



FIELD TO FLAME

Biomass Heating at the University of Illinois at Urbana-Champaign



Starting in March 2017, homegrown perennial grasses will replace propane as the primary heat source for the Illinois Energy Farm's main research greenhouse. A state-of-the-art Heizomat biomass boiler produced in Germany will turn biomass into hot water distributed across the research complex as the primary energy source for heating.

REDUCED GREENHOUSE GAS EMISSIONS

On average, the main greenhouse at the Energy Farm consumes 8,000 gallons of propane per heating season. Switching to biomass heating enables the Energy Farm to reduce its annual carbon release by ~60 tons just from replacing propane. In addition, the biomass grown in the summer sequesters carbon below ground. Plans for life cycle analysis (LCA) once the system is operational will allow for a detailed carbon budget of the farm to fuel model.

LEARNING EXPERIENCES FOR ALL

The Energy Farm Biomass Boiler Research and Education Facility will:

- Demonstrate the feasibility of using non-densified energy grasses as a source for renewable energy generation on campus;
- Engage and familiarize F&S personnel with the design, installation, and operation of such systems with a view to accelerate the adoption of renewable energy production on campus;
- Provide a research tool that can leverage future technology to further build upon the low-carbon heating system. The boiler room was designed with a spare "bay" for future expansion;
- Support the education and training of students; and
- Create awareness in the larger community.

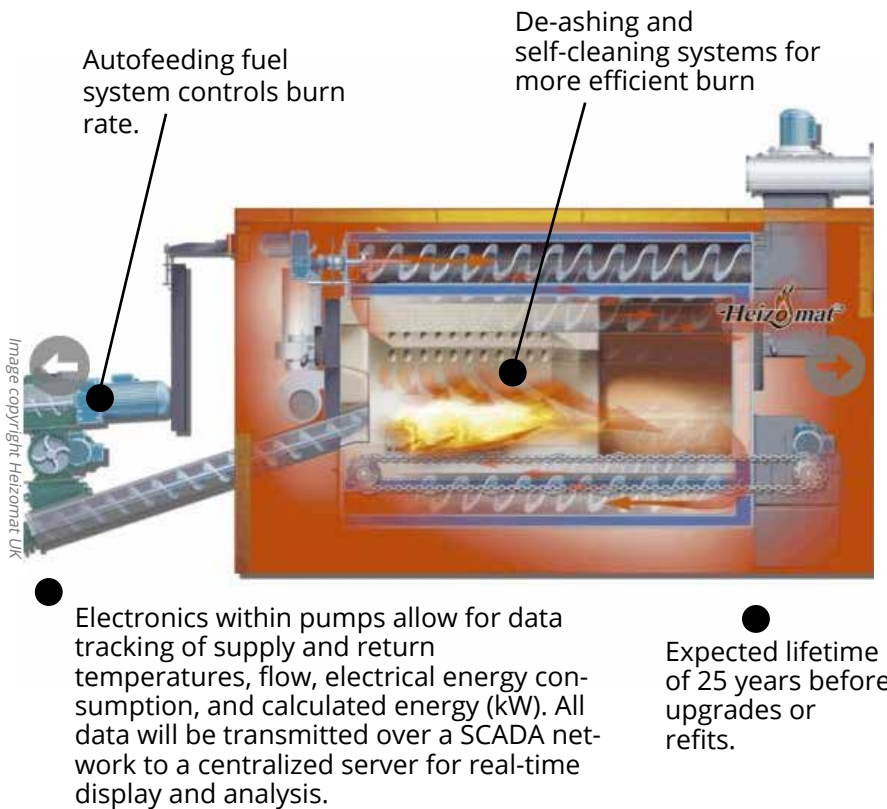
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SYSTEM FEATURES



FAST FACTS

Manufacturer: Heizomat GmbH

Model: RHK-AK 200

Rated Output: 198kW
(675,000 btu/hr)

Fuel Inputs: Chopped perennial grasses, wood chips, sawdust

Additional equipment:

- Järnforsen cyclone particulate separator (for flue gases)
- Two 1,000-gallon thermal storage tanks

FOLLOW THE FLOW



LOOKING TO THE FUTURE ...

This project lays the foundation for larger biomass projects that could directly supply renewable low carbon energy to the Urbana-Champaign campus through Abbott power plant or other plants that feed energy to campus. The energy farm produces more than 500 tons of biomass each year without easily accessible energy market outlets. Expansion of biomass crops on the Energy Farm could easily top 1,000 tons per year, displacing the equivalent of 650 tons of coal currently used on campus. This biomass heat facility is designed from the ground up to allow future expansion and testing of emerging technologies in low-carbon energy production.

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