

資料10. 供与機材参考

供与機材、およびパイロット設備 供与機材リスト

①人材育成用パイロット機材

- ・ボイラ（エコマイザー）および吸収式冷凍機、冷却塔、水処理装置
- ・燃焼テスト炉（空気予熱器）
- ・熱設備材料 → 断熱材、保温材、バラ設置保温配管
- ・トランス
- ・蒸気使用設備 → 形式の異なる熱交換機およびSTMストラップ
- ・冷却水循環ポンプおよびインバータ
- ・計測機器類 → 流量、温度、圧力、電気、記録計、および
O₂、CO₂、NO_x、SO_x、PH等の分析機器類
- ・計測機器校正装置 → 熱用、電気用

②工場エネルギー診断機器

- ・省エネルギー診断バス（計測機含む）
- ・計測機器類 → 流量、温度、圧力

③情報システム機器

- ・パソコン（プリンタ、ソフトを含む）、VTR、コピーマシン、FAX、製本機

④広報システム機器

- ・資料検索用パソコン、VTRおよび調製機器、FAX、コピーマシン、製本機

⑤人材育成用視聴覚機材

- ・OHP、VTR、ビデオカメラ、スライド映写機、35mmカメラ

⑥図書資料

- ・省エネルギー関連文献

LIST OF EQUIPMENTS AND MATERIALS

| Priority | Name of Facilities | Q'ty | Specifications |
|----------|---|--------|--|
| 1 | Training Facilities ; | | |
| | 1. Steam Generator and Auxiliaries | 1 set | Boiler(Fuel: Gas, Cylindrical Type), Capacity : Nor. 1.5t/h as Steam Pressure : Below 10kg/cm ² Economizer, Water treatment System, etc. |
| | 2. Combustion Test Facility | 1 set | Furnace(Fuel: Gas and Oil) Amount of Fuel : 3,000,000kcal/h |
| | 3. Electricity Supply Equipment | 1 set | Transformer, 13.2kV/380V, 500kVA (Approx.) Cables |
| | 4. Steam Utilization Facility | 1 set | Heat Exchanger(Two Types), Steam Traps, Chiller, Cooling Tower, etc. |
| | 5. Liquid Flow Measurement System | 1 | Some Range Flow Meters, Temperature Indicator, Water Circulation Pump |
| | 6. Exhibition Models | 1 set | Valves, Steam Traps, etc. |
| 2 | Measuring Devices for Training; | | |
| | 1. Flow Meters | 1 set | For Liquid and Gas |
| | 2. Temperature Indicators | 1 set | Thermo-cuople Type, Radiation Type, Thermo Video Type, etc. |
| | 3. Pressure Gages | 1 set | For Furnace Gas and Steam, For Differential Pressure, etc. |
| | 4. Analyzers | 2 sets | O ₂ % & NO _x ppm, SO _x ppm, CO %, CO ₂ %, and HC in Exhaust Gas, Chromatography Equipment, Calorimetric Bomb, etc. |
| | 5. Electrical Instrument | 4 | Power Meter |
| | 6. Recorder | 3 | Multi-channel Recorder |
| 3 | Energy Audit Bus | 1 | (to transport measuring devices) |
| 4 | Information System | 26 | Personal Computers (including printers, software, and small net) |
| 7 | Calibration Devices for Measuring Devices | 1 set | For Temperature, Pressure, and Flow Rate, etc. |
| 5 | Audiovisual System | 2 sets | OHP, Stereo Video System, etc. |
| 6 | Public Relation System | 1 set | Photocopier Machine, High Speed Printer, etc. |
| 7 | Materials for Library | 1 set | Books and Technical Manuals |
| 8 | Van | 1 | (to transport measuring devices) |
| 9 | Others | | Spare Parts and Consumables |

Necessary data of the new Building

1. FUEL

(1) Fuel gas

| | | |
|---|--------------------------------|--------------------------------|
| • Type | Natural gas | |
| • Property | <u>High H.H.V. Case</u> | <u>Low H.H.V. Case</u> |
| Higher Heating Value: (@760 mmHg, 15°C) | 9,520 kcal/m ³ Std. | 9,096 kcal/m ³ Std. |
| Specific gravity: | 0.629 | 0.595 |
| Gas analysis volume percent: | | |
| methane CH ₄ | 89.68 % | 94.32 % |
| ethane C ₂ H ₆ | 5.50 % | 2.49 % |
| propane C ₃ H ₈ | 1.37 % | 0.42 % |
| i-butane C ₄ H ₁₀ | 0.19 % | 0.06 % |
| n-butane C ₄ H ₁₀ | 0.27 % | 0.11 % |
| i-pentane C ₅ H ₁₂ | 0.10 % | 0.03 % |
| n-pentane C ₅ H ₁₂ | 0.09 % | 0.03 % |
| hexane and superiors C ₆ H ₁₄ | 0.09 % | 0.05 % |
| nitrogen N ₂ | 1.01 % | 0.96 % |
| carbon dioxide CO ₂ | 1.70 % | 1.53 % |
| • Temperature: | Ambient (15°C) | |
| • Pressure: | 1.6 Kg/cm ² G | |

(2) Fuel oil

| | | |
|---------------------------|---------------------------|----------------|
| • Type | B Residual (Fuel oil "B") | |
| • Property | | |
| Higher Heating Value: | | 10,400 kcal/kg |
| Specific gravity (@15°C): | | 0.950 |
| Viscosity: | Kinetic viscosity | cSt |
| | Redwood I | second |
| | S.Universal | second |
| | S.Furol | second |
| Flash point: | | °C |
| Power point: | | °C |
| Residual carbon: | % Conradson | 9 |
| Sulfur content: | % | 0.40 |
| Ash: | % | 0.05 |
| Water: | | Trace |
| Composition (weight %): | C | 82-87 |
| | H | 10-15 |
| | O | 1-2 |
| | N | 0.2-0.5 |
| | S | 0.1-1 |
| | H ₂ O | 0.5-1.5 |
| | Ash | Trace |

2 . CITY WATER

· Analysis data of Water (By INTI)

| | | |
|-------------------------------|-----------------|---|
| COLOR | 8 | SCALE Pt-Co |
| TURBITY | 2.3 | SCALE NTU |
| PH | 8.2 | |
| CONDUCTIVITY | 270 | μ S |
| CaCO ₃ -HARDNESS | 79.1 | PPM |
| CaCO ₃ -ALCALINITY | 55.1 | PPM |
| Cl ⁻ | 27.6 | PPM |
| SO ₄ ⁻ | 66 | PPM |
| NO ₃ ⁻ | less than 1 | PPM |
| NO ₂ ⁻ | less than 0.01 | PPM |
| NH ₄ ⁺ | 0.17 | PPM |
| Cl ₂ TOTAL | 0.7 | PPM |
| Ca | 23 | PPM |
| Mg | 5.2 | PPM |
| F | less than 0.2 | PPM |
| As | less than 0.05 | PPM |
| Fe | 0.10 | PPM |
| Mn | less than 0.05 | PPM |
| Pb | less than 0.01 | PPM |
| Cd | less than 0.008 | PPM |
| Cr | less than 0.01 | PPM |
| ORGANIC MATERIAL | 0.55 | O ₂ COMSUPTION BY MnO ₄ |

3 . Electricity

Power source: 13.2Kv x 3 phase
 Motors and power (Japanese standard) : 380v, 220v x 3 phase
 Instrument (Japanese standard) : 220v, 100v x 2 phase
 Lighting (Japanese standard) : 220v, 100v x 2 phase

4 . CLIMATIC DESIGN DATA

Temperature: 0~35°C (Not considering freezing)
 Pressure: 760 mmHg
 Relative humidity: 50~90 %

5 . ARCHITECTUAL DESIGN DATA

| | |
|------------------------|-------------------|
| Wind velocity: | 27 m/sec |
| For mechanical design: | According to JIS |
| Seismic factor: | Not consideration |
| Shape factor: | According to JIS |

6 . PIPING DESIGN DATA

To be used for "Liquid Flow Measuring System"

| | |
|-----------------------------|-----|
| Pipe size and fitting size: | ASA |
|-----------------------------|-----|

7 . OTHERS

The materials and equipments to be provided from Japan are of Japan Industrial Standards (JIS).

資料 11. - 1 暫定 PDM (英語版)

| Narrative Summary of the Project | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | | | | |
|---|--|--|--|---|--|---|---|
| <p><u>Overall Goal</u> Industrial energy conservation is promoted in the Argentine Republic.</p> | <p>The number of enterprises carrying out energy conservation activities increase.</p> | <p>* national statistics * inquiry survey</p> | <p>* The price of energy does not fall heavily. * Macroeconomic fundamentals are stabilized.</p> | | | | |
| <p><u>Project Purpose</u> By expanding the functions, the Department Energy of INTI is enabled to effectively lead and promote energy conservation in industrial areas.</p> | <p>The number of enterprises that participate in activities of the Department of INTI increase.</p> | <p>* achievement table of the Department of Energy of INTI</p> | <p>* The Argentine Government keeps supporting the Project * Social consciousness for energy conservation increases.</p> | | | | |
| <p><u>Output</u> ① Counterparts who lead and promote energy conservation are developed. ② Energy managers in industrial areas are trained by developed counterparts. ③ Energy conservation awareness and knowledge in industrial areas is promoted by developed counterparts.</p> | <p>① C/P's knowledge and technology level reaches to necessary standard. ② The numbers of trainees and their evaluation ③ -1 the frequency of factory energy audit -2 the frequency of factory improvement consulting -3 accumulated data -4 the frequency of public relations -5 examination of appropriate measures</p> | <p>① list of C/P evaluation along the lines with energy managers system's requirement ②③ achievement table of the Department of Energy of INTI</p> | <p>* The industrial areas positively accept guidance of the Department of Energy of INTI.</p> | | | | |
| <p><u>Activities</u> (1) The Japanese side carries out the following activities in cooperation with the Argentine side: ① -a. formulates plans for counterpart training programs; -b. prepares for counterpart training materials; and -c. provides guidance and makes lectures to counterparts. (2) The Argentine side carries out the following activities with advice and guidance from the Japanese experts: ② -a. formulates plans for training courses; -b. prepares materials for training courses; -c. recruit trainees; -d. provides training courses; ③ -a. recruits factories to receive audits and consultations; -b. performs factory energy audits; -c. performs factory improvement consultations; -d. collects, processes and provides information; -e. conducts technical public relations; and -f. recommends plans for appropriate measures.</p> | <p style="text-align: center;">Inputs</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">The Japanese Side</td> <td style="width: 50%;">The Argentine side</td> </tr> <tr> <td>① experts/long-term /short-term ② C/P training in Japan ③ machinery and equipment</td> <td>① counterpart personnel ② local costs ③ facilities of project-site</td> </tr> </table> | The Japanese Side | The Argentine side | ① experts/long-term /short-term ② C/P training in Japan ③ machinery and equipment | ① counterpart personnel ② local costs ③ facilities of project-site | <p>* Developed C/P stay. * The Project secures connections with the Argentine Government, enterprises and mass media.</p> | <p>Pre-conditions * The approval and disbursement of IDB loan, and the construction of the new building proceed smoothly.</p> |
| The Japanese Side | The Argentine side | | | | | | |
| ① experts/long-term /short-term ② C/P training in Japan ③ machinery and equipment | ① counterpart personnel ② local costs ③ facilities of project-site | | | | | | |

資料 11-2 暫定 PDM (日本語版)

| プロジェクトの要約 | 指標 | 指標データ入手手段 | 外部条件 |
|--|--|--|---|
| <p><u>上位目標</u> 「ア」国工業分野において省エネエネルギーの推進が図られる。</p> | <p>省エネエネルギー活動を実行している企業数が増加する。(一定の企業数でエネルギー原単位が減少する。)</p> | <p>聞き取り調査、各種統計等</p> | <p>* エネルギーの価格が暴落しない。 * マクロ経済調整が順調に進む。</p> |
| <p><u>プロジェクト目的</u> I N T I エネルギー一部の機能が拡充され、工業分野における十分な省エネエネルギーの指導・推進を行うことができる。</p> | <p>I N T I エネルギー一部による省エネエネルギー活動に参加する企業数が増加する。</p> | <p>I N T I エネルギー一部活動実績表</p> | <p>* 政府による協力が変化がない。 * 一般社会の省エネルギーに対する認識が深まる。</p> |
| <p><u>成果</u> ① 省エネエネルギーを指導・推進する C/P の養成 ② C/P による工業分野におけるエネルギー管理者の育成 ③ C/P による工業分野への省エネエネルギーの啓蒙・普及</p> | <p>① C/P 知識・技術レベルが一定の水準まで到達する。 ② 研修コースの受講者数と評価 ③ -1 工場診断数 -2 コンサルテーション数 -3 養育された統計集 -4 広報活動回数 -5 施策検討状況</p> | <p>① エネルギー管理士資格等項目に沿った評価表 ② ③ I N T I エネルギー一部活動実績表</p> | <p>* 産業界が積極的に指導を受け入れる。</p> |
| <p><u>活動</u> (1) 「日」側は、「ア」側と協力のうえ、以下の活動を行う。 ①-a. C/P 養成計画の策定 ①-b. C/P 養成教材の作成 ①-c. C/P への講義・指導 (2) 「ア」側は日本人専門家の助言と指導のもと、以下の活動を行う。 ②-a. 研修コース計画の策定 ②-b. 研修用教材の作成 ②-c. 研修生募集 ②-d. 研修コースの実施 ③-a. 診断・コンサルテーション対象工場の募集 ③-b. 工場診断の実施 ③-c. コンサルテーションの実施 ③-d. 情報収集、加工、提供 ④-a. 広報活動 ④-b. 施策提言</p> | <p>日本側 長期 4 名 短期 必要に応じて年/4 名程度 ① 専門家 人材育成用 PC/ネット機材 ② 研修員受入 省エネエネルギー診断機器 ③ 機材供与 情報システム機器 広報システム機器 人材育成用視聴覚機材等 図書資料</p> | <p>投入 アルゼンティン側 ① 人員配置 ② ローカルコスト ③ プロジェクトサイト整備 ④ 機材措置</p> | <p>* 訓練された C/P が定着する。 * プロジェクトと政府、企業、メディア等とのチャンネルが確保される。</p> <p><u>前提条件</u> * I D B 借款の承認、支出、及び施設の建設工事が円滑に進捗する。</p> |

JICA