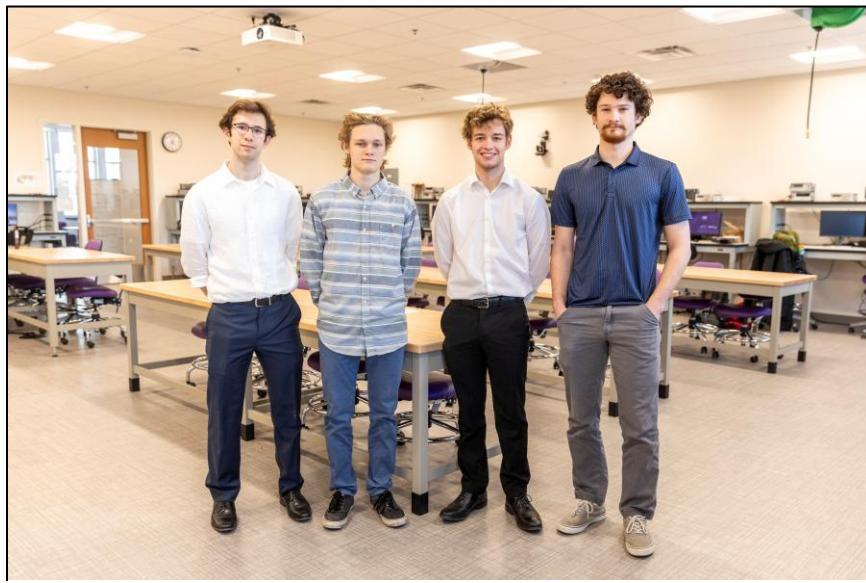


Custom Impact Machine for R&D



From left to right: Grant Courtney, Ethan Kotrba, Joe Gilsdorf, Sam Landry.

PROJECT SUMMARY:

A key aspect of industrial instrumentations (particularly with polymer housings) is impact resistance. Emerson's current device for impact testing is oversized, manual, and only experimentally derives the actual energy supplied to the test part by a dropped mass. It does not account for any future variability in friction losses over time. A fully functional prototype was developed that features an automated mechanism for producing a repeatable and measurable impact to a free-standing polymer device. The device fits on a desktop while maintaining a weight suitable for transportation.

DESIGN GOAL:

An automated test apparatus that delivers a controlled impact to a polymer-based device while accurately measuring the energy imparted to the test part.



TEAM 26

FACULTY ADVISOR

Greg Mowry

DESIGN CONSTRAINTS:

- Sized for lab bench placement (24 x 24 in. max footprint)
- Light enough to be transported by one person
- Accurate within +/-5% of true energy supplied to test part
- Safety interlocks to protect users from pinching
- Fulfill EHS safeguards for potential flying projectiles
- Accommodate device geometries up to 8 x 8 x 8 in.
- Plug into a 120 VAC outlet

