School of Engineering

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PROTOTAU
HYDROGEN POWERED

- Shell Eco-Marathon
- History of PrototAU
- Future Plans

Shell Eco-Marathon

- Global competition with events for Europe, America and Asia
  - 1,500 engineering students
  - 140 vehicles
  - 28 countries
  - And that’s just Europe

Images courtesy of: Shell Eco-Marathon Flickr

PROTOTAU
HYDROGEN POWERED

Shell Eco-Marathon

- Prototype – ultra-efficient, lightweight, single occupant
- Fuel Category - Hydrogen
- Mileage Challenge
  - **Fixed volume of fuel (0.4L at 200 bar)**
  - 11 laps, less than 30 minutes, as little energy used as possible
  - Least equivalent energy usage wins

Images courtesy of: Adam Din

History of ProtoTAU

- Small group of engineering students started over 3 years ago

Images courtesy of: PrototAU

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Images courtesy of: PrototAU

History of ProtoTAU

- Small group of engineering students started over 3 years ago
- 2017 – feasibility studies and early sponsors
- 2018 – design, team expansion, began ordering parts
- 2019 – further design, started manufacture

Images courtesy of: ProtoTAU

PROTOTAU
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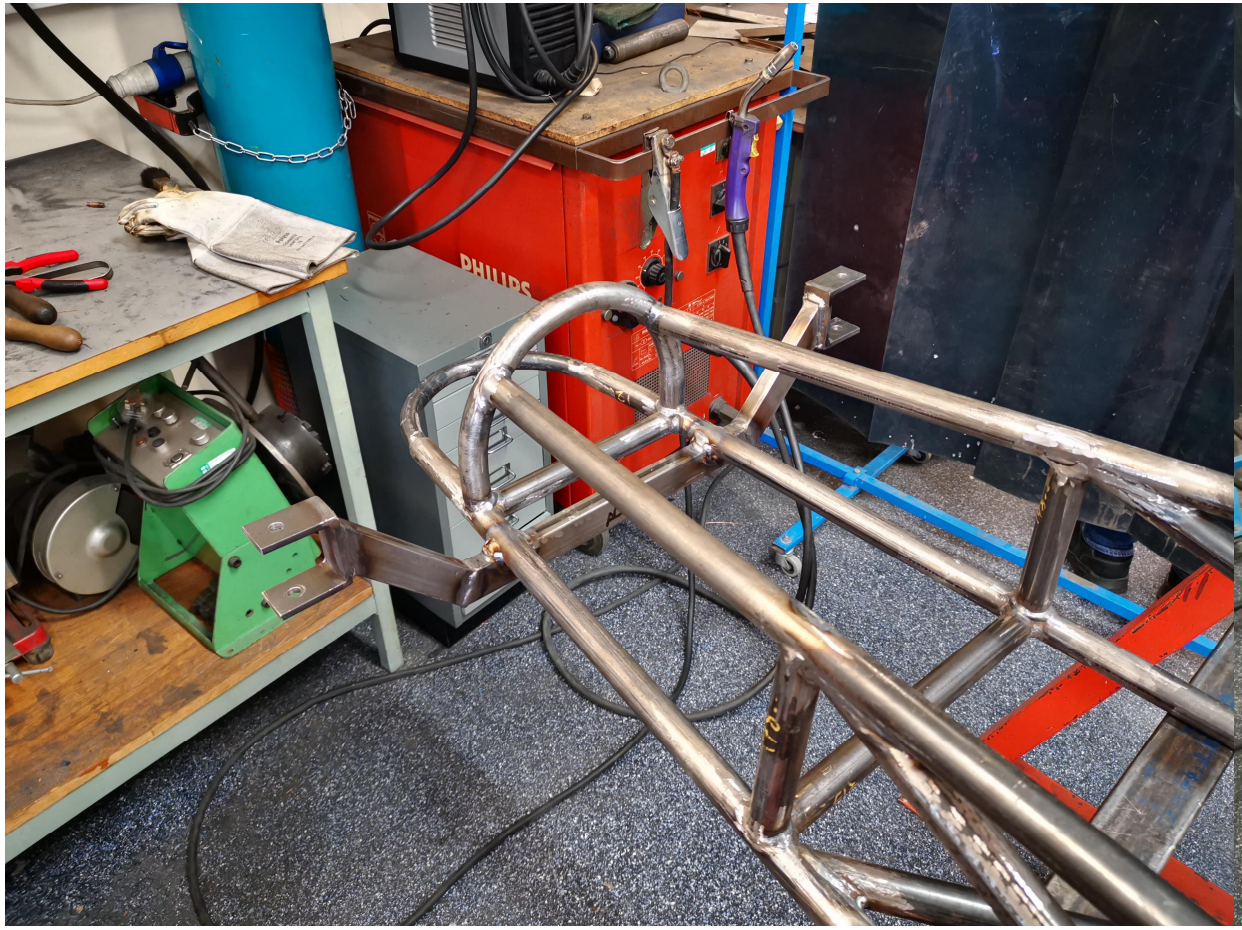
History of ProtoTAU



Images courtesy of: PrototAU

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Shell Eco-Marathon

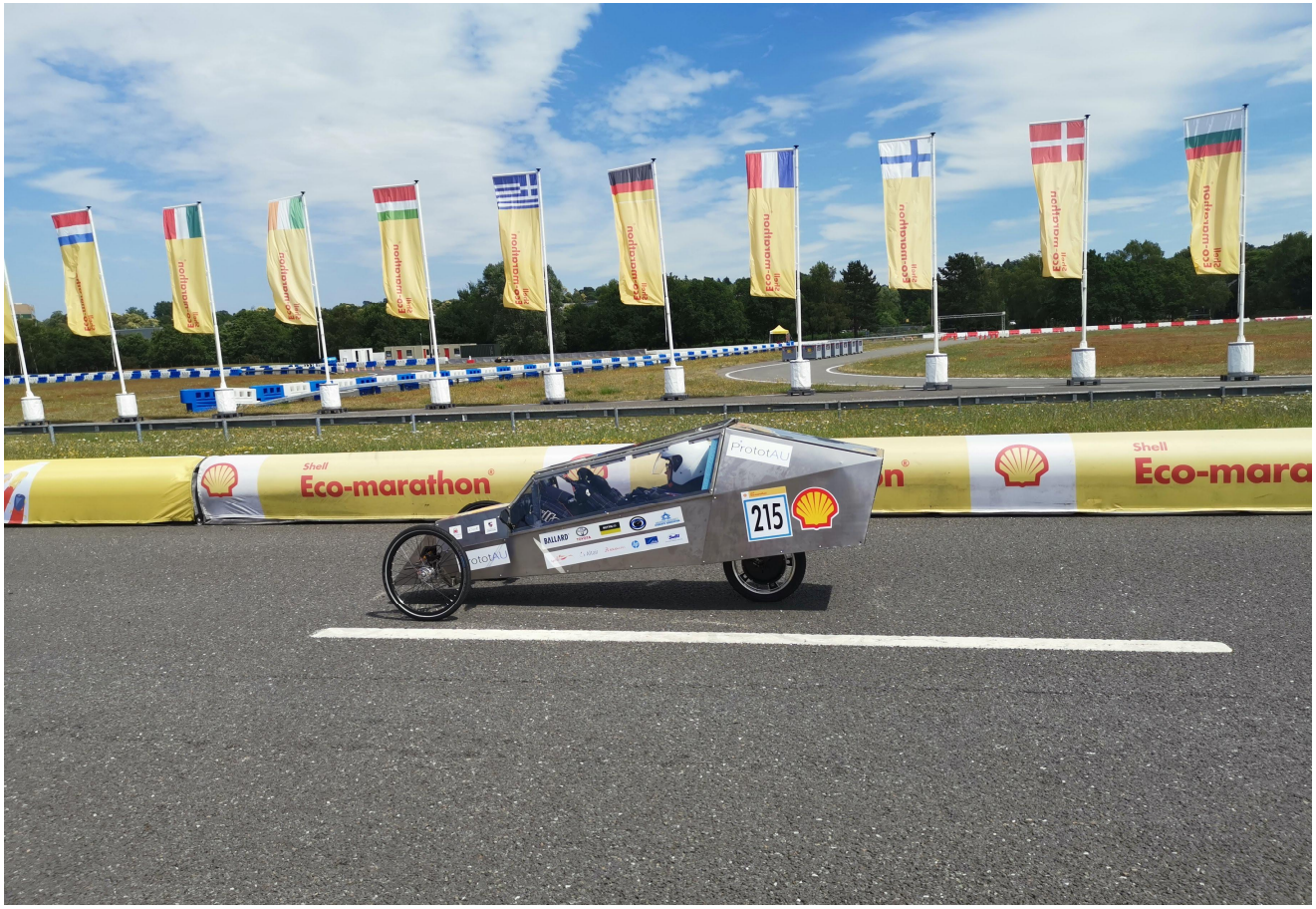
- Technical Inspection
- Safety Inspection

- We passed!

Images courtesy of: PrototAU

Shell Eco-Marathon

- Track results
  - 2 attempts
  - Completed 3.5 laps



Images courtesy of: ProtoTAU

Shell Eco-Marathon

- Off-track Awards
  - Most Innovative Hydrogen Fuel Cell Newcomer

Images courtesy of: Shell Eco-Marathon Flickr

History of PrototAU

- ProtoTAU 2019
  - Final weight was 131kg
  - L=2.5m, H=1.6m, W=1m
  - Top speed 17 km/h
  - Consumption 80 km/l

Images courtesy of: PrototAU

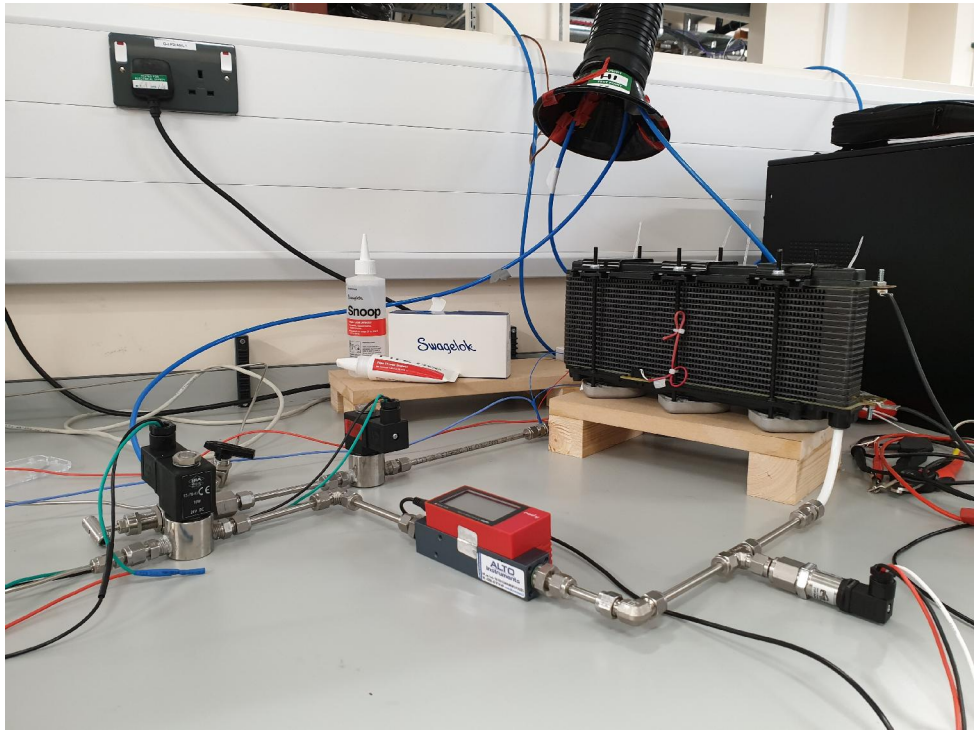
Future Plans

- Our goals for PrototAU 2020
  - Mass reduction
    - Old car: 131kg
    - Goal weight: <80kg
    - New chassis
  - Lower frictional loses
    - New transmission system
    - New motor
  - Aerodynamic improvements
    - New lightweight shell
  - Electrical energy storage
    - Supercapacitors

Images courtesy of: Shell Eco-Marathon Flickr

Future Plans

- Academic Research – Undergraduate and Postgraduate projects
  - Development of new fuel cell membrane materials
  - Optimisation of the fuel cell stack
  - Hydrogen lab facilities
  - Potential collaborators?



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