

WOODY BIOMASS CASE STUDY

Rotorua Girls High School

Conversion of a 1 MegaWatt (MW) school boiler from coal to wood pellets

Programme to support the use of woody biomass

EECA is coordinating an initiative to support forestry bioenergy projects. The bioenergy initiative aims to increase the use of renewable energy and forest owners' income through the use of woodwaste left in the forest after tree harvesting, and waste produced from wood processing sites.

The initiative is the bioenergy stream of the Government's Forest Industry Development Agenda (FIDA) to support forest owners.

Demonstration projects are critical for increasing the implementation of woody biomass and an effective means for educating businesses and individuals on bioenergy options.

These case studies are part of a set that are available to industry.



Rotorua Girls High School (RGHS) is attended by 1,500 students, housed in numerous single story classrooms with sports facilities and a large events centre. All of this is heated by a single 1970's boiler heating the radiators in the classrooms and other areas.



The new events centre.

- Existing coal boiler converted to run on wood pellets for only \$9,500
- No need to purchase new boiler or entirely new heating system
- Carbon dioxide emissions reduced by 100%
- Ash reduced by 90%, saving on maintenance
- Sulphur dioxide emissions reduced by 100%
- Particulate emissions reduced by 60%

Rotorua is a warm part of New Zealand but the school still requires heating for around 16 weeks annually – around 40% of the school year.

The school is not only concerned about its own impact on the environment, it also sees a role in providing leadership in environmental issues to its students, and to the wider community.

Historically many schools have used coal boilers, largely for lower running costs, but now particulate and carbon emissions from coal boilers are being targeted for reduction.

The options for RGHS were to:

1. replace the entire heating system with some form of electric heating, which would have incurred a high capital cost and a major additional load on the local electricity network
2. replace the boiler with another type, possibly a gas boiler or new pellet boiler, which would still have incurred a significant capital cost and produced carbon dioxide in the case of gas
3. convert the existing boiler to use another fuel.

The school chose to convert their boiler.

As wood pellets are essentially another form of solid fuel it was possible to convert the existing coal boiler to burn pellets at a minimal capital cost, whilst significantly reducing its environmental impact.

A further benefit is that pellet boilers produce much less ash than coal boilers which need to be cleaned daily and the accumulated ash taken to a landfill site. Wood pellet boilers need cleaning less often and the ash can be used as a fertiliser for the school's gardens.