2024 ACEF Conference

Sustainable Geothermal Development in New Zealand

Phil Lory
New Zealand Major Generation and Transmission Companies
Geothermal Hot Spa – Rotorua, New Zealand

New Zealand Geothermal Resources
Geothermal Direct Use Examples

Geothermal Energy Helps to Grow Prawns

The only geothermally heated prawn farm in the world is right here in New Zealand and it harnesses renewable energy as a secret to its success.

**The Halcyon Prawn Farm**, near Taupo, was built in 1987. Current managing director, Richard Oates, has seen the farm's business expand from 900 prawns per season in its early days to 600,000 prawns per season now.

**Geothermal Energy**
- The geothermal heat from the Taupo Geothermal Field near Taupo heats the farm’s ponds and supplies heat to the processing plant.
- Ponds are heated to a temperature of 30°C, which is ideal for growing prawns.
- The farm’s prawns are grown using sustainable practices, including the use of geothermal energy.

**KEY BENEFITS**
- Reduced operating costs
- Increased productivity
- Environmentally friendly
- Easy to scale
- Very reliable

Tenon Manufacturing Ltd’s Earth Energy Solution

Harnessing a naturally occurring energy source has proved a big plus for Tenon’s wood processing plant on the Taupo Geothermal Field near Taupo.

**Tenon Manufacturing Ltd** has implemented geothermal energy for heating their wood-processing site. The result has been significant energy savings and increased productivity.

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**KEY FACTS**
- **Operational for 20+ years**
- **Geothermal heat plant**: ten 350-kilowatt heat pumps
- **Annual energy savings**: over 200,000 kWh
- **Environmental benefits**: reduced carbon footprint

Orakei Korako Thermal Park neighbours Ngatamariki Power Development

Ngatamariki Main Consent Conditions

1. Performance Standards and sustainable management principles
2. Sets duration and maximum daily mass take
3. Does not specify any approved power output
4. Requires an independent peer review panel to review impacts of usage and subsidence & reservoir modelling
5. Developer to demonstrate the project does not cause pressure drawdown, cold water inflow, induced pressure or temperature response or contamination of aquifers
6. Enables Council to vary consent if standards are not met
Contact Energy’s Tauhara 174MW Triple Flash and 52MW Te Huka 3 Binary Geothermal Projects (2024)
Keys to Sustainable Geothermal Development in NZ

• Prospecting, mapping, exploration and early drilling government funded
• Commitment to renewable energy supported by an active carbon market
• Power generators have a mix of renewable and thermal plant
• Market model enables timely response to electricity demand
• Resource consenting model encourages state of the art technologies
• Partnering with local iwi and land owners enables broader interests to be considered in development proposals