

AUTOMOTIVE LIGHTWEIGHTING

HPC SPEEDS UP OPTIMIZATION FOR TAILOR ROLLED BLANKS AT MUBEA

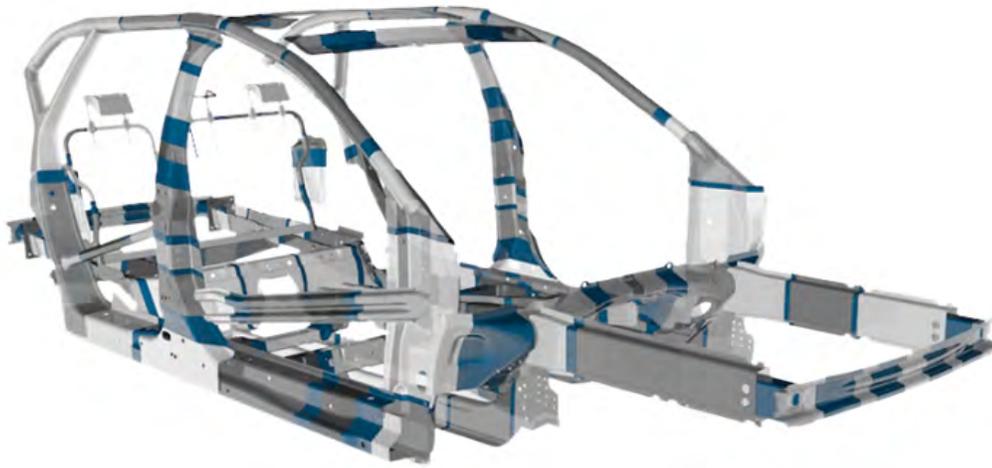
Mubea and Automotive Lightweighting

Lightweighting is critical in today's automotive industry. In addition to reducing a car's fuel consumption and enabling it to meet CO2 emission requirements, a lighter vehicle structure can add to driving comfort and cost efficiency, using less material while maintaining structural safety standards. Mubea Tailor Rolled Blanks GmbH, based in Germany, is a world-class global supplier of lightweight automotive chassis, motor components, and tailor rolled blanks (TRB). Tailored rolling is a process in which sheet thicknesses is varied to meet the needs of an automotive structure.



With the Altair Unlimited virtual appliance we were able to reduce the turnaround time of a lightweight study significantly.

Niklas Klinke, CAE Engineer
at Mubea Tailor Rolled Blanks
GmbH



Compared to a traditional auto body part with constant sheet thickness, a TRB can eliminate approximately 20% of a structure's weight without compromising performance. Mubea supports its customers by identifying lightweight potential in a vehicle, designing the right tailor rolled parts, and conducting full lightweight studies with full-vehicle models using their own CAE resources. The company's engineers use the Altair HyperWorks™ CAE suite to design and optimize parts.

Mubea took the HPC Challenge to move computing resources to the cloud with Altair Unlimited

Design optimization of TRBs is based on crash simulations, which can take between 1-12 hours each. Multiply this by the number of runs needed to explore and optimize different design concepts, and high-performance computing (HPC) becomes a requirement. Mubea typically handles crash simulations via their own local Altair Unlimited physical appliance, a private cloud solution with fully configured hardware and software plus unlimited use of a broad variety of Altair software.

The HPC Challenge: Computing in the Cloud

For the HPC Challenge, the Altair Unlimited virtual appliance — the cloud-based version of Altair Unlimited — was combined with solutions from AWS and Intel. Participants chose from among 6 different configurations, starting with 32 cores and going up to 128+ cores on the Intel® Xeon® processor E5 product family, plus Altair Unlimited. They could access the solutions free for 7 or more days to complete the engineering tasks for their projects. "The HPC Challenge was a good opportunity," says Niklas Klinke, CAE engineer at Mubea. "It showed the Altair Unlimited virtual appliance can be a very good opportunity for us, because we can run optimizations in the same manner we are used to doing on our local resources."

Powerful on-premises resources are no longer necessary to investigate new product concepts with design exploration. With the Altair Unlimited virtual appliance, users get flexible access to all the CAE tools and computing resources they need. "Cloud-based resources help us react to short-term peaks in HPC performance. I think it will become a common practice to rent cloud space for big studies rather than host one's own hardware and software resources," says Klinke. The cloud-based solution delivers industry-standard security and performance comparable to on-site resources. Now Mubea's engineers can react more quickly than ever to new projects and changing requirements.

The Future of Cloud-based CAE

Cloud-based CAE is an increasingly attractive option for businesses of all sizes. According to a 2019 Bitkom survey, 73% of all companies in Germany use private or cloud computing resources, up from 54% just 3 years earlier — and that percentage will only increase. "For Mubea I see a lot of potential in the Altair cloud offering and with the agreement of our customers, we would definitely like to move some of our project workload to the cloud," concludes Klinke.