2019/2020 team at the Puck on Missouri S&T campus

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The Finished Product
The Missouri S&T Human Powered Vehicle Team (HPVT) spent the past year hard at work. During the fall semester, the team focused on recruiting new, dedicated members and teaching them the basics. After training and honing our skills, we began manufacturing this year’s vehicle, “Greased Lightning,” informally known as “Gracie” to the team. HPVT spent long hours at the Student Design and Experiential Learning Center (SDELC) perfecting the vehicle. “Greased Lightning” started as a 3D model in SolidWorks but transformed into one of the team’s favorite vehicles.

“Greased Lightning”, like several of the previous year’s vehicles, is a leaning recumbent tricycle. Unlike the majority of other universities we compete with, our team manufactures almost every component in-house at the SDELC. This year’s vehicle features custom-made carbon fiber wheels, remote-lockout front suspension, a removable rollbar, an improved adjustable seat, high quality bike components provided by Route 66 Bicycles, and a custom paint job sponsored by Hi-Tech Collision. This year’s innovation project presented live rider feedback using a power meter and Garmin-sponsored bike computer.

Making the Best of It
Although many things were changed due to the spread of COVID-19, the Missouri S&T community and HPVT have continued to connect and make the best of the situation. We truly believe now is a time to stay connected while still staying apart. Here are some of the ways the team has adapted.

Team members have turned their living rooms into workshops to keep fine tuning “Greased Lightning” and other vehicles.
Riders have taken the vehicles for rides to escape their homes and get some fresh air. Of course, members maintain a minimum of six feet and an additional safety feature was added to the vehicles.

Zac Petersen and Emily Allen out for an afternoon ride

Greased Lightning's newest safety feature

The leadership team and general body meet virtually weekly to discuss updates and to connect.

HPVT at a weekly Zoom meeting
Competing Virtually
Due to COVID-19, both North American ASME E-Fests were cancelled, so sadly, our team never made it to Michigan or Georgia to race against schools from across the world. Thankfully, our hard work did not go unrecognized! To compensate for the cancelled events, the ASME E-Fest staff held a Digital E-Fest so that students, industry leaders, and potential employers could still connect. All E-Fest competitions were held virtually, and prizes were still awarded. For our competition, the Human Powered Vehicle Challenge (HPVC), the competition was based on our extensive design report and presentation. Here, the team described the design, analysis, and testing processes that we followed throughout the year. This year, HPVT focused on expanding by completing extensive testing for the trailer-pull challenge, rollover verification and drivetrain optimization. Because of resource limitations, most of this testing took place in a living room or in a parking lot, but this did not stop us from ensuring testing of “Greased Lightning” was completed for competition! Our team held a “watch party” over Zoom, so we could hang out as a team during Digital E-Fest.

Results
At E-Fest Digital, Missouri S&T competed in both the North and South HPVC. Missouri S&T swept the competition and brought home 1st place at both competitions! The team was so proud and happy to be recognized for their hard work. Some of the team members’ reactions can be seen on our Facebook!

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<tr>
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<th>Rank</th>
<th>Total Teams</th>
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<tbody>
<tr>
<td>ASME E-Fest North</td>
<td>1st place</td>
<td>36</td>
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<tr>
<td>ASME E-Fest South</td>
<td>1st place</td>
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Thank You for Supporting the Missouri S&T Human Powered Vehicle Team!
Our donors and supporters are a huge reason for our success, and we are so grateful for all that they give. Please follow our social media to continue to see updates about our team.

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Email: [humanpowered@mst.edu](mailto:humanpowered@mst.edu)

Facebook: Missouri S&T Human Powered Vehicle Team

Website: [humanpowered.mst.edu](http://humanpowered.mst.edu)

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