Solar Innovations Inc. Biodiesel Fleet Fuel

Overview
Solar Innovations, Inc. (SI) is a single source provider of custom glass structure, skylights, windows, and doors. They maintain a fleet of 24 trucks that run on diesel engines. They are used for various corporate activities such as deliveries, pickups, installation crew transportation, and general work. The goal was to research and implement biodiesel into their fleet by finding the best biodiesel blends to use, the optimal mixing practices, designing a layout of on site mixing and storage along with necessary permits.

Objectives
Our objectives are to create an initial recommendation plan for the implementation of biodiesel into their fleet. This will include:

• Prospective suppliers of biodiesel fuel, onsite mixing, fuel storage, filling station design.
• Provide Solar Innovations with contact information of fuel suppliers, tank manufacturers, as well as current companies that use biodiesel in their fleet.
• A cost analysis that will include possible State funded benefits and total costs per year and initial start up cost.

Approach
• First we researched biodiesel and conducted interviews with professors to gain sufficient knowledge of the fuel and its strengths and weaknesses. Cold weather causing gelling was a large issue.
• Next we visited SI in order to gain a grasp of their expectations and site layout.
• Our concept generation stage consisted of the logistics of the operation.
  o Where would the tanks go?
  o How often would a supplier refill the tanks?
  o How many tanks would there be and what blends would they consist of?
• We researched fuel and tank providers and chose them based on their customer service and price.
• Current corporate and private company users of biodiesel in their fleets were found and were needed to gain knowledge on the logistics of running an operation like this.
• Our results consisted of optimizing to find the best possible way logistically, chemically and economically for SI to use biodiesel.

Outcomes
The final outcome was to supply biodiesel from Werley Inc. and diesel fuel from Meyer Oil co. The plan of action consisted of:

• A one-tank system in the first year holding B20 from March-October and only diesel in November-February.
• As funding from grants become available, a three-tank system would be implemented holding B100, on road Diesel and a B25 blend.
• This plan allows SI to gradually integrate biodiesel into their fleet with the hope of producing biodiesel on site in the future.