Nature’s Flame Wood Pellets

Presented by
Gavin Higgins  (Key Account Manager, Nature’s Flame)

Introduction

• Solid Energy New Zealand Limited
  – Overview

• Solid Energy Renewable Fuels Ltd
  – Nature’s Flame, Biodiesel NZ, Switch

• Nature’s Flame
  – Wood Pellets
  – Feed stock for production
  – Benefits
  – Can you trust Wood Pellets
  – How can you use Wood Pellets?

• Summary
Feedstock for production

Nature’s Flame – Rolleston & Rotorua

- 2 Regional plants for bagged and commercial markets in NZ
- Established in ’00 and ’06
- Exports
- Production capacity circa 25,000tpa
New Taupo Plant

- Key Production Statistics
  - 40Ktpa in 2010, moving to 100Ktpa and then 180Ktpa
  - Automation – 2-3 ops staff
  - Close to Ports & feedstock
  - DIN Plus Certified

Proposed new Bagging line

Pellet Mill building

Low emissions belt dryer

Stockpiles

Storage/Truck Load-out

Trust Wood Pellets - Quality

<table>
<thead>
<tr>
<th>Specification</th>
<th>Measurement</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>6mm</td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>&lt;5 x dia mm</td>
<td></td>
</tr>
<tr>
<td>Ash</td>
<td>&lt;1%</td>
<td></td>
</tr>
<tr>
<td>Additives</td>
<td>&lt;1%</td>
<td>No binding agent</td>
</tr>
<tr>
<td>Moisture</td>
<td>&lt;10%</td>
<td>By weight</td>
</tr>
<tr>
<td>Bulk density</td>
<td>&gt;650kg/m3</td>
<td></td>
</tr>
<tr>
<td>Energy content</td>
<td>&gt;17MJ/kg (net)</td>
<td></td>
</tr>
<tr>
<td>Particle size</td>
<td>&lt;3mm</td>
<td></td>
</tr>
<tr>
<td>Fines</td>
<td>&lt;1%</td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>&lt;20ppm</td>
<td></td>
</tr>
<tr>
<td>Sulphur</td>
<td>&lt;0.05%</td>
<td></td>
</tr>
</tbody>
</table>
Benefits of Nature’s Flame Wood Pellets

- 7 years production experience
- Cost competitive in most areas of New Zealand
- Term contracts available
- Possibility of lowering life-time running costs of heat plant
- Pellet fuel very consistent
- DIN Plus Certification
- Help meet government climate change targets
- BioGrow ash certification as a fertiliser
- FSC wood supply
Exports

- Agents now in place in Italy, France and throughout Europe.
- Currently exporting bagged product to various European destinations
- Brand now established in Europe as high quality and is in demand
- Exported break bulk shipments to Holland, UK and Japan
- Currently expanding bagging operation to satisfy increasing demand.

Case Study – Waiouru 8,000kW steam boiler conversion

Key Facts
- Boiler Installed five years ago and converted to pellets in 2011.
- 6,000t pellets per year.
- 10,000t Carbon saved per year.
- Significant reduction in maintenance costs
- Potential reduction in manpower due to future automation of plant made possible by converting to wood pellets
Case Studies

Summary

- Wood Pellet Fuel
  - A refined fuel with consistently good handling and combustion characteristics
  - Established production and logistics all around NZ
  - Free advice and Feasibility Studies to ensure successful projects
  - Very significant scope for production increase
  - Cut emissions, improve efficiency, reduce carbon footprint
  - Using DIN Plus wood pellets make biomass easy.
  - Why is there not more pellets used in NZ? – Demand side development.