

## **Custom Klarius exhaust helps Staffordshire University to podium finish at Formula Student 2023**

**29 November 2023**

**Beyond the compelling battles on track, motorsport is also a race in terms of car development. Engineers push technology, and what is possible, to the limit to unlock any pace advantage. Formula Student is a crucible for aspiring professionals looking to enter this industry. In 2023, Staffordshire Uni Racing achieved a second-place finish at this demanding event, helped in part by a custom exhaust from expert emissions manufacturer, Klarius Products.**

Running for 25 years, Formula Student is a crucial pitstop for those heading into the world of professional motorsport. Supported by Formula One stars, the competition challenges student engineers to design, build and compete single seater race cars. More than that, entrants must also manage all aspects of the race team, alongside their studies at the University.

Competition is fierce, with 130 university teams from over 30 countries fighting for glory. As in any racing series, developing a fast and reliable car is paramount for success. When Staffordshire Uni Racing set about building a new car for the 2023 event, they already had a direction in mind.

## **Accelerating car development**

Joe Grimer, Team Leader at Staffordshire Uni Racing, elaborates: “For this year’s car we wanted to improve packaging and reduce weight compared to our previous entry ‘Bertha’. A key development path was adopting side-mounted radiators, which beyond providing cooling, would lower the centre of gravity and enhance handling.”

Improving packaging is exceptionally important in race car design. Optimising the placement of critical components and assemblies, along with reducing weight, invariably leads to better lap times out on track.

Joe continues: “Accommodating this new direction meant that we needed a new exhaust design. Due to its support for us in the past and its manufacturing expertise, we asked Klarius to help.”

## **A leading manufacturer joins the team**

Based in Cheadle, Staffordshire, Klarius is the largest UK manufacturer of aftermarket exhausts. As well as providing quality replacements for road cars, the company has motorsport heritage. It has manufactured exhausts for UK spec series such as the BMW Compact Cup and 116 Trophy, 120 Coupe Cup, as well as one-off designs for motorsport teams and previous Staffordshire University Formula Student entries.

Jayson Prince, a member of the race team and recently appointed Project Engineer at Klarius, designed the exhaust: “The exhaust manifold is a critical area for performance gain. Pipes must enable a smooth, high velocity flow of exhaust gases from the engine, which is a considerable challenge within the confines of a well

packaged race car. In our case, we also needed to account for the car's high-revving 675cc bike engine. A custom solution was needed.”

Using Jayson's design, Klarius fabricated custom pipes, carried out welding, installed fixtures and assembled the exhaust. The group's specialist engineering business KMT also produced bespoke jigs & fixtures based on Jayson's blueprints so the system could be welded together. By using Klarius's rapid prototyping expertise, importantly, the exhaust was ready for testing ahead of the event, giving the team a competitive edge in terms of car set up and reliability. This confirmed that the design conformed to mandated clearances and noise regulations.

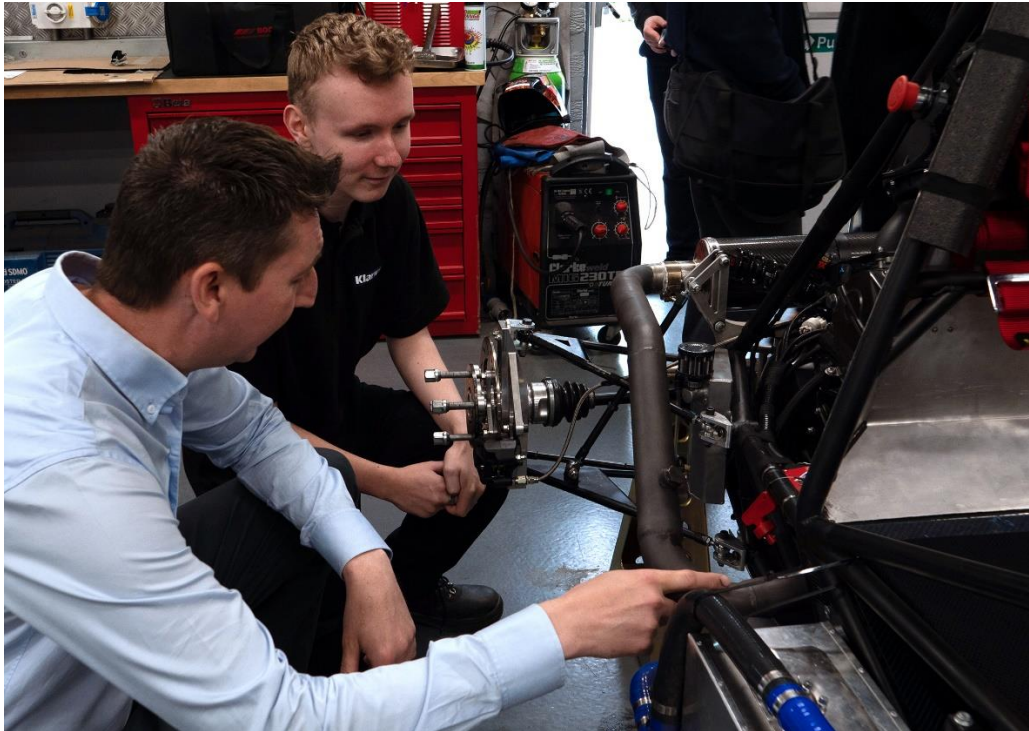
### **Finishing on the podium**

The teams gathered at Silverstone on 22<sup>nd</sup> of July and were greeted by the changeable wet/dry conditions that often characterise summer motorsport in the UK. After gruelling scrutineering and track events, Staffordshire Uni Race Team were awarded a superb second place overall.

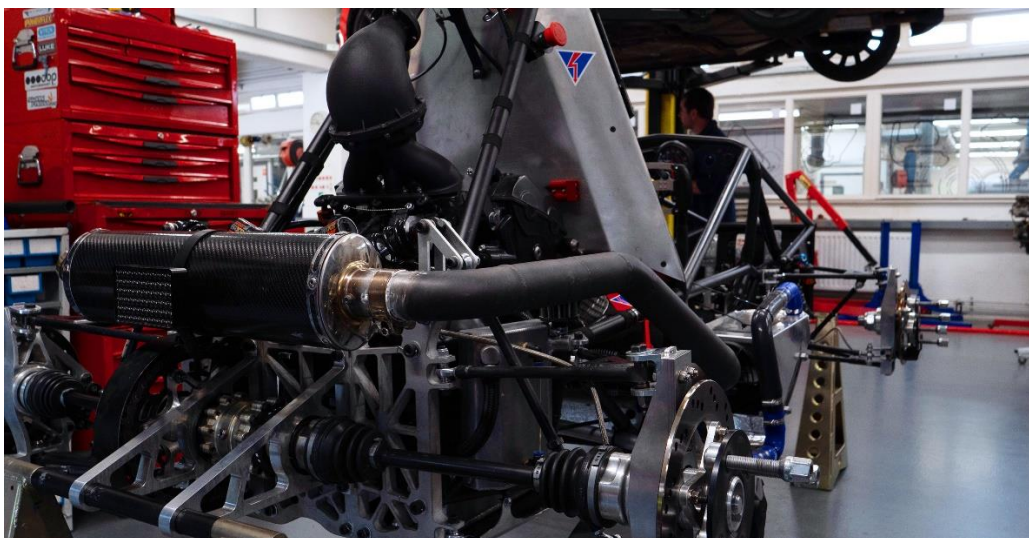
Doug Bentley, Head of Research and Development at Klarius and a former Staffordshire University engineering student, concludes: “As an engineering company engaged with the local community, we strive to inspire and collaborate with the next generation. We're all proud to have been a small part of the team's success this year. The fact that Formula Student fosters young engineers is evidenced by Jayson joining us directly from the race team and on successful completion of his engineering degree at Staffordshire University.”

You can view a Klarius video here: <https://youtu.be/gyNWTrXcEtA>

**Image captions:**



**Image 1:** Doug Bentley, Head of Product Development at Klarius inspecting the race car



**Image 2:** Klarius Products provided a bespoke exhaust system the Formula Student team's latest racing car



**Image 3:** Joe Grimer, Team Leader at Staffordshire University Formula Student team



**Image 4:** The Klarius team alongside Jayson Prince of the Staffordshire University Formula Student team



**Image 5:** Staffordshire Uni Racing logo

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## About Klarius Products

Klarius Products is a dedicated Emission Control Products manufacture and supply company servicing primarily the UK and EU markets. The business supplies type approved exhausts, CATs and DPFs designed, developed and manufactured in the UK and delivered via its own logistics operation. Klarius Products operations are centred on the manufacturing, R&D, test track, logistics and stock facility hub based in Cheadle in the UK.

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