

MARKET SECTOR:
VARIOUS

DMA DIGITAL
MANUFACTURING
ACCELERATOR
FROM THE MANUFACTURING TECHNOLOGY CENTRE

VIRTUAL SIMULATION PLATFORM TO INNOVATE MANUFACTURING

Virtual manufacturing is a computer-based simulation-driven technology for defining and visualising manufacturing processes and systems, diagnosing manufacturing related issues and evaluating solutions.

THE CHALLENGE

Common manufacturing challenges often include a number of simulation disciplines. A solution requires a cross-functional team of simulation engineers and system engineers to generate candidate solutions as well as interpret simulation results. For efficient collaboration, the following challenges need to be addressed:

- Definition of inputs, outputs, and intermediate data
- Data exchange between simulations
- Compute resources and execution management for simulations

MTC'S SOLUTION

Our Virtual Factory Environment provides a ready-to-use environment for multi-disciplinary simulation within manufacturing engineering.

Workflows manage executing the simulations according to the specified hierarchy and automate data handling.

The platform permits multiple engineers to access integrated simulations within a workflow, define inputs and outputs, and specify ranges or sets to restrict input parameter values.

This enables system engineers to define candidate solutions, considering the simulations as black box models.

"THE MULTI-DISCIPLINARY VIRTUAL FACTORY ENVIRONMENT ENABLES ENGINEERS AND SUPPLIERS TO COLLABORATE TO IDENTIFY AND DE-RISK NOVEL MANUFACTURING TECHNOLOGIES IN AN AFFORDABLE AND EFFICIENT WAY"

DR EMILE GLORIEUX

Senior Research Engineer,
The Manufacturing Technology Centre

THE OUTCOME

Our Virtual Factory Environment enables multi-disciplinary simulation and optimisation for designing and configuring production systems.

This has been used at The MTC for the packaging of pharmaceutical tablets and producing personal care products.

These workflows used 5 to 6 interacting simulations to de-risk and optimise innovative elements within the systems.

Workflows included Computational Fluid Dynamics (CFD) simulation, thermal models, Discrete Event Simulations (DES), robot simulations and mathematical models.

BENEFITS TO THE CLIENT

The multi-disciplinary simulation analysis allowed engineering teams to refine and de-risk the design before implementation. Because of the efficiency gains with the multi-disciplinary Virtual Factory Environment, an analysis could be performed with half the effort.

This allows engineers to evaluate more candidate solutions, thereby gaining deeper insights and further refining the optimal solution.

To find out more, contact our Digital Engineering Team via enquiries@the-mtc.org, or visit www.digitalmanufacturingaccelerator.com

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