



*Taupo, New Zealand*

## Facility Summary

Geothermal Power Plant  
166 MW

## Te Mihi Geothermal Power Project



## TE MIHI POWER PROJECT—2 x 73MW GEOTHERMAL POWER PLANT

Te Mihi Power Project is a geothermal power facility located near the town of Taupo on the north island of New Zealand. The project was technically challenging due to the fairly low geothermal steam pressures and the large MW size of the facility for a geothermal installation.

### Project Issues

Directing these efforts required the development and management of a three-way joint venture, acting as an EPC Contractor to the Owner. One Partner was key for process design, one Partner was key for construction and one Partner was key for power experience and integrated EPC projects.

The facility was designed utilizing two (2) 3-flow condensing steam turbines, direct contact condensers, hotwell systems, non-condensable gas removal systems, vacuum pump systems, integrated distributed control systems, eight cell cooling towers, and a first-of-kind well re-injection system (utilizing sulphuric acid) to optimize the life of the geothermal wells.

Seismic installations and daily earthquake tremors were the norm for this area of New Zealand and safety drills were conducted on a regular basis. Additionally, due to the H<sub>2</sub>S emissions from the geothermal fluids, extreme caution and safety protocols emphasized during all construction and operational activities.

### Problem Resolution

Construction of the facility progressed at a rapid pace and the Site team implemented augmented safety measures which resulted in 2.2 million man-hours without a lost time incident and over 19 months without a single medical recordable incident.

Challenges occurred during the flushing, startup and commissioning of the facility and the project team rallied to implement the necessary design changes, component modifications and installations in order to allow the facility to achieve the required performance guarantees.

Performance testing of the facility was complex due to the low steam pressures involved, the layout of the facility and the rigid requirements of the EPC Contract. McHale developed and provided the necessary test procedures, a site specific test performance spreadsheet model, valve isolation lists, high accuracy temporary test instrumentation, test personnel and final test reports.

### Work Outcome

The facility achieved above the required performance output and was capable of achieving the maximum design output with margin to spare.