Project Name: Adjustable Watchband

Overview: The VorTic Capstone team is responsible for designing and prototyping a wristband using the VorTic patent-pending concepts and design that can be manufactured for approximately $50 or less that will be later presented on a kick-starting event. VorTic Watches LLC is company founded in January 2013 by four students pursuing their bachelor degree at Pennsylvania State University. The idea of designing completely new concept of watch wristband mechanism is based on inconvenient fit of current watches on wrist and coming with design that will allow to twist dial on the watch frame to tighten it around the wrist with precise accuracy.

Objectives: The main goal of this project was to create a prototype with the conceptual design of mechanism of the watches. The prototype must have lowest possible manufacturing costs, but still include basic concepts of the design for the future product. The team also analyzed the strength of material, most efficient dimensions of the mechanism (gears/spool) and predicted the cost of manufacturing.

Approach:
- Design prototype in Solidworks using conceptual design
- Manufacture the mechanism in FAME lab and Learning Factory
- Develop second prototype using lessons learned from first
- Formulate experimental design and spreadsheet for gear ratio analysis
- Research strength of materials and potential failure points in design
- Estimate cost of manufacturing the watch
- Make recommendations for Vortic’s product development

Outcome:
- Developed two working prototypes that convey working mechanism
- Made multiple improvements to the mechanism’s design
- Saved Vortic time and money on research of materials for final product
- Provided an accurate estimate of the cost to manufacture the watch
- Gave insightful recommendations for Vortic to develop the watch moving forward