

## Installation of a 200 kilowatt (kW) HDG boiler into a primary school.



**Katikati Primary School** is located in the western Bay of Plenty. It is a school with a role of about 550 pupils. The classrooms and facilities are located in a number of separate buildings, which are heated from radiators from a central boiler system.

### Project Background

Katikati Primary School is located in the Bay of Plenty region of New Zealand. Despite the area's reputation for warm weather, the school still requires heating for about 40% of the school year.

Until the winter of 2008, the school had been heated with a central boiler system fired with coal. The coal boiler was reaching the end of its life, and the school was becoming increasingly concerned with its reliability.

The school looked at a number of options regarding replacing the aging boiler, but insisted on certain criteria:

- They were keen to continue to utilise their existing heating reticulation system as it was still in good order.
- They preferred a central heating control system, to minimise waste.
- They wished the heating system to reflect their strong environmental credentials.
- The system had to be cost efficient.

The school chose to replace their coal boiler with a new specialised biomass boiler to be fired using wood pellets.

### Background stats

- Replaced existing coal boiler with new HDG Compact 200 kW boiler
- Carbon dioxide emissions reduced by 100%
- Ash reduced by 90%, saving on maintenance
- Boiler operational labour and costs significantly reduced
- Sulphur dioxide emissions reduced by 100%



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### The Design

The HDG Compact 200 kW boiler was installed with a 2,000 litre buffer tank. Heat for the school is drawn from the buffer tank, and the boiler maintains the temperature in the buffer tank at a constant 90°C. This ensures the boiler, when it runs, operates at an efficient full capacity rather than part loads. It also means there is a ready store of heat for unexpected demand such as weekend meetings at the school.

The normal heat requirements for the school are operated on a timer basis, but for particularly cold days, or extended hours, the caretaker only needs to turn on the heating water circulation pump to extract heat from the buffer tank. The boiler will automatically replace any heat extracted.

### Fuel Storage

A feature of wood pellets is that they have to be kept dry. A specially designed bunker was built within the existing boiler house with an automatic feed directly into the boiler.

### Added Benefits

Traditionally the school caretaker had to manually shovel the coal from the main bunker to a day hopper, refilling the day hopper two or three times per day. The caretaker also had to clean out the coal ash from the boiler once a day.

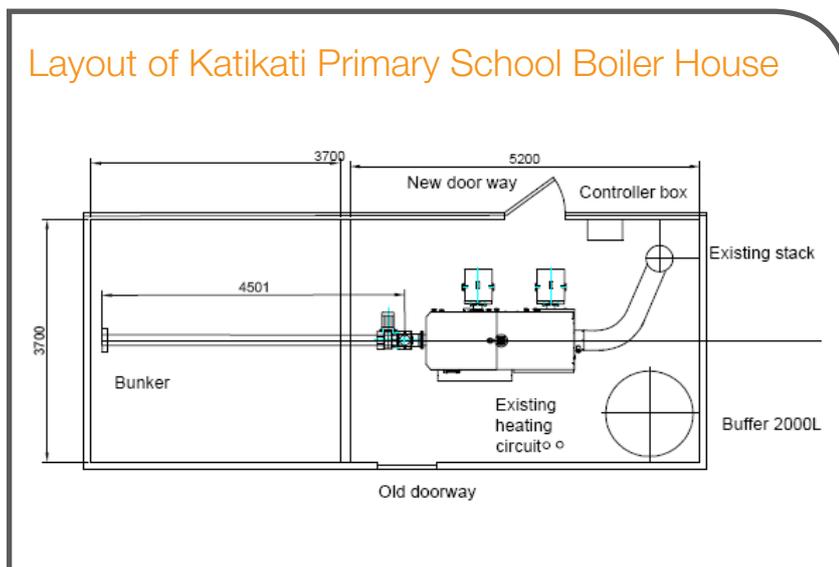
The wood pellets are delivered in bulk into the bunker and with the automatic feed into the boiler, it has meant the fuel delivery system is seamless and requires minimal labour input. Wood pellets have a very low ash content, and what ash there is, is automatically cleaned from the boiler into ash containers. The wood pellet ash has Bio-Grow certification as an organic fertiliser, and can therefore be spread on the school gardens.



Refurbished bunker with fuel delivery chute



The old coal boiler



2,000 litre buffer tank

