
PRESS RELEASE

Hexagon ICME solution doubles the pace of engineering innovation by integrating advanced materials into design

LUXEMBOURG – Apr 16, 2020 – e-Xstream engineering, part of Hexagon’s Manufacturing Intelligence division, has unveiled a new [10X Integrated Computational Material Engineering \(ICME\) Solution](#) that applies academic research with leading software and inspection solutions to dramatically accelerate innovation using by enabling manufacturers to design, engineer and test components virtually through simulation.

Integrated Computational Material Engineering (ICME) is an emerging technique that ensures optimal combination of materials and manufacturing processes to innovate and maximize performance, resulting in reduced costs and lead time.

10X ICME from Hexagon offers the industry the most complete and integrated solution portfolio to leverage the full potential of ICME. It is the first industrialised solution to apply ICME so that companies can exploit the ideal combination of materials with manufacturing processes to innovate and maximize performance, while also reducing cost and product lead time. By integrating design, engineering and testing, manufacturers can make informed choices early in product development to improve quality or reduce waste and also harness data to devise more efficient, connected design and engineering workflows.

ICME enables advanced materials such as carbon fibre composites to be selected and applied to their full potential by improving the accuracy of, and trust in, material simulations with better data and modelling. Using 10X ICME, it is now possible to predict how combinations of advanced materials such as composites and manufacturing methods from injection moulding to 3D printing will affect everything from the speed to the sustainability of future aircraft and cars. It reduces the amount of materials testing required and correlates measurement with simulation so manufacturers can more easily validate simulations. In addition, because materials data is made readily available, engineers can apply accurate values to make optimal designs rather than relying on approximations.

The digital integration of end-to-end supply chains will also cut material waste by significantly reducing dependence on extensive real-world prototyping and over-design. A single material-centric ‘digital twin’ of the entire manufacturing line from material development to final part performance will enable organisations to predict the performance of end products at concept stage. It also presents opportunities for data-driven customisation of advanced materials for specific purposes such as recyclability or energy-efficiency.

10X ICME significantly lower barriers to innovation by enabling ground-breaking new technologies such as lightweight blended wing airliners or ultra-quiet electric vehicles to be developed much faster than today. The solution is already being used by a major aerospace and automotive original equipment manufacturers (OEMs) to significantly accelerate the rate at which new designs can be brought from concept to reality. Initial customer projects using this new approach are being completed in half the time and at a third of the cost.

There are 10 pillars within the 10X ICME solution, which combine the different ICME technologies from the ecosystem to address specific use cases. Manufacturers can choose the pillars most pertinent to them today and mould their solution to their needs as the disciplines and processes derive value from evolve.

Developed in close collaboration with Original Equipment Manufacturers (OEMs) and material suppliers to address their industrial needs, 10x ICME draws on cutting-edge material science research, Hexagon's metrology, software and e-Xstream engineering material simulation technologies and a growing industrial partner ecosystem. It integrates the supply chain of materials suppliers, software tools, manufacturing equipment and metrology to make the best possible use of data and enable real-world implementation for many manufacturing environments

Dr. Waruna Seneviratne, Director, National Institute for Aviation Research (NIAR) commented: "As we develop advanced multi-functional materials and processes, it is essential that we have an understanding of how molecular changes impact structural properties. Although it is impractical to develop microscale models in structural level, multi-scale modelling that provides useful information to the next scaled up models is essential in understanding design challenges, optimize structures, and mitigate risks as we climb the building blocks of design and certification."

Dr. Jan-Anders Mansson, Distinguished Professor of Materials & Chemical Engineering, Purdue University said: "We have been working with Hexagon and e-Xstream to integrate cutting-edge metrology, digital technology and material science, which is merged in our manufacturing testbed with Hexagon's state-of-the-art hardware and software for Smart Factory solutions. The aim now is to develop a digital parallel of the whole end-to-end journey from design to manufacturing. We'll be able to zoom in and out from a macro to micro level from line production to individual cell production."

Roger Assaker, CEO, e-Xstream engineering, said: "Bringing together OEMs, Universities, materials suppliers and technology partners in a business-driven ecosystem has enabled us to develop the unique, end-to-end 10X ICME solution that has already helped early adopters complete projects in half the time and at a third of the cost. We believe connecting materials insights to engineering will accelerate the Fourth Industrial Revolution, enabling new products to be made efficient, safe and sustainable before the first prototype is even built."

Guillaume Boisot, Head of Business Development, e-Xstream engineering commented: "ICME will enable automotive manufacturers to optimise the use of composites within their design processes, enabling lighter and more efficient vehicles designs and material-centric innovation for new mobility solutions. Looking at existing vehicle designs alone, optimising how composites are used will save manufacturers an average 22.5kg material waste per vehicle – that's 2.1 million tonnes less composites used in new cars a year globally, so there's a huge opportunity reduce waste and enable more efficient transport."

About Hexagon | e-Xstream engineering

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

e-Xstream engineering, part of Hexagon's Manufacturing Intelligence division, provides Integrated Computational Materials Engineering (ICME) solutions to innovate and optimise product performance using the right materials and manufacturing process for the right application. Learn more at [e-Xstream.com](https://www.e-xstream.com). Hexagon's Manufacturing Intelligence division provides solutions that utilise data from design and engineering, production and metrology to make manufacturing smarter.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 21,000 employees in 50 countries and net sales of approximately 3.9bn EUR. Learn more at [hexagon.com](https://www.hexagon.com) and follow us [@HexagonAB](https://twitter.com/HexagonAB).

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