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**Renishaw extends ParaMatters collaboration for optimised lightweighting and automation of metal additive manufacturing**

[Global engineering company](https://www.renishaw.com/en/additive-manufacturing-systems--15239?utm_source=StoneJunction&utm_medium=Hard+news&utm_campaign=REN424) Renishaw is working with [autonomous topology optimisation expert ParaMatters](https://paramatters.com/) to give manufacturers access to efficiently manufactured metal 3D printed parts.

ParaMatters’ CogniCAD cloud solution enables users to easily upload part geometries for optimisation and automatically produces lightweight macro, meso and lattice structures using generative design principles backed up with high resolution finite element analysis (FEA) validation. CogniCAD users are no longer constrained by traditional complex CAD/CAE/CAM tools, instead they simply upload their part and follow the intuitive CogniCAD workflow and user-friendly interface to prepare a printable model.

Renishaw has previously used CogniCAD to reduce the weight of the upper mounting bracket for [ECOSSE Moto Works’](http://ecossemoto.com/) motorcycle, the Nightstalker. Lightweight components are important in motorcycles for ensuring fuel efficiency and improved dynamics. Here, the two complementary technologies are used together to produce lightweight and structurally robust components and Renishaw’s collaboration with ParaMatters has made both technologies accessible to its customers.

“We worked with Renishaw to establish a smooth workflow that made it possible to automate the entire process from design to manufacturing,” explained Michael Bogomolny, Co-Founder & CTO of ParaMatters. “CogniCAD uses topology optimisation, computational geometry and high-performance computing to autonomously generate designs that are adapted to make the best use of AM.”

ParaMatters produced a design for the motorcycle bracket, which included a lattice structure to reduce the weight of the part. Once redesigned, the bracket’s structural performance was validated using FEA, provided by CogniCAD, and assessed by fitting it onto the motorcycle. The results exceeded expectations. The final bracket was 35 per cent lighter than the original part, the maximum stress was 20 per cent less and the fundamental natural frequency of the part was two per cent greater.

In a new extension of the collaboration, Renishaw will use CogniCAD at its AM Solutions Center in West Dundee, Chicago. ParaMatters will join Renishaw’s network of software vendors and will provide a “Click to Print” functionality from CogniCAD. This will enable design review and printability assessment by Renishaw experts before additive manufacture commences. ParaMatters will also have access to Renishaw additive manufacturing (AM) systems for joint customer projects.

“Generative design has a clear role to play in lightweighting parts that cannot be produced by computer numerical control (CNC) machining alone,” explained Stephen Anderson, AM Business Development Manager at Renishaw Inc. “However, for many manufacturers, the initial investment required to perform such optimisations is too high. By working with ParaMatters potential users can easily try topology optimisation, see the results and then engage with Renishaw to assess final suitability for additive manufacturing.”

“We successfully use Renishaw to additively manufacture ParaMatters optimised designs and have been really impressed with the results,” commented Bogomolny. “We have developed CogniCAD, Meta-Materials Compiler and our new Unique Meso-Structural Designer, that can be used to develop realistic bone-like structural implants - all with simple web-based GUIs allowing for the fast creation of optimal, FEA checked, components. We believe working with Renishaw and implementing “Click to Print” in our offering will help open up ever wider markets for metal additive manufacturing and our software.”

For more information about Renishaw’s AM systems and applications of the technology, visit [https://www.renishaw.com/additive-manufacturing](https://www.renishaw.com/en/additive-manufacturing-systems--15239?utm_source=StoneJunction&utm_medium=Hard+news&utm_campaign=REN424)

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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)