



1 Completed building 2 External view of dryer tower building during construction 3 EPS bearing installation

Fonterra Pahiatua Dryer 3

Project Location: Pahiatua

Silvester Clark Consulting Engineers Ltd for Fonterra Co-operative Group Limited

Disciplines: Structural Engineering



The new milk spray dryer powder plant for the Fonterra facility at Pahiatua has been constructed and has been in production since August 2015.

The dryer tower is a 53 x 21, 43 m high building constructed in predominantly reinforced concrete, with structural steel for some floor platforms and the roof. The plant is a repeat of the Fonterra Darfield Dryer 1 building constructed in 2011 – 2012. The Pahiatua sites high Hazard factor $Z = 0.42$ and proximity to a local fault means that a significant increase in seismic demand is imposed on the building compared to Darfield.

After consideration of strengthening the building structure and foundations using conventional means, seismic isolation of the building was chosen as the best and most economical solution. A concrete raft foundation and seismic isolator bearings are used to support the dryer building superstructure. Consideration was given to lead rubber elastomeric bearings, however friction pendulum bearings were chosen due to their ability to support high axial load capacities at high displacements.

The project was delivered by a design and build team comprising:

- Fonterra (client)
- GEA Process Engineering Ltd (process plant design and construction) · Ebert Construction Ltd (main building contractor) ·
- Silvester Clark Consulting Engineers Ltd (structural design engineers) ·
- Compusoft Engineering Ltd (building modelling and seismic isolation design) ·
- Aurecon (geotechnical investigation and reporting)

This submission describes the design process and challenges associated with the project and in particular, the development of the design and installation of the seismic isolation system.

Judging & Copyright Statement

This project is a Finalist entry in the 2016 INNOVATE NZ Awards of Excellence competition. The winners will be announced on Friday 2 September, 2016.

Images and text remain copyright of ACENZ and the consultant firm entering the project. Users are asked to give credit to the photographer where this is specified. ACENZ and INNOVATE NZ are trademarks of the Association of Consulting Engineers New Zealand.