

## FACTORY AUTOMATION

# Customer Reference

## Seiko Corporation

### Simulation tool utilized in packaging line design to reduce start-up time on site

Seiko Corporation, a packaging systems manufacturer, is using Mitsubishi Electric's MELSOFT Gemini 3D simulator to help design its packaging lines. The tool's ability to simulate the optimal line configuration virtually right from the planning stage of a project has reduced the need for on-site adjustments after installation.

#### Key points

- Simulation enables issues to be identified and resolved early, without using actual equipment
- Can be used as a proposal tool to recommend improvements at customer sites
- A shared library of simulated parts can be used by all employees, reducing effort and boosting efficiency



Based in Shizuoka City, Seiko Corporation designs and manufactures liquid filling machines and other packaging systems. The company has earned a strong reputation for its all-in-one bottling machines, which handle the entire process from filling to capping, delivering outstanding reliability, quality and productivity for its customers.



Packaging systems designed and manufactured by Seiko, including leading bottling machines

A bottling machine forms part of a wider packaging line that also includes upstream and downstream processes such as container supply, labelling and boxing. Each line must be designed to maximize production efficiency based on the layout of the customer's facility. In the past, on-site adjustments were often required after installation to fine-tune performance to each customer's requirements.

However, making such adjustments once a system is in place can be challenging.

"We realized that being able to simulate a line from the planning stage would help us to make proposals more efficiently," explains Kotaro Murayama of the company's Technology Planning Department.

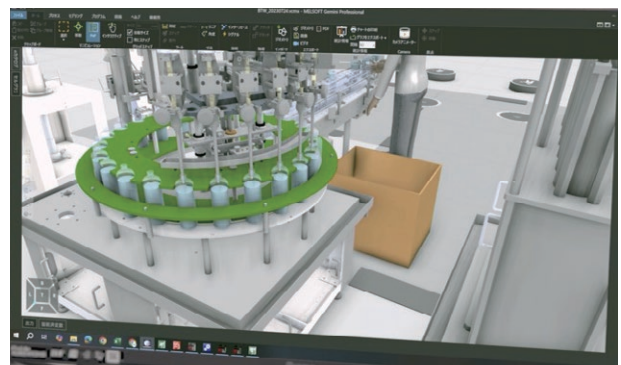


Kotaro Murayama,  
Technology Planning  
Department,  
Market Development  
Division, Seiko Co.

That realization led Seiko to adopt Mitsubishi Electric's MELSOFT Gemini, a powerful tool that allows equipment layout and operation timing to be simulated in a 3D virtual environment. By verifying the system on a computer during the design stage, potential issues can be identified and resolved early, ensuring trouble-free installation, and eliminating the need for later adjustments.

#### Finding the optimal layout and operation at the design stage

The Seiko team attended several days of training on Gemini before using it to create a 3D model of a bottling machine. Once familiar with the software, they simulated how containers move through the packaging line. When deciding on the layout, designers must consider operating and stopping conditions, conveyor speeds and other interrelated factors – all of which can be checked virtually within Gemini.



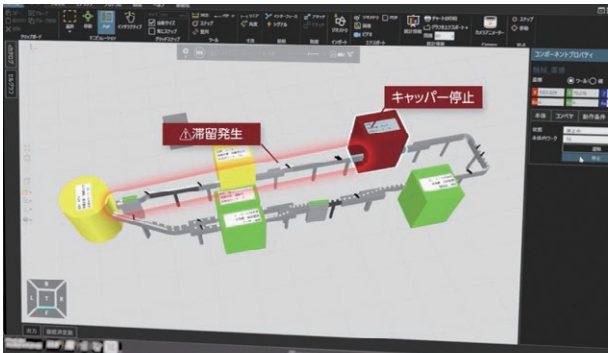
A filling machine modeled using Gemini. Operation timing can be verified on screen.

Using Gemini, designers can configure each piece of equipment under realistic operating conditions. This makes it possible to identify bottlenecks as containers move along the line and to ensure that all processes stay synchronized to maintain the overall throughput. By testing different configurations and parameters, designers can determine the optimal layout and conveyor settings in advance.

Hiro Yoshi Matsuzaki of the Technology Planning Department is impressed by Gemini's effectiveness: "Being able to perform simulations without using the actual equipment is a huge advantage. Checks that would have been performed on-site can now be done at the design stage, which reduces the commissioning time of the packaging line."



Hiro Yoshi Matsuzaki, Technology Planning Department, Market Development Division, Seiko Co.



Simulation of a whole line to check for bottlenecks or other issues

### Presented as a solution to customers at a trade show

Having seen Gemini's effectiveness in design work, Seiko has begun showcasing its use to customers. At the JAPAN PACK (Japan Packaging & Manufacturing Technology Show) in Tokyo, the company demonstrated a digital twin system – a real packaging machine synchronized with a virtual one in Gemini.

"Visitors appreciated being able to see how equipment works in 3D. I think Gemini could also be used as a tool to suggest improvements at customer sites," says Akira Masuda of the Technical Sales Department at Seiko's Shimizu Plant.



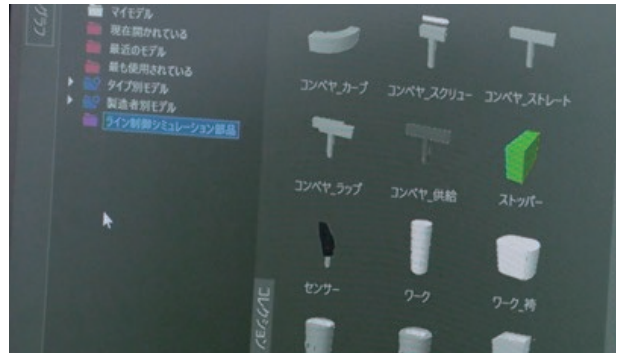
Digital twin demo using Gemini at JAPAN PACK 2023



Akira Masuda, Technical Sales Department, Technical Division, Shimizu Plant, Seiko Co.

Seiko now plans to establish an environment where all employees, not just trained specialists, can utilize existing design data to perform simulations using Gemini. To realize this, the company is creating a library of its most frequently used equipment and components in Gemini's catalog.

"Moving forward, we will be able to detect potential issues at the planning and concept stage, even before the design stage," says Murayama. "As well as reducing the time we need to spend working on site, I think this will be a huge advantage to customers in terms of reducing the overall lead time. We can leverage these benefits to develop more functional systems and improve productivity, providing highly optimized solutions for our customers."



Seiko is cataloging equipment and components to promote the use of Gemini



### Company profile



Seiko Corporation

- Established: May 1939
- Business areas: Design and manufacture of packaging machines and general industrial machinery, repairs & modifications, manufacture & sales of cold forged products, sales of factory automation equipment, air conditioning systems, refrigeration equipment and other electrical equipment, installation of air conditioning systems
- Website: <https://www.seiko-co.com/>

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