN> Aneka Banusakti	Maeda, Kobayashi, Dadang, Agus	7th Visit
45-2	117	<MALANG> Bumi Brake Drum		5th Visit
45-3	118	<GERSIK> Agrindo		6th Visit
46		<MEDAN / BEKASI >		
46-1	119	<Medan> Multi Mineral	Maeda, Hashida, Furqon	2nd Visit
46-2	120	<Medan> Multi Mineral	ditto	3rd Visit
46-3	121	<Medan> Asia Raya Foundry	ditto	
46-4	122	<Medan> Karya Deli steelindo	ditto	
46-5	123	<BEKASI> Bakrie Tosanjaya	Maeda, Hashida, Kobayashi, Sudarman, Juanda	7th Visit
46-6	124	<BEKASI> Bakrie Tosanjaya	ditto	8th Visit
47		<CEPER>	Hashida, Sakakibara, Homma	
47-1	125	<CEPER> Ceper Laboratorium		5th Visit
47-2	126	<CEPER> Baja Tunggal		4th Visit

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EXTENSION SERVICE (VISIT TO INDUSTRIES) (6/8)

No.	Date	Name of Companies / Organizations	Project Staff visited	Remarks
47-3	127	May 16, 2002 <CEPER> Baja Kurnia		3rd Visit
47-4	128	May 16, 2002 <CEPER> Mitra Karya Utama		3rd Visit
47-5	129	May 16, 2002 <CEPER> UPT Ceper		2nd Visit
47-6	130	May 16, 2002 <CEPER> Mulya Jaya		2nd Visit
48				
48-1	131	Jun. 17, 2002 <EAST JAVA: GERSIK / MALANG / PASURUAN>	Hashida, Kobayashi, Dadang, Adi	
48-2	132	Jun. 17, 2002 <GERSIK> Agrindo		7th Visit
48-3	133	Jun. 18, 2002 <MALANG> Bumi Brake Drum		6th Visit
48-4	134	Jun. 18, 2002 <MALANG> Hiram Foundry		
49	135	Jun. 19, 2002 <PASURUAN> Aneka Banusakti		8th Visit
50	136	Jul. 15, 2002 <BANDUNG> Politeknik Manufaktur (Poliman)	Sakakibara, Miyazaki, Homma, Takemoto, Nagafuchi, Furqon	2nd Visit
51	137	Jul. 26, 2002 <SUBAN> Perkakas Rekaday Nusantra	Sakakibara, Takemoto, Furqon	
50-1	137	Jul. 31, 2002 <CEPER>	Takemoto, Furqon	
50-2	138	Jul. 31, 2002 <CEPER> Ceper Laboratorium		6th Visit
50-3	139	Jul. 31, 2002 <CEPER> Baja Kurnia		4th Visit
52	140	Sep. 23, 2002 <BANDUNG> Cipta Nusa	Maeda, Hashida, Sakakibara, Takemoto, Agus	
53	141	Oct. 1, 2002 <Jakarta> Geteka Foundindo	Maeda, Hashida, Agus, Dedi	2nd Visit
54	142	Oct. 7-11, 2002 <EAST JAVA: PASURUAN / MALANG / GERSIK / YOGYAKARTA>		
54-1	142	Oct. 7, 2002 <MALANG> Bumi Brake Drum	Maeda, Hashida, Agus, Sudarman	7th Visit
54-2	143	Oct. 8, 2002 <PASURUAN> Aneka Banusakti		9th Visit
54-3	144	Oct. 9, 2002 <GERSIK> Agrindo		8th Visit
54-4	145	Oct. 10, 2002 <GERSIK> Agrindo		9th Visit
54-5	146	Oct. 11, 2002 <YOGYAKARTA> Karya Hidup Sentosa (KHS)		5th Visit
55	147	Oct. 21-22, 2002 <EAST JAVA: GERSIK >	Takemoto, Kobayashi, Dadang	
55-1	147	Oct. 21, 2002 <GERSIK> Agrindo		10th Visit
55-2	148	Oct. 22, 2002 <GERSIK> Agrindo		11th Visit
56	149	Oct. 24-25, 2002 <MEDAN >		
56-1	149	Oct. 24, 2002 <Medan> Multi Mineral	Maeda, Hashida, Agus	4th Visit
56-2	150	Oct. 25, 2002 <Medan> Bina Karya Logam		
57	151	Oct. 28, 2002 <BEKASI> Bakrie Tosanjaya	Maeda, Hashida, Ichiki, Furqon	9th Visit

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EXTENSION SERVICE (VISIT TO INDUSTRIES) (7/8)

No.	Date	Name of Companies / Organizations	Project Staff visited	Remarks
58	Nov. 5-7, 2002	<EAST JAVA: GERSIK / PASURUAN / MALANG>	Maeda, Hashida, Ichiki, Agus	
58-1	Nov. 5, 2002	<GERSIK> Agrindo		12th Visit
58-2	Nov. 6, 2002	<PASURUAN> Aneka Banusakti		10th Visit
58-3	Nov. 7, 2002	<MALANG> Bumi Brake Drum		8th Visit
59	Nov. 8, 2002	<BEKASI> Bakrie Tosanjaya	Maeda, Ichiki, Furqon	10th Visit
60	Nov. 20, 2002	<TEGAL>		
60-1	Nov. 20, 2002	<Tegal> Matahari	Maeda, Hashida, Furqon	
60-2	Nov. 20, 2002	<Tegal> Prima Logam		
61	Nov. 25, 2002	<BEKASI> Bakrie Tosanjaya	Maeda, Takemoto, Furqon	11th Visit
62	Jan. 27-28, 2003	<MEDAN>		
62-1	Jan. 27, 2003	<Medan> Multi Mineral	Hashida, Furqon, Fukuchi(SV), Imawan(C/P)	5th Visit
62-2	Jan. 28, 2003	<Medan> Multi Mineral		6th Visit
63	Feb. 18-21, 2003	<EAST JAVA: GERSIK / PASURUAN / MALANG / CEPER>		
63-1	Feb. 18, 2003	<GERSIK> Agrindo	Hashida, Takemoto, S.Kobayashi, Furqon, Agus	13th Visit
63-2	Feb. 18, 2003	<PASURUAN> Aneka Banusakti	ditto	11th Visit
63-3	Feb. 19, 2003	<MALANG> Bumi Brake Drum	ditto	9th Visit
63-4	Feb. 19, 2003	<MALANG> Universal Steel Prima Industries	ditto	
63-5	Feb. 20, 2003	<CEPER> Ceper Laboratorium	Hashida, Sakakibara, Miyazaki, S.Kobayashi	7th Visit
63-6	Feb. 20, 2003	<CEPER> Baja Kurnia	ditto	5th Visit
63-7	Feb. 20, 2003	<CEPER> Mulya Jaya	ditto	3rd Visit
63-8	Feb. 21, 2003	<CEPER> Sahabat Kerja	Hashida, Sakakibara, S.Kobayashi	
63-9	Feb. 21, 2003	<CEPER> Suyuti Sido Maju	ditto	2nd Visit
63-10	Feb. 21, 2003	<CEPER> Bahama Laksana	ditto	
64	Mar. 13, 2003	<BEKASI> Bakrie Tosanjaya	Takemoto, S.Kobayashi, Agus	12th Visit
65	Mar. 14, 2003	<KARAWANG> PT. AT Indonesia	Sakakibara, Y.Kobayashi, Yopi	2nd Visit
66	Apr. 4, 2003	<KARAWANG>ASAMA INDONESIA	Sakakibara, Hashida, Y.Kobayashi, Furqon	
67	May. 9, 2003	<Jakarta> Geteka Foundindo	Takemoto, S.Kobayashi, Furqon	3rd Visit
68	May. 12-13, 2003	<MEDAN>		
68-1	May. 12, 2003	<Medan> Multi Mineral	Takemoto, S.Kobayashi, Agus	7th Visit
68-2	May. 13, 2003	<Medan> Bina Karya Logam	ditto	2nd Visit

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EXTENSION SERVICE (VISIT TO INDUSTRIES) (8/8)

No.	Date	Name of Companies / Organizations	Project Staff visited	Remarks
69	177 May. 23, 2003	<BANDUNG> Indo Pattern Lestari	Sakakibara, Okada, Dedi	9th Visit
70				
70-1	Jul. 10-11, 2003	<BEKASI / Jakarta>	Takemoto, Furqon	13th Visit
70-2	Jul. 10, 2003	<BEKASI> Bakrie Tosanjaya		4th Visit
	Jul. 11, 2003	<Jakarta> Geteka Foundindo		
71				
71-1	Aug. 6-7, 2003	<EAST JAVA: GERSIK / PASURUAN >	Takemoto, Yano, Furqon	14th Visit
71-2	Aug. 6, 2003	<GERSIK> Agrindo		12th Visit
	Aug. 7, 2003	<PASURUAN> Aneka Banusakti		
72				
72-1	Aug. 14, 2003	<YOGYAKARTA, CENTRAL JAVA: CEPER >	Takemoto, Yano, Juanda, Adi	6th Visit
72-2		<YOGYAKARTA> Karya Hidup Sentosa (KHS)		
73				
73-1	Aug. 21-22, 2003	<BEKASI / BOGOR / JAKARTA >	Takemoto, Yano, Agus	14th Visit
73-2	Aug. 21, 2003	<BEKASI> Bakrie Tosanjaya	ditto, Sakakibara, S.Kobayashi, Y.Kobayashi	15th Visit
73-3	Aug. 22, 2003	<BOGOR> Ebara Indonesia	Sakakibara, S.Kobayashi, Y.Kobayashi	
	Aug. 22, 2003	<JAKARTA> Niigata Santana Diesel Mfg. Indonesia	Sakakibara, S.Kobayashi, Y.Kobayashi	
74				
74-1	Aug. 25-26, 2003	<CENTRAL JAVA: TEGAL / SEMARANG>	Takemoto, Yano, Furqon	2nd Visit
74-2	Aug. 25, 2003	<Tegal> Prima Logam		2nd Visit
74-3	Aug. 26, 2003	<Tegal> Matahari		
	Aug. 26, 2003	<Semarang> Texmaco		
75				
75-1	Aug. 26, 2003	<KARAWANG>	S.Kobayashi, Y.Kobayashi	
75-2		<KARAWANG> Nissan Motor Indonesia		
		<KARAWANG> Astra Isuzu Casting Company		

Target Companies (14)

- Bandung: (1) Bara Multi Metalika, (2) Indo Pattern Lestari
- Surabaya and Surroundings in East Java: (1) Aneka Banusakti, (2) Agrindo, (3) Bumi Brake Drum
- Cepher and Surroundings in Central Java and Yogyakarta: (1) Karya Hidup Sentosa, (2) Baja Tunggal, (3) Ceper Laboratorium, (4) Matahari
- JABOTABEK: (1) Bakrie Tosanjaya, (2) Geteka Foundindo
- Medan: (1) Multi Mineral, (2) Bina Karva Logam
- Sukabumi: (1) Logam Makmur

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ANNEX27

I. TRAINING COURSE FOR SMALL & MEDIUM SCALE FOUNDRY INDUSTRIES (Except for short courses less than one week)				
No.	Date	Title / Location	Participants	Contents
1	Jul.31-Aug.16, 2000	Wood and Metal PATTERN MAKING TRAINING COURSE in Theory and Practice for Small and Medium-scale Foundry industries in MIDC (Bandung) sponsored by ILMEA	12 Trainees from industries Trainers: MIDC (Pattern Making Group (5 staff) and Other Staff), JICA Expert (Mr. Nonaka & Others)	Wood Pattern Making Practice, Lectures on Pattern Making, Castings Production with Trainees' Pattern, Lectures on Casting Tech., Casting Design, etc.
2	Aug.28-Sep.13, 2000	Casting QUALITY CONTROL TRAINING COURSE in Theory and Practice for Small and Medium-scale Foundry industries in MIDC (Bandung) sponsored by ILMEA	19 Trainees from industries Trainers: MIDC (Foundry Shop Staff and Other Staff), JICA Experts	Practices on Testing and Examinations, Lectures on Testing and Examinations, Castings Production etc.
3	Jun.25-Jul.3, 2001	CASTING TRAINING COURSE for Small and Medium-scale Foundry Industries in MIDC (Bandung) sponsored by ILMEA in the sub-courses of (1) Moulding, (2) Melting, (3) Planning Production Control (PPC)	60 Trainees (20 Trainees for each sub-courses) from industries Trainers: MIDC (Foundry Shop Staff and Other Staff), JICA Experts	Lectures and Practices on Moulding, Melting and Production Control, Industries Visit etc.
4	Jul.9-27, 2001	PATTERN MAKING TRAINING COURSE in Theory and Practice for Small and Medium-scale Foundry industries in MIDC (Bandung) sponsored by JICA/MIDC	17 Trainees from industries Trainers: MIDC (Pattern Making Group (5 staff) and Other Staff), JICA Expert (Mr. Nonaka & Others)	Wood Pattern Making Practice, Lectures on Pattern Making, Castings Production with Trainees' Pattern, Lectures on Casting Tech., Casting Design, etc.
5	Mar.11-Mar.28, 2002	CASTING DESIGN TRAINING COURSE in Theory and Practice for Small and Medium-scale Foundry industries in MIDC (Bandung) sponsored by JICA/MIDC	15 Trainees from industries Trainers: MIDC (Engineering Group (5 staff) and Other Staff), JICA Expert	Lectures on Casting Design, Melting and Production Control, and Practices on Moulding, Pattern Making etc.
6	Jul.8-26, 2002	MOULDING TRAINING COURSE in Theory and Practice for Small and Medium-scale Foundry industries in MIDC (Bandung) sponsored by JICA/MIDC	15 Trainees from industries Trainers: MIDC (Moulding Group (4 staff) and Other Staff), JICA Expert	Moulding Practice, Lectures on Pattern Making, Castings Production with Trainees' Pattern, Lectures on Casting Tech., Casting Design, etc.
7	Jul.21-31, 2003	MELTING TRAINING COURSE in Theory and Practice for Small and Medium-scale Foundry industries in MIDC (Bandung) sponsored by JICA/MIDC	15 Trainees from industries Trainers: MIDC (Melting Group (4 staff) and Other Staff), JICA Expert	Melting and Fetting Practice, Lectures on Casting Design, Melting and Production Control etc.

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II. TRAINING COURSE FOR SMALL & MEDIUM SCALE FOUNDRY INDUSTRIES (Short courses)

No.	Date	Title / Location	Participants	Contents
1	May.5 2002	Casting Training (Solidification Analysis) for Students in MIDC	6 Trainees from BPPT Staff Trainers: MIDC (Engineering group Staff)	
2	Jul.1-Sep.30 2002	Casting Training for Trainers in MIDC	5 Trainees from SMK, MERDEKAT Trainers: MIDC (Foundry Shop Staff and Other Staff)	
3	Jul.15-Jul.20 2002	Casting Training for Trainers in MIDC	20 Trainees from Baturaja/Oku-South (Sumatra) Trainers: MIDC (Foundry Shop Staff and Other Staff)	
4	Sep.16-Sep.20 2002	Casting Training (Sand Testing) for Trainers in UPT Cepel Sand Lab.	9 Trainees from the relevant industry Trainers: MIDC (Moulding group Staff)	
5	Sep.23-Sep.27 2002	Casting Training (Metalography) for Trainers in UPT Cepel Metal Lab.	9 Trainees from the relevant industry Trainers: MIDC (Melting group Shop Staff)	
6	Jun.2-Jun.13 2003	Pattern Making Training for Trainers in MIDC	3 Trainees from PT.Pupuk(Karimantan Timur) Trainers: MIDC (Pattern making group Staff)	
7	Jun.2-Jun.14 2003	Casting Training (Solidification Analysis) for Trainers in MIDC	2 Trainees from BPPT Staff Trainers: MIDC (Engineering staff Staff)	
8	May.19-May.21 2003	Casting Training (Quality Control) for Trainers in MIDC	6 Trainees from PT.Jagat baja Trainers: MIDC (Engineering group Staff)	
9	Sep.22-Oct.1 2003	Casting Training for Trainers in MIDC	4 Trainees from Dinas Perindag (Bali) Trainers: MIDC (Foundry Shop Staff and Other Staff)	
10	Sep.15-Oct.19 2003	Casting Training for Trainers in MIDC	6 Trainees from UPT Sukabumi Trainers: MIDC (Foundry Shop Staff and Other Staff)	
11	Oct.6-Oct.10 2003	Casting Training for Trainers in MIDC	6 Trainees from UPT Ceper Trainers: MIDC (Foundry Shop Staff and Other Staff)	

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III. TRAINING COURSE (TAILOR-MADE) (Except for short courses less than one week)

No.	Date	Title / Location	Participants	Contents
1	Feb.19-Mar.23, 2001	Casting Training for Trainers in Toyota Astra Motors (Phase I)	2 Trainees from Toyota Astra Motors Trainers: MIDC (Foundry Shop Staff and Other Staff)	
2	Mar.27-May 1, 2001	Casting Training for Trainers in Toyota Astra Motors (Phase II)	2 Trainees from Toyota Astra Motors Trainers: MIDC (Foundry Shop Staff and Other Staff)	
3	Mar.28-May 10, 2001	Casting Training for Students in Gajah Mada University Yogyakarta	2 Students from Gajah Mada University Trainers: MIDC (Foundry Shop Staff and Other Staff)	

**Sample manuals and textbooks used for the training course
(developed by the Indonesian side)**

- 1 Introduction of Casting (Pengantar Pengecoran)
2. Basic of Technical Drawing (Dasar Gambar Teknik)
- 3 Technology of Metal Ferro and Non-Ferro (Ilmu Pengetahuan Logam Ferro dan Non Ferro)
4. Casting Design/Risering System (Perancangan Cor/Sistem Saluran Tuang)
- 5 Technology of Pattern Making (Teknologi Pembuatan Pola)
6. Technology of Sand Mould Making (Pengetahuan Pasir Cetak)
- 7 Technology of Mould/Sand and Core (Teknologi Cetakan/Pasir dan Inti)
8. Mould Sand Testing (Pengujian Pasir Cetak)
- 9 Technology of Melting and Fetting (Teknologi Peleburan dan Pemaduan)
10. Casting Defect Analyse (Analisa Cacat Tuang)

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SEMINAR / OPENING CEREMONY

No.	Date	Title / Location	Participants	Contents
1	Mar.2, 2000	1st SEMINAR on Iron Casting Technology at Panghegal Hotel (Bandung)	Appr. 130 Participants (Industries, etc.), Presentation by :<Japan> Prof. Niyama, Dr. Ishihara, <Indonesia> MIDC, APPLINDO, ITB, PT. Pindad	Presentations (7 sessions including HICASS demonstration), Exhibition, Discussions etc.
2	Jul.25, 2000	OPENING CEREMONY for and GRAND OPENING of the Project in MIDC (Bandung)	Appr. 200 Participants (Industries, etc.), Presentation by Mr. Kondo, Exhibition by 6 Companies	Opening Ceremony, Presentation, Handing-Over Ceremony, Turn-key Ceremony, Demonstration, Exhibition, Workshop Tour, Clinic of Technology etc.
3	Mar. 22, 2001	2nd SEMINAR on Iron Casting Technology at Hotel International Imperium (Bandung)	Appr. 180 Participants (Industries, etc.), Presentation by :<Japan> Mr. Ichiki, Mr. Yamanaka, <Indonesia> Univ. Indonesia, MIDC, GIAMM, Pakarti Riken	Presentations (6 sessions), Discussions etc.
4	Mar. 5, 2002	3rd SEMINAR on Iron Casting Technology at Panghegal Hotel (Bandung)	Appr. 180 Participants (Industries, etc.), Presentation by :<Japan> Mr. Takemoto, Mr. Mori, <Indonesia> POLMAN, APPLINDO, MIDC, Aneka Banusaki	Presentations (6 sessions), Discussions etc.
5	Oct. 31, 2002	4th SEMINAR on Iron Casting Technology at Panghegal Hotel (Bandung)	Appr. 170 Participants (Industries, etc.), Presentation by :<Japan> Mr. Ichiki, Mr. Fujisawa, <Indonesia> Univ. Jendoul Achamad Yan , MIDC, PT.Agrindo	Presentations (5 sessions), Discussions, Exhibition of Casting Products etc.
6	Mar. 20, 2003	5th SEMINAR on Iron Casting Technology at MIDC (Bandung)	Appr. 120 Participants (Industries, etc.), Presentation by :<Japan> Mr. Y.Kobayashi, Mr. Manba, <Indonesia> Institute of Bandung Technology, MIDC	Presentations (4 sessions), Discussions, Demonstration of Pouring, Exhibition of Casting Products etc.
7	Dec. 10-11, 2003	6th SEMINAR on Iron Casting Technology at Ministry of Industry and Trade (Jakarta)	(Under Planning)	(Under Planning)

List of Publication

No.	Type	Contents	Date	Remarks
1	Printing	Project Leaflet	Dec.1999	English / Indonesian 1,000 copies
2	Video Tape, CD	Project Introduction Video	Mar. 2001	English, Indonesian
3	Printing	Project Pamphlet	Jul. 2002	English / Indonesian 2,500 copies
4	Printing	Casting Technology Handbook (Petunjuk Praktis Teknologi Pengecoran Besi Tuang)	Mar.2002	Indonesian 500 copies
5	Printing	[METAL INDONESIA 2002] Iron Casting Technology Edition	Jul.2003	Indonesian Circulation of 300

The number of beneficiaries of each technical services

Item	Technical Services	1999	2000	2001	2002	2003 (Up to Sep.)	Total
1	Extension Services (No. of visits) ¹	17	22	57	62	34	192
2	Training Services						
	Original	0	31	77	79	42	229
	Order-made			6			6
3	Seminars		330	180	350	120	980

¹ For extension services, the number of visit was counted as the number of beneficiaries for each visit varied.

MIDC Foundry Activities (Annual Self - Income of Foundry Shop)

MIDC FOUNDRY ACTIVITIES
31 December 2002

No	ACTIVITIES	Nr of Act.	Value	Remark
1	TRAINING : - Foundry Technology - Melting - Pattern	1	4,920,000.0	
2	TESTING : - Chemical Composition			
3	PRODUCT MANUFACTURING : - Bushing - Counter Weight - Crank Shaft - Cam Shaft - Fly Wheel - Rocker Arm - Balancer	5	35,245,000.0	
		6	40,165,000.0	

MIDC FOUNDRY ACTIVITIES
31 December 2003

as of the end of September, 2003

No.	ACTIVITIES	Nr of Act.	Value	Remark
1	TRAINING : - Foundry Technology - Melting - Pattern	1	17,909,000.0	
2	TESTING : - Chemical Composition	12	17,505,000.0	
3	PRODUCT MANUFACTURING : - Bushing - Counter Weight - Crank Shaft - Cam Shaft - Fly Wheel - Rocker Arm - Balancer	3	24,540,000.0	
		16	59,954,000.0	

MIDC Foundry Activities (Annual Self - Income of Foundry Shop)

MIDC FOUNDRY ACTIVITIES
31 Desember 2000

No.	ACTIVITIES	Nr of Act.	Value	Remark
1	TRAINING : - Pattern - Quality Control	2	72,790,000.0	
2	TESTING : - Chemical Composition - Verification of Sand Testing	2	550,000.0	
3	PRODUCT MANUFACTURING : - Pattern of Bearing Housing - Spare Parts - Gear - All Component - Jack Lever	5	8,850,000.0	Order by Customer
		9	82,190,000.0	

31 December 2001

No.	ACTIVITIES	Nr of Act.	Value	Remark
1	TRAINING : - Foundry Technology - Melting - Pattern	3	132,512,000.0	
2	TESTING : - Chemical Composition	1	1,600,000.0	
3	PRODUCT MANUFACTURING : - Ingot Mould - Bearing Housing - Spare Parts - Arm - Pattern Gear Cast - Pattern & Casting - Gear Cast - Front Case - Cam - Pattern & Casting Fixture - Casting from Case	11	49,185,200.0 8,000,000.0 112,000,000.0	Non Ferrous done outside FC & FCD big size done outside
		15	303,297,200.0	