



## Project Review

### Fonterra Darfield Boiler 1

#### 30MW<sub>th</sub> Coal Fired Boiler

Client: Fonterra Cooperative Group  
 Location: Darfield, South Island of New Zealand  
 Duration: 15 months Design & Build  
 Site hours 60,000 man hours with no lost time injuries.

#### Background

Fonterra is a global, co-operatively-owned company with its roots in New Zealand where it processes around 22 billion litres of milk each year in over 30 processing factories nationwide.

The newest site is at Darfield (around 30 minutes drive inland from Christchurch).

Darfield site was a new greenfield milk powder factory planned by Fonterra to process the rapidly growing milk supply from the fertile Canterbury plains area around Christchurch. High pressure saturated steam is required to deliver process heat to the new 15t/hr dairy spray dryer and associated milk processing plant.

#### The Solution

RCR Energy's contract scope for this project included design and build of a coal fired boiler plant that can produce 45t/hr (30MW) of saturated steam:

- Boiler house and MCC/control room buildings;
- Steam boiler plant including integral ancillaries;
- Feedwater deaerator and pumping system;
- Steam, water and condensate piping systems;
- Coal reception and conveying system designed for two boilers coal storage (above and below ground (totalling 200+ tonnes);
- Chimney stack for 2 boilers (62 metres);
- Bag filter emission control system with 336 filter bags;

- Ash handling system including dense phase ash conveying system, ash silo and ash conditioning system;
- Electrical instrumentation and control (EI&C) systems.

For both Darfield 1 and 2 Projects Fonterra was recipient of awards:

- Darfield 1 was awarded Safeguard NZ Workplace Health & Safety Award in 2013 for ACC best leadership of an industry sector or region; and
- Darfield 2 was awarded PMINZ Project of the Year 2013.



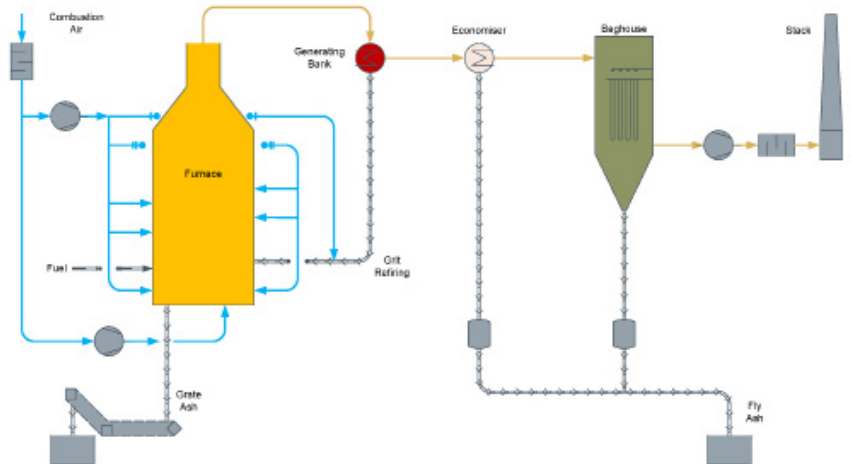


### Why Windsor Energy?

As a proven provider of plant and services to Fonterra in New Zealand & Australia, Windsor Energy offered the following advantages

- Proven track record with Fonterra and other large industrial clients.
- Established network of local and international partnerships proven to deliver safe and reliable boiler plant on time.
- Modular plant design optimised for transport and smooth, safe erection.
- Innovative plant design for high efficiency and simple operation.
- Clean burning combustion technology with very low particulate emissions.

| Project Name                        | Fonterra Darfield Boiler 1                      |
|-------------------------------------|---|
| Project Number                      | 7777  |
| Date Installed                      | 2012  |
| Boiler Type                         | B & W Towerpak® Boiler                          |
| Combustion System                   | Spreader firing onto travelling grate (Detroit) |
| Thermal Capacity                    | 30 MW   |
| Fuel Source                         | Coal  |
| Boiler Design Code                  | AS 1228   |
| Steam Output                        | 45000 kg/h                                      |
| Steam Temperature                   | 253°C (Saturated)                               |
| Design Pressure                     | 4200 kPa  |
| Operating Pressure                  | 3800 kPa  |
| Feedwater Temperature               | 105°C   |
| Emissions Guarantee<br>Particulates | < 35 mg/Nm <sup>3</sup>                         |
| Turn Down                           | 5:1   |



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