Overview
Design a cost efficient, reliable device that is capable of differentiating between water and oil and can alert personnel when the presence of oil is detected. The device should be able to alert personnel within 15 minutes and the ability to be placed in hard visibility areas.

Objectives
Our team’s objectives were to do research on a potential oil-leak detection system. This included sensor research, patent research, along with similar product research. After research our team was to come up with a potentially patentable design using whichever sensing technology that our team saw fit. We then were tasked with testing this prototype and making a finalized version of the prototype that successfully detected the presence of oil and alerted personnel but did not react to the presence of water.

Approach
• Gathered customer needs based on New Pig survey.
• Research on similar market products.
• Patent research.
• Research on different sensing technology.
• Concept generation and selection.
• Rough prototype build.
• Generation 1 SolidWorks design and print.
• Testing of Gen 1.
• Generation 2 SolidWorks design and print.
• Testing of Gen 2.
• Gathered reliability results of generation 2 design.

Outcomes
• New Pig will save approximately $30,000 from the entirety of this project.
• New Pig now has a generation 2 prototype that opens up a brand new side of the market for their company.
• The device successfully distinguishes between hydrocarbons and water along with alerting personnel.
• New Pig was given a cost efficient and reliable device so that prototyping can be continued from where our team left off.