

## **FUELADE TECHNOLOGIES PRODUCTION AND INVENTORY CONTROL PROJECT**

**Project Sponsor / Client:** Fuelade Technologies, LLC

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**Project Term:** Fall 2012 – Spring 2013

**SDSM&T Project Program:** Industrial Engineering & Engineering Management

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### **Project Overview:**

Fuelade Technologies, LLC. was formed in 2008 in the State of South Dakota. We manufacture a non-toxic combustion enhancer that encourages a more complete burn of fuel in the combustion chamber. This allows diesel engines to operate at their full potential resulting in more pulling power, acceleration with better fuel economy and reduced emissions. The organization is still very much in the start-up phase, but beginning to experience significant growth. As such, we have an immediate need to further develop formalized processes and documentation of inventory and production management.

For the Production and Inventory Control Project, the firm is seeking the following deliverables:

- Develop systematic Bills of Materials to include raw materials, subassemblies, finished goods, packaging and labeling materials
- Design and develop a spreadsheet-based MRP/Inventory Control/Kan Ban system to integrate purchasing and production scheduling
- Create Visual Factory Management tools

Student project team members will survey the current production and inventory control processes, and report to the supervisors as necessary to verify correct operation of their designed system(s).

### **Project Background:**

Fuelade Technologies has developed a new, non-toxic combustion enhancer that encourages a more complete burn of fuel in the combustion chamber by cleaning valves, pistons and cylinder walls. This allows diesel engines to operate at their full potential resulting in more pulling power, acceleration and better fuel economy. The catalyst in Fuelade provides essential oxygen and hydroxyl radicals during the critical stages of the combustion cycle. These intermediate combustion species improve combustion of the diesel fuel, reduce soot formation, and lower the emissions of unburned hydrocarbons and carbon monoxide. There is also evidence that the catalyst lowers the flame temperature in the engine, resulting in lower nitrogen oxide (NOx) emissions.

Unlike some fuel additives that contain suspended minerals that settle, Fuelade is a chemical solution that is bonded at the molecular level. This means consistent and optimal performance over time without the formation of potentially harmful mineral deposits. Fuelade is very concentrated. One 16-ounce bottle treats 1,000 gallons of diesel fuel.

### **Project Team Requirements and Deliverables Description:**

This project will require a team of approximately four senior design students. Software to document the processes will be selected by the student team, and may include MS Excel, Access or Visio.

The following deliverable items are expected for this project:

***Bill of Materials System*** – identifying the materials from purchase through shipping in each state as used for production.

***Spreadsheet-Based Inventory Control System*** – using MS Excel or other team-identified software, select a methodology and develop a computer-based tracking system coupling purchasing and production.

***Visual Factory Management Tools*** – using best practices, develop a set of visual management tools for tracking the performance of key operations and identify a plan for implementation. Verify the performance of these tools and plans by assisting with the initial tracking implementation.

These items are expected within the time frames and along with the other deliverables described in the Industrial Engineering and Engineering Management Senior Design Projects document. That document provides a more complete description of the process, deliverables, and timing of SDSM&T IEEM Senior Design Projects.