BURWOOD HOSPITAL’S STATE-OF-THE-ART ENERGY CENTRE
The aerial view is from early 2013, before the current development work began.

…and the 50 year old boiler house
Burwood Hospital’s old coal boiler plant

The two 2.85MW coal fired boilers were commissioned in 1964 and are coal fed chain grate fire tube boilers. In Winter they use up to 7 tonnes of coal each day and 3-4 tonnes in Summer.

The fact they are still working is a credit to the maintenance and engineering team.

Coal became more expensive with increased Emission Trading Scheme charges and the sourcing of high quality energy-efficient coal became more challenging.
Burwood Hospital is the first cab off the rank in the close to $1 billion of hospital redevelopments underway in Canterbury. It is also the largest Government rebuild project in Christchurch East.

The $215 million facility focuses on services for older people which were previously located at The Princess Margaret Hospital. The new hospital is 32,000 square metres in size. The redevelopment was managed by the Ministry of Health in conjunction with the Canterbury DHB and services moved into the building progressively throughout June. The facility will be officially opened in August 2016.

Burwood houses 230 new inpatient beds. Half of the rooms are single rooms, with the other half accommodating two beds. Rooms have TVs, Wi-Fi and each ward has communal dining areas for patients, as well as family/whānau rooms.
Tender for 6 MW biomass energy plant

2014

Design, supply, installation and commissioning of the complete steam and LTHW generating plant for the Burwood Hospital site.

The extent of work includes all necessary items to generate steam and LTHW in a safe and energy efficient manner and includes but is not limited to:

1 x 4MW biomass boiler
1 x 2MW biomass boiler
and 1 x 4MW diesel boiler (back-up)

Including inter alia the following features:

"A true biomass boiler designed to ensure complete fuel combustion within its combustion chamber"
Typical low cost biomass fuels
Successful Wood Energy Plants

Viable and economic biomass boiler plant

- High plant utilisation
- Wood waste & residues = cheap fuel
- Fuel flexibility (size, moisture, ash)

© Copyright Polytechnik Biomass Energy
Polytechnik’s concept wins

2014

Polytechnik Biomass
Energy selected as supplier

Over 3,000 plants and
50 years of experience

Only European biomass boiler supplier with an established office in New Zealand

World-leading combustion system

Highest efficiencies

Lowest emissions

Fuel flexibility

Highly reliable
Steam boiler plant 6 MW with ESP
Building Design
In March 2015 the construction of the new hospital is well underway.

Start of the new boiler house construction.
Polytechnik’s boiler plant arrived, as per programme, at the beginning of June with foundation not ready for another 6 weeks.
July 2015

Polytechnik gets the OK to lift the first components in place.
August 2015

Fast progress due to the modular design of the components
Due to the building design and the progress of the construction company, the mechanical installation of the energy plant has to follow the building progress:

“SAFETY FIRST”
Finally the roof is on!
As the building work continues Polytechnik Biomass Energy together with its partner Energy Plant Solutions continues to install the plant in the boiler house with sometimes over 30 workers. …and no LT!
After running 30,000 km of cables, 1,000 m of pressure pipe work, over 2,500 pipe welds with 10% being subjected to radiographic testing without a single failure and the installation of several hundred tonnes of equipment, the commissioning of the plant was, not surprisingly, carried out without any problems!
…which of course makes Polytechnik’s General Manager proud and happy.
Performance and Emission Tests
June 2016

...fresh hogged fuel with wood sizes up to 350 mm and 45 to 55% moisture content and bark to fuel New Zealand’s most advanced energy plant
Performance and Emission Tests

1.1 Summary of Results

The following table summarises the results for sampling at Burwood Hospital, 255 Mairehau Rd, Burwood, Christchurch.

<table>
<thead>
<tr>
<th>Year</th>
<th>Consent Condition PM$_{10}$ Suspended Particulate (mg/m$^3$, 0°C, dry gas, 1 atm, 12% CO$_2$)</th>
<th>PM$_{10}$ Suspended Particulate (mg/m$^3$, 0°C, dry gas, 1 atm, 12% CO$_2$)</th>
<th>Consent Condition PM$_{10}$ Suspended Particulate (kg/h)</th>
<th>PM$_{10}$ Suspended Particulate Mass Emission (kg/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>50</td>
<td>8.5</td>
<td>1.2</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Due to the installation of a steam dump for the commissioning and the performance tests (allowed us to run the plant at 100%) the efficiencies and the emission guarantees could be confirmed over the whole operating range with particulate emissions of just 8.5 mg/m$^3$ (PM10) = 83% below the stringent particulate emission limit of 50 mg/m$^3$. © Copyright Polytechnik Biomass Energy
Hospital takes over

June 2016

New Hospital now heated with 100% renewable energy!
Wood waste reduces the energy cost of Burwood Hospital.
Burwood Hospital

New Zealand’s showcase of a modern and environmentally friendly hospital
THANK YOU FOR YOUR ATTENTION