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## Trinity engineers develop smart, reconfigurable manufacturing technology

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Engineers from Trinity have developed smart, reconfigurable manufacturing technology, which provides advanced automated product testing and will unlock data innovations of the future. The developments have come from two interconnecting Projects – CIRCLE and INTERPrit – involving the Trinity research team [STAM \(Science and Technology in Advanced Manufacturing\)](#) and Irish manufacturing Small-Medium Enterprise (SME), Ceramicx Ltd.

Project CIRCLE (Ceramic IR heater Characterisation Laboratory Equipment) enabled the creation of the smart, reconfigurable, automated test machine. Uniquely this test machine is made of reconfigurable test 'cells' which communicate with each other to create custom test processes. One huge benefit of this is that a single machine can test hundreds of part types by changing automatically. Presently, the CIRCLE machine is collecting test data from thousands of parts, and this data will unlock never-before-seen production insights, and enable next generation production and product improvement initiatives.

Project INTERPrit (Intelligent reconfigurable Part coding Technology) enabled the creation of a Hybrid Continuous Ink Jet (CIJ)/Laser coding technology. The mixture of high-temperature ink with laser pre/post processing, has created a one-of-a-kind, robust, professional, coding solution for high temperature materials. Uniquely, this novel robotic hybrid coding process was modularised into a CIRCLE test 'cell' and integrated into the CIRCLE test machine seamlessly.

Research Fellow in Trinity's School of Engineering, **Dr Jeff Morgan**, said: *"Projects CIRCLE and INTERPrit demonstrate the power of academic and commercial collaboration. This partnership has combined cutting-edge academic research with commercial industrial knowledge to create innovation in Irish manufacturing."*

*"Investing in research and development is a catalyst for economic growth. Presently, European manufacturing is entering a digital age of technology known as Industry 4. Projects CIRCLE and INTERPrit are a step forward for Irish Industry 4 advancement, with smart reconfigurable manufacturing technology."*



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