Sector focus
3D Printing

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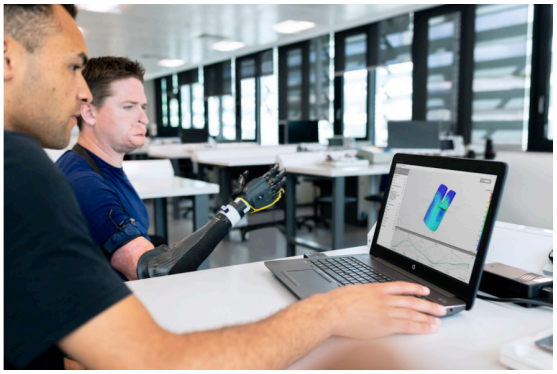
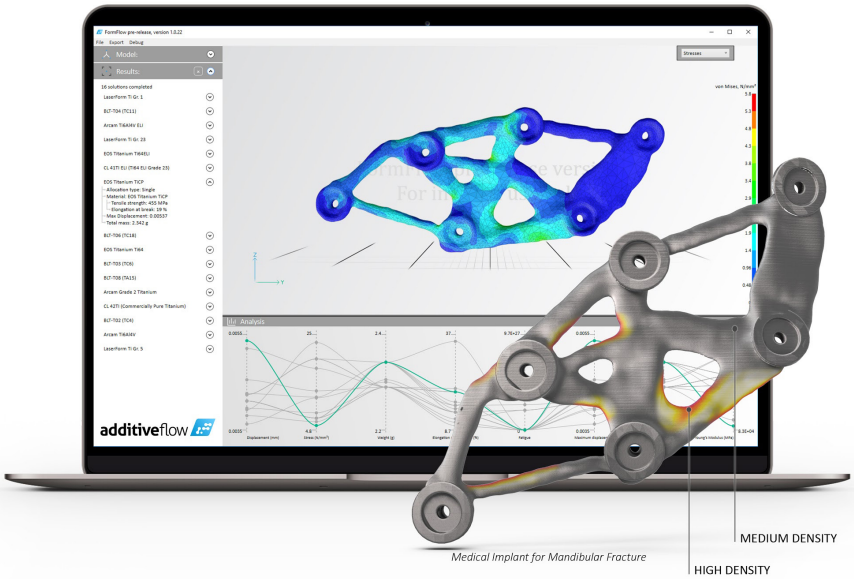
Additive Flow

In traditional additive manufacturing (AM) methods, there have always been constraints in terms of what materials can be used. Additive manufacturing capable of building functional multi-material components has been a key challenge in recent years. The solution lies in Additive Flow's multi-functional software, with multi-property capabilities, driven by a multi-physics approach.



Challenge

Multi-material parts have the potential to advance the performance and simplify the assembly of complex, high-value devices and machinery. The emergence of multi-material AM will also necessitate a big change in the computer-aided design (CAD) process that takes into account material allocation and characteristics. As a result, the CAD workflow is being re-thought specifically for printing multi-material parts.



Medical Implant for Mandibular Fracture

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HEAD OFFICE
Goodfellow Cambridge Limited
Ermine Business Park
Huntingdon, PE29 6WR
England

Tel: 0800 731 4653 (UK)
or +44 1480 424 800

Fax: 0800 328 7689 (UK)
or +44 1480 424 900

info@goodfellow.com
www.goodfellow.com

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Solution

Additive Flow was established to take the benefits of additive manufacturing to the next level. This advanced company creates intuitive, physics-driven and generative design software for multi-material and multi-property design. AdditiveFlow's optimisation tools are relevant across the entire development and manufacturing value chain and the company has recently partnered with Goodfellow in order to further push the boundaries of innovation.

The company's cutting-edge software helps to empower engineers and innovators to produce new prototypes and products. The software helps to find the right material and uses optimisation to change the material's shape in order to determine which material would be best for each project. Working with Goodfellow has allowed the team to create different types of materials, in different ratios, that can be used for innovative prototypes and projects.

By using Goodfellow's materials and renowned material science expertise, new complex materials can be created, thanks to the team's understanding of the practicality of material combinations and possibilities. For instance, the team canadvise on when and how materials can be mixed in multi-material parts, as either discrete or gradient allocations based on material components. This can result in changing an item's characteristics and effectively reducing component mass without compromising on performance. This is useful for innovation across a wide range of applications, including motor sport – where such specialist materials can be strategically placed within a vehicle to enable specific types of performance.

Future design and engineering solutions are likely to include a choice of metals, alloys, polymers, composites or ceramic materials. Additional sectors that could benefit from using the software include aerospace, medical, healthcare, optics and many more. Dependent on the requirements of the end user, the software can guide a benefit analysis, comparing performance requirements against business requirements such as sustainability and full lifecycle project costs. These decisions will help scientists, designers, and engineers put the right material, with the right property, in the right place, to produce the best possible end product.

By working together, Goodfellow and Additive Flow are combining collective expertise and data, further validating the software to further its purposes and applications. Essentially, the partnership is bridging the gap between materials, optimisation and production – resulting in the optimal outcome.

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