BP Interactive Lubricant Display

Overview
BP asked for a demonstration that they could use to show a comparison of their lubricant to a competitor's lubricant. The demonstration was required to have an interactive aspect and be used interchangeably with ever advancing lubricant technologies.

Objectives
The team was to build this demonstration for BP in such a manner consistent with the engineering process while meeting BP's and the customer's needs and staying under the budget.

Approach
- The team travelled to BP's Castrol facility in Wayne, NJ to review existing models and gain inspiration
- Research was done into lubricant properties and their role in internal combustion engines
- Three concepts were generated that met the needs of the project
- A selection was made based on the best qualities from each of the concepts
- A prototype was fabricated from wood to test the basics of the selected design and expose potential problems
- CAD models were created that expanded upon the prototype
- Parts and materials were decided upon and ordered based on the assessed needs
- Fabrication and machining was carried out on the materials to create an assembly
- The individual parts were assembled into a whole with various repairs and alterations made accordingly
- The two demonstrations were tested by various individuals to ensure consistency and that they accurately represented a superior lubricant to an inferior lubricant
- U-tube Viscometers were used to test viscosity against the demos and further support what they were simulating

Outcomes
- The demonstration using bearings for the crankshaft accurately represents a good quality lubricant in a well operating engine
- The demonstration using a rotary damper connected to the crankshaft accurately represents a poor quality lubricant in a poorly operating engine
- The compactness of the display allows for easy transportation
- Building the two demonstrations separately and with no labelling allows BP to example multiple lubricants