

The OSU Solar Trailer



The Oregon State sponsored Solar Trailer is a mobile solar power generator used to power events within a drivable distance. Some events the trailer has been used for in the past are county fairs, food trucks, and educational events for solar energy.

The solar system on the trailer uses a mechanical lift and a dual axis sun tracker to adjust the positions of the solar panels to maximize sun absorption and power output. The Solar Trailer, built in 2007 and designed by OSU students, is sponsored by the Oregon State Sustainability Office. OSU students undergoing their Capstone project have maintained and made improvements to the trailer over the last 16 years.



OSU Solar Trailer: Cable Management

Project Overview:

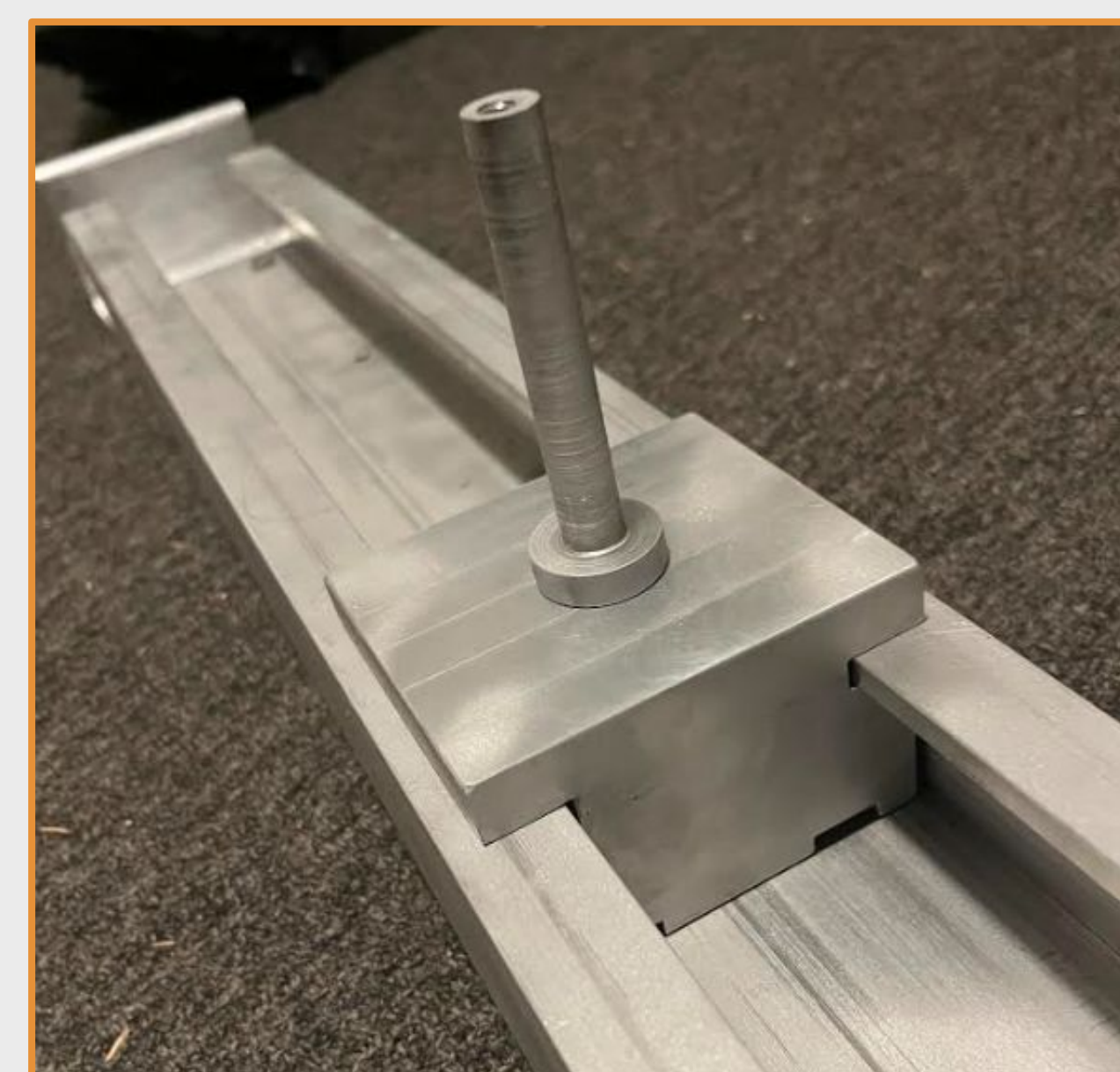
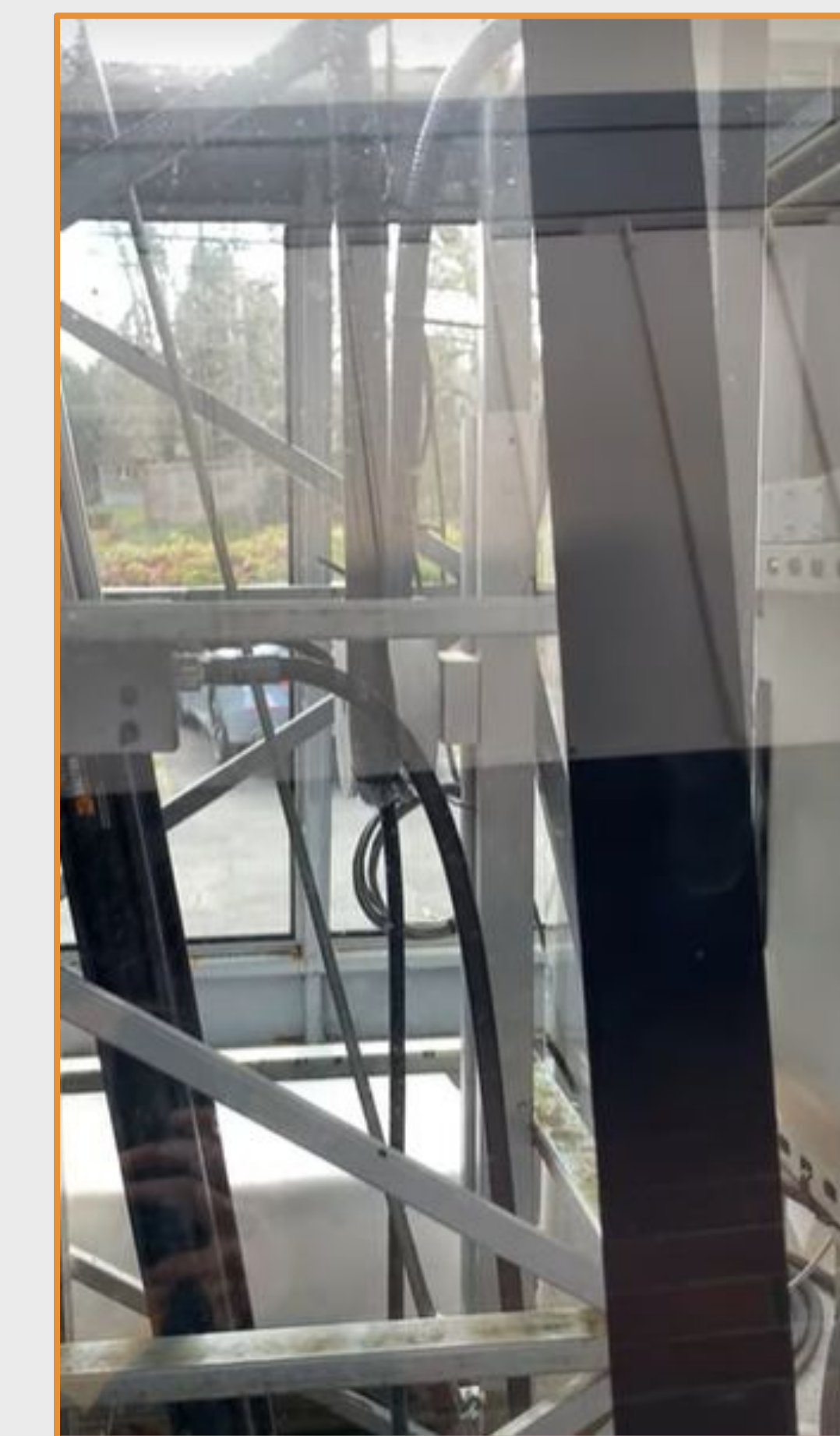
A team of four senior level mechanical engineers assembled to design and implement a new mechanical cable management system for the OSU Solar Trailer. The proposed system will reduce or eliminate the Solar Trailer's flexible conduit connecting the solar panels to the lower part of the trailer from physically getting caught or damaging other moving components.



Objectives & Function:

The main objectives for the design include a mechanical device that will have a constant tension on the cable conduit as the solar panels are in motion. The simple design was created such that the device can be easily assembled and adjusted for future uses. Most of the material is made with aluminum for its properties of being lightweight, easily machined, and resistant to rust and corrosion.

A nylon pulley will sit on the cable and move vertically along a aluminum shaft. The weight of the sliding block within the shaft will act as the constant tension for the conduit and, if needed, additional weights can be added to adjust the force of tension.



Design Process:

This project is completely customly machined and assembled. The student engineering team began with 8 pieces of aluminum stock with a total cost of about \$350. Using machines and tools in the OSU Machining and Product Realization lab, the team spent the 2022-2023 Winter quarter completing the final pulley system.

Final Product:



Project Sponsor OSU Sustainability Office

Project Mentor:
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