



Sheffield Forgemasters Engineering cast work to the Sorby Nano Investigation Centre

Sheffield Forgemasters Engineering is a world leader in specialist engineering solutions, high-integrity steel castings and steel forgings. Sheffield Forgemasters Engineering produces and stocks a range of products for nuclear, offshore oil and gas, power generation and materials processing industries. The company's key capability is in the materials processing industry and in particular steel roll production. This contributes towards manufacturing some of the world's largest steel castings, ranging from 1 to 350 tonnes in weight.

Based at the River Don works, the origins of Sheffield Forgemasters Engineering date back to the 1750s. In recent times Firth Brown amalgamated with the River Don Works to form a private sector company, employing a workforce of 6,500. The company, now in its third century, is probably the oldest steel business in the world. The company remains at the forefront of supplying an increase in global demand for high quality engineered products to key industries such as oil and gas exploration, power generation and construction.

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Martin Kearney, Technical Director of Forgings said: 'By working with the Sorby Nano Investigation Centre, Sheffield Forgemasters Engineering have been able to improve our end product to our expanding international market place'

Sheffield Forgemasters Engineering were interested in analysing the microstructure and chemical composition of spray formed work rolls. This modern and novel technique is a powerful way of refining the initial microstructure. The aim for Sheffield Forgemasters Engineering was to compare the performance of these work rolls with those from the more conventional cast production route that are currently used.

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At the Sorby Nano Investigation Centre we performed scanning electron microscopy and energy dispersive spectroscopy on the samples from the spray formed work rolls. The analysis revealed a refined microstructure but also variations in the chemical composition within the roll. These variations included silicon which were thought to be a result of the fabrication process. The analysis provided by the Sorby Nano Investigation Centre resulted in a better understanding of both the properties and processes of the spray formed work rolls.

Dr. Martin Highett, Manager of the Sorby Nano Investigation Centre said: 'We are pleased to be able to support Sheffield Forgemasters Engineering in their business by allowing them access to the latest microscopy facilities and expertise locally here in Sheffield'



Sheffield Forgemasters Engineering division has played a significant role in the development of new materials and processes in the power generation and offshore markets. To help continue this progress of innovation, Sheffield Forgemasters International aims to carry on working with the Sorby Nano Investigation Centre. The Centre is based on the multi-disciplinary North Campus site in Sheffield, and acts as a gateway for industry to access the unique expertise and research that is taking place in Sheffield's universities.

For more information please contact the Sorby Nano Investigation Centre Manager, Dr. Martin Highett at martin.highett@sorbynano.org or telephone 0114 222 5981.

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