

## FACTORY AUTOMATION

# Customer Reference

## Toyota Motor East Japan, Inc.

### Using 3D Simulation to Optimize the Logistics Process

### Empowering the on-site team to make meaningful improvements

Toyota Motor East Japan has implemented Mitsubishi Electric's MELSOFT Gemini 3D simulator to optimize logistics operations at its production sites. By creating virtual models of logistics systems, the company has gained a comprehensive view of operations, enabling on-site teams to take a more active role in identifying and implementing process improvements.

#### Key points

- 3D modelling and simulation of logistics operations in a virtual environment
- Enhanced visualization makes complex processes easier to understand
- On-site teams empowered to identify problems and propose improvements



Based in the Tohoku region, Toyota Motor East Japan manages the end-to-end production of compact cars, including popular models like the Yaris, Aqua, Sienta, and Lexus LBX. The company continuously works to optimise factory layouts and logistics processes to ensure safety, quality, and efficiency. However, as Kohei Hanzawa from the Digital Engineering Support Group notes, "It was not easy to find the right tool for this job."



Kohei Hanzawa  
Digital Engineering Support  
Group, Information Systems  
Division,  
Toyota Motor East Japan, Inc.



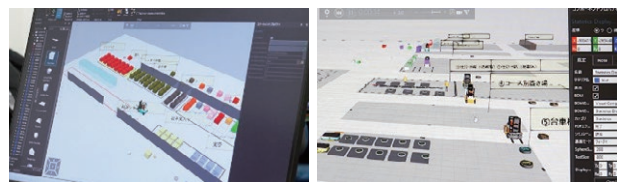
Toyota Motor East Japan is responsible for the whole production process for compact cars, from planning and development to manufacturing.

Looking for a more effective tool, Toyota Motor East Japan found Mitsubishi Electric's MELSOFT Gemini simulator. This 3D simulation platform enables teams to visualize equipment layouts and operation timings in a virtual environment before actual hardware is installed.

This approach helps identify potential issues early, reduce development time, and streamline deployment.

#### Easy 3D modelling using standard parts

The company decided to trial Gemini in a component supply warehouse. They reproduced the warehouse layout in Gemini, then used it to explore the ideal process and work sequence by moving stock and transfer equipment around on the screen. In order to perform simulation, they first needed to reproduce the actual logistics warehouse in 3D, but this was easy to accomplish with the huge selection of standard parts available in Gemini.



MELSOFT Gemini makes it easy to create a 3D model of the site layout by combining standard parts.

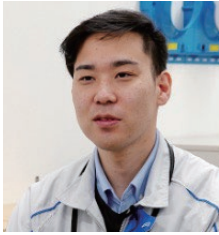
"We received close support from Mitsubishi Electric when we introduced Gemini, enabling a smooth start," says Seichi Kamio from the Digital Engineering Support Group. "The 3D model of the warehouse gave us a bird's-eye view of the whole process, something that just wasn't possible with 2D drawings."

This broader perspective helped the team spot inefficiencies in areas such as lift transporters and flow lines, leading to quicker and more effective problem-solving.



Various equipment is used in the logistics warehouse. Gemini allows the whole process to be visualized.

With Gemini, issues that were once difficult to detect from 2D layouts became far more visible. "Previously, it was hard to understand what was happening on site from just drawings," Kamio explains. "You might find things looked completely different in reality, or you'd need to rely on the memory of the original designer. Now, as the next step, we are working on improving the transfer line in the production process."



Seichi Kamio  
Digital Engineering Support  
Group, Information Systems  
Division,  
Toyota Motor East Japan, Inc.

### Revealing hidden issues on site

The benefits of simulation are now extending beyond engineering departments to daily operations. Yuto Totsuka, from the Molding Process division, highlights one example: forklift routes within the warehouse often interfered with each other, causing delays.

"We'd been trying to figure it out just by observing on site and checking paper-based schedules," he explains. "But production varies daily, so it was difficult to pinpoint the root of the problem. Gemini helped us to visualize these hidden issues more clearly."



Masato Totsuka  
Molding Process  
Toyota Motor East Japan, Inc.

Compared to 2D drawings, 3D models are easier for all staff to understand and assess. According to Kamio, the new system has helped create "an environment where issues can be shared and everyone can contribute ideas for improvement."



On-site operators are now able to suggest and implement improvements themselves, using 3D visualization as a shared reference point.

"3D modelling is already starting to become second nature to us," says Hanzawa. "We hope this initiative becomes a permanent part of how we operate, helping us deliver exciting compact cars from Tohoku to customers around the world."



On-site operators are now able to suggest and implement improvements themselves, using 3D visualization as a shared reference point.

Company profile



TOYOTA MOTOR EAST JAPAN, INC.

Toyota Motor East Japan, Inc.

- Established: July 2012 (Merger of three companies: Kanto Auto Works, Central Motor and Toyota Motor Tohoku)
- Business: Planning, R&D and production of Toyota vehicles

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