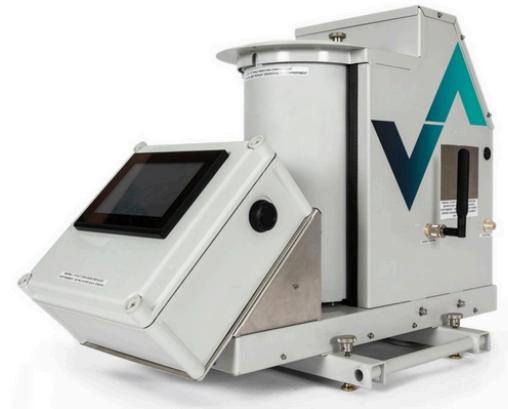
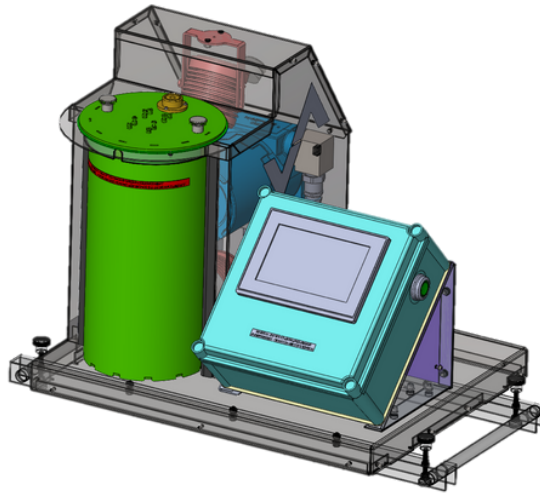
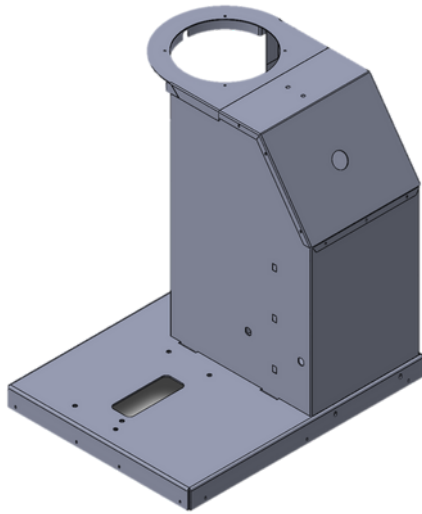


## CENTRIFUGE TUBE READER (CTR) - VALIDERE ✓



### What?

- Design and fabricate a device that reads the sediment and water quantity in oil with 95%+ accuracy
- Performed a **needs analysis** to initiate the design process

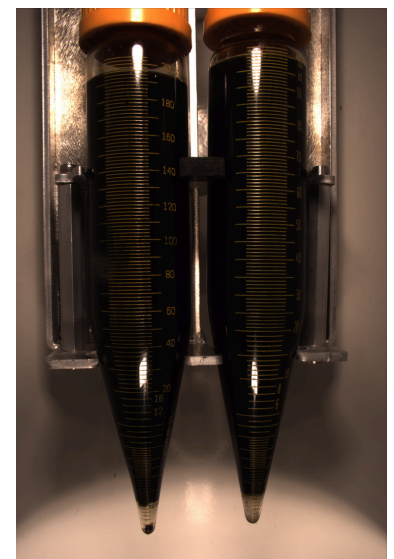
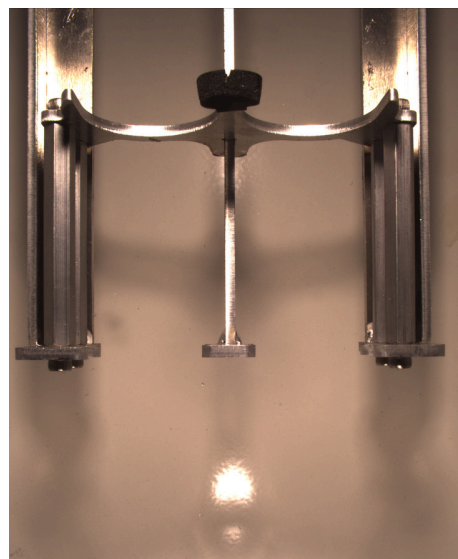
### How?

- Used **sheet metal** features in **SolidWorks** to design this
- Applied **GD&T** on all drawings
- Joined flat surfaces via **spot welding**

### Results

- The design fulfilled its purpose with 97% accuracy (vs.80% previously when readings were done by humans)

## TUBE HOLDER - VALIDERE ✓



### What?

- Reduce amount of time it takes to fill tubes with oil
- Minimize human operator error

### How?

- Designed on **SolidWorks**
- Joined the 4 components that make up the tube holder via **MIG welding**
- Fabricated bends via **break forming**
- **Tumbled** the tube holder to smoothen the rough exterior

### Results

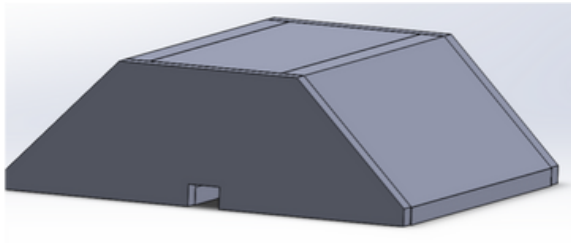
- Human operator error was reduced by 53%
- Implemented **DFM** principles to reduce overall part production cost

# ROHIT SINGH

MECHANICAL ENGINEERING AT THE GUJARAT TECHNOLOGICAL UNIVERSITY

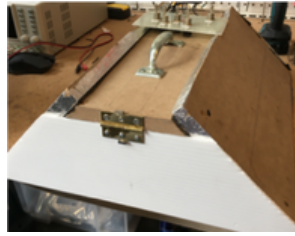
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## SOLAR PANEL TEST FIXTURE - AXIS LABS ✕



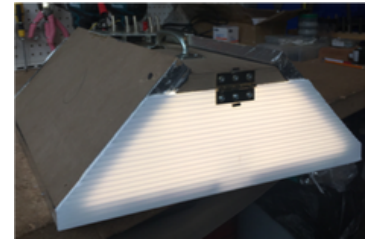
### What?

- Test AXIS Lab's solar panels at various levels in illumination (100 - 5000 lux)
- Minimize amount of faulty products sold to customers



### How?

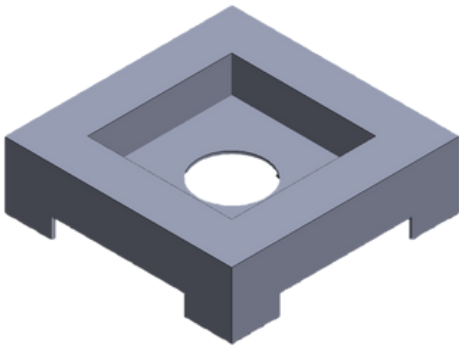
- Used **SolidWorks** to design fixture
- Used **Arduino** for electrical structure
- Implemented **DFA** principles to reduce product assembly cost



### Results

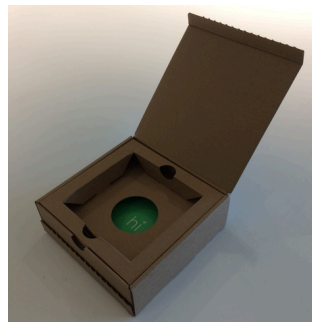
- Reduced faulty products sold to customers by 75%

## THERMOSTAT PACKAGING - ECOBEE 🐝



### What?

- Create a low cost, lightweight packaging for ecobee's thermostat
- Packaging is used to hold the thermostat safely as it is shipped to contractors who are installing it as part of a home renovation



### How?

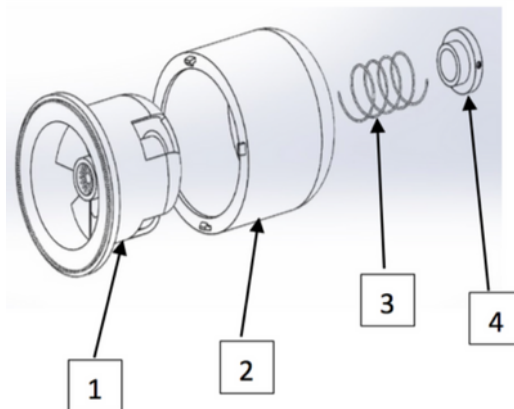
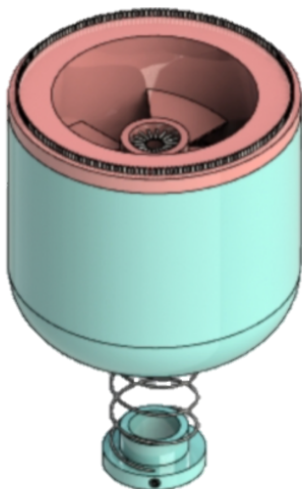
- Used **SolidWorks** to design the outer box
- Contacted manufacturers in China to fabricate the packaging



### Results

- Reduced production costs by 62%
- Built relationships with Chinese manufacturers

## DRILL GUARD



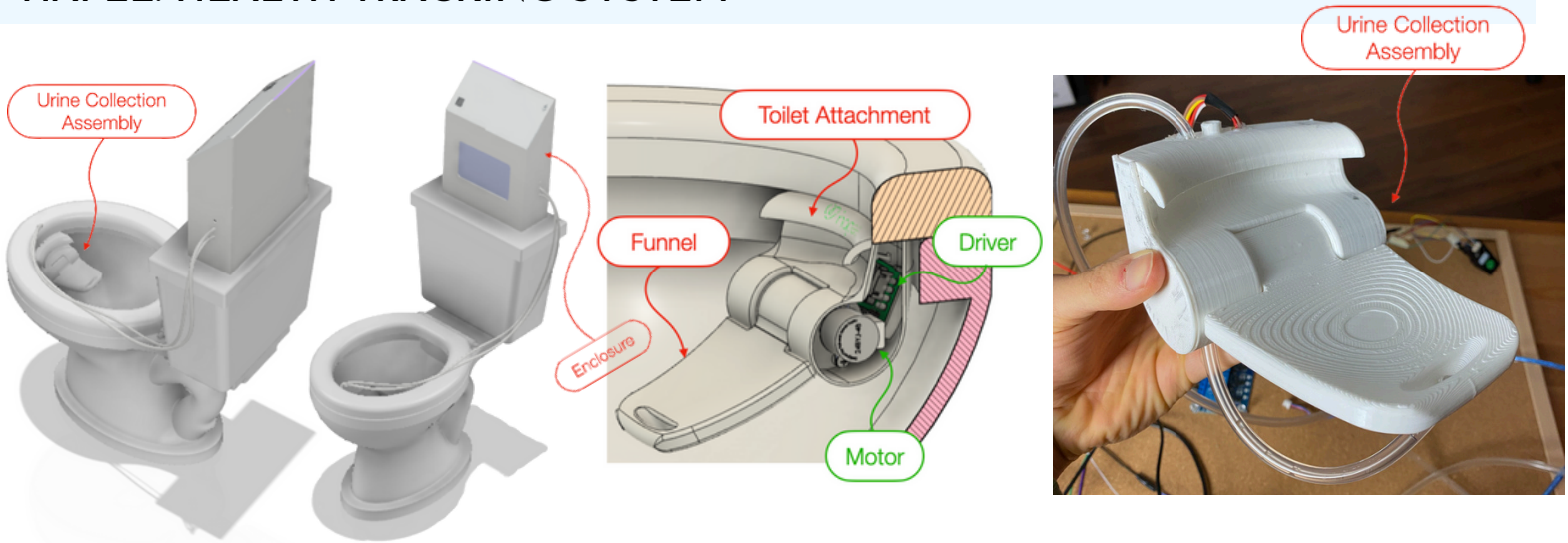
### What?

- Drilling holes results in dust, the Drill Guard collects it

### How?

- Used **injection molding** to fabricate this due to the part's complex geometry
- Drill Guard needed to be strong to withstand the stresses caused by the power drill, so injection molding with an added calcium carbonate filler was used in order to improve elastic modulus and achieve the desired strength

## HAPEE: HEALTH TRACKING SYSTEM



### What?

- hapee is a **toilet attachment** that analyzes urine before it's flushed away to give you the tools you need for **daily health monitoring** and **early disease detection**
- Diseases product can detect include: Dehydration, UTIs, Diabetes and Kidney Stones

### How?

- Produced **3D CAD** models and detailed **2D engineering drawings** for Urine Collection Assembly and Enclosure using **Fusion 360**
- Used Arduino and several sensors for electrical infrastructure
- Fabricated using **rapid prototyping** methods (3D Printing)

### Results

- Outputted results of urine pH & hydration levels with a 95% accuracy
- Provided users with accurate predictions on dehydration levels and risk of developing kidney stones

