



EPSRC Centre for Doctoral Training in Industrial Functional Coatings

USER CASE STUDY

TATA STEEL



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Sponsoring projects across the COATED CDTs



Tata Steel employs over 15,000 people in the UK with approximately double that number working in the supply chain. It contributes over £2 billion per annum to the country's economy and is especially important to the regions where the production activity is based. Steel finds itself in a plethora of applications, each with its own challenges and requirements. Over 1000 tons of British made steel was used in the Shard building in London. Wembley and the Millennium stadium are clad in organically coated UK made steel. Nissan, Mini, BMW plus a number of other companies in the automotive sector all utilise steel manufactured in the UK. In the home, food cans, washing

machines, dishwashers along with other white goods are produced using UK coated steel. If it is not made of steel, it will have been made with steel.

It is therefore unsurprising that we at Tata Steel have long been a supporter of the Engineering Doctorate training programmes at Swansea University in all their incarnations. Since its inception in 1992, EngD REs have worked on almost every aspect of the process and have been instrumental in the majority of new product developments. There are numerous examples including; research by EngDs to improve the corrosion resistance of our premium organically coated steel product allowed us to offer 40 year guarantees, something no other company could do at the time. Solving the problem of PVC plastisol coating discoloration and loss of adhesion saved the company £millions in potential complaints. Process models that elucidate conditions within the blast furnace have helped us improve efficiency. Scale reduction research helped win back a large customer who had left because of poor surface finish. The human capital produced by the EngD has been a talent pipeline for the business and we now have around 70 former EngDs working within the company, many in high level positions (including myself).

The more recent COATED CDTs have supported our aspirations to grow our value added products and diversify the markets and applications we supply to. Coatings are a vital part of our product and process mix. Our coatings plant in Shotton, Deeside produces over 100 million m² of coated steel products each year. The value of 20 tonne coated coil is commensurate with the value of a medium sized hatch back car. High quality functional metallic coatings allow us to sell steel for around £200 per tonne more than standard hot dip galvanised steel. Even incremental improvements in these areas can have a huge financial impact. Construction is another area where the COATED CDTs are providing critical support. We are currently sponsoring numerous EngDs through the COATED CDTs allowing us to explore more novel products and exciting science that can add value to our steel. Such research areas include flexible next generation photovoltaics for roofing, hydrophobic coatings, chrome free corrosion inhibitors, advanced metallic coatings, photo-degradation prevention, energy storage systems and many more. The research supports our UK plants and critically the CDT provides us with a talent pipeline for our future workforce who'll have in-depth understanding of functionalised coated steel products.

The CDT's use of industry and EPSRC funds to leverage Welsh European funds is another huge attraction for us. Coatings are a large part of our business but we also have a need for researchers in other areas such as process modelling, steel metallurgy and mechanical properties. The Advanced Materials and Manufacturing CDT, achieved through the leveraging of our funds, has been vital for our technological development outside of coatings.

