

Silver Fern Farms Energy Plant

LOW EMISSION



EFI – COMMITTED TO BEST OUTCOMES BY APPLYING LEADING-EDGE TECHNOLOGY

“Energy For Industry (EFI) showed enthusiasm, strict attention to detail and an innovative well-thought-through approach,” says Silver Fern Farms Ltd engineering manager, Marthinus Hendriks.

“They were very innovative and their proposed solution solved two of our energy issues.”

Marthinus Hendriks oversaw this major project that EFI undertook to install a new 8.5MW bio-fuel boiler at Silver Fern Farms’ largest meat processing plant, Finegand, near Balclutha.

The new purpose-built boiler is designed to supply one third of the plant’s steam requirements (12t/h of base-load steam).

Importantly, it replaces a 46 year old coal-fired boiler and reduces at least 2000 tonnes of CO₂ emissions each year, while also reducing fine ash particulate and sulphur dioxide emissions.

Hendriks says the new boiler almost didn’t happen. It was an informal discussion between Silver Fern Farms and EFI that initiated the proposal and demonstrated it to be the best option for Silver Fern Farms.

“Initially, we were planning a new waste water treatment plant to meet resource consent requirements stipulated by the Otago Regional Council,” Hendriks said.

“This would have created much larger volumes of sludge which, at that point, we were considering composting.

“But we would have needed a new composting plant to deal with about 10,000 tonnes of compost a year, and that was an issue.

“So, EFI undertook to consider other options.”

EFI is a business unit of Meridian Energy. EFI specialises in developing and supplying sophisticated on-site energy solutions designed to improve energy efficiency, enhance environmental outcomes and reduce energy costs.

In this case, EFI identified that a bubbling fluidised bed boiler could utilise the dewatered sludge from the meat processing effluent plant as fuel, co-fired with some wood waste.

The boiler design uses technology that is new to New Zealand, in this configuration, although it is proven overseas and is now the preferred method of burning ‘low grade fuels’.

It allowed Silver Fern Farms to ‘retire’ an old coal-fired boiler and deal with the sludge composting issue at the same time.

Marthinus Hendriks says EFI also provided a detailed analysis of the benefits of this innovative concept.



SILVER FERN FARMS BFB BOILER

That analysis allowed Silver Fern Farms to assess the financial, operational, environmental and compliance outcomes of the solution EFI was proposing.

“EFI’s work made good sense strategically.”

The bubbling fluidised bed boiler (BFB) technology was sourced from Babcock and Wilcox and supplied under license by contractors, RCR Energy Systems Ltd, who are specialists in this type of technology. The plant also includes a wood residue fuel reception and feed system, a sludge handling and feed system and a flue gas baghouse for the boiler.

The boiler burns some 3,000 tonnes of sludge (dry basis) each year from the site’s waste water treatment plant. EFI undertook the project as part of a BOO (Build, Own, Operate) partnership it negotiated with Silver Fern Farms.

Under the partnership, EFI met the costs of developing, building and commissioning the BFB boiler plant. As the plant owner, EFI is also responsible for the overall management of the boiler operation, including full asset management and ensuring plant optimisation to agreed performance standards.

Silver Fern Farms operate the boiler on a day to day basis as part of the 15 year agreement with EFI.

“EFI’s proposal has delivered us a modern and much improved boiler system, better environmental outcomes and enhanced operational efficiencies.” Marthinus Hendriks said.

“It also ensured we avoided major capital cost outlays.

“The EFI solution was definitely the best option.”