MOBILE PUMP NOZZLE RETENTION SYSTEM

TEAM MEMBERS -- ABEL BARRAZA -- ARNOLD MAGHEMA -- ERIK MALDONADO -- JUSTIN OSBORNE

Background
- Capstone project group has been tasked with developing a retention device for holding the gas nozzle to better protect it from the elements.
- It has been noted on several occasions the nozzle is not used by consumers due to the nozzle falling out or not safely being retained within the housing unit.

Problem Statement
- The capstone team must create a holster system to retain the nozzle from falling inside during transit. It is easily bumped out if a force is exerted up anywhere.
- The goal is to appeal to the consumers to use the housing.
- Make sure the shut-off valve isn't closed while the nozzle swings around in the bed of the truck.

Proposed design
- No interference between surfaces
- Added thickness to top surface
- Hook cut-out length was increased
- Cost was kept under $2 for the addition of the toggle, spring, and shaft.

Structure Design

Cost Analysis

Testing methods
- Manufacturability Test
- Line worker will attempt to assemble product
- Poka Yoke opportunities to be decided on
- Durability/Transit Test
- Determines if it can be stepped on
- Determines if during transit it will fall out
- Computer Aided Stress and Force Analysis

Conclusion
- Developed a working solution
- Followed safety protocols; UL Compliance
- Created a simplistic and cost-effective design
- Addressed all Sponsor’s concerns
- Manufacturing cost totaled to $1.57 for all components

References
- “Fuel Transfer Pumps and Meters - GPI.” Great Plains Industries, gpi.net/.