

# Kruger

Products



## nexterra

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### KRUGER PRODUCTS LP GASIFICATION SYSTEM



## ■ Project Description

- Customer: Kruger Products LP
- Location: New Westminster, B.C.
- Application: Direct-fired biomass gasification plant to provide process steam for the mill
- Nexterra Scope of Work: Turnkey gasification system
- Capacity: 40,000 lbs/hr of low pressure steam for process use
- Fuel: Locally sourced wood residue
- Fuel Moisture Content: Up to 60%
- Fuel Source: Local mills and/or clean construction debris

## ■ System Highlights

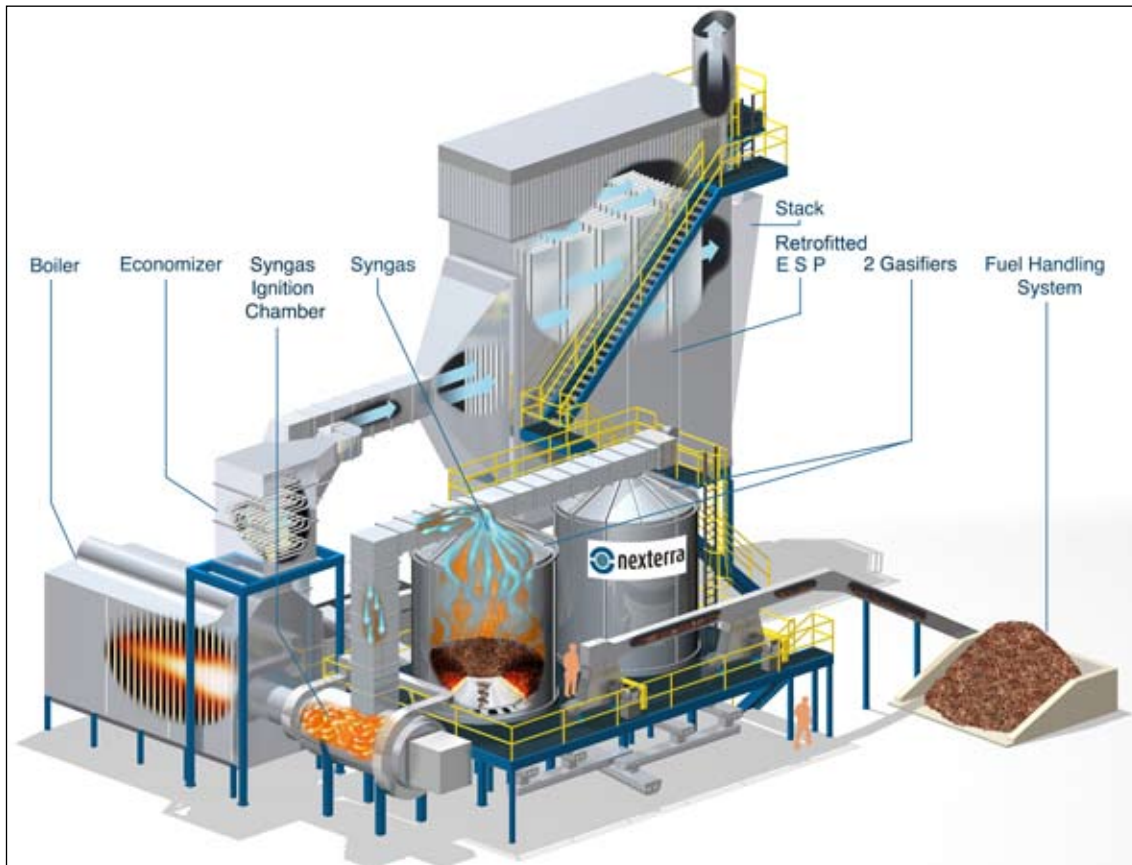
- First commercial demonstration of Nexterra's direct fired gasification solution
- First system of its kind in pulp and paper industry
- Expected to displace 54% of current natural gas consumption

## ■ Expected System Performance

Natural Gas Displacement	422,000 MMBtu/yr
Reduced CO <sub>2</sub> Emissions	22,000 tonnes/yr
Reduced CO <sub>2</sub> Emissions (Car Equivalent)	5,500 cars/yr
Wood Fuel Required	78,000 green tonnes/yr
Wood Fuel Trucks Required	10 trucks/day

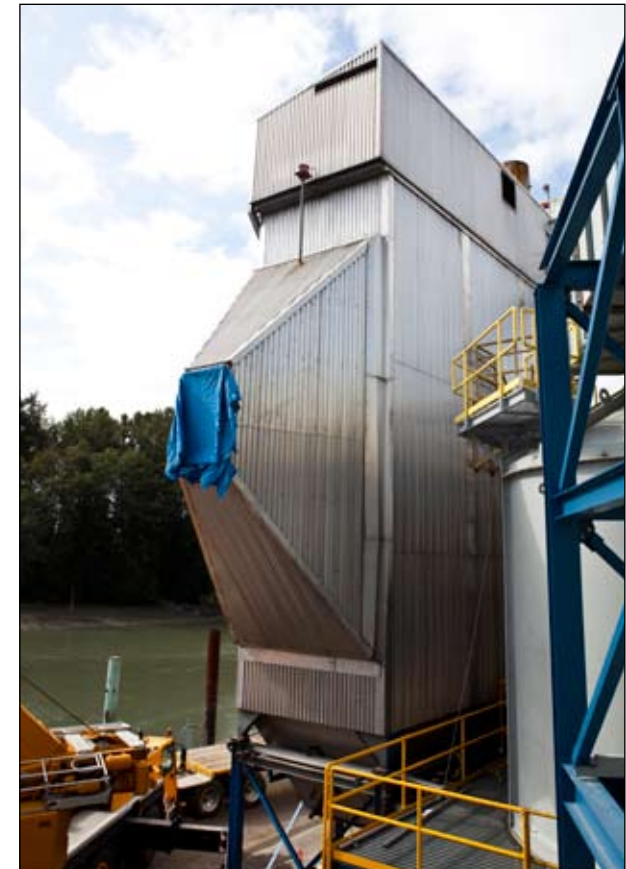
“Our New Westminster mill is situated in an urban area, so we needed the cleanest technology available, and in a challenging economic climate, we also needed the most cost-competitive.”

- Frank van Biesen, VP Technology, Kruger Products LP



## ■ Process

- 2 gasifiers convert wood biomass to combustible syngas
- Syngas is directed to an ignition chamber
- Combustion of syngas is completed in the furnace section of the boiler
- Process steam is produced for multiple uses at the mill
- The (existing) ESP further cleans flue gas before releasing it out the stack

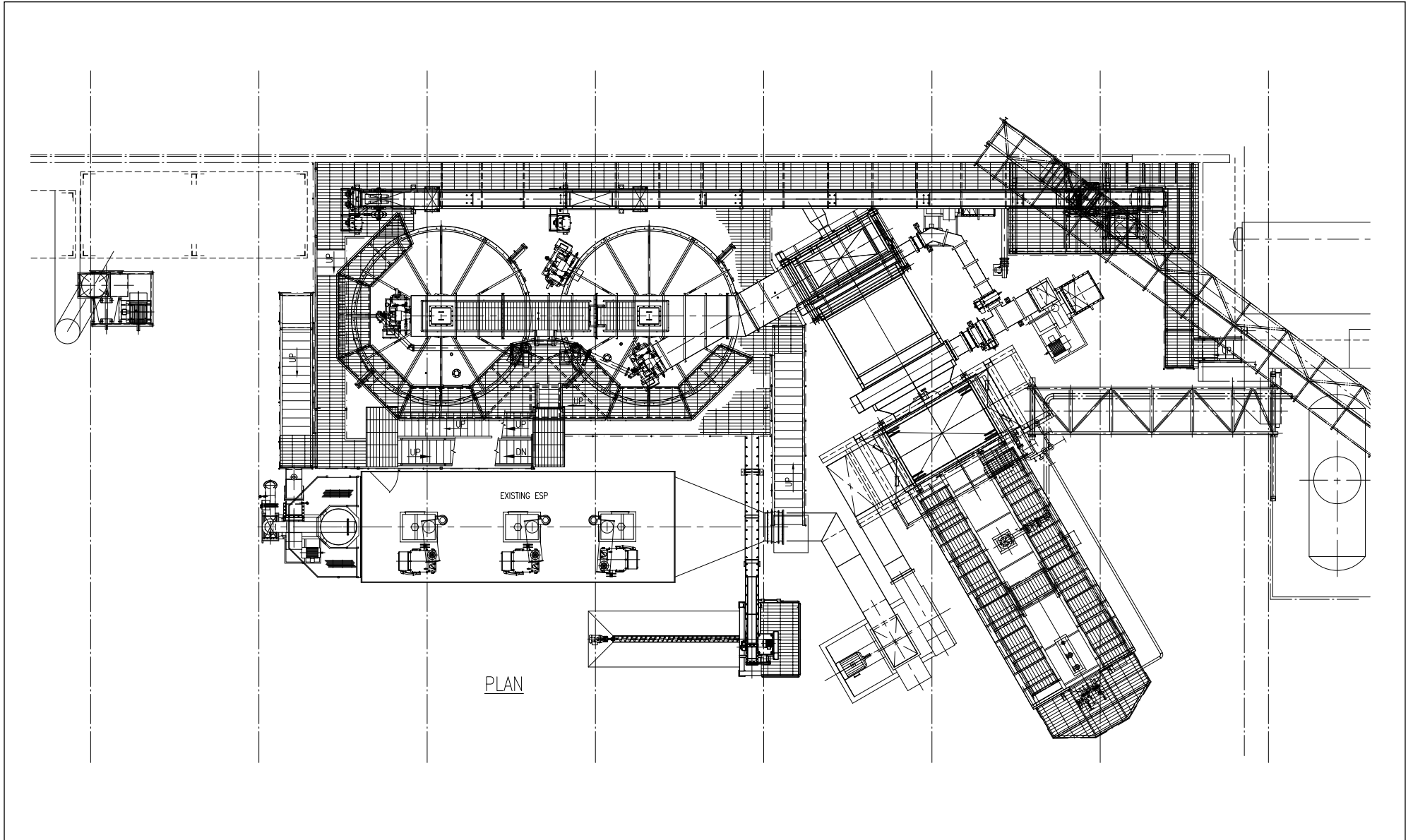


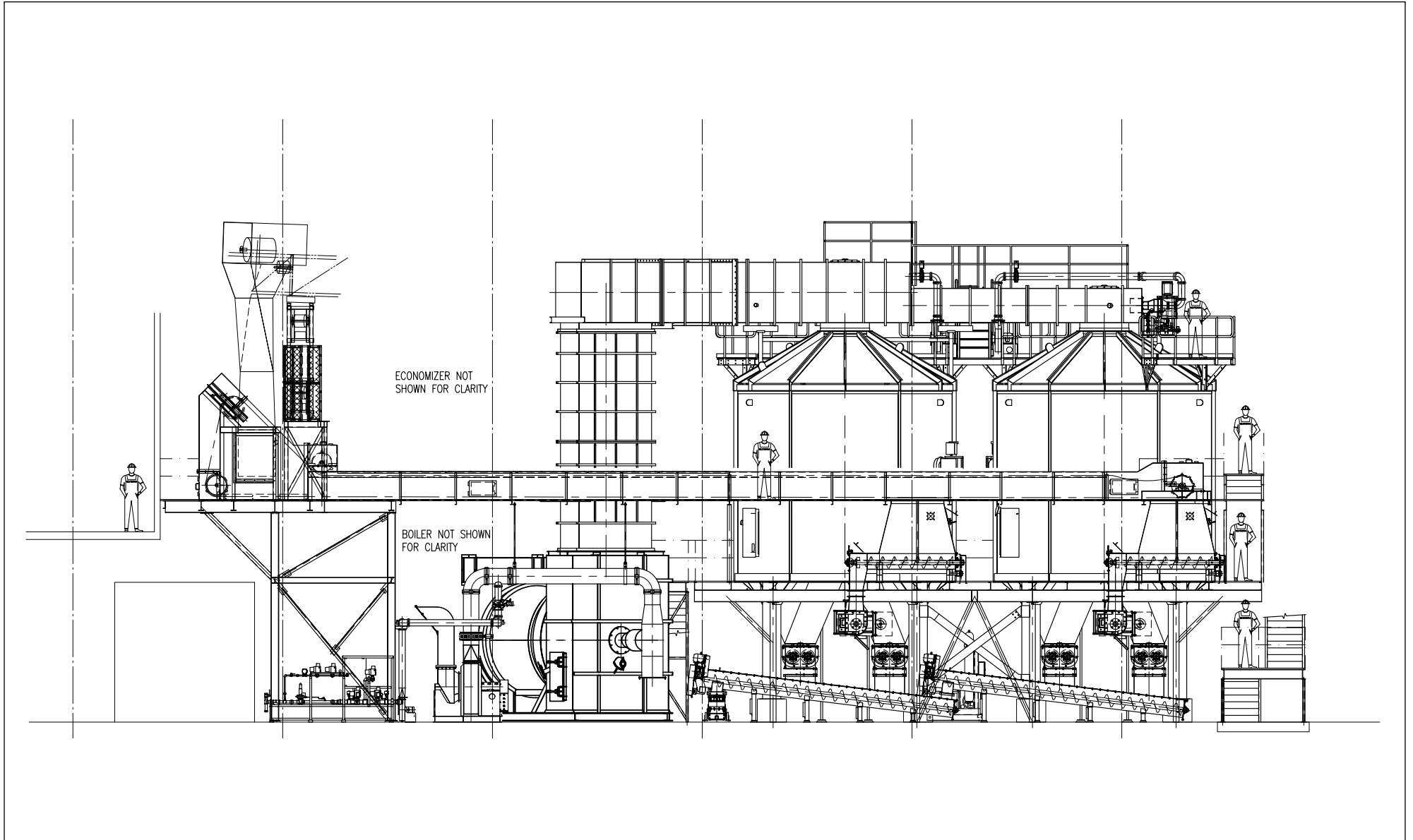
“Nexterra’s direct fired gasification system is a platform technology that can be used in many industrial applications. Replicating Nexterra’s technology at industrial sites in B.C. could result in an estimated 200,000 tonnes of greenhouse gas emission reductions in British Columbia annually by 2020.”

- Jim Dangerfield, VP FPIInnovations









## About Kruger Products LP New Westminster, British Columbia

Kruger Products is the leading Canadian manufacturer and distributor of tissue and paper towel products. Kruger, Nexterra and FPInnovations formed a consortium to build Kruger's gasification plant, the first of its kind in the pulp and paper industry and the first commercial demonstration of Nexterra's direct fired gasification solution. Nexterra broke ground on the project in April 2009 and completed equipment installation in November 2009, when the plant was commissioned. The plant was fully operational in December 2009.

The project has received support from Natural Resources Canada (NRCan), the British Columbia Innovative Clean Energy (ICE) Fund and Ethanol BC. This is the first completed project from the \$25 million ICE fund.

*"Kruger Products has taken a leadership role in incorporating green technology in our business practices for 12 years. Our goal is to be North America's foremost provider of quality tissue products that embrace a commitment to sustainability for future generations. Our new biomass gasification system brings us closer to achieving our goal."*

*- Mario Gosselin, COO, Kruger Products LP*

**For more information: [www.krugerproducts.ca](http://www.krugerproducts.ca)**



### Partners:



Natural Resources  
Canada



## About Nexterra Systems Corp. Vancouver, British Columbia

Nexterra is a leading developer and supplier of advanced biomass gasification solutions that enable customers to self-generate heat and/or power inside-the-fence at institutional and industrial facilities using low cost biomass fuels. Nexterra's strategic relationships include GE Energy, Johnson Controls and Andritz.

### Projects include:

- Nexterra Product Development Centre (PDC), Kamloops, BC
- Tolko Industries, Ltd., Heffley Creek Division, Kamloops, BC
- University of South Carolina, Columbia, SC
- Dockside Green Development, Victoria, BC
- U.S. Department of Energy (DOE), Oak Ridge National Laboratory, Oak Ridge, TN
- Kruger Products LP, New Westminster, BC
- University of Northern British Columbia, Prince George, BC

**For more information: [www.nexterra.ca](http://www.nexterra.ca)**