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**Renishaw collaboration demonstrates additive manufacturing capabilities for spinal implants**

[Global engineering company](https://www.renishaw.com/en/renishaw-enhancing-efficiency-in-manufacturing-and-healthcare--1030?utm_source=Stone+Junction&utm_medium=Hard+news&utm_campaign=REM136) **Renishaw has collaborated with two advanced technology companies to demonstrate the advantages of additive manufacturing (AM) in the production of spinal implants. By working with Irish Manufacturing Research (IMR) and nTopology, the project shows how streamlined the transition from design to AM can be when working with the right partners.**

**Manufacturing research organisation IMR designed a representative titanium spinal implant, aimed at the cervical spine (c spine), using advanced manufacturing software company nTopology’s generative design software. IMR then manufactured the implants using Renishaw’s RenAM 500M metal AM system.**

**“AM can be used to manufacture spinal implants with lattice structures, which cannot be achieved with conventional manufacturing techniques,” explained Ed Littlewood, Marketing Manager of Renishaw’s Medical and Dental Products Division. “An implant with a lattice structure is lightweight, can be optimised to meet the required loading conditions and has a greater surface area, which can aid osseointegration. Therefore, AM implants can be designed to mimic the mechanical properties of bone, resulting in better patient outcomes. But all of this comes to nothing if you do not have the tools to create the design.”**

**“Traditional CAD tools weren’t built to design complex lattice structures; the job would be difficult or even impossible.” Explains Matt Rohr, nTopology’s Application Engineering Manager. “nTopology was designed to complement existing workflows and make the job easier. We cut the design time of complex structures from days to minutes which was a crucial component in helping this project run to schedule.”**

**“Renishaw worked tirelessly with us on improving the AM process for producing the spinal implants,” commented Sean McConnell, Senior Research Engineer at IMR. “Together, we designed a set of experiments that yield the most appropriate parameter settings for the product. As a result, we reduced the amount of post processing required on key features of the implants by a factor of ten.”**

**Patients with medical conditions including degenerative disc disease, herniated disc, spondylolisthesis, spinal stenosis and osteoporosis can require spinal implants to restore intervertebral height. The improved implant design made possible by AM means patients may require shorter surgery time and fewer revision surgeries, saving healthcare resources and costs.**

**Renishaw also uses its AM machines to produce healthcare products, such as craniomaxillofacial implants and dental frameworks, at its site in Miskin, South Wales. To find out more about Renishaw’s healthcare products, visit the company’s website** [https://www.renishaw.com/en/medical-and-healthcare](https://www.renishaw.com/en/medical-and-healthcare--32082?utm_source=Stone+Junction&utm_medium=Hard+news&utm_campaign=REM136)**.**

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Notes to editors

UK-based Renishaw is a world leading engineering technologies company, supplying products used for applications as diverse as jet engine and wind turbine manufacture, through to dentistry and brain surgery. It has over 4,500 employees located in the 36 countries where it has wholly owned subsidiary operations.

For the year ended June 2018 Renishaw recorded sales of £611.5 million of which 95% was due to exports. The company’s largest markets are China, the USA, Germany and Japan.

Throughout its history Renishaw has made a significant commitment to research and development, with historically between 13 and 18% of annual sales invested in R&D and engineering. The majority of this R&D and manufacturing of the company’s products is carried out in the UK.

The Company’s success has been recognised with numerous international awards, including eighteen Queen’s Awards recognising achievements in technology, export and innovation.

Further information at [www.renishaw.com](http://www.renishaw.com)

Irish Manufacturing Research (IMR) is a leading manufacturing Research and Technology Organisation with labs and industrial pilot lines in Dublin and Mullingar, Ireland.  IMR works with leading global and indigenous brands to ***de-risk*** and ***de-mystify*** new and emerging technologies and to ***deliver*** high impact collaborative research to enable global leadership in advanced manufacturing.

IMR has over 50 researchers with 100’s years of combined Industry Expertise working in areas such as 3D printing, Data Analytics, Knowledge Management, Energy Efficiency, Advanced Robotics and the Industrial Internet of Things.  IMR activities span national and European research collaborations, prototyping services, training and Industry networks.

Further information at [www.imr.ie](file:///\\renishaw.com\global\GB\PLC\DPD\Data\Marketing\incise_marketing\Case%20studies%20+%20news%20articles\IMR%20&%20nTopology%20spinal%20implant\www.imr.ie)

nTopology is a software company creating design and engineering solutions to support automation initiatives and advanced manufacturing. By making an environment that is driven by data and physics, and by utilizing the latest 3D modelling technology, creative restraints are removed, and engineers can fully realize the benefit of advanced manufacturing techniques like additive manufacturing.

The goal of nTopology products is to enable engineers to better define, represent, and lock down various engineering processes, digitally. When engineers have robust tools that efficiently integrate important data, they can adequately capture their knowledge and repurpose it for tomorrow’s products.

Further information [www.ntopology.com](file:///\\renishaw.com\global\GB\PLC\DPD\Data\Marketing\incise_marketing\Case%20studies%20+%20news%20articles\IMR%20&%20nTopology%20spinal%20implant\www.ntopology.com)