

Nexterra's Gasification System at ORNL – How It Works

1. Fuel In-Feed

Locally sourced wood waste, sized to 3-inch minus, is loaded into the fuel bin and conveyed to a metering bin near the gasifier. Nexterra's gasifiers can accommodate bark or white wood fuels up to 60% moisture content.

2. Gasifier

Fuel enters the gasifier(s) and goes through several stages including drying, pyrolysis and gasification. The wood is converted into synthetic "syngas" that can be used like natural gas.

3. Oxidizer

The clean syngas exits at 500 – 700 °F where it is directed to an oxidizer for conversion to clean flue gas, complete with an ammonia injection system (SNCR) to reduce NOx emissions, then sent to energy recovery equipment and fired in a boiler.

4. Boiler

The boiler produces steam that is transported through an underground distribution network of piping that supplies heat for the facility buildings.

5. Economizer

The economizer pre-heats boiler feed water by removing heat from the flue gas exiting the boiler.

6. ESP

After exiting the boiler, the flue gas is cleaned in an electrostatic precipitator (ESP) that filters out virtually all of the remaining particulate matter.

