What to Consider when Selecting your Heat Plant

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1. Living Energy
2. Primary Design Fundamentals
3. Secondary / Other Factors to Consider
4. The Perfect Wood Boiler Solution

94 slides  = 12.766 seconds per slide
1. Living Energy

Established in 2003

Installed over 40,000kW of wood boiler capacity (25 boilers)

Installed boilers ranging from 100kW to 22,500kW

Partnered with Hargassner and Binder (Austrian) as well as Visdamax (NZ & Malaysian)

Wood Energy specialists: focus is on the area that is economic: **HEAT !!**
A quick intro to “Wood Energy”

- Boilers are highly developed products
  - Automated ignition
  - Automated fuel feed
  - Automated boiler tube cleaning
  - Auto ash removal
  - Auto response to load etc etc
- As convenient as fossil fuels....?
2. Primary Design Fundamentals
Fundamental No. 1: Investment Horizon

Covered by Christian already

*Competition for capital is a factor, normally requiring compromises*
Fundamental No. 2 : SIZING......
a) Sizing the Boiler
Wood Boilers...

- Cannot turn on and off as easily, or up and down
- Condensation occurs when cooling – try to avoid this
- Can only turn down to 20-30%
- Are expensive compared to gas or coal

These are all good reasons to ensure the wood boiler is sized optimally
Some examples of sizing ‘ratios’:

<table>
<thead>
<tr>
<th>Site</th>
<th>Old boiler</th>
<th>Wood boiler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thames High School</td>
<td>600kW</td>
<td>300kW</td>
</tr>
<tr>
<td>Golden Bay High / Pool</td>
<td>700kW</td>
<td>300kW</td>
</tr>
<tr>
<td>Westland High School</td>
<td>900kW</td>
<td>350kW</td>
</tr>
<tr>
<td>Dunstan High School</td>
<td>1200kW</td>
<td>650kW</td>
</tr>
<tr>
<td>Dunstan Hostel</td>
<td>1000kW</td>
<td>250kW</td>
</tr>
<tr>
<td>Little Sisters Hospital</td>
<td>800kW</td>
<td>300kW</td>
</tr>
</tbody>
</table>

Optimising the wood boiler size saves installation and operating costs. It also extends the life of the boiler.
Boiler Sizing
b) Sizing the Fuel Store

1. Aim for as much as possible - within the space and budget constraints
2. Factor in the distance to the fuel depot
3. Factor in the amount stored off site
4. Factor in the net amount recoverable
c) Sizing the Energy Storage. Buffer tanks....

1. Improve efficiency
2. Improve response times
3. Increase boiler longevity
4. Increase peak output

Aim for as much as possible - given space and budget constraints
OTHER PRIMARY DESIGN FUNDAMENTALS

a) Receiving the Fuel
b) Recovering the Fuel
c) Combusting the Fuel
d) Flue Gas Clean-Up
a) Getting the wood fuel into the fuel store
The truly renewable fuel for your business
Wood Chip – Fuel Storage
b) Recovery / Extraction of the Wood Fuel from the Store
c) Combusting the Wood Fuel
d) Flue gas Clean-Up (Emissions Control)
4. Other Factors to Consider

1. Safety Features
2. Ignition
3. De-ashing and Tube cleaning
4. Longevity
5. Controls / Graphics packages
6. Efficiency
7. Redundancy
8. Supplier Expertise
How to install it
How to install it ?!
Burn-back Protection
Automatic Ignition
Different ash handling....
Ash Removal
4. Other Factors to Consider

1. Safety Features
2. Ignition
3. De-ashing and Tube cleaning
4. Longevity
5. Controls / Graphics packages
6. Efficiency
7. Redundancy
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5. Summary : The Perfect Wood Boiler Solution

1. Large, spacious, well ventilated boiler house
2. On-site fuel storage of a week of winter use
3. Large buffer tank capacity (if appropriate)
4. Walking floor fuel recovery system
5. Ram stoker system
6. Automatic ash removal, with drag chain or ram
7. Pre-heater and economiser
8. Fuel-flexible boiler(s) well suited to load, and built to last
9. Flexible ignition system
10. Good back-up (100% or more)
11. With safety features, and the other bells and whistles

Only in Europe - where policy is consistent and long term?

Fossil fuels are abundant here - so NZ Budgets usually require compromise.