



**Geothermal modelling  
and reservoir engineering –  
assessing resource capacity  
and improving performance**

Reservoir engineering and modelling are important tools for assessing resource capability, improving reservoir performance, undertaking reservoir management and predicting the impact of geothermal developments.

IRL (Industrial Research Limited) has a longstanding and world-leading capability in reservoir engineering and modelling. We help manage the sustainability of geothermal reservoirs by building a better understanding of field management options and changes to the resource over time.

### Stand-out benefits

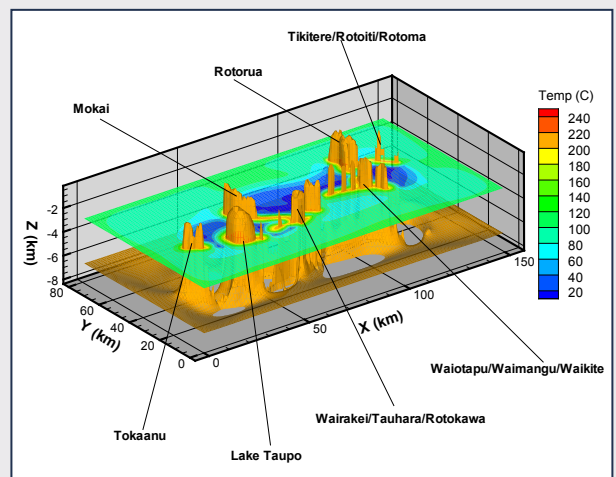
- ▶ Modelling provides tools to help decision making for maximum return from the field
- ▶ Modelling also enables the informed estimation of:
  - the economic life of the field
  - the effect of new wells
  - the effect of production and reinjection
- ▶ All the geo-scientific knowledge of the reservoir is summarised in the model
- ▶ Risks are reduced by testing the effects of reservoir management decisions.

The IRL Applied Mathematics team has been at the forefront of research and application of geothermal modelling since the beginning of development at the Wairakei field in 1958.

We have developed models of many fields around the world including Kakkonda (Japan), Wairakei (New Zealand), Mokai (New Zealand), Rotokawa (New Zealand), Kawerau (New Zealand), Luise (Papua New Guinea), Uenotai (Japan), Sumikawa (Japan), Tikitere (New Zealand), Rotorua (New Zealand), and Tauhara (New Zealand).

### Key expertise

- ▶ Development of large scale and complex models of geothermal systems
- ▶ Ability to solve problems that cannot be addressed with standard methods
- ▶ Reservoir modelling and engineering to predict the response to production and reinjection and to assess environmental impacts
- ▶ Calculation of chemical conditions in the reservoir
- ▶ Specialist handling of supercritical temperature and pressure regimes
- ▶ Advanced coupling of the response of surface features to changing reservoir conditions
- ▶ Combining reservoir models with rock mechanics to predict subsidence
- ▶ Use of advanced computer modelling systems.



3D view of an IRL model of the Taupo Volcanic Zone showing the 220°C isosurface on which the known geothermal fields can be identified.

For all enquiries please contact the Industry Engagement team on 0508 CALL IRL (0508 225 5475). If calling from overseas phone +64 4 931 3000 or visit the *Contact Us* page on our website.

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