



Delft University of Technology
Friday, 26 May 2023

Focus session ‘Student session – Dream Teams’

Speakers:

- Project MARCH – self-balancing exoskeleton
- Brunel Solar Team – solar car Nuna, solar races
- Forze Hydrogen Racing – hydrogen car
- Hydro Motion Team – hydrogen boat

Session leader: Anna Verdouw (TU Delft, VvTP)

Summary of the session

Student (Dream)teams are teams of students who achieve something together in a year. With a Dream Team, students often work full-time, but sometimes also part-time on a project. For example, they build a car on hydrogen, a boat on solar energy or they put up something else cool. Together with a group of students from different disciplines, they experience the design process from start to finish in one year.

During this session, four student teams will talk about their (dream)team. What processes are involved in such a large project and how does the physics of their project work? But also find out about the personal stories of the students. How do they experience this year, what do they learn and what do they take to the workplace later. Which parts from their studies are relevant to this project and what is the role of a physicist in such a project. The following student teams will talk during this session:

Project MARCH: Project MARCH is a Dream Team of TU Delft in which we enable people with spinal cord injury to stand up and walk again. We do this by building an exoskeleton, a robot that takes over the function of the legs. The team consists of 27 enthusiastic, motivated and inquisitive students who work full-time on this project for a year. In addition, we have another pilot, the user of the exoskeleton. This year it is Koen van Zeeland. He actually has a spinal cord injury and is therefore unable to walk. This year's goal is to create a self-balancing exoskeleton. Before this, Koen was still walking with crutches in the exoskeleton.

Brunel Solar Team: We are the Brunel Solar Team, a team of 18 Delft students who design and build a new solar car every two years. With this solar car, called Nuna, we take part in many solar races around the world. In October we will participate in the Bridgestone World Solar Challenge in Australia for the eleventh time. Actually, we have already won this challenge 7 times. In this 3000 km long race across Australia, from Darwin to Adelaide, we can only use the energy of the sun and wind. During the design, a lot of physics also emerges, such as the optimal aerodynamic shape, the forces in the



suspension and the chassis and of course also the electrical system from the solar panels to the engine and battery. To win the race, the optimal car must be designed. We do this by determining the optimal aerodynamic shape and forces in the suspension and chassis. In addition, we apply techniques in the electrical system from the panels to the motor and the battery that have not been implemented before. This allows us to provide the best possible car.

Forze Hydrogen Racing: Forze Hydrogen Racing is a hydrogen racing team at the top. Since its foundation in 2007, the team has aimed to promote hydrogen technology by showing the possibilities in racing. With a team of more than 65 motivated students, the team pushes the boundaries of this sustainable energy. In this way, the team hopes to inspire companies, governing bodies and the general public to accelerate the use and development of hydrogen in the sustainable energy transition. This year the team is ready to race their most ambitious car, Forze IX. This car will show its capabilities by racing against petrol powered cars in the Supercar Challenge.



Hydro Motion Team: The TU Delft Hydro Motion Team is a team consisting of 23 multidisciplinary students from TU Delft. The Hydro Motion Team wants to inspire the maritime sector to accelerate the transition to green energy. By pushing the boundaries of technology, sustainability and engineering, they want to show that it is possible to design, build and race a foiling hydrogen boat in just one year.



To put the boat to the test, the team takes part in the Open Sea Class of Monaco Energy Boat Challenge. The team strives to excel in the three areas; speed, agility and endurance to become world champion.

