Alaska–Yukon Wood Energy Conference

Biomass Heating for the North

Feasibility and Early Project Development
And Other Interesting Things

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Who is Fink Machine Inc.?

• Canada’s Largest Supplier of ICI Biomass Boiler Systems
• First install 2003
• Over 100 installations
I want to do a bioenergy project!!
Keys to Success

• Economically/Environmentally* Viable
• Proponent AND Operator Buy-in
• Social License and Naysayers
• Technical Details
  • Fuel Supply
  • Sizing
  • Etc.
Common Threads on Feasibility Studies

• De-risk new approach/technology
• Gather information
• Understand your market and drivers
  • Economic
  • Environment
  • Business Development
• Technical considerations
Capacity vs Consultant

- Detail Level
  - 10,000 ft or granular
- Knowledge
  - Internal vs external
  - Plugging the gaps
    - Fuel supply/availability
    - System design
    - Economic analysis/business case
    - Environmental
    - Etc.
Managing the Approach

• Most Foresters and Engineers do not speak the same language and are challenged speaking politician and bureaucrat
• Get the information you need not what someone thinks you need
• Use the resources around you for support
• Careful of assumptions based on lack of knowledge
• BE HONEST
Choosing a Project Support Team

- Experience
  - References and Timeframe
- Knowledge
  - Technical, Local, Fuel, etc.
- Limitations
- Passion/commitment
- Be critical of needs
Common Pitfalls of Developing Bioenergy Projects

• Scope Creep

• Inertia
  • Too fast/too slow

• Paralysis by Analysis
Common Pitfalls of Developing Bioenergy Projects

- Focus on technology rather than infrastructure
- Information Quality
- Not enough focus on connection and operation
## Buffer Storage/Multiple Boilers

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<th>Buffer Storage</th>
<th>Multiple Boilers</th>
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<tr>
<td><strong>Pros</strong></td>
<td>• Simple&lt;br&gt;• Low Capital Cost&lt;br&gt;• Responds Quickly</td>
<td>• Better coverage of peak load&lt;br&gt;• Reduction/elimination of peaking capacity</td>
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<td><strong>Con</strong></td>
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- **Pros:**
  - Simple
  - Low Capital Cost
  - Responds Quickly

- **Cons:**
  - Temporary response

- **Pros:**
  - Better coverage of peak load
  - Reduction/elimination of peaking capacity

- **Cons:**
  - Complexity
  - Increase Maintenance
Efficiency vs Efficiency

- Energy
- Operational
Bioheat Projects in Canada

Figure 1. Canadian Bioheat Projects by Province/Territory

Updating and Expansion of the Canadian Bioheat Database – Torchlight Bioresources
Bioheat Projects by Fuel Type

![Bar chart showing the number of projects by fuel type. The chart indicates a significant number of projects for Wood Pellets and Wood Chips, with much lower numbers for other feedstocks such as other mill residues, whole logs or briquettes, crop residue, and other/unknown.](image-url)
Bioheat Projects by Size

Figure 2. Canadian Bioheat Projects by Capacity
Austria Renewable Energy

Turnover of RES technologies: investment - operation

Primäre Umsätze aus Technologien zur Nutzung erneuerbarer Energien
In Mio. € im Jahr 2008

Investitionseffekte
Operation

Biomasse fest
Biomasse flüssig
Biomasse gasförmig
Geothermie
Kleinwasserkraft
Photovoltaik
Solarthermie
Wärmepumpen
Windkraft

Source: Gottfried Lamers, Austrian Ministry of Agriculture, Forestry, Environment and Water Management, Presentation Feb 2011
Austria Renewable Energy

Jobs created by RES technologies: investment - operation

Source: Gottfried Lamers, Austrian Ministry of Agriculture, Forestry, Environment and Water Management, Presentation Feb 2011
Key Community Drivers for Bioenergy

• Cost Savings
• Economic Development
• Lower GHG Emissions
• Waste Reduction/Resource Utilization
• Wildfire Mitigation
Case Studies – Cost Savings

- Clearwater
  - Dutch Lake School
  - North Thompson Sportsplex
Case Studies – Economic Development

• Gussing, Austria
Case Studies – Lower GHG’s

• NWT
Case Studies – Waste Reduction

• ECCO Recycling – Calgary
• 2 x 540 kW boilers
• Ground Waste Wood
Case Studies – Wildfire Mitigation

• Telkwa District Energy System
Case Studies – Other

• Camrose County
  • Willow Plantations for Fuel

• Barriere
  • Preheating for Hydroponic Waste Water Treatment

• Yukon Gardens
  • Northern Food Security
Enderby DH System

- Privately Owned and Funded
- Utilised Knowledge Base
- 540 kW chip Boiler
- 11 clients
- 1.6 km of trench
Lillooet Rec Centre

- 400 kW Viessmann Wood Pellet Boiler
- Simple Payback 5.4 years
- $26,000 a year savings
- Air Emissions below 50 mg/m³
Additional Thoughts

- Talk to the community early and get them involved
- Not all bioenergy projects are the same
  - 500 tonnes of chips for DE system as compared to 60,000 tonnes for a single line pellet plant
- There is no free lunch - you might get it for nothing now but there is cost and value to this fuel so think beyond the short term
- Look for Windows of Opportunity and Synergies
Looking Forward

• Bioheat Voice
• Renewable Fuel Standards
• Low Carbon Building Standards
• Challenges
  • Standards – Emission, Carbon, Safety
  • Public Perception
Thank You

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