

The Gasification Process at UMM

The UMM Biomass Gasification Facility

UNIVERSITY OF MINNESOTA

MORRIS

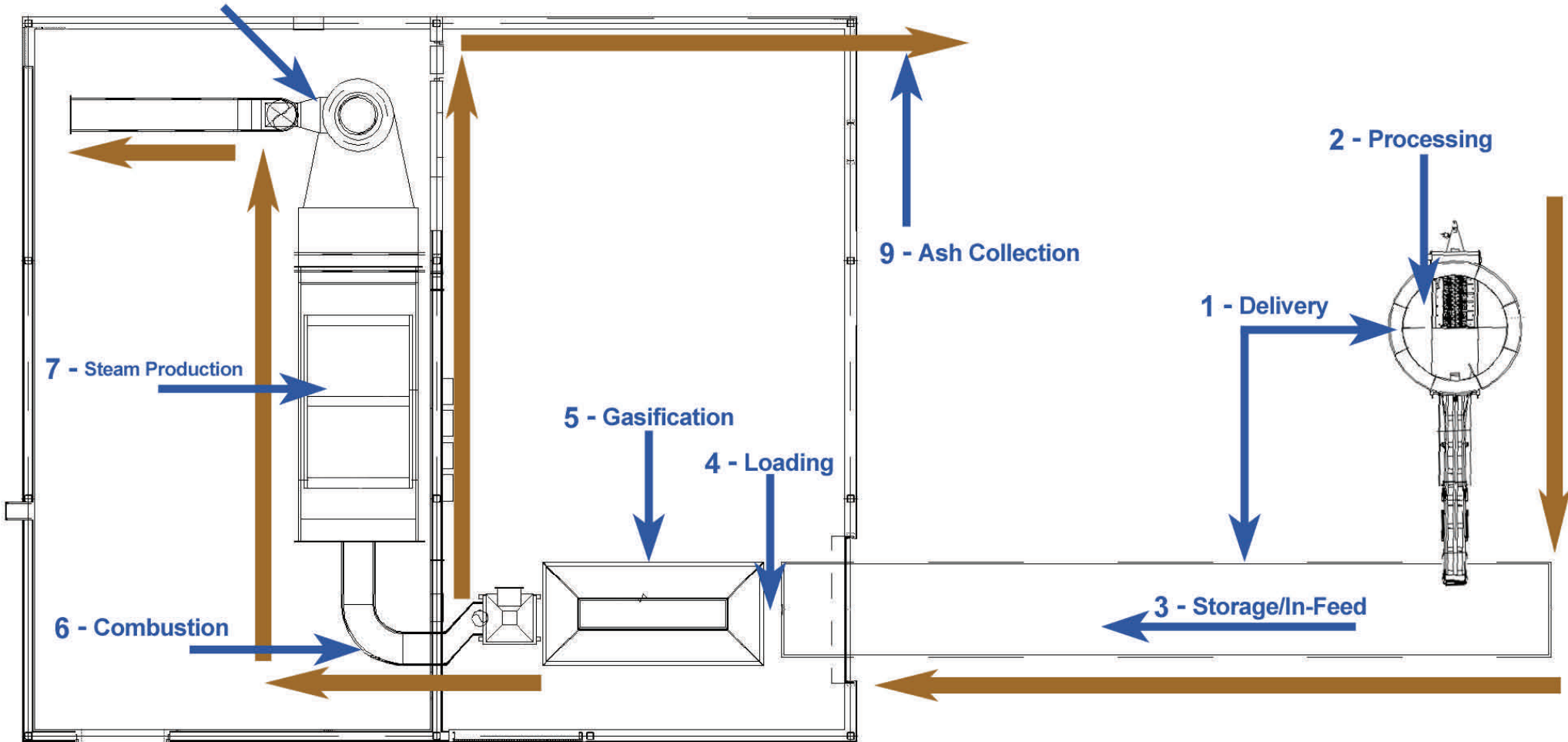
College of Food, Agricultural
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UNIVERSITY OF MINNESOTA



<http://renewables.morris.umn.edu/biomass>

8 - Pollutant Removal



- 1. Delivery:** Bales are delivered to a processing unit. Bulk materials can be directly added to the walking floor feed hopper.
- 2. Processing:** Bales are currently resized in a tub grinder. This may occur off-site.
- 3. Storage/In-Feed:** Material is conveyed toward the gasifier as needed from a walking floor storage bunker.
- 4. Loading:** Material is forced into the gasifier by a hydraulic ram.

- 5. Gasification:** Biomass is gasified into energy-rich vapors (syngas) in the entrained flow atmospheric pressure inclined grate gasifier.
- 6. Combustion:** Oxygen is added to the syngas stream, causing it to combust.
- 7. Steam Production:** Heat from combustion turns water into steam in the boiler.
- 8. Pollutant Removal:** Pollutants are removed from the emissions by a wet scrubbing unit.
- 9. Ash Collection:** Ash is collected in a wagon or hopper, with the goal of using it as a fertilizer.

Visit <http://renewables.morris.umn.edu/biomass/facility> for an online virtual tour of the facility