

International Economic and Technology Cooperation Assistance Available from the MOEA

1. Name of Organization:

Taiwan Power Research Institute, Taiwan Power Company

2. Service Items:

Power system monitoring and control

3. Description:

Communication network and supervisory control technology:

- (1) Software and hardware technologies involving communication network backbone, communication protocol, communication media interface, etc.
- (2) Application of power system value-added customer service.
- (3) SCADA (supervisory control and data acquisition) integration of wide area networks, computers and communication device architecture.
- (4) SCADA communication driver, packaged graphic interface system and remote terminal interface.
- (5) Development and application of SCADA simulation systems and mimic boards.
- (6) Distributed web-based technology in SCADA applications.

4. Implementation Methods:

- (1) Provision of technical services
- (2) Provision of personnel training
- (3) Mutual technical cooperation

5. Past Cases:

SCADA implementation on hydro-and small-island power plants

6. Contact Information:

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7. Remarks:

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1. Name of Organization:

Taiwan Power Research Institute, Taiwan Power Company

2. Service Items:

Power quality monitoring, analysis and improvement

3. Description:

Evaluation and application of power electronics equipment for power quality improvement:

- (1) Monitoring, analysis and improvement of a power system's harmonic, flicker and switching surge as well as system imbalances
- (2) Monitoring, analysis and improvement of the quality of power supply to high-tech industrial parks
- (3) Development of power quality monitoring systems

4. Implementation Methods:

- (1) Provision of technical services
- (2) Provision of personnel training
- (3) Mutual technical cooperation

5. Past Cases:

Power quality monitoring, analysis and mitigation at three science-based industrial parks and several high-tech parks.

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1. Name of Organization:

Taiwan Power Research Institute, Taiwan Power Company

2. Service Items:

Coal ash utilization

3. Description:

Of the total coal ash generated by the coal-combustion power plants of Taiwan Power Company (TPC), around 80 percent is fly ash and 20 percent bottom ash. The objective of coal ash utilization at TPC is to address the problem of coal ash disposal and establish a foundation for diversified application. From 1980 to 1992, TPC conducted a series of studies on the application of coal ash, such as cement, concrete products, construction materials, pavement materials, thermal-insulating materials, agricultural products, and artificial reefs. Research results in these fields provided information for the government to use in formulating legislation on coal ash utilization. (Coal ash was legally classified as a reusable industrial material in 1996.) Coal ash has thus become a valuable raw material and can be used for domestic construction purposes, thereby generating additional revenues for TPC. This has not only resolved the issue of TPC's coal ash disposal, but also achieved the company's goal of recovering used resources. Presently, coal ash from TPC's coal-combustion power plants yield approximately 1.7 million tons of reusable by-products each year, accounting for an annual utilization rate of 70%.

4. Implementation Methods:

- (1) Provision of technical services
- (2) Provision of personnel training
- (3) Mutual technical cooperation

5. Past Cases:

- (1) Research results and papers were presented at the Environmental Protection & Industrial Waste Reduction Exhibition, the International Coal Ash Utilization Symposium, the Symposium on Recovery Technology, and the Conference on Clear Production and Sustainable Development.
- (2) From 1984 to 1987, TPC completed a “Coal Ash Artificial Reef” study in collaboration with academic institutes. These results demonstrated the potential of using coal ash as artificial reefs without impacting the environment.
- (3) TPC developed “lightweight cellular concrete”(LCC) products and successfully transferred the technology to manufacturers.
- (4) TPC developed lightweight aggregate products employing the sintering process and the cold bonding process. The cold bonding process was later patented in the ROC (patent protection No.54384).

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7. Remarks:

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1. Name of Organization:

Taiwan Power Research Institute, Taiwan Power Company

2. Service Items:

Life assessment and failure analysis of boilers and steam turbines in sub-critical fossil power units

3. Description:

Aging of boilers and steam turbines in sub-critical fossil power units occurs when such equipment operates in a high-stress, high-temperature or corrosive/erosive environment for an extended period of time. The result of aging usually shows itself as fatigue damage, creep damage, cracking, loss of fracture toughness or excessive deformation. Sometimes mechanical failures may occur due to design defects or operating and maintenance problems, even if the equipment itself is not aged. The Taiwan Power Research Institute can provide life assessment and/or failure analysis services that help extend the service lives of boilers and steam turbines and prevent unexpected failures from recurring.

4. Implementation Methods:

Provision of technical services to help with the life assessment and failure analysis of boilers and steam turbines in sub-critical fossil power units

5. Past Cases:

- (1) Boiler life assessment projects for Taipower's many fossil units, IPP units in Taiwan and the Guam Island of the USA and failure analyses of numerous failures that occurred in Taipower's boilers and their accessories
- (2) Turbine life assessment projects for Taipower's many fossil units and failure analyses of numerous failures that occurred in Taipower's steam turbines and their accessories.

(3) Conducting of a recoating treatment for the used blades of Siemens' gas turbines

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7. Remark:

International Economic and Technology Cooperation Assistance Available from the MOEA

1. Name of Organization:

Department of Power Equipment Repair and Maintenance,
Taiwan Power Company

2. Service Items:

Training courses in nondestructive testing (NDT), rotating machine balance, and generator and gas turbine inspection

3. Description:

Training courses can be provided in PT, MT, UT, RT, VT, ET (Penetration, Magnetic, Ultrasonic, Ray, Visible, Eddy current Testing), rotating machine balance, and generator and gas turbine inspection.

4. Implementation Methods:

The above-mentioned training courses can be conducted at the Linko Training Center of Taiwan Power Company, which can also offer the necessary facilities as well as meals and accommodations for trainees.

5. Past Cases:

Our balancing and vibration analysis team offered similar training courses to Dominican Power Company in 1992.

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7. Remarks:

International Economic and Technology Cooperation Assistance Available from the MOEA

1. Name of Organization:

Power Development Department, Taiwan Power Company

2. Service Items:

Evaluation of investments in hydropower, thermal power and wind power development projects

3. Description:

Feasibility studies can be conducted on hydropower, thermal power and wind power development projects.

4. Implementation Methods:

An agreement must be signed before cooperation is implemented.

5. Past Cases:

- (1) Electric technology cooperation with Honduras as part of the Power Technical Mission of the ROC
- (2) Holding of annual Electrical Cooperation Conferences with KEPCO (Korea Electric Power Company) and Eskom.

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7. Remarks: