

Budget Allocation
The Project on Upgrading Metal Processing Technology in The Arab Republic of Egypt

JICA Project Budget Allocation

(Project period: October 2000 - September 2004)

as of the end of December, 2001
 (Unit: 1000 Japanese Yen)

| | Japanese Fiscal Year | 2000 | | 2002 | | 2003 | 2004 | 2005 | Total | |
|----------|---|------------|---------|------------|-----------------|------|------|------|------------|---------|
| | | Allocation | Actual | Allocation | Expected Actual | | | | Allocation | Actual |
| 1 | JICA LOCAL BUDGET (L.E..1= 30JPY) | | | | | | | | | |
| (1) | <i>Expenses for ordinary activities</i> | 2,840 | 1,660 | 4,275 | 4,700 | | | | 7,115 | 6,360 |
| (2) | <i>Supportive expenses for large areal cooperation</i> | 0 | 0 | 0 | 0 | | | | 0 | 0 |
| (3) | <i>Expenses for popularization or localization activities</i> | 0 | 0 | 0 | 0 | | | | 0 | 0 |
| (4) | <i>Expenses for specialized activities</i> | 0 | 0 | 0 | 0 | | | | 0 | 0 |
| 2 | MACHINARIES & EQUIPMENT | | | | | | | | | |
| (1) | <i>Equipment Provision by JICA</i> | 338,755 | 315,831 | 37,201 | 37,201 | | | | 375,956 | 353,032 |
| (2) | <i>Accompanied Equipment by Experts</i> | 332,924 | 310,000 | 33,811 | 33,811 | | | | 366,735 | 343,811 |
| | | 5,831 | 5,831 | 3,390 | 3,390 | | | | 9,221 | 9,221 |

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

Note 2. Japanese Fiscal Year starts in April and ends March in the next year

Budget Allocation
The Project on Upgrading Metal Processing Technology in The Arab Republic of Egypt

CMRDI Project Budget Allocation

(Project period: October 2000 - September 2004)

(Unit: L.E.= Egyptian Pound)

| | Egyptian Fiscal Year | 2000 | 2001 | 2002 | 2003 | 2004 | Total |
|-----|--|--------|---------|------|------|------|---------|
| 1 | CMRDI LOCAL BUDGET | 360000 | 150,000 | | | | 510,000 |
| (1) | <i>Furnitures (& Air Conditioner)</i> | 150000 | 20,000 | | | | 170,000 |
| (2) | <i>Materials, tools & others</i> | 150000 | 80,000 | | | | 230,000 |
| (3) | <i>Custom clearance & transportation</i> | 60000 | 30,000 | | | | 90,000 |
| (4) | <i>Others</i> | 0 | 20,000 | | | | 20,000 |
| | | | | | | | 0 |

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

Note 2. Egyptian Fiscal Year starts in July and ends June in the next year

Annex 13 Project Design Matrix (PDM)

Project on Upgrading of Metal Processing Technology in the Arab Republic of Egypt

| Narrative Summary | Verifiable Indicators | Means of Verifications | Important Assumptions |
|---|--|--|--|
| Overall Goal Technical capability for production of metal processing industries in Egypt is upgraded. | 1 Increase of products delivered to industries 2 Improvement of quality of products 3 Improvement of productivity and efficiency | 1-1 Industrial Statistics 1-2 Survey Report 2 Survey Report 3 Survey Report | a There is no drastic change in political and economic situation in Egypt. b Metal processing industries development policy remain unchanged. |
| Project Purpose Technical services for metal processing industries extended by CMRDI are upgraded. | 1 Level of satisfaction of service beneficiaries 2 Variety of technical services extended by CMRDI | 1 Questionnaire to and interview with beneficiaries 2 Activity reports | a Egyptian metal processing industries utilize the technology obtained from CMRDI. |
| Outputs 0 Project operation unit is enhanced. 1 Necessary machinery and equipment are provided, installed, operated and maintained properly. 2 Technical capability of the counterpart personnel (hereinafter referred to as "C/P") is upgraded. 3 Technical services for metal processing industries are provided. | 0 Number and capability of staff, budget and established management system 1-1 Contents and condition of machinery and equipment 1-2 Route to get spare parts and situation of securing spare parts 2-1 Assessment by the Japanese experts 2-2 Training materials for the C/P 3-1 Level of the technical services provided for metal processing industries (1) Number of technical services implemented (2) Number of technical services recipients (3) Number of document, curricula, manuals and materials for technical services 3-2 Assessment by beneficiaries | 0 Organization chart, Administration record, Accounting record, Personnel record 1-1 Property record, operation and maintenance record of machinery and equipment 1-2 Spare parts list, suppliers list 2-1 (1) Evaluation Sheet in general (2) Evaluation sheet for target products 2-2 (1) Questionnaire to the C/P (2) Interview with the C/P 3-1 Evaluation sheet (1) List of technical services implemented (2) List of technical services recipients (3) List of curricula, manuals and materials for technical services 3-2 Questionnaire to and interview with beneficiaries | a Trained C/P remain at CMRDI. |
| Activities 0-1 Allocate necessary personnel. 0-2 Formulate 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 necessary machinery and equipment. 1-3 Operate and maintain 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 result of the technology transfer to the C/P. 3-1 Make plan of technical services. 3-2 Implement technical services. 3-3 Monitor and evaluate technical services. | Inputs <Egyptian side> 1 Provision and maintenance of building and facilities 2 Allocation of the C/P and administrative personnel (1) Management C/P (2) Technical C/P (3) Supporting staff 3 Provision of machinery, equipment and their maintenance 4 Local Cost Necessary budget for the implementation of the Project | <Japanese side> 1 Dispatch of Japanese Experts (1) Long term Experts a Chief Advisor b Project Coordinator c Control of Mechanical Properties and Quality Control d Aluminium High Pressure Die Casting e Laser Cutting (2) Short Term Experts Appropriate number of short term experts will be dispatched as necessity arises. 2 Egyptian C/P training in Japan a certain number (maximum 3 persons) of the C/P yearly 3 Provision of Machinery and Equipment 4 Supporting Local Cost | a The C/P remain at CMRDI. Preconditions Renovation of the Project site is stably provided |

(Remarks) Outputs 3 will be applied to the fields of Aluminium High Pressure Die Casting and Laser Cutting.

ANNEX 14: SUMMARIZED RESULTS OF PDM INDICATORS (as of the mid-term evaluation) (1/2)
 JICA/CMRDI Project on Upgrading Metal Processing Technology in Egypt

| Narrative Summary of the Project | Verifiable Indicators | Results | Remarks |
|---|--|--|---|
| <p>((Overall Goal)) Technical capability for production of metal processing industries in Egypt is upgraded.</p> | <p>1. Increase of production delivered to industries</p> <p>2. Improvement of quality of products</p> <p>3. Improvement of productivity and efficiency</p> | <p>- Too early to evaluate the consequence of this project.</p> <p>- Too early to evaluate the consequence of this project</p> <p>- Too early to evaluate the consequence of this project</p> | |
| <p>((Project Purpose)) Technical services for metal processing industries extended by CMRDI are upgraded.</p> | <p>1. Level of satisfaction of present and former service beneficiaries</p> <p>2. Level of satisfaction of industries</p> <p>3. Number of newly improved services and targeted group</p> | <p>- Too early for evaluation</p> <p>- Too early for evaluation</p> <p>- Now, the project is at the stage of selecting the potential beneficiaries and studying and analyzing the kind of service they require.</p> | |
| <p>((Outputs of the Project)) 0. Project operation unit is enhanced.</p> | <p>0. Number and capacity of staff, budget, and established management system</p> | <p>- 548 personnel are working at CMRDI, including 155 research staff. The research staff consist of 40 research professors, 16 assistant professors, 34 researchers, 41 assistant researchers and 24 research assistant. 18 research staff is allocated for the UMPT Project.</p> <p>- CMRDI budget allocation.</p> <p>- Established management system:</p> <p>- Public Relations (Project Leaflet, News Letter,),</p> <p>- Linkages (with Industries, associations, academies, institutions etc.),</p> <p>- Organization (Joint Coordinating Committee),</p> <p>- Meetings (Regular Meeting, Technical Meeting, etc.)</p> | <p>Annex 3 Annex 7 Annex 4 Annex 12</p> |
| <p>1. Necessary machinery and equipment are provided, installed, operated and maintained properly.</p> | <p>1-1 Contents and conditions of machinery and equipment</p> <p>1-2 Route to get spare parts and situation of securing spare parts.</p> | <p>- Machinery and Equipment provided by JICA and installed in CMRDI: Total 74 items, which are worth 353,063,000- JPY</p> <p>- The machinery and equipment mentioned above are basically kept in good conditions in CMRDI.</p> <p>- The routes to get raw materials for experiments from local markets have been established.</p> <p>- Spare parts and consumables necessary for the operation have been secured by either provided by JICA or from local market.</p> | <p>Annex 8</p> |

Annex 15 Tentative Schedule of Implementation (TSI)

| Calendar Year | 2000 | | | | 2001 | | | | 2002 | | | | 2003 | | | | 2004 | | | |
|---|------|----|-----|----|------|----|-----|----|------|----|-----|----|------|----|-----|----|------|----|------|--|
| Japanese Fiscal Year | 1999 | | | | 2000 | | | | 2001 | | | | 2002 | | | | 2003 | | 2004 | |
| | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | | |
| Terms of Cooperation | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Japanese Side | | | | | | | | | | | | | | | | | | | | |
| I. Dispatch of Study Team | | | | | | | | | | | | | | | | | | | | |
| (1) Preliminary Study | - | | | | | | | | | | | | | | | | | | | |
| (2) Supplementary Study | | - | - | | | | | | | | | | | | | | | | | |
| (3) Implementation Study | | | | | | | | | | | | | | | | | | | | |
| (4) Management Consultation | | | | | | | | | | | | | | | | | | | | |
| (5) Mid-Term Evaluation | | | | | | | | | | | | | | | | | | | | |
| (6) Final Evaluation | | | | | | | | | | | | | | | | | | | | |
| II. Dispatch of Long-Term Experts | | | | | | | | | | | | | | | | | | | | |
| (1) Chief Advisor | | | | | | | | | | | | | | | | | | | | |
| (2) Project Coordinator | | | | | | | | | | | | | | | | | | | | |
| (3) Control of Mechanical Properties & Quality Control | | | | | | | | | | | | | | | | | | | | |
| (4) Casting | | | | | | | | | | | | | | | | | | | | |
| (5) Laser Cutting | | | | | | | | | | | | | | | | | | | | |
| III. Dispatch of Short-Term Experts | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| IV. Training of Counterpart Personnel in Japan | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| V. Provision of Machinery and Equipment | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Egyptian Side | | | | | | | | | | | | | | | | | | | | |
| I. Building and Facilities | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| II. Machinery and Equipment | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| III. Allocation of Counterpart Personnel and Supporting Staff | | | | | | | | | | | | | | | | | | | | |
| Counterpart Personnel and Supporting Staff | | | | | | | | | | | | | | | | | | | | |
| IV. Allocation of Budget | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

Note:

1. Japanese fiscal year starts in April and ends in March.
2. Egyptian fiscal year starts in July and ends in June.
3. This schedule is subject to change in accordance with the progress of the Project.

Annex 16 Annual Tentative Schedule of Implementation (ATSI)

| Calendar Year Japanese Fiscal Year | 2001 | | | | | | | | | | | | 2002 | | | | | | | | | | | | 2003 | | | | | |
|---|------|---|---|------|---|---|---|---|---|----|----|----|------|---|---|---|---|---|---|---|---|------|----|----|------|---|---|--|--|--|
| | 2000 | | | 2001 | | | | | | | | | 2002 | | | | | | | | | 2003 | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | | | |
| Terms of Cooperation | JCC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Japanese Side | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I. Dispatch of Study Team | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Management Consultation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Mid-term Evaluation Team | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| II. Dispatch of Long-Term Experts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Chief Advisor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Project Coordinator | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Control of Mechanical Properties and Quality Control | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) Aluminum High Pressure Die Casting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (5) Laser Cutting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| III. Dispatch of Short-Term Experts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Installation and Operation of the equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Control of Mechanical Properties and Quality Control | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. metallurgical factors controlling the physical properties of cast materials / strength, toughness and fracture of metals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Casting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. Aluminum High Pressure Die Casting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b. Shell Mold Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (5) Cold Box Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) Heat Treatment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. Austempering of Ductile Cast Iron | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b. Surface Hardening by Carburizing and Carbonitriding | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (5) Fatigue Evaluation of Welded Joints | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (6) Laser Cutting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (7) Lecturer for Seminar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IV. Training of Counterpart Personnel in Japan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. Heat Treatment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b. Casting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c. Laser Cutting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| V. Provision of Machinery and Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Egyptian Side | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I. Building and Facilities | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| II. Machinery and Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| III. Allocation of C/P and Supporting Staff | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IV. Allocation of Budget | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- Notes:
1. Japanese fiscal year starts in April and ends in March.
 2. Egyptian fiscal year starts in July and ends in June.
 3. This schedule is subject to change in accordance with the progress of the Project.

Annex 17 Plan of Operations (PO)

| Calendar Year | 1999 | 2000 | | | | 2001 | | | | 2002 | | | | 2003 | | | | 2004 | | | |
|---|------|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|----|--|
| Japanese Fiscal Year | 1999 | | | 2000 | | | | 2001 | | | | 2002 | | | | 2003 | | | | 04 | |
| | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | | |
| Term of Technical Cooperation | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| 0 The Project operation unit is enhanced. | | | | | | | | | | | | | | | | | | | | | |
| 0-1 Allocate necessary personnel | - | - | | | | | | | | | | | | | | | | | | | |
| 0-2 Formulate plans of activities | - | - | | | | | | | | | | | | | | | | | | | |
| 0-3 Make budget plan and execute properly | - | - | | | | | | | | | | | | | | | | | | | |
| 0-4 Establish and operate management system | - | - | | | | | | | | | | | | | | | | | | | |
| 1 The necessary machinery and equipment are provided, installed, operated, and maintained properly. | | | | | | | | | | | | | | | | | | | | | |
| 1-1 Make facility refurbishment plan and implement as planned | | | | | | | | | | | | | | | | | | | | | |
| 1-2 Provide and install necessary machinery and equipment | - | | | | | | | | | | | | | | | | | | | | |
| 1-3 Operate and maintain machinery and equipment properly | | | | | | | | | | | | | | | | | | | | | |
| 2 Technical capability of the C/P are upgraded. | | | | | | | | | | | | | | | | | | | | | |
| 2-1 Make Technical Cooperation Program | - | - | | | | | | | | | | | | | | | | | | | |
| 2-2 Implement technology transfer to the C/P | | | | | | | | | | | | | | | | | | | | | |
| 2-3 Monitor and evaluate the result of technology transfer to the C/P | | | | | | | | | | | | | | | | | | | | | |
| 3 Technical services for metal processing industries are provided. | | | | | | | | | | | | | | | | | | | | | |
| 3-1 Make plan of technical services | | | | | | | | | | | | | | | | | | | | | |
| 3-2 Implement technical services | | | | | | | | | | | | | | | | | | | | | |
| 3-3 Monitor and evaluate technical services | | | | | | | | | | | | | | | | | | | | | |

Note: 1. The Japanese fiscal year starts in April and ends in March.

2. This schedule is subject to change in accordance with the Progress of the Project.

Annex 19

Technical Cooperation Program

| Calendar Year | 2000 | | | | 2001 | | | | 2002 | | | | 2003 | | | | 2004 | |
|--|------|----|-----|----|------|----|-----|----|------|----|-----|----|------|----|-----|----|------|----|
| Japanese Fiscal Year | 2000 | | | | 2001 | | | | 2002 | | | | 2003 | | | | 2004 | |
| | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II |
| Term of Technical Cooperation | | | | | | | | | | | | | | | | | | |
| Implement Technology Transfer to the C/P | | | | | | | | | | | | | | | | | | |
| I Control of Mechanical Properties and Quality Control | | | | | | | | | | | | | | | | | | |
| (1) Basis of phase transformation (incl. CCT & TTT Diagram experiments) | | | | | | | | | | | | | | | | | | |
| (2) Methods of micro-analysis of steels (Using Metallography Equipments) | | | | | | | | | | | | | | | | | | |
| (3) Micro-structural analysis and its interpretation (Using Metallography Equipments) | | | | | | | | | | | | | | | | | | |
| (4) Met. factors controlling the properties of carbon steels | | | | | | | | | | | | | | | | | | |
| (5) Met. factors controlling the properties of tool steels | | | | | | | | | | | | | | | | | | |
| (6) Met. factors controlling the properties of stainless steels | | | | | | | | | | | | | | | | | | |
| (7) Met. factors controlling the properties of cast materials | | | | | | | | | | | | | | | | | | |
| (8) Strength, toughness and fracture of metals | | | | | | | | | | | | | | | | | | |
| (9) Quality Control and evaluation of Metal Products | | | | | | | | | | | | | | | | | | |
| (10) Mechanical Testing of materials | | | | | | | | | | | | | | | | | | |
| (11) Metallography, Fractography and Failure Analysis of Metals | | | | | | | | | | | | | | | | | | |
| II Casting | | | | | | | | | | | | | | | | | | |
| 1 Aluminum High Pressure Die Casting | | | | | | | | | | | | | | | | | | |
| (1) Knowledge of Die Casting Process | | | | | | | | | | | | | | | | | | |
| (2) Practice of Die Casting | | | | | | | | | | | | | | | | | | |
| (3) Practice of Maintenance and Repair of Die Casting Machine and Dies | | | | | | | | | | | | | | | | | | |
| (4) Knowledge of Designing and Making Dies (Provision of Information) | | | | | | | | | | | | | | | | | | |
| (5) Approach to Industrie's Demands | | | | | | | | | | | | | | | | | | |
| 2 Chemically Bonded Sand Molding | | | | | | | | | | | | | | | | | | |
| 2.1 Shell Mold Process | | | | | | | | | | | | | | | | | | |
| (1) Knowledge of Shell Mold Process | | | | | | | | | | | | | | | | | | |
| (2) Practice of Shell Mold Process | | | | | | | | | | | | | | | | | | |
| (3) Practice of Maintenance and Repair of Shell Mold Machine | | | | | | | | | | | | | | | | | | |
| 2.2 Cold Box Process | | | | | | | | | | | | | | | | | | |
| (1) Knowledge of Cold Box Process | | | | | | | | | | | | | | | | | | |
| (2) Practice of Cold Box Process | | | | | | | | | | | | | | | | | | |
| (3) Practice of Maintenance and Repair of Cold Box Machine | | | | | | | | | | | | | | | | | | |
| III Heat Treatment | | | | | | | | | | | | | | | | | | |
| 1 Austempering of Ductile Cast Iron | | | | | | | | | | | | | | | | | | |
| (1) Knowledge of Austempering | | | | | | | | | | | | | | | | | | |
| (2) Practice of Austempering | | | | | | | | | | | | | | | | | | |
| (3) Practice of Maintenance and Repair of Heat Treatment Equipment | | | | | | | | | | | | | | | | | | |
| 2 Surface Hardening by Carburizing and Carbonitriding | | | | | | | | | | | | | | | | | | |
| (1) Theory of Carburizing and Carbonitriding | | | | | | | | | | | | | | | | | | |
| (2) Methodology of Carburizing | | | | | | | | | | | | | | | | | | |
| (3) Methodology of Carbonitriding | | | | | | | | | | | | | | | | | | |
| (4) Practice of Carburizing | | | | | | | | | | | | | | | | | | |
| (5) Practice of Carbonitriding | | | | | | | | | | | | | | | | | | |
| (6) Application of Carburizing & Carbonitriding | | | | | | | | | | | | | | | | | | |
| (7) Heat Treatment Training Course for MSE Engineer | | | | | | | | | | | | | | | | | | |
| IV Fatigue Evaluation of Welded Joint | | | | | | | | | | | | | | | | | | |
| (1) Knowledge of Fatigue Theory | | | | | | | | | | | | | | | | | | |
| (2) Knowledge of Fatigue Test Procedure | | | | | | | | | | | | | | | | | | |
| (3) Practice of Investigation of Fractured Part | | | | | | | | | | | | | | | | | | |
| (4) Practice of Fatigue Testing of Carbon Steel Welded Joint | | | | | | | | | | | | | | | | | | |
| (5) Practice of Fatigue Testing of Cast Iron Welded Joint | | | | | | | | | | | | | | | | | | |
| (6) Practice of Fatigue and Fracture Mechanics of Steel Structure | | | | | | | | | | | | | | | | | | |
| V Laser Cutting | | | | | | | | | | | | | | | | | | |
| (1) Knowledge of Laser | | | | | | | | | | | | | | | | | | |
| (2) Practice of Laser Processing (Operation and Maintenance skill) | | | | | | | | | | | | | | | | | | |
| (3) Practice of Laser Processing (Arrangement of Cutting Work Standard) | | | | | | | | | | | | | | | | | | |
| (4) Off-line Teaching Operation | | | | | | | | | | | | | | | | | | |
| (5) Approach to Industrie's Demands | | | | | | | | | | | | | | | | | | |

Note: 1 Japanese fiscal year starts in April and ends in March.

2 Egyptian fiscal year starts in July and ends in June.

3 The line describe rough length of period. A quarter line could mean less than 3 months.


Annual Technical Cooperation Program (ATCP)

| Calendar Year | 1999 | | | | | | | | | | | | 2000 | | | | | | | | | | | | 2001 | | | | | | | | | | | | 2002 | | | | | | | | | | | | 2003 | | | | | | | | | | | | 2004 | | | | | | | | | | | |
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| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Team of Technical Cooperation | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PO 2-2 Implement technology transfer to the C/P | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| II Casting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 Aluminum High Pressure Die Casting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1 Knowledge of Die Casting Process | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Die Casting Machine | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Various Die Casting Machine | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Cold Chamber Die Casting Machine | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Dies | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Alloys for Die Casting and Melting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Alloys for Die Casting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Melting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) Basic Theory of Die Casting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (5) Methodology of Die Casting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (6) Fattling of Products | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (7) Inspection of Products | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2 Practice of Die Casting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Melting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Operation of Melting of Alloys | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Operation of Degassing | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c Operation of Holding | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Die Casting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Optimization of Injection Condition | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Operation of Injection | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Settling | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) Inspection | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3 Practice of Maintenance and Repair | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Die Casting Machine | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Dies | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 Knowledge on Designing and Making of Dies | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Design of Casting | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Gating and Spruing | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Overflow and Vent | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Design of Dies | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Procedure of Designing | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Parting Line of Dies | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c Cooling System | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d Ejection System and Guide | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Making of Dies | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Procedure of Making Dies | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Machining | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c Polishing & Surface Treatment | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d Heat Treatment | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| e Inspection | [Redacted] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

note: [Redacted] Terms of Technology Transfer by Long-Term Experts
 [Redacted] Terms of Technology Transfer by Short-Term Experts
 [Redacted] Terms of Technology Transfer through Training in Japan
 [Redacted] Terms of Technology Transfer by C/P themselves without Japanese Experts

Annual Technical Cooperation Program (ATCP)

| Calendar Year | 2000 | | | | | | | | | | | | 2001 | | | | | | | | | | | | 2002 | | | | | | | | | | | | 2003 | | | | | | | | | | | | 2004 | | | | | | | | | | | |
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| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Japanese Fiscal Year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Term of Technical Cooperation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PO 2-2 Implement technology transfer to the C/P | ▶ signing of the R/D | | | | | | | | | | | | ▶ JDC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| II Casting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Chemically Bonded Sand Molding | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 Shell Mold Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1-1 Knowledge of Shell Mold Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Various Sand Mold Procedure | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Theory of Shell Mold Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Equipment of Shell Mold Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1-2 Practice of Shell Mold Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Molding by Shell Mold Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Sand Test | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Melting of Cast Iron and Pouring into the Mold | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Operation of Melting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Operation of Pouring | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) Inspection of Cast Iron Product | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1-3 Practice of Maintenance and Repair of Shell Mold Machine | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Main Body of Shell Mold Machine | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Die Mold | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 Cold Box Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2-1 Knowledge of Cold Box Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Sand Mold Procedure | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Theory of Cold Box Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Equipment of Cold Box Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2-2 Practice of Cold Box Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Core Making by Cold Box Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a Operation of Core Making | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b Operation of Core Setting into the sand Mold | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Pouring of Cast Iron Melt into the Sand Mold | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Inspection of Cast Iron Product | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2-3 Practice of Maintenance and Repair of Cold Box Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) Main Body of Cold Box Machine | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) Sand Mixer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) Gas Controller | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) Gas Neutralization Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (5) Die Mold | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

note:  Terms of Technology Transfer by Long-Term Experts
 Terms of Technology Transfer by Short-Term Experts
 Terms of Technology Transfer through Training in Japan
 Terms of Technology Transfer by C/P themselves without Japanese Experts