Flexible Container Design

Overview
Currently, GM utilizes different trucking containers for each type of vehicle hood they make. This means that there is a need for a universal design that can transport multiple types of hoods. The major issues are the variations in hood sizes between the Impala, Malibu, and the Lacrosse vehicle hoods. The rack must be easily adjustable and practical for use in a manufacturing facility.

Objectives
GM was interested in obtaining a flexible container design for multiple hoods. A successful design would have the following qualities:

- Fits Chevy Impala, Malibu, and the Buick Lacrosse
- Protective design for hoods
- Reduce costs for transportation and storage containers
- Maximize hood capacity

Approach
- Team had conference calls with our GM sponsor to understand the scope of the project
- Our team had an onsite visit to the Lordstown facility where the Chevy Cruze is Assembled
- Able to see firsthand how the storage racks were being used in the assembly plant
- Group brainstorming was held to gather possible ideas without looking at restrictions
- The sponsor provided current rack designs and hoods in CAD models
- Three design ideas were created and modelled on SolidWorks
- Our sponsor provided details on spacing and current rack designs
- These same dimensions were calculated for CAD models
- Provided GM with our top three designs and let them decide which would be most applicable
- A full scale prototype was created to display our design
- Critical dimensions were measured on new rack design to provide GM with data.

Outcomes
Our team was able to provide General Motors’ with a storage and transportation rack that will:

- Allow the sponsor to ship the Malibu, Impala, and Lacrosse hoods on one rack
- Provide a storage container that can handle greater variations in hood sizes that was scoped out for the project
- That will decrease transportation costs by having one rack instead of many specialized storage containers
- That will allow employees to safely and efficiently load and unload the car hoods for the transportation containers