One of the cleanest and most cost-effective sources of electric power available in Indonesia

CASE STUDY: GEOTHERMAL POWER

Lahendong
Indonesia

Customer: Perusahaan Listrik Negara (PLN)
Type of power plant: Geothermal
Steam source: Single flash geothermal steam
Electrical output: 1 x 20 MW turnkey geothermal power unit
Commercial operation: August 2001

Alstom’s long-term technological pioneering spirit contributed to its geothermal turbines setting a milestone in the geothermal power generation market. The world’s first large scale commercial geothermal power plant in Wairakei, New Zealand, built by Alstom in the 1950s, provided the track record that won the confidence of Indonesia’s state-owned utility Perusahaan Listrik Negara (PLN). In 1995 PLN granted Alstom a contract as part of a consortium for the supply of a 20 MW geothermal power plant under the supervision of the Compagnie Française de Géothermie (CFG).

The Lahendong geothermal power plant is located in the Indonesian province of North Sulawesi, about 30 km south of the province’s capital city Manado. The 20 MW unit began its commercial operation in 2001 after an extended construction period following the Asian financial crisis in 1997.

Lahendong geothermal power plant accesses the geothermal steam resource using deep-drilled wells. The power plant feeds the Minahasa district through the North Sulawesi electricity network. In August 2001, the Lahendong geothermal power plant began its commercial operation, capable of producing 20 MW of clean electricity.

CUSTOMER PROFILE

A state-owned company, Perusahaan Listrik Negara manages the electric power industry in Indonesia. PLN has various business divisions, which manage the generation, transmission and distribution of electric power throughout the country.

SCOPE OF THE ORDER

PLN launched an international bid with technical specifications to build a turnkey geothermal power generation unit, including the required equipment to regulate the geothermal steam, a geothermal steam turbine, generator, direct contact condenser, hotwell pumps, cooling tower, distributed control center, turbine control, motor control and electrical equipment rooms, substation, engine room, traveling derrick; as well as civil works, project management and commissioning. Alstom’s tender provided an integrated solution that fulfilled the needs of PLN. As the leader in the mechanical and control scope, Alstom provided a reliable geothermal turbogenerator and the main mechanical equipment.
ADVANTAGES

Alstom is a global leader in steam turbine technology with more than 100 years of experience in manufacturing, delivering, installing and servicing steam turbine generator sets from 5 MW to 1,800 MW for a wide range of applications, including geothermal. Geothermal is one of the most reliable sources of renewable power.

Alstom pioneered the commercial exploitation of geothermal power in New Zealand in the 1950s. Today, we offer an extensive portfolio of cutting-edge solutions for geothermal applications that are grounded in technologies that have been proven in geothermal applications worldwide.

For the most challenging geothermal applications, we are able to tailor our solutions to take account of aggressive steam conditions.

Alstom’s geothermal power plant offers:
- **Plant integration** using **Plant Integrator™ concept**
- **High reliability and availability**
- **Proven modules** for any size and process
- **Efficiency and performance** with steam turbines designed to adapt to the most demanding geothermal steam conditions
- **Outstanding operational flexibility** through high-performance last-stage blades for all unit sizes and cooling conditions in any climate
- **Compact and modular design**
- **Minimal maintenance** resulting in shorter outage times
- **Geothermal know-how** from the experience gained in the construction and commissioning of geothermal projects around the world
- **Sustainable clean power** generation

For more information please contact Alstom:

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