

Rec 2/17/15



### MTSU Clean Energy Initiative Project Funding Request

There are five (5) sections of the request to complete before submitting. See <http://www.mtsu.edu/sga/cleanenergy.shtml> for funding guidelines. Save completed form and email to [cee@mtsu.edu](mailto:cee@mtsu.edu) or mail to MTSU Box 57.

1. General Information	
Name of Person Submitting Request Beau Hallavant	
Department/Office Society of Automotive Engineers	Phone # (Office) 615-494-8786
MTSU Box # 19	Phone # (Cell) 615-556-3644
E-mail <a href="mailto:bnh4g@mtmail.mtsu.edu">bnh4g@mtmail.mtsu.edu</a>	Submittal Date Feb 17, 2015

2. Project Categories (Select One)	
Select the category that best describes the project.	
<input type="checkbox"/>	Energy Conservation/Efficiency
<input type="checkbox"/>	Sustainable Design
X	Alternative Fuels
<input type="checkbox"/>	Other
<input type="checkbox"/>	Renewable Energy

3. Project Information
<ul style="list-style-type: none"> <li>a. Please provide a brief descriptive title for the project.</li> <li>b. The project cost estimate is the expected cost of the project to be considered by the committee for approval, which may differ from the total project cost in the case of matching funding opportunities. <b>Any funding request is a 'not-to-exceed' amount. Any proposed expenditure above the requested amount will require a resubmission.</b></li> <li>c. List the source of project cost estimates.</li> <li>d. Provide a brief explanation in response to question regarding previous funding.</li> </ul>
<u>3a. Project Title</u> Ethanol E100 Generator
<u>3b. Project Cost Estimate</u> \$1,355.00
<u>3c. Source of Estimate</u> Cost of generator, supplies to develop E100 Carburetor, fuel system.
<u>3d. If previous funding from this source was awarded, explain how this request differs?</u> N/A

#### 4. Project Description

(Completed in as much detail as possible.)

- a. The scope of the work to be accomplished is a detailed description of project activities.
- b. The benefit statement describes the advantages of the project as relates to the selected project category.
- c. The location of the project includes the name of the building, department, and/or specific location of where the project will be conducted on campus.
- d. List any departments you anticipate to be involved. Were any departments consulted in preparation of this request? Who? A listing may be attached to this form when submitted.
- e. Provide specific information on anticipated student involvement or benefit.
- f. Provide information for anticipated future operating and/or maintenance requirements occurring as a result of the proposed project.
- g. Provide any additional comments or information that may be pertinent to approval of the project funding request.

##### 4a. Scope: Work to be accomplished

This project will hope to develop a carburetor / throttle body that will allow small four-stroke engines to run on alternative fuels such as E85 and E100 ethanol.

A generator will be purchased, as it uses a small engine and gives us the ability to vary load for dynamic tuning.

The stock fuel system will be removed, as the fuel systems on small engines are not accepting of ethanol based fuels. A new fuel system will be put in place which will work with alternative fuels.

##### 4b. Scope: Benefit Statement

While the automotive industry has been quick to accept ethanol based fuels, and has modified its vehicles to do so, the small engine industry has not followed suit. Few small engine manufacturers have developed fuel systems to work with ethanol fuels. This project will research the modifications necessary to do what these companies have not, and will develop prototype fuel systems that, if successful, could open the entire small engine market to renewable fuels.

#### 4. Project Description (continued)

4c. Location of Project (Building, etc.)

Voohries Engineering Technology Building – room 170D

4d. Participants and Roles

Jeremy Posey, Graduate Assistant & SAE President, will act as faculty supervisor.

Robert Johnson, SAE Officer, will act as Project Manager.

Members of the Society of Automotive Engineers will perform all research, design, and implementation.

4e. Student participation and/or student benefit

Students in the Society of Automotive Engineers will perform all research and development associated with this project, as well as the implementation of the final design. Students will apply high-level classroom concepts in thermodynamics, fluid dynamics, and physics in order to solve a real-world problem. In the process of solving these problems the students will gain invaluable skills such as teamwork, leadership, and effective communication.

4f. Future Operating and/or Maintenance Requirements

None

4g. Additional Comments or Information Pertinent to the Proposed Project

## 5. Project Performance Information

Provide information if applicable.

- a. Provide information on estimated annual energy savings stated in units such as kW, kWh, Btu, gallons, etc.
- b. Provide information on estimated annual energy cost savings in monetary terms.
- c. Provide information on any annual operating or other cost savings in monetary terms. Be specific.
- d. Provide information about any matching or supplementary funding opportunities that are available. Identify all sources and explain.

### 5a. Estimated Annual Energy Savings (Estimated in kW, kWh, Btu, etc.)

As this is primarily a research project the direct savings will be minimal, approximately 20 gallons per year for this generator alone. However, the potential savings due to the application of the research is nearly boundless.

### 5b. Annual Energy COST Savings (\$)

Direct fuel savings will be approximately \$50 annually for this generator. Indirect are incalculable.

### 5c. Annual Operating or Other Cost Savings. Specify. (\$)

None

### 5d. Matching or Supplementary Funding (Identify and Explain)

No additional funding sources.