MEDIA RELEASE

Controlling the bend

Research collaboration to set up a smart, Industry 4.0 enabled manufacturing cell to control and optimise FormFlow's bending process.

Melbourne, January 18, 2021: Geelong manufacturing start-up FormFlow is partnering with Deakin University and the Innovative Manufacturing CRC (IMCRC) to advance its unique corrugated steel bending process to enable high volume manufacturing of building products consistent in quality and shape.

Over the next 12 months, co-funded through the new IMCRC activate program, metal forming experts from Deakin's Institute for Frontier Materials (IFM) will set up an Industry 4.0 enabled manufacturing cell equipped with smart vision technologies to trace, evaluate, and continuously monitor the profile shape and forming load of corrugated steel strips used in FormFlow's bending process.

Dr Matt Dingle, Managing Director at FormFlow, said that the project represents a vital next step in FormFlow's technology development and commercialisation journey.

"FormFlow`s bending technology is unique. It is a secondary forming operation that relies on the theory of "folded developables" to limit material deformation in incoming roll formed strip to simple bending while forming a complex shape, such as a 90-degree angle.

To achieve this, the profile shape of the incoming corrugated strip must conform to the surface contours of our bending technology. Unfortunately, this is often not the case as different steel manufacturers use different profile shapes and material parameters.

Thus, being able to trace the incoming profile shapes and material properties in-real time and adjust the technology accordingly will enhance our bending process significantly, allowing us to respond to different customer requirements and deliver products of greater quality," Dingle said.

The project is being led by IFM Senior Research Fellow, Dr Matthias Weis who said that his team was looking forward to taking FormFlow's bending technology to the next level.

"We are taking a new approach towards process monitoring and control of secondary forming operations. By linking load signatures measured throughout the bending process to changes in incoming profile shape and material parameters, we hope to develop a proactive routine for FormFlow's shape control," said Weiss.

The new manufacturing cell equipped with the latest sensing technology will provide real-time data which will allow the research team to digitally model the physical FormFlow process and establish the correlation between incoming and outgoing profile shapes.

David Chuter, Managing Director and CEO at IMCRC pointed out that the outcomes of the research project will have far-reaching benefits, not only for FormFlow, but for Australia`s wider sheet metal manufacturing industry.

“FormFlow`s technology is transforming low-cost corrugated steel into a higher value-added product that is unique in the world.

By applying smart technologies, the project removes the main barrier for a much wider application of the technology. It opens the door for FormFlow to upscale their manufacturing capabilities and expand their business model – not just in Australia, but globally,” said Chuter.

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About IMCRC
IMCRC has a vision for Australian manufacturing to be thriving, relevant and globally integrated. As a not-for-profit, independent cooperative research centre, IMCRC helps Australian companies and the research community increase their relevance through collaborative, market-driven research in manufacturing business models, products, processes, and services. Find out more at www.imcrc.org.

About FormFlow
FormFlow is an engineering company developing and commercialising new manufacturing solutions for the building industry. FormFlow`s goal is to develop advanced technologies to make high performance habitable spaces that are affordable, attractive and functional for an ever-increasing number of Australians. FormFlow has already integrated some of the new technologies into a prefabricated building system to launch its “FormFlow Living” product range. FormFlow was founded in 2016 on the development of a revolutionary bending process to produce a sharp 90-degree bend in a corrugated sheet resulting in a beautiful, clean look.

About the Institute for Frontier Materials
The Institute for Frontier Materials (IFM) is a vibrant, multicultural research institute, graduating more than 30 PhD students a year and training 80 post-docs at any given time. The Institute facilitates material solutions that deliver extraordinary functionality but which also enable multiple high value material lifetimes and re-designs materials explicitly for a circular economy – to reduce waste and maximize resources. IFM also seeks to impart materials with extraordinary functionality – materials to clean water, materials to safely power electric vehicles, materials to save energy, in short, materials that have transformational benefit to society. IFM has persistently received the highest rating in Materials Engineering from the national excellence in research assessment.

About Deakin University
Deakin, named after Australia’s second Prime Minister, is a young contemporary university with a reputation for being innovative. We aspire to combine excellent research and outstanding teaching with a strong focus on the communities we serve. Deakin is ranked in the top 2 per cent of the world’s universities in each of the major rankings and ranked 211 in the Academic Ranking of World Universities (ARWU). Deakin researchers are making a difference through world-class research and innovation.

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