



Nicholas Zglobis, Graduate Engineer at Tinsley Bridge, inspects the filament winder at the AMRC Composite Centre.

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Proving the viability of disruptive technology

Truck suspension manufacturer Tinsley Bridge is working with the AMRC to reduce the weight and improve the performance of key components. The project could allow the company to significantly increase its market share.

Engineers at the AMRC Composite Centre showed that Tinsley Bridge could design an innovative high-performance composite stabiliser bar for heavy commercial vehicles with less than half the weight of current products.

Carbon fibre composites are not yet widely used in the automotive sector for functional parts such as suspension systems. Replacing steel with lightweight composites can improve fuel efficiency, helping truck operators meet new emissions regulations. Lighter vehicles are also in demand for niche markets including emergency services and defence.

The AMRC’s composites experts found that Tinsley Bridge could reduce the weight of a stabiliser bar by over 50 per cent by replacing the standard solid steel component with a hollow tube of carbon fibre composites, without compromising performance.

“These weight savings will result in huge cost savings over the life of the vehicle,” says Andy

Smith, Technical Lead at the AMRC Composite Centre. “There are also now solutions for recycling composite parts at the end of their life.”

And because composite materials are less affected by fatigue, their use can also provide increased durability. Providing a product with both environmental and performance benefits would give Tinsley Bridge a real competitive advantage in its core market.

“Working with the AMRC allows us to expand our footprint,” says Martin Filleul, Sales Manager at Tinsley Bridge. “We can carry out R&D in a way that is not possible by ourselves. As an SME business our internal resources can be limited, but this gives us the potential to deliver a disruptive technology.”

As a result of the initial project, Tinsley Bridge has secured a Smart Award from the Technology Strategy Board to develop and test a full prototype of the stabiliser bar.

The AMRC is continuing to work with Tinsley Bridge to bring the composite bar to production readiness. AMRC engineers are providing their expertise in composite design for manufacture, using techniques such as finite element analysis (FEA) to make sure that the bar has the required mechanical strength.

The AMRC Composite Centre is also providing access to its production facilities, including an automated filament-winding robot, machining centre and oven, to manufacture the prototype bars.

Tinsley Bridge Graduate Engineer Nicholas Zglobis is working alongside the AMRC team. “This project involves a completely different application of materials,” Zglobis says. “By working with the AMRC, we get access to manufacturing techniques that are pretty much unique. It’s a great group of engineers and designers who are open to anything.”

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