

# Steel fabricator turns to specialists from the AMRC to carry out strength verification tests on its welded steel ring exports



## A local steel fabricator requiring quality assurance for welded rings it makes for an international customer is working with the University of Sheffield's Advanced Manufacturing Research Centre to verify the strength of the product.

A K Orme and Son's contract involves creating reinforced rings for large grinding wheels by cutting steel rods to length, bending them and welding the ends together. The Sheffield-based company's client wanted the weld strength measuring, which meant cutting the welded section out of the ring and machining it so that the tensile strength could be measured perpendicular to the weld surface.

To do this, the firm turned to specialists from the Advanced Structural Testing Centre (ASTC) at the University of Sheffield Advanced Manufacturing Research Centre (AMRC) to carry out tests to verify the strength of

the exported steel rings. The ASTC provides state-of-the-art means, methods and skills to validate engineering materials, components, assemblies and full products.

The testing for quality verification involves taking a section of the parent material and part of the weld section of the steel ring and machining these to create tensile specimens from which a comparison can be made. The load value data of the welded section versus the parent material is then sent to the company for it to measure against the strength requirements demanded by the customer.



Steve Caborn, from the ASTC, said the relationship with A K Orme and Sons is a good example of how the AMRC and its capabilities can help SMEs to remain competitive.

Steve added: “We are in Sheffield and it’s a local company and it’s what we are here for, to help small to medium sized enterprises (SMEs). The company wouldn’t be able to put all of this system in place for tensile testing because it would make it unviable. By us doing the testing it keeps them competitive because they are able to do the quality assurance and satisfy their customer.”

A K Orme and Sons had originally approached ASTC to help it develop a non-destructive test that could be put in place on its own production line to ensure all of its welds were of a satisfactory condition.

However, it decided that installing a quality checking system would not have been viable or cost efficient for the business and instead chose to continue using the ASTC to carry out the tensile testing.

The ASTC has been working with A K Orme and Sons since 2016 following the expansion of its testing capabilities – made possible with the help of former ASTC apprentice Edward Allen who now works at the centre as an Advanced Structural Testing Technician.

Edward was in his final year as an apprentice when the head of the ASTC, Phil Spiers, tasked him with refurbishing an old CNC machine that had been donated, allowing the ASTC to make its own test pieces rather than having them done off site.

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