



Project Review

Fonterra, Boiler 5 – Edendale, New Zealand 20MW_{th} Electrode Boiler

Client:	Fonterra
Location:	Edendale, Southland, New Zealand
First Steam:	Q4 2024
Official Opening	May 7 2025

Background

In November 2023 Fonterra was faced with a significant challenge in terms of boiler asset condition, exposing Edendale to a significant ~2ML of milk per day processing risk.

A 20MW Electrode boiler solution was endorsed to mitigate the risk, with 12 months to deliver the project. The delivery required innovation for new-to-Fonterra technology, to meet the timeline, and overcome challenges with an already constrained electrical supply.

The Solution

Project Munro was launched, and Windsor was engaged as the lead EPC contractor and closely partnered with Fonterra to deliver their first electrode boiler. The 20MW electrode boiler project was delivered on time and on budget.

The success of the project has delivered Fonterra's first electrode boiler and Decarbonisation at scale

and speed, a critical step in delivering Energy Security for the Edendale Site and reducing Fonterra's carbon emissions. This has given Fonterra the confidence to undertake further proposed electrode boiler projects.

The main Windsor scope included:

- 20MW high Pressure (42Barg operating) Electrode Steam Boiler
- Duty and standby circulation and feedwater pumps and associated instrumentation for operation
- 60m³ stainless steel condensate and makeup water storage tank
- Deaerator and duty standby feed pumps
- Boiler control panel and MCC system
- Steam distribution and HIPPS over pressure system
- Boiler structure, platforms and galleries

- Boiler house, MCC room, RO/EDI plant room and pre-action valve room
- *Precision conductivity management and automated dosing integration
- Chemical shelter, bunding and dosing system
- Condensate diversion, cooling and makeup water heat recovery system
- Complete installation and commissioning

*Water chemistry is critical to the success of the electrode boiler projects. Our high-pressure electrode boiler features precision conductivity management, automated TSP dosing, and real-time monitoring to ensure optimal steam purity and electrode longevity. With conductivity tightly controlled, the system minimizes blowdown losses and enhances operational reliability.



Feedback from Fonterra's operations and maintenance teams has been overwhelmingly positive. They're thrilled with the boiler's reliability, simplicity, efficiency and its quiet performance delivering steam right throughout the dairy season.

The official opening of Fonterra's first electrode boiler was celebrated on the 7th of May 2025 with Minister for Climate Change and Energy, Simon Watts, alongside Fonterra Chief Operating Officer Anna Palairot cutting the ribbon. For this project initiative, Fonterra won the New Zealand Energy Excellence Awards for Large Energy User Initiative of the Year 2025.

Project Name	Fonterra Edendale Boiler 5
Boiler Type	High Pressure Electrode Steam Boiler
Date Installed	2024
Thermal Capacity	20 MW
Process Fluid	Saturated Steam
Energy Source	Hydroelectricity
Steam Output	30,500 kg/h (net to process 28,000 kg/h)
Supply Pressure	42 Barg
Thermal Efficiency	99.9%
Turn Down	25:1

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