

ORNL Biomass Steam Plant Progress Report

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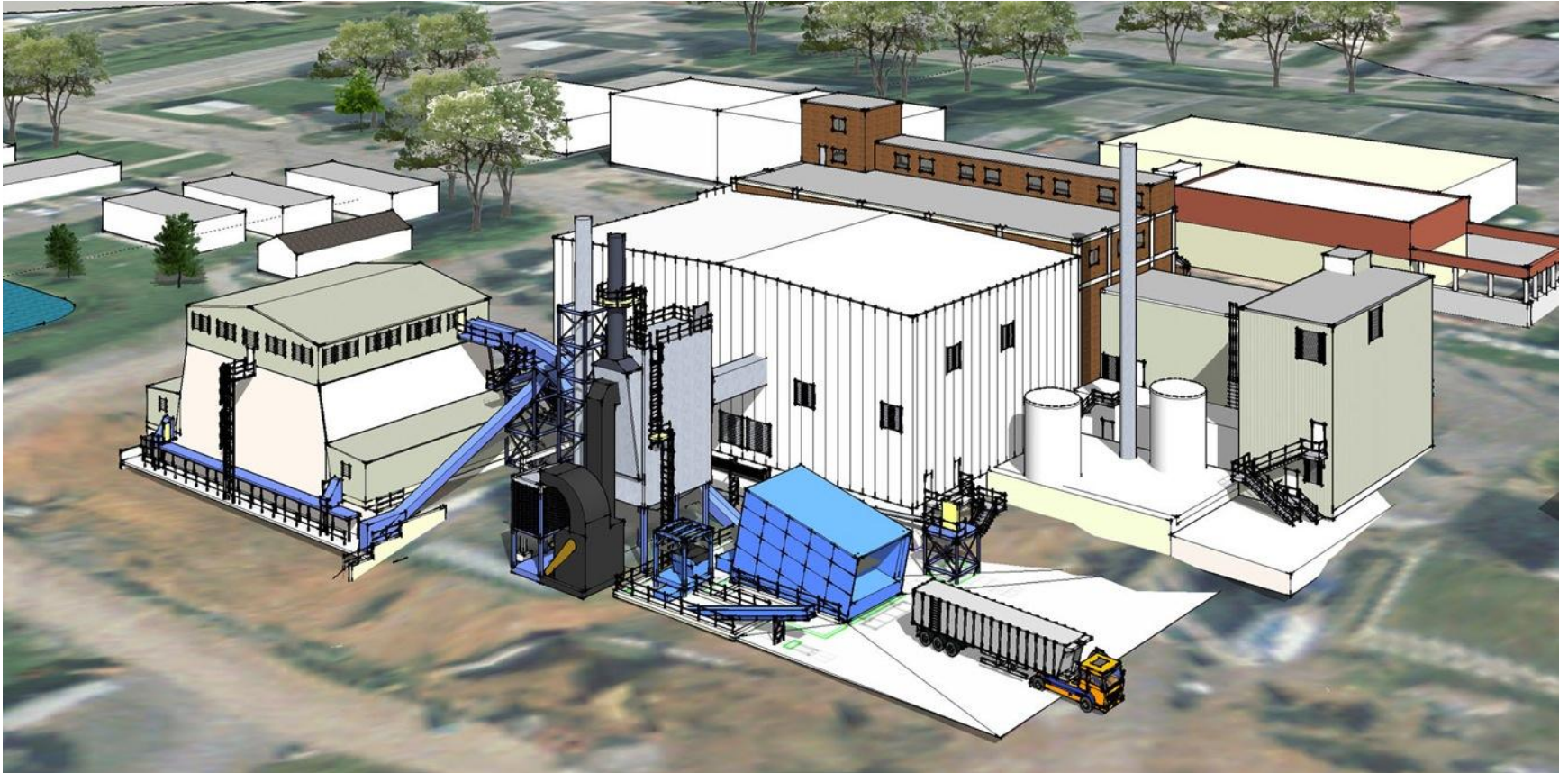


History

- 1947
- 1956
- Late 1950s
- Early 1960s
- Late 1990s
- 2009



New South Face of Steam Plant



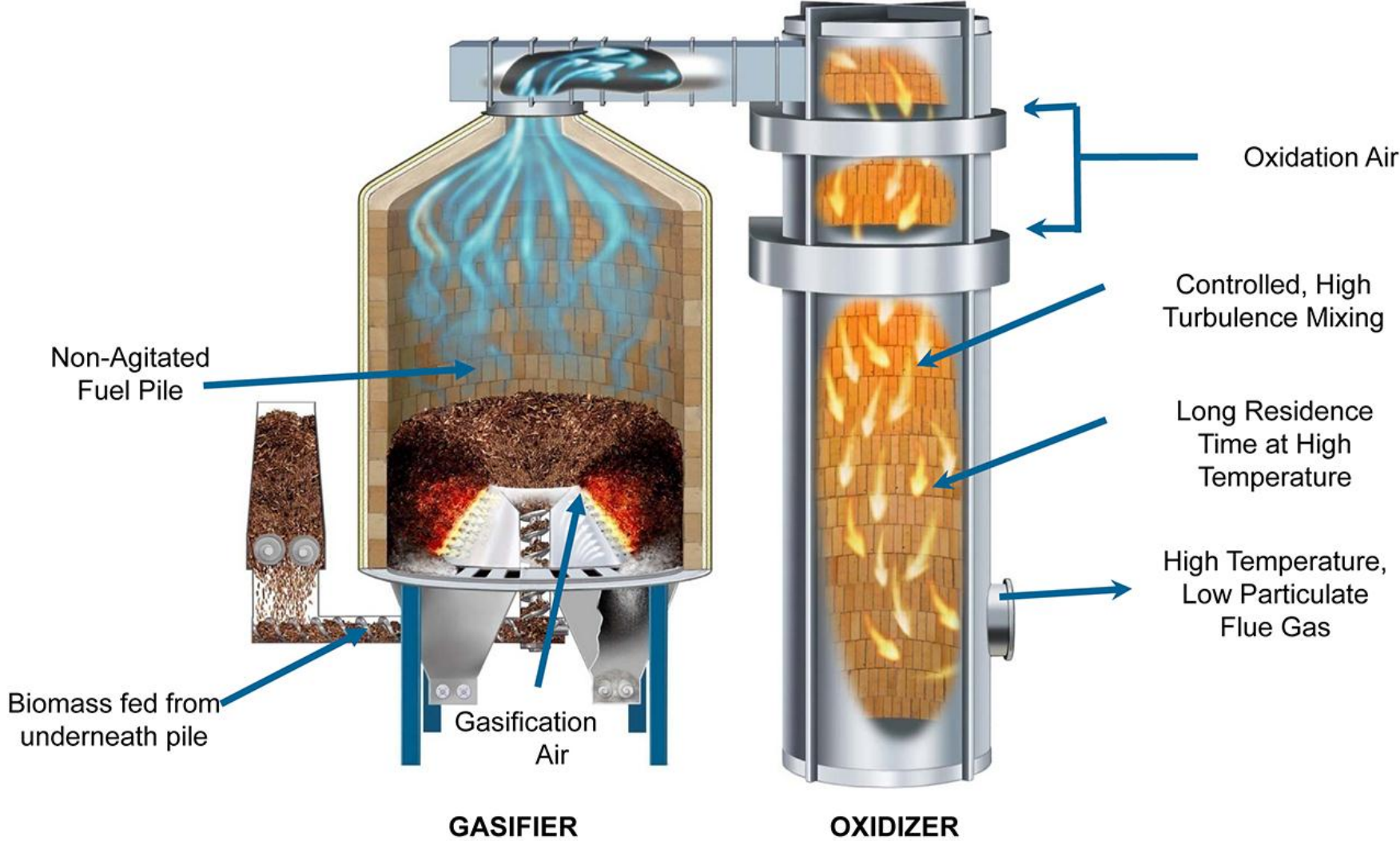
Fuel Storage



***ORNL will be able to house a 3-day supply
of fuel in a covered building***

Cutaway of Gasifier

Low Particulate Syngas



Non-Agitated Fuel Pile



Biomass fed from underneath pile



Gasification Air

GASIFIER

Oxidation Air



Controlled, High Turbulence Mixing



Long Residence Time at High Temperature



High Temperature, Low Particulate Flue Gas



OXIDIZER

Gasifiers & Oxidizer



Biomass Steam Plant Highlights

System & Fuel:

- Capacity: 60,000 lbs/hr of 150 psig steam
- Fuel: Locally sourced wood with 3+ day storage capability
- Consumption: ~70,000 green tons per year

Benefits

- Annual Cost Savings: ~\$4 million per year (energy & energy related O&M savings)
- Reduces reliance on fossil fuel by 85%
- Greenhouse Gas Reduction: 20,000 tons/yr (estimated)
- Supports local business by using locally sourced wood fuel
- Adds a valuable research tool for ORNL

Current Status

- Construction is approximately complete
- Commissioning process has begun and will continue through December 2011
- Transition and Operational Capabilities Assessment to be performed and completed in January/February 2012
- Formal acceptance of plant expected in March 2012 timeframe