

## Case Study

# The AMRC invents game-changing hybrid 3D printing process

An engineer with the Advanced Manufacturing Research Centre's (AMRC) Design and Prototyping Group has developed a unique hybrid 3D printing process that allows electrical, optical, and structural elements to be introduced throughout an additively manufactured component during the build process.

'THREAD' is a patent-pending technology, which means components can now be manufactured with in-built, continuous connectivity and additional functionality passing through the X, Y and Z axes.

The fully automated THREAD process is suited to a variety of additive manufacturing (AM) platforms. It has so far been successfully demonstrated on machines used for 3D printing polymer components.



AMRC Development Engineer and AM specialist Mark Cocking, developed the new technique, he said: “The technology has scope to simultaneously add multiple, industry recognised threads of differing materials into one component to give that component additional functions. This will open AM up to a greater variety of uses.”

“The technology is a potential game-changer and could be used across many sectors such as medical, aerospace and automotive; where weight and size of components is critical or where components would benefit from integrated data transfer and the protection of sealed connective tracks.”

The technology will be an advantage in the manufacture of components requiring encapsulated electronics. Such as components for use in medical prosthetics, consumer electronics or structural components that require electrical connections and that until now would have been secured externally to the component.

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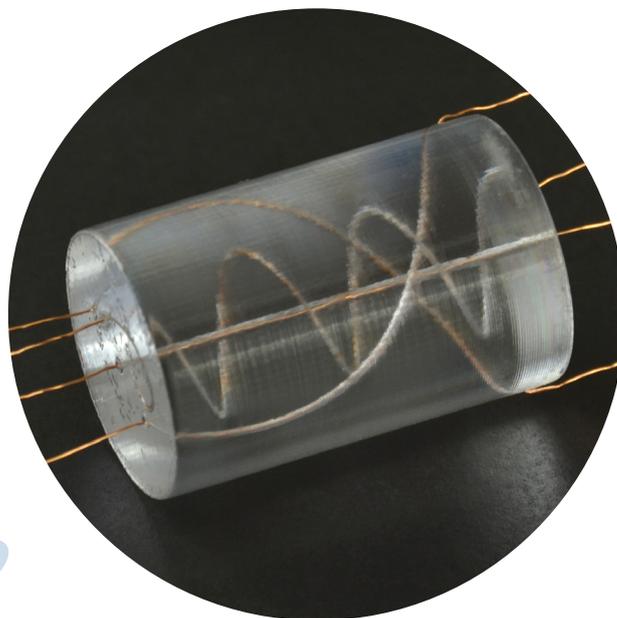
Mark Cocking,  
AMRC Development Engineer and AM specialist.

The nature of the ‘sealed’ conductive tracks could also be of benefit for components which may be sensitive to contamination from debris, corrosion or impact.

“THREAD technology has potential to be developed as an add-on for existing AM platforms and also incorporated into next generation AM technologies,” added Mark Cocking

Chris Iveson, who is driving the commercialisation of this technology, said: “We see THREAD transforming the functionality of additively manufactured components. Feedback from our contacts in various industries indicates a real need for this technology, with new potential applications being discussed daily. This is a great example of the AMRC using its unique expertise to solve real industry problems.”

The AMRC are further developing the THREAD process and technology for various commercial markets. Manufacturers of 3D printers and industrial users of 3D printing processes are encouraged to contact the AMRC Design and Prototyping Group.



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