

The Grasshopper Pipeline Welding Ground

Universal Engineering Services, Inc.

Team:

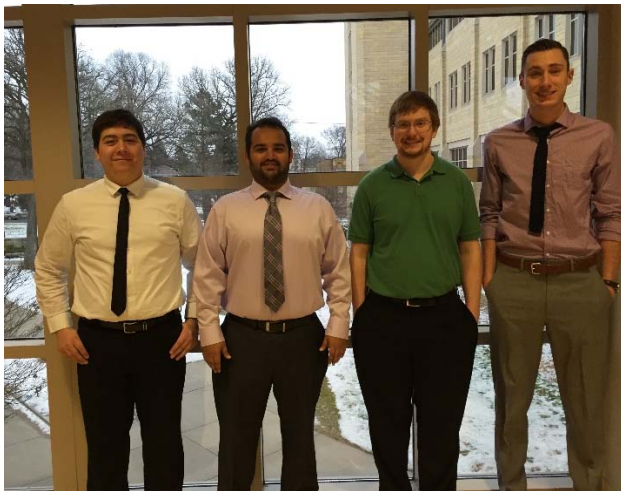
Carl Willkom, Grant Mongin, Abdullah Alzahrani, Brice Lu

Advisor:

Chris Haas

Industry Representative:

Mathew Michel



Project Summary:

Grasshoppers are used to ground electric current during pipeline welding operations in the field. Most grasshoppers are built and designed by each welder. Tommy Carter, a 60 year veteran of the industry, has his own version of a Grasshopper. Relatives of Tommy contacted Universal Engineering Services to create a manufacturable design that held true to Tommy Carter's original. Universal Engineering Services then partnered with the University of St. Thomas Senior Design team to accomplish this goal.

Design Goal:

Provide a product that improves upon Tommy Carter's original, in particular the manufacturability, without a dramatic redesign. The device must be manufactured for under \$125 dollars, and safely ground electric current during pipeline welding. The team will provide Mathew Michel of Universal Engineering Services with testing plans, engineering drawings, and a manufacturing plan to immediately take the Grasshopper into production.



Design Constraints:

- Must be able to conduct a maximum of 400 Amps for 1 hour.
- Must adapt to diameters of pipe ranging from 4 to 60 inches.
- Must have a manufacturing cost of under \$125.
- Device must be able to withstand falls from up to 40 feet.
- Device must look similar to Tommy Carter's original design
- Setup time must be less than 90 seconds.