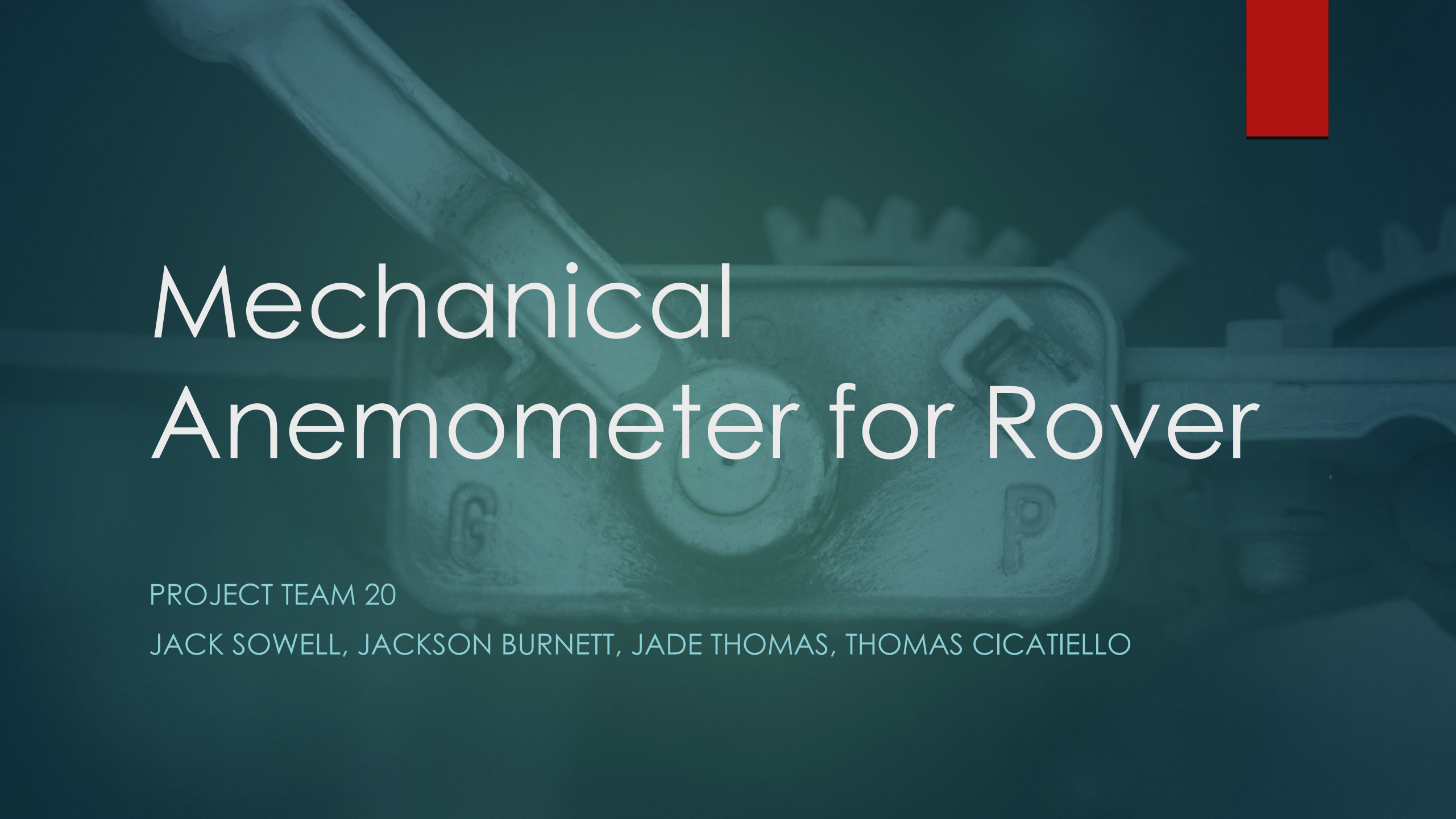




Mechanical Anemometer for Rover

PROJECT TEAM 20

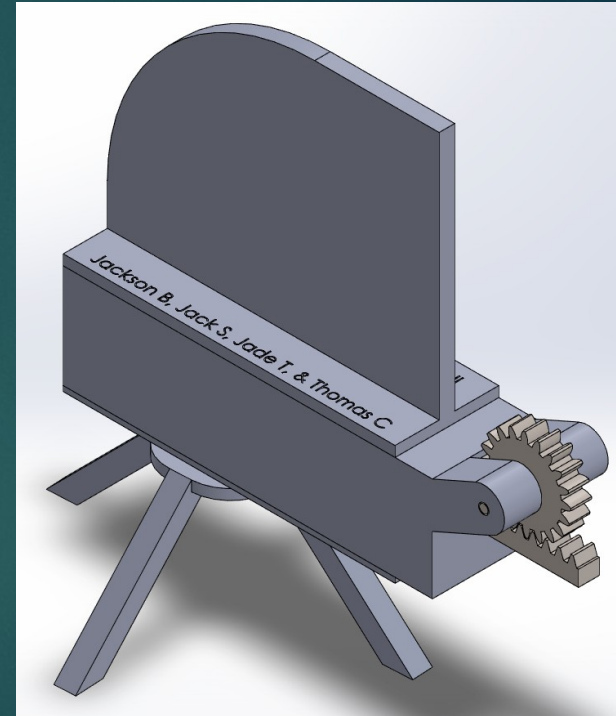
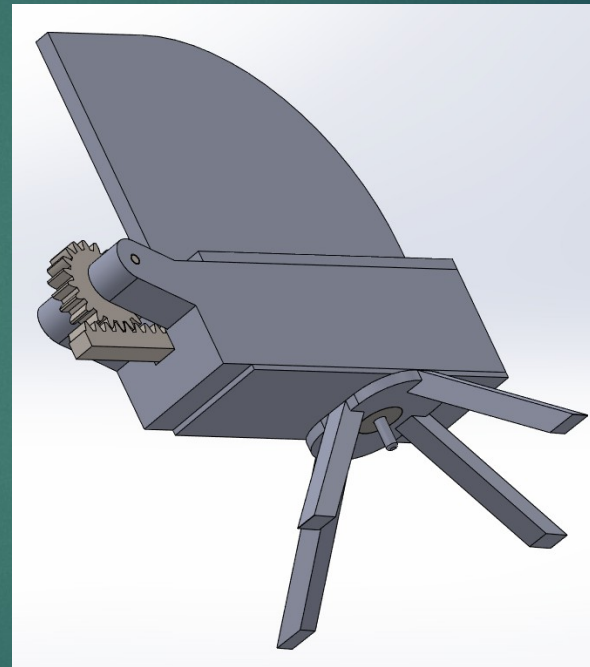
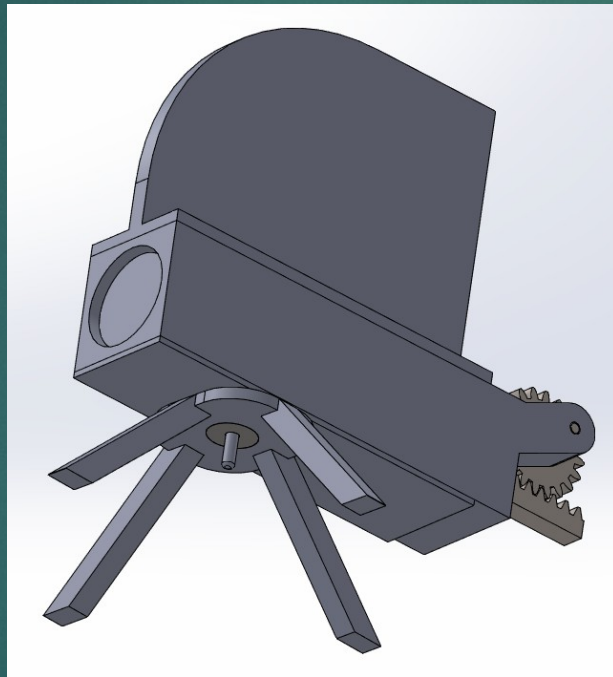
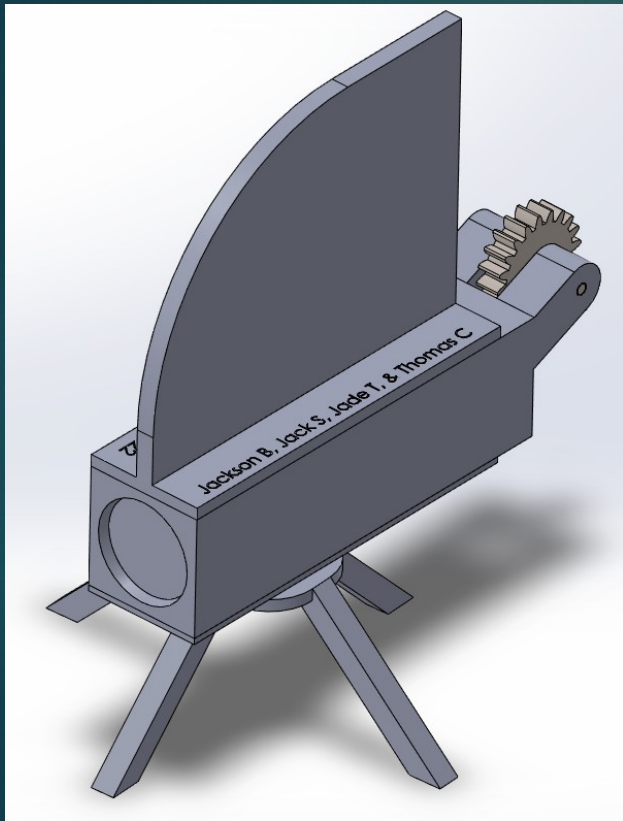
JACK SOWELL, JACKSON BURNETT, JADE THOMAS, THOMAS CICATIELLO

What drove the design effort?

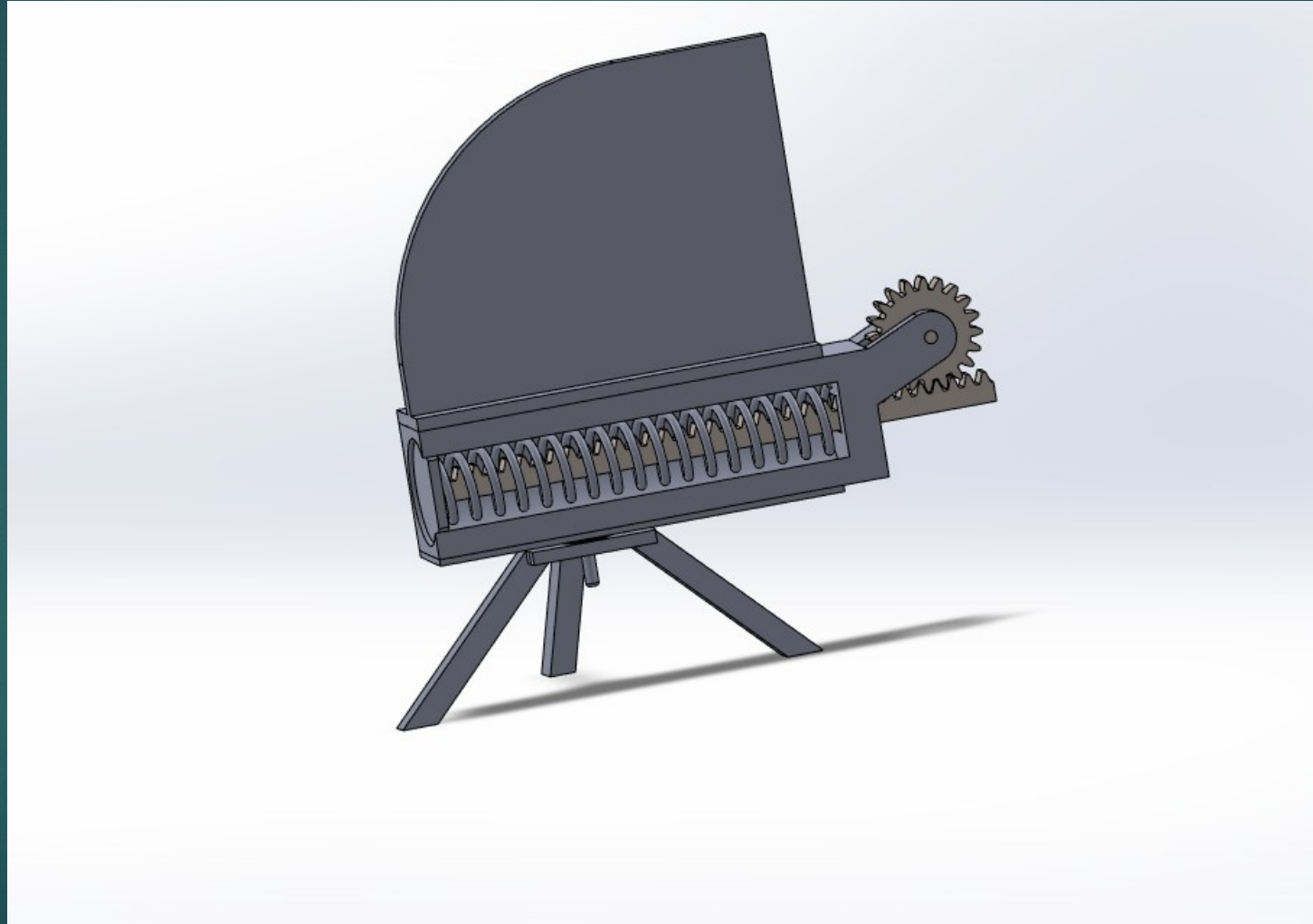
The customer needs that drove the design effort were that:

- The machine must be able to **accurately measure wind speed**.
- The machine must be able to **report the measured wind speed**.
- The machine must **not interfere with other components on the rover**.
- The machine must be able to **withstand high wind speeds**.
- The machine must be able to **withstand dust and debris**.
- The machine must be able to **withstand extreme temperatures**.
- The machine must be able to **power itself using only the environment**.
- The machine must **be cost-efficient**.
- The machine must **be sustainable**.
- The machine must be able to **operate without human input**.
- The machine must **be durable for the entire lifespan of the rover**.

Complete CAD Assembly



Product Animation



Estimated Cost of the Product

Quantity	Part Name	Material	Source	Estimated Cost (For One Part)
One	Spring	Stainless 302 ASTM A313	Acxess Spring	\$13.00
One	Pressure Plate	Steel 1018	Xometry	\$212.28
One	Rack	1018 Carbon Steel	McMaster-Carr	\$30.31
One	Pinion Gear	1144 Carbon Steel	McMaster-Carr	\$29.94
One	Housing	Stainless Steel 303	Xometry	\$627.76
One	Fin	Stainless Steel 304	Xometry	\$320.40
One	Ball Bearing	Steel	McMaster-Carr	\$7.03
One	Base Plate	Sheet Stainless Steel 304	Xometry	\$162.25

Total Estimated Cost: \$1,402.97

NOTE: The product would likely not actually cost this much to produce. Some of these numbers were gotten from the Xometry website which gives a high estimate based on CNC machined parts. We expect the actual cost to be lower.

Why this design deserves to be funded for further development!

▶ **Simplicity**

- ▶ This design is not flashy, but it gets the job done. It was designed to be as cheap and easy to build at possible.

▶ **Low Number of Parts**

- ▶ With few parts, this device can be assembled quickly and easily, which can be useful if it were to be mass produced.
- ▶ Fewer parts also means that there are fewer points of failure in the device, increasing its predicted lifespan.

▶ **Durable**

- ▶ With few parts, and the functional ones being enclosed, this device can withstand extreme weather with ease.

▶ **Low Cost**

- ▶ This design only has two custom-made parts, the rest of the parts can be bought from manufacturers.

▶ **Fully Autonomous**

- ▶ This device can function on its own with no human interaction.