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In collaboration with RLE Technologies,
the Department of Electrical and Computer Engineering presents the

Automated PCB Test System
Senior Design Project

RLE Technologies

Mechanical

- Linear Bearing system slides PCBs in and out of connection
  - Clamps implemented for supplying desired force

- 3D printed parts
  - Backplate – Holds all female connectors (roughly 13 prototypes)
  - Many CAD Files used from Mcmaster-Carr to save cost

- Machined parts – CSU EMEC
  - Includes Aluminum plates (Milling Machine), Dowel Pins (Lathe), Aluminum Rods (Horizontal Bandsaw)
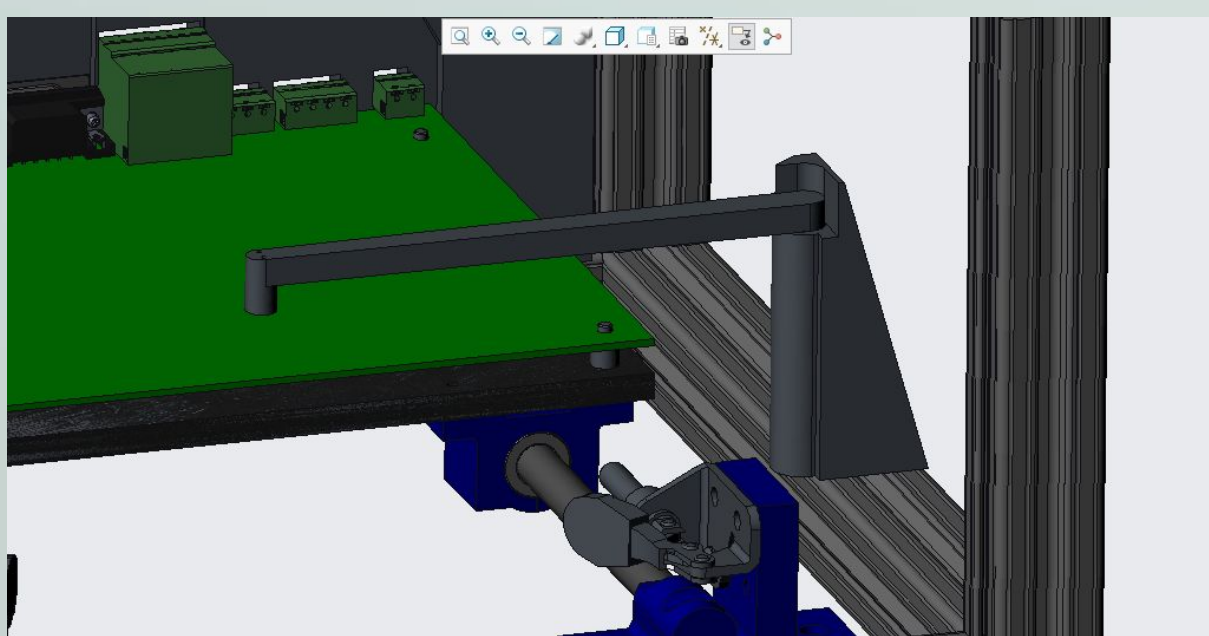 - All parts designed with Creo Parametric

Clamp and first slot assembly
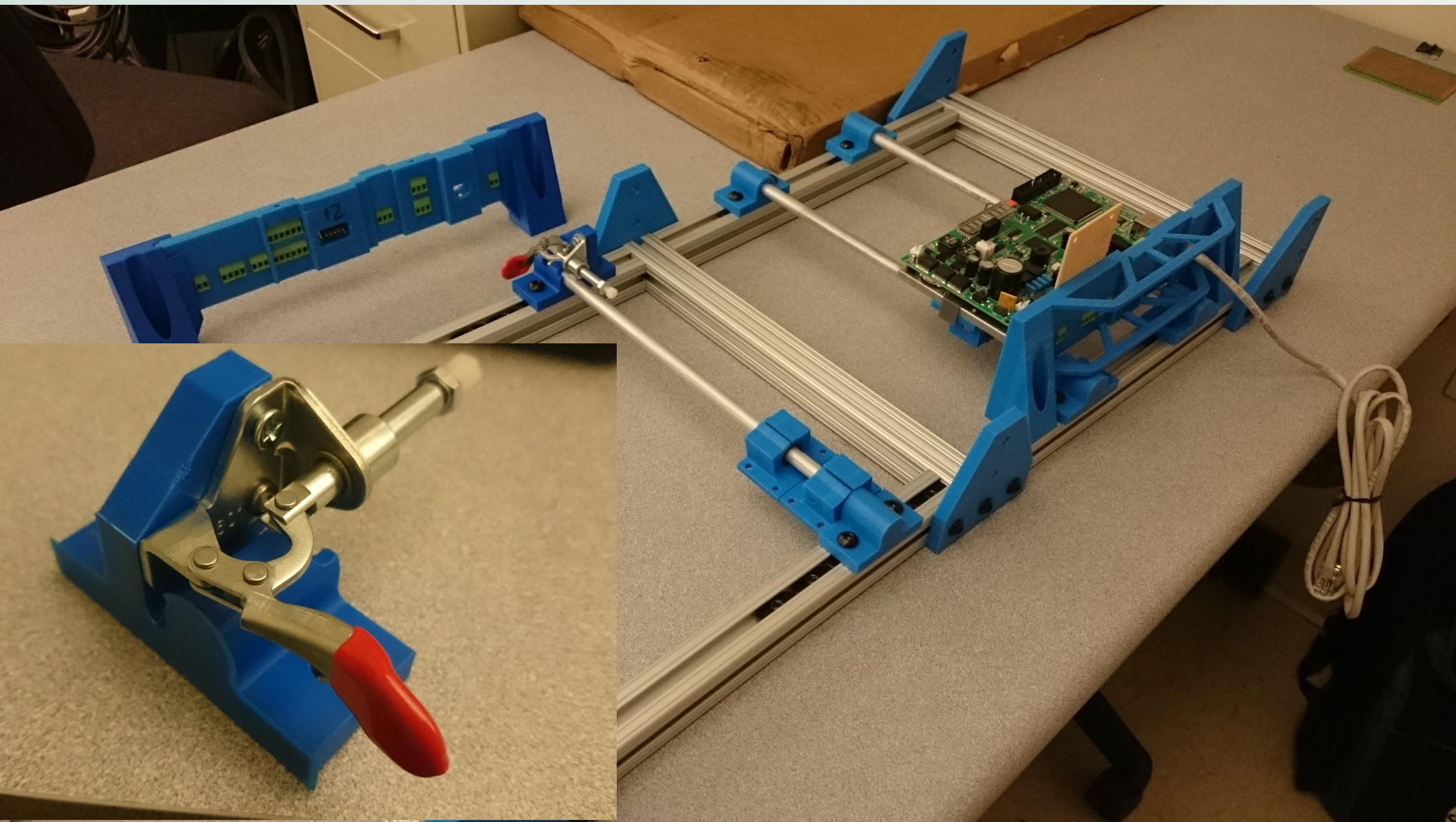
Backplate for LD5200
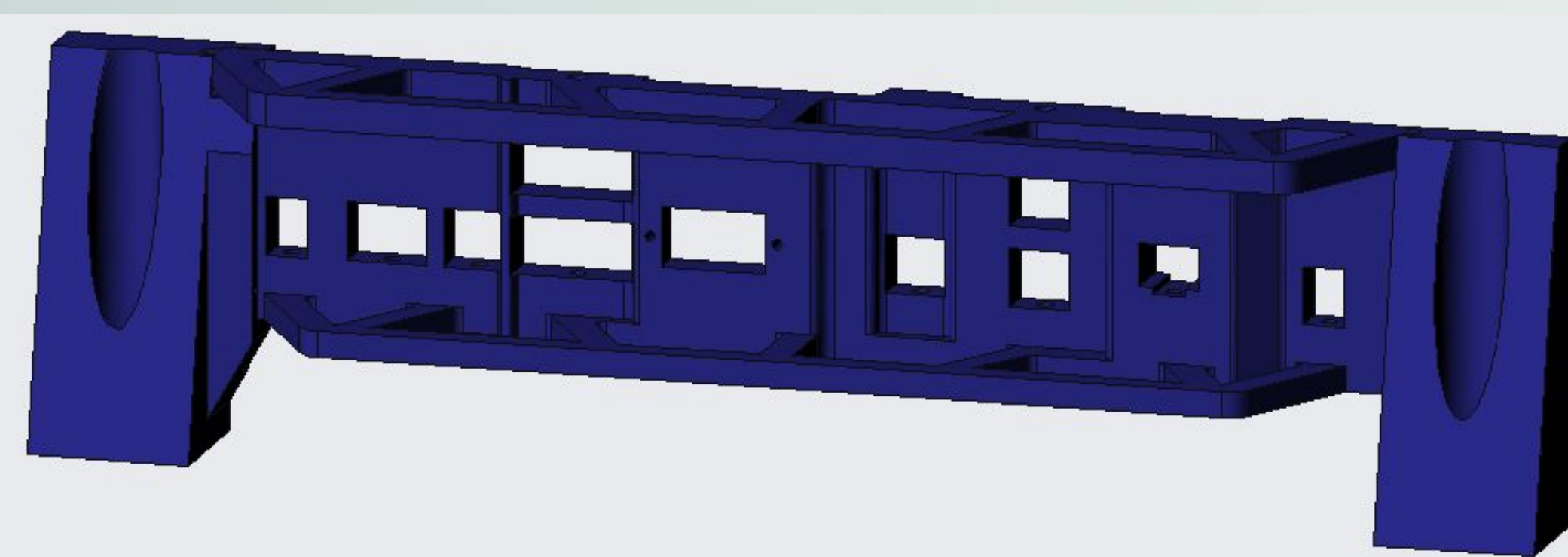
Photoresistor holder

Computer

- Serial RS232, ModBus/RTU/RS485 to utilize and test communications with products
  - Will test on up to 6 different PCBs that the fixture holds
    - Up to 3 of each model product

- LCD Display is used for operator interface
 - This is used for both initializing the testing process and for tracking Serial Number

LCD Display

Project Summary

RLE produces Leak Detection devices that are used in data centers such as those owned by Intel and NASA. Ensuring that the equipment is safe, RLE must be certain that their products are ready to alert personnel in these data centers when leaks occur. Since product testing is inconvenient for them now, our job is to decrease test time with a reliable design.

From Cumbersome Test Process to Automated Quality Assurance Machine
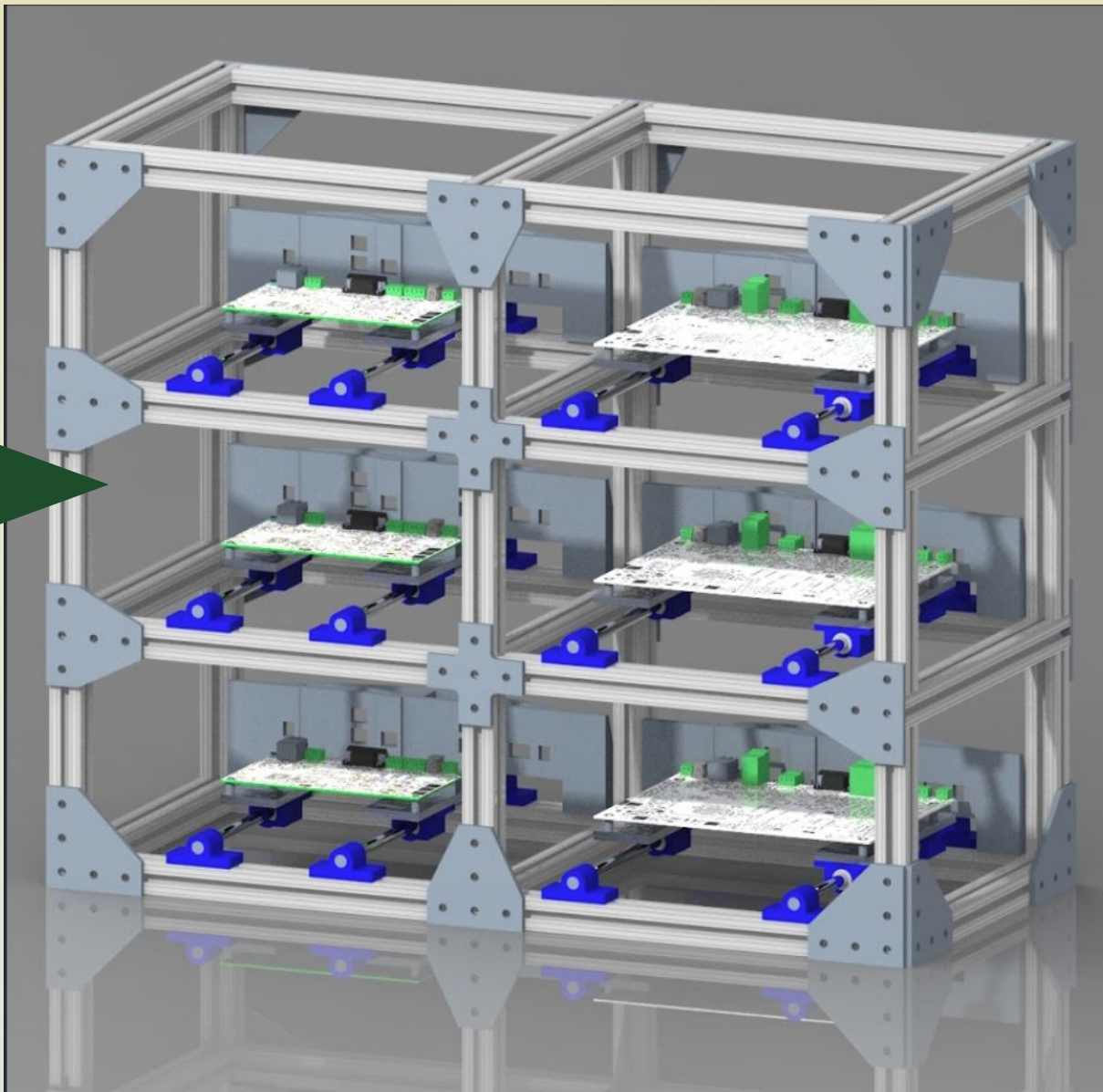
A Big Thanks to

Ryan, Don, Joe, and Katie at RLE Technologies for their consistent support and encouragement.
Dr. James Barnes for his steadiness and faithfulness as our team advisor.

Electrical

- 2 different model PCBs to test
  - Each testing process needs to emulate different cable lengths
    - These will test for damages and water

- LED & Alarm Tests
  - Checks if board LED works
  - Checks if buzzer on board is turned on

- Relay Test
  - Tests relay outputs to ensure they are working correctly

The RLE Technologies LD5200 SeaHawk