MESCO Engineering Quarterly

Marketing Division
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Domestic Sales

[Special Issue] Hydropower Plants

Kanakido Power Plant Completed !!

Hydropower Plant Construction Record

Engineering Topics

Shifting power generating plants to profit generating plants

MESCO

Mesco's abundant track records and excellent technologies have led to a high reputation gained in various fields.

Hydropower Projects

Kamioka Mining & Smelting Co., Ltd.

Kanakido Power Plant Completed

Ceremony Held to Celebrate Completion of Plant Construction

Mesco commenced construction of Kanakido Power Plant in June, 2015, which started with setup of its temporary facilities, and successfully completed its construction, commissioning and handover in September, 2017.

A ceremony was held by Kamioka Mining & Smelting on September 13, 2017 to celebrate its completion and in appreciation of support extended by all those involved in the project.

Background of Replacement

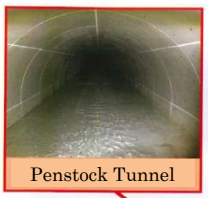
Construction of the original Kanakido Power Plant was started in December, 1951 with a view to utilize the water resources abundantly available from Kanakido River, which belongs to the Jinzu River system. The plant started its operation in June 1953 and has served Kamioka Mining & Smelting as its main hydropower station, generating the output of 18,000 kW ever since.

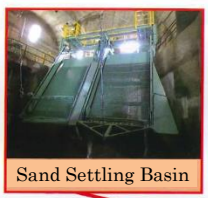
The project completed this time was carried out to replace the aging facilities, in line with the Feed-in Tariff Scheme for Renewable Energy in place, and also by implementing automatic control of the water intake flow and an improved remote monitoring system.

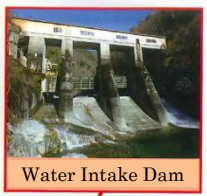
Facility Outline

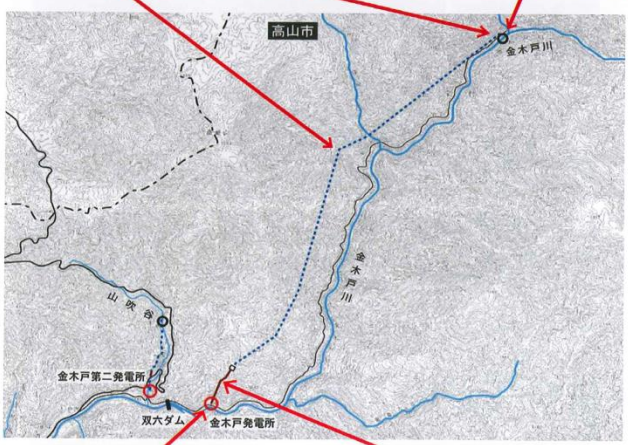
The scope of the project covered a main water intake located 90 m downstream the merging point of Kanakido River and Nakanomata River, a sand settling basin that follows, a 5,740 m long penstock tunnel running down to a water tank, two subsequent steel penstock pipelines, and two water turbine generators, from where the water returns to the main stream of Kanakido River.

Power Plant Location & Its Main Facilities

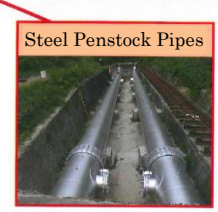

Penstock Tunnel


Sand Settling Basin


Water Intake Dam




Turbine Generator


Steel Penstock Pipes

Location	Kanakido, Takayama, Gifu
Water System Area	116 km2
Effective Head	351.7 m
Generated Power	18,287.1 kW max

Information Source * Kamioka Mining & Smelting's leaflet produced for the ceremony of completion of Kanakido Power Plant

Hydropower Projects

Renewable Energy
Hydropower Plant Construction Records

Mesco offers support by providing total engineering services and carrying out installation of penstocks, water turbine generators, and transformers, as well as connecting power lines.

Transformer Facility Construction

Water Intake Weir (Lodging Weir)

Water Turbine Generator Replacement

① Support Installation on Steep Slope

② Crane Setup on Steep Slope

④ Penstock Installation

③ Penstock Installation Preparation

<Penstock Installation Example>

① Delivery of a Series of 10m-long Pipes

② Forming Long Pipes by Welding

④ Pipe Loading Completed

③ Loading of Pipes with a Backhoe

<Water Piping Work Example>
Mesco Pipes Used

We provide full support with the services of feasibility studies, subsidy applications, detailed engineering, construction, and all the way through to commissioning.

PICK UP!!

Let us serve you with a total EPC package from planning to construction

Feel free to contact us, Mesco, if you have any plans of replacing your hydropower plant.

1. Considered Site Check (Site Survey)

Technical feasibility check by site survey
- Water intake and penstock route
- Power plant
- Power transmission line route
- Approx. power output calculation based on approx. water flow rate and head

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Check by preliminary feasibility study

2. Basic Design

Optimum process selection by water flow rate check and topography survey
- Water intake facility
- Penstock & pipelines
- Turbines & generators
- Transformers
- Power lines & generator building

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Approx. construction cost estimate (civil, building, mech. & elec.) Production of planning drawings & a rough process flow

3. Feasibility Study (F/S)

Execution of Feasibility Study

Evaluation by Internal Rate of Return (IRR) process, etc.

4. Applications to be Filed (Support for preparation of necessary documents, etc.)
- River Act (Law)
- Electric Utility Industry Law
- FIT application procedure

5. Detailed Design & Construction

Execution of a lump-sum EPC project involving civil, building, mechanical, and electrical works
- Detailed design
- Equipment procurement
- Project planning
- Construction work

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Commissioning & operation training

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Handover & acceptance (commercial run commissioning)

6. Operation Management Support
- Regular inspection (annual)
- Aged item replacement (electrical equipment, etc.)
- Major repair work
- Supply of spare parts and consumables

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