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Wisconsin Rapids Mill  
Project Independence

# Wisconsin Rapids Mill



- Wisconsin Rapids mill is interested in biomass gasification as fuel for the P-3 Power Boiler and Lime Kiln.
- Low cost capital options were recently explored with assistance from the Wisconsin DATCP and Focus on Energy. Initial results from this exploration are just now surfacing.
- TRI is one technology option capable of producing synthesis gas that can be used to produce liquid fuels (Fischer-Tropsch process). TRI technology, however, includes higher capital costs than some of the other options we identified through the exploration process.
- Working with CleanTech Partners, we learned of a Department of Energy (DOE) opportunity that would provide 50% funding (up to \$30MM) to create a demonstration plant capable of producing a minimum of 1MM gallons/year in liquid fuels from biomass.

- We are proposing a plant capable of producing 5MM gallons/yr liquid fuels, as:
  - This meets the DOE requirements for the project.
  - It is the right size for gas fuel needs for the Lime Kiln.
  - The plant size is 15% of a commercial scale plant.
  - It is the minimum size of the TRI gasification units.
  - This matches the potential biomass collection and bark availability.
  - The capital cost fits the DOE funding proposal.

- June 2007 – began preparing the DOE grant application with CleanTech Partners.
- August 13, 2007 – the proposal was submitted to DOE for review and consideration.
- January 29, 2008 – the DOE approved our grant application.
- September 8, 2008 – Approval from NewPage Corporation to proceed with Feasibility Study.
- March 15, 2009 – Approval from DOE to proceed with Feasibility Study
- August, 2009 – Pilot plant trials start.
- September 25, 2009 – Award funds released by DOE.

- This project consists of:
  - Collecting biomass from the local region
  - Transporting and drying this material at Wisconsin Rapids mill
  - Gasifying the biomass using the TRI reformer technology
  - Cleaning the gas stream
  - Generating liquid fuels using a Fischer-Tropsch reactor
    - Selling liquid fraction into refinery applications, naphtha, diesel and wax
    - Burning the gas fraction in the Lime Kiln and P-3 Boiler
    - Generating steam in the process that can be used at the mill

- Learning's
  - Biomass drying is a significant cost and a energy user. Looking at newer technologies that are energy efficient and less environmental impact.
  - Biomass handling and size reduction can be very complex. Judicious design needs to be used to keep the cost down and keep the operational difficulty down.
  - Biomass feed to the reformer is a critical item.
  - Pilot plant information is critical in proving out the design.
  - Need to build in product flexibility maximize profitability of overall plant.
  - This type of process fits well in an existing Pulp and Paper operation. Substantial reduction in Indirect Costs and integration into energy systems.

- Feasibility Study – March 1, 2009 to December 1, 2009
- Construction – March 1, 2010 to October 1, 2011
- Start-up – October 1, 2011 to January 1, 2012
- Demonstration Runs and Operation - January 1, 2012 forward

- Complete NewPage and DOE Stage Gate Process
- Start Design Stage Engineering work