



EURO²

Presentation at the HPC Forum, NCC Bulgaria, 16.11.2023



Improving the furniture precision

Company

PLYGear is specialized in the design, computer modelling and manufacturing of furniture born in timely recorded digital dreams supported by the plywood unique properties.

Challenges & Solution

The models designed and implemented in virtual environment are complex and require state-of-the-art computational techniques to resolve. The required computational resources are extensive and need high-performance computing as all Plygear items need the precision of the modern processing methods.

Simulations were performed to acquire knowledge in running effectively new design methods. The impact of using large-scale HPC models improved both the precision and the production rate.



Benefits

- ✓ Accelerate the development of new designs via simulations
 - ✓ Each model is designed and implemented in virtual environment
- 👉 **a functional minimalist design offered to our customers**

“PLYGear wanted to have a better approach to furniture design for a complex environment by mixing ideas with passion and engineering precision. The most characteristic of all PLYGear items is that thanks to the precision of the modern processing methods the assemblies are made extremely reliable and impeccable. ”

Borislav Georgiev, MS in Engineering, Technology Developer @PLYGear

Full story:



Improving the furniture precision

Challenges

The models designed and implemented in virtual environment are complex and require state-of-the-art computational techniques to resolve.

"Sustainability" for HPC means in such kind of applications the efficient utilisation of resources. Better utilization of resources, coupled with shorter timeframes, means improved environmental sustainability.

Discrete manufacturing: Reducing or eliminating the need for physical testing, predictive and prescriptive maintenance, automation of product lifecycle management, and shortened design cycles.

Discrete manufacturing refers to the repeatable production of distinct items created from component parts.

HPC - what is it for?

- HPC can shorten manufacturing design cycles by reducing or eliminating the need for physical prototyping and testing. This feat is often accomplished via digital twin technology, which creates a virtual representation of the technology in question via software designed to accurately reflect the physical object.
- Physically testing fewer systems has a net positive impact on the environment as well as the supportive systems powering prototyping and testing phases.

HPC - solution

- By leveraging HPC, discrete manufacturing and digital twins can help companies reduce their costs, resource usage and carbon footprint while positioning them to become more disruptive, innovative and agile via customer-centric business models.
- Simulations were performed to acquire knowledge in running effectively new design methods. The impact of using large-scale HPC models improved both the precision and the production rate.

Thanks!



Funded by
the European Union



EuroHPC
Joint Undertaking

This project has received funding from the European High-Performance Computing Joint Undertaking (JU) under grant agreement No 101101903. The JU receives support from the Digital Europe Programme and Germany, Bulgaria, Austria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Lithuania, Latvia, Poland, Portugal, Romania, Slovenia, Spain, Sweden, France, Netherlands, Belgium, Luxembourg, Slovakia, Norway, Türkiye, Republic of North Macedonia, Iceland, Montenegro, Serbia