University of Strathclyde Motorsport

Winter 2022/2023 Newsletter

Record Breaking Recruitment

The team has had a record breaking recruitment period this year, with over 250 registered members! All new members went through a development block which included the fundamentals of engineering and race car design. Towards the end of the block, many new members were taking part in their own projects and designing parts for our next car, USM23.

"I didn't really know what I wanted to do coming in to the team but everyone was super helpful and the teaching sessions allowed me to find out what all the systems were about."

"It's amazing to be hands-on in the team so quickly. Getting involved with manufacture is really fun but also helps you understand the car."

Design Season

The Technical Team, composed of 12 Systems Heads and led by Technical Director, Lewis McDonald have been working hard designing the next evolution of our electric race car, USM23.

USM23 Technical Highlights

- Custom battery management system
- 5% reduction in mass
- Lower centre of gravity
- Tyre/Brake Temperature Sensors
- CFRP wishbones

"The car is an evolution on the previous car with many quality of life improvements and electrical upgrades. Overall, the goal of the car is to be reliable and to finish dynamic events. Achieving this, the team is on for a strong result at Competition."

Lewis and the team are now busy bringing the design to life in our workshop over the coming months!

Technical Director

Lewis McDonald

Composite Development

We have devised a three year plan to tackle one of our key technological hurdles - structural composites. This is planned to culminate in the manufacture and implementation of a carbon fibre monocoque replacing our traditional steel space frame chassis in the 2024-2025 season.

To carry out this exciting project, we have created a new "Structures" System within the team to carry out the development of our structural composites knowledge. This year, the team are carrying out an extensive list of material tests which should provide some crucial insight into utilising composite structures within our car.

"Composites are really a step up over their metallic counterparts. They are lighter, stiffer and offer a significant performance benefit."

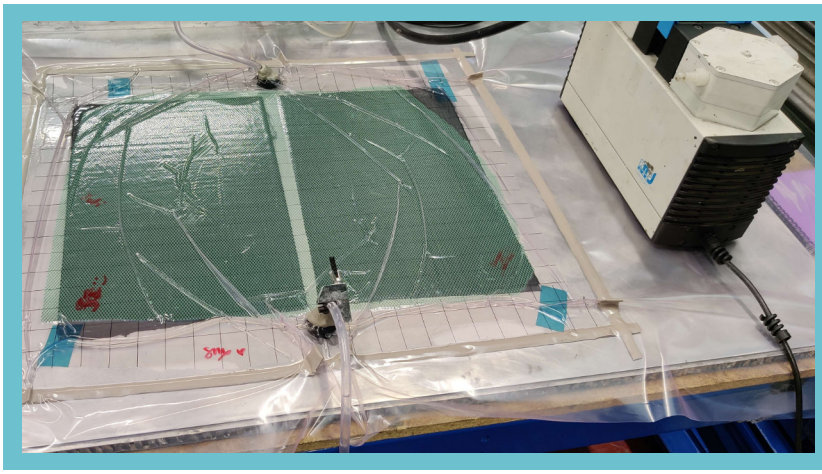
"The plan breaks the task of designing and building a monocoque into smaller steps. This year we are tackling carbon suspension elements while also undertaking design of a composite accumulator case."

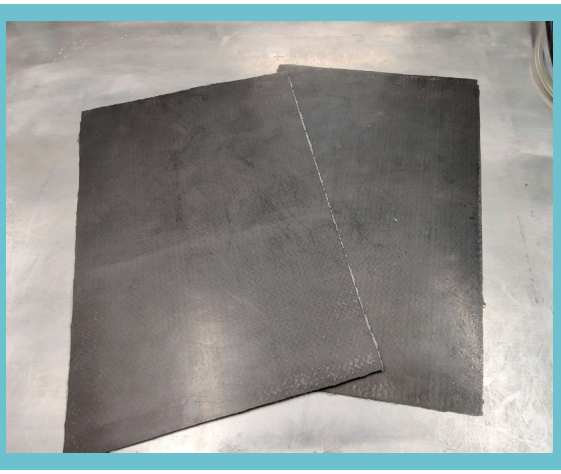
Head of Structures

Adam Robertson

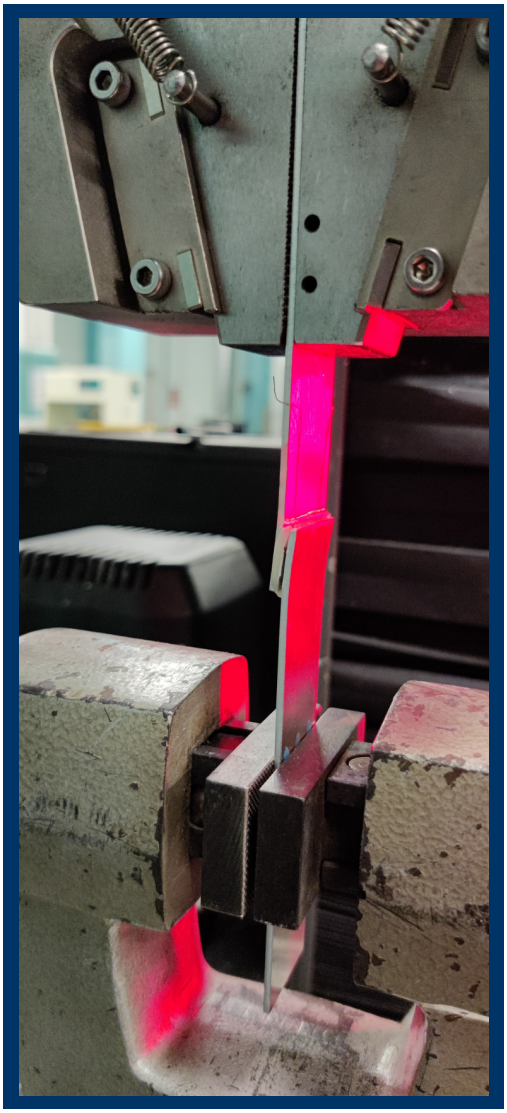
Head of Structures

Adrian Turski

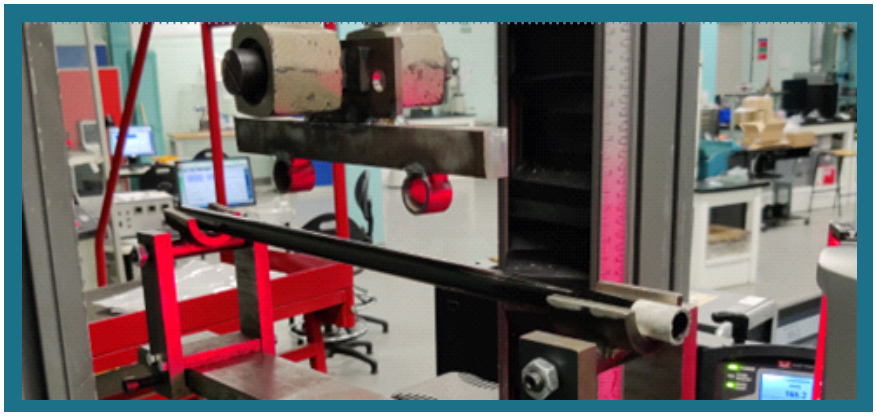




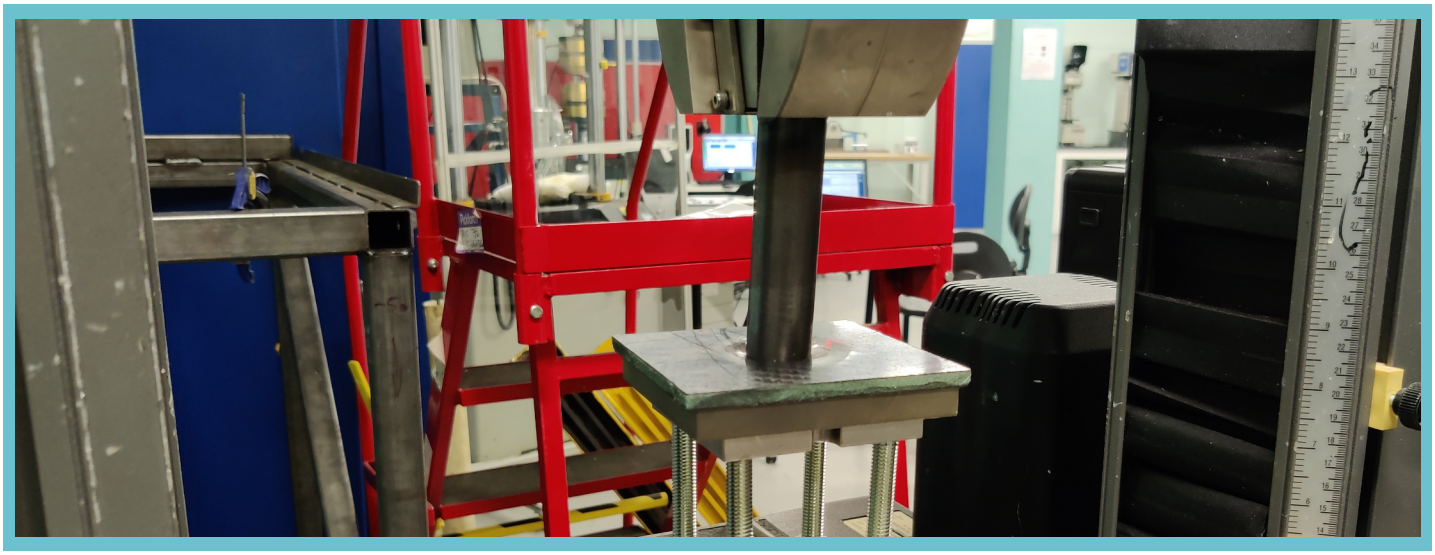
Materials Testing



As part of the development phase of CFRP suspension elements, a material testing program was devised and executed using equipment at the Advanced Materials Research Laboratory (AMRL) at the University of Strathclyde. 4-point bend tests were conducted on a range of diameters and wall thicknesses of carbon tube, this allowed us to verify strength data on data sheets and select the tube that was required to counteract our suspension loads.



Lap shear and perimeter shear tests have also been conducted. The purpose of these tests were to validate material properties of composite materials and to test the strength of various adhesives.



Thank You!

The design of USM23 is complete and the team is now gearing up for an intense period of manufacture over the next few months.

Finally, we would like to thank all of our fantastic sponsors, old and new, that make our project possible. Your donations help develop the next generation of top Scottish engineering talent and also allow us all to pursue our passion for racing!

Keep an eye out on our social media channels where we frequently post updates on our project, there is something very special coming up!

University of Strathclyde Motorsport

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USM

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