2nd Stakeholders Plenary Meeting
22 Jan. 2009

Neste Oil – Stora Enso
BTL Joint Venture

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Background

• 50/50 Joint Venture “NSE Biofuels Oy” to develop technology and produce BTL products from wood / forestry residues

• Investment decision for Demo 2 based on results from Demo1

• Strong development consortium
  
  Research & piloting partner  Gasifier + reformer pilots
  VTT
  
  Gasification supplier  Multiple CFB biomass gasifiers
  Foster Wheeler
  
  Process engineering  Neste Oil / Neste Jacobs
  
  Feedstock procurement  STORAENSO
  
  Sustainability  STORAENSO
  
  Upgrading, distribution  NESTE OIL
Phase 1 – ”Demo 1” 12 MW
• Plant at Stora Enso’s Varkaus mill, Finland, start up 2009
• Gasifier remains after tests to replace fossil fuel in lime kiln

Phase 2 – “Demo 2”
• Plant ~ 100 000 t/a wax
• Stora Enso site and upgrading at Neste Oil refinery

Phase 3 – Expansion
• Globally
**Demo 1**

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<th>Drier</th>
<th>Gasifier</th>
<th>Reformer Shift &amp; Clean</th>
<th>F-T</th>
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<tbody>
<tr>
<td>Critical Technologies</td>
<td>+</td>
<td>++</td>
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<tr>
<td>Core Technologies</td>
<td>+</td>
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<td>Maturity Level (biomass)</td>
<td>++++</td>
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Technology perspective:  + = minor impact  
Maturity level +++ = multiple references
NSE Biofuels Oy – Varkaus Demonstration Plant
Dec. 2008
Neste Oil

Finnish refining and marketing company
Refining capacity ~ 14 Mt/a
Sales 2007 EUR 12.1 billion
Approximately 5,200 employees

Stora Enso

Integrated paper, packaging and forest products company
13.1 Mt/a paper and board
7.5 M m³ of processed wood products
Sales 2007 EUR 11.8 billion
36 000 employees in > 40 countries