

R025-B: Biomass to Refinery Feedstock-Grade Liquids

Submitted by EERC

Principal Investigator: Bruce Folkedahl

Request for \$304,543; Total Project Costs \$609,086

Technical Advisor Comments

- Two reviewers recommended fund, one recommended funding may be considered.
- The 50% cash match comes from Epcot Crenshaw Corporation.
- All 3 reviewers felt that the project was likely achievable. However:
 - 1 reviewer felt that more information regarding the catalyst should have been provided, and found it troublesome that it was not.
 - 1 reviewer felt that some technical issues were not fully addressed in the proposal (see below.) These issues may involve additional cost.
 - Energy cost in drying manure feedstock,
 - Temperature distribution of the gasifier as affected by the moisture content in manure,
 - Purification/conditioning of the producer gas to syngas
- The reviewers felt the methodology was adequate, however:
 - 1 reviewer noted that Task 1 should have already been completed, and
 - 1 reviewer noted that this is a process development project vs. scientific research.
- Regarding the scientific contribution:
 - 1 reviewer noted that the applicants have a long way to go to verify the overall system will integrate the various unit operations, that a demonstration scale operation will be economically viable, and that a reliable feedstock supply system can be put in place, and that commitments from buyers can be procured.
 - 1 reviewer commented that this project offers a technology to overcome several factors currently limiting in the economic and technical feasibility of converting biomass into chemicals that can replace petroleum.
- 2 reviewers felt that the PI's awareness of current research activity appeared to be limited; however 2 reviewers also felt that the PI has a strong background in this area.
- 1 reviewer felt that the weakness of this proposal was the absence of economic viability data, a reliable feedstock supply, and a reliable buyer of the finished product.
- 1 reviewer felt that the energy needed to bring the moisture of manure (85%) down to a level for gasification (8-10%) that the process may not break even.
- 1 reviewer felt that the proposal was strong, but had a concern regarding the lack of details on the catalyst since it is critical to a successful project.

Technical Advisor Recommendations

Funding may be considered. This proposal has several strengths. It is a step forward in developing a biochemical industry in the state. It utilizes technology developed by the EERC. It ultimately could offer another revenue stream for agricultural producers that experience fluctuating commodity prices. It has a strong industry partner.

However, there are some items that are unclear from the proposal. In addition to the catalyst information and economic information mentioned by the reviewers, the proposal would be strengthened by more information regarding the feedstock potential. It appears that manure is the main feedstock for the process, but it is unclear how much of this feedstock is required, if that amount is readily available in the state, and what costs would be associated with collection and transportation.

The applicant has indicated that they are working with Singularity Energy Technologies to develop a business strategy for AFBG commercialization. Therefore, they may already have economic feasibility information available to share with the Council.

Suggested Contingencies If Funded

- None.