

CASE STUDY

Advanced Pilot Plant Validates Alternative Energy Technology with Automated Production-Level Testing

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JOB OVERVIEW

Key Features

- Multi-stage separation process for alternative energy: biomass to liquid fuel
- Future technologies proof-of-concept pilot plant
- Industrial feasibility testing – industrial testing equipment
- Integrated utility systems
- 12+ sampling points

Challenges

- Proprietary technology scale-up
- Skid design and layout
- Integrating scale-able technologies for industrial feasibility testing
- No pre-existing utility systems
- On-going skid modifications as skid was built and tested

Impact

- No external site modifications were required
- Clear path to production-sized operations were provided
- Time and money invested significantly reduced through use of industrial technology

THE EPIC SOLUTION

A self-contained automated advanced laboratory skid that converted biomass to liquid fuels in a multi-stage process was delivered, fully tested, to the client. The final skid included several industrial technologies that provided a clear path to production. For example, at the pilot plant scale, the size of equipment required for full production was too large for electric heat tracing to adequately provide heating. For this reason, EPIC designed the demonstration skid with an industrial heater to test the production-sized heating process.

There were no pre-existing utility systems for this plant. EPIC's scale-up specialists included an exhaust system, drainage system, and spill management system on the pilot plant itself. The skid was also fully enclosed due to location in a lab space, where a system breach would need containment within the skid. The final pilot plant included over a dozen sampling points placed strategically throughout the process. This allowed the client to check specific process efficiencies and understand the changing states of the product. The end of the process also had a built-in valving system that allowed plant operators to collect multiple samples at different points during operation in different totes for analysis.

Testing with chemicals was performed at EPIC's fabrication shop before the system was shipped. This two month period of testing, by EPIC's project managers, allowed the client to save 3-4 months of start-up time on location.

