NCC SLING Success Stories: A Case of Collaboration with the GOSTOL – GOPAN

Study of AI-enhanced Production Screening

GOSTOL – GOPAN is a global provider of integrated industrial solutions for middle-sized and large industrial bakeries, including equipment for dough mixing, dividing, molding, proofing, baking and cooling. Complete adaptability to the buyer's needs, more than 70 years of experience in the field of baking industry, technically and technologically sophisticated, energy-efficient equipment, innovativeness and reliability are our main qualities.

Technical Challenge

To truly differentiate our offerings in a competitive market, it is essential to innovate how we present our machinery to customers. By leveraging advanced technologies, such as image-based modelling, real-time data integration and various simulation methods, we can deliver a compelling, immersive experience that showcases the full potential of our technical solutions for the baking industry.

Our interactive **Object Recognition (OR) Table** serves as a dynamic platform to present Gostol's product portfolio in an engaging, intuitive, and highly informative way. Through interactive 3D models, customers can explore not only detailed technical specifications but also real-time economic performance data.

To fully realize this vision, the development and deployment of high-fidelity visualizations, from detailed 3D modelling and CFD simulations to advanced data analytics, require substantial computational power. Therefore, HPC resources are critical to optimize software performance, accelerate simulation workflows, and ensure seamless, real-time interactivity across the system.

Solution

With HPC we wanted to achieve the following goals.

- Real-time CFD simulations to prepare visualisations of the airflow and steam distribution within machines, providing deep insights into thermal efficiency and process optimization.
- Interactive exploration of 3D models, allowing users to rotate, zoom, and dissect components to understand design and functionality.
- Access to live sensor data and performance analytics, including current readings from various monitoring systems.

HPC was really needed only for the first case, CFD simulations. The second case which is related to interaction with 3D models has been achieved on a local workstation, since only one model can be used at the same time and having a locally installed GPU doesn't need internet connectivity to an HPC cluster. Third case is easily achieved with one or more virtual servers aggregating the data from different machines and providing visualisations to a remote location. However combing data from various systems and sensors, can also be used for predictive maintenance using AI, but this was not the case in this project.

EuroHPC Joint Undertaking
REPUBLIC OF SLOVENIA MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATION

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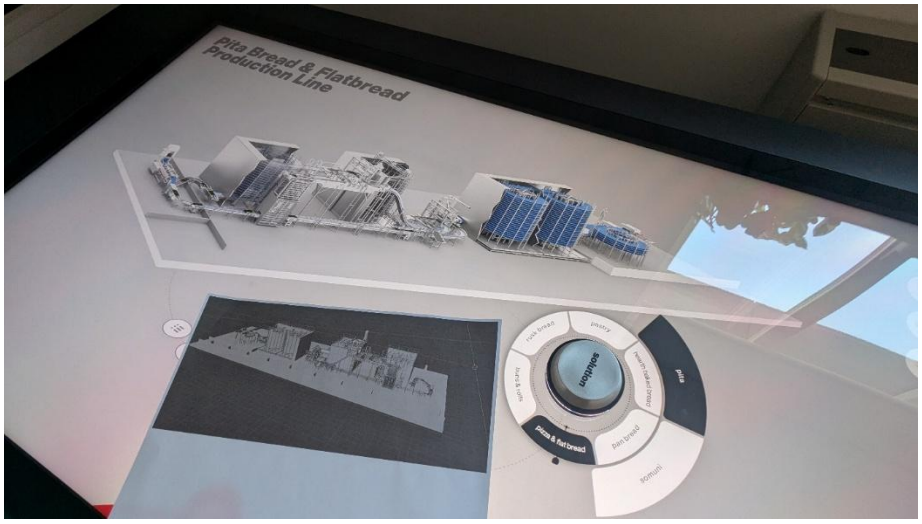

Business impact

As we've already proven, using HPC clusters on demand is very beneficial, since there is no need to invest in HW, allowing local workstations to be used for daily usage and at the same time having a lot of resources available when you need them.

However, sometimes it is easier to use local environment and incorporating HPC would cause more problems than benefits, this was proven by using a local GPU for interaction with 3D modelling.

Combing data from different locations, systems, sensors can be used for advanced data analytics, understanding the behaviour of the machines or part of the machines and allowing us to predict failures. This could be achieved with AI and GPUs, but this is the case for a new project.

Benefits

- Shorter simulation time
- Enhanced visualizations
- Allowing advanced data analytics

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