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Scaling lab research to engage the manufacturing industry: a story of vacuum thin film coatings

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To remain competitive in a rapidly changing global market, many industries are looking at implementing new and innovative products. This sometimes requires engaging with scientific and engineering researchers to bring the latest discoveries to commercial products. The ultimate success of translating these discoveries into products will come from the ability to scale-up the fabrication processes from the lab into production.

This presentation will provide an overview of the collaborative projects between university researchers and industry. Specifically focused on the scale-up research being undertaken by the Future Industries Institute at UniSA in the area of thin film coatings. This research is aimed at scaling-up the thin film capabilities to create minimum viable product that can be tested by industry to meet the specifications set by their customers.

In one example, our on-going partnership with the Malaysia Automotive Institute (through the MAI-UniSA Automotive Innovation Centre) has seen the design, build and commissioning of a pilot production flow coating plus inline magnetron sputtering system to deposit multilayer thin film coatings on plastic substrates up to 600x600mm in size. This capability allows for prototype product of light weight plastic glazing for electric vehicles to be tested.

Such an approach to thin film materials research to manufacturing process design to partnered commercialisation of product with industry has in the past seen successful development of the world's first plastic automotive mirror. In partnership with SMR Automotive, the UniSA team's ability to scale-up lab based processes to bridge the gap towards commercial manufacture was critical. As a result over 3 million of these products have been manufactured and exported to the global automotive industry.

From this, the team have expanded their scale-up research to encompass thin film coating technology in the areas of defence, agriculture, renewable energy, and medical.

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