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MITSUI CHEMICALS,INC.

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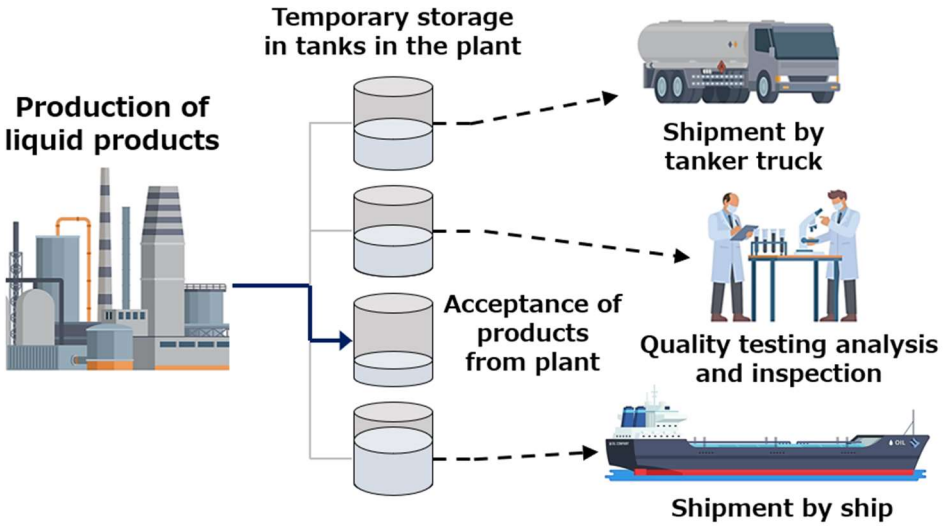
Mitsui Chemicals, Inc.

Mitsui Chemicals Automates Tank Allocation Planning Through Digital Transformation

New approach reduces work hours by 80%, speeds up response to environmental changes and improves planning accuracy

Mitsui Chemicals, Inc. (Tokyo: 4183; President & CEO: HASHIMOTO Osamu) has developed a tool to automate tank allocation planning for liquid products at its Osaka Works, with operation of this tool beginning in March 2025. By standardizing the task of tank allocation planning, which had previously been dependent on individual skills, this tool has reduced work hours by 80% while also enabling quicker responses to environmental changes and improved planning accuracy.

The liquid products produced at the plant are ultimately stored in multiple tanks. When storing products, it is necessary to consider and adjust storage tank selection, quality testing analysis and inspection timing, and shipment timing based on order status. This work, known as "tank allocation," requires the consideration of complex factors such as the filling rate and inspection status of each tank, making the knowledge of experienced personnel essential.

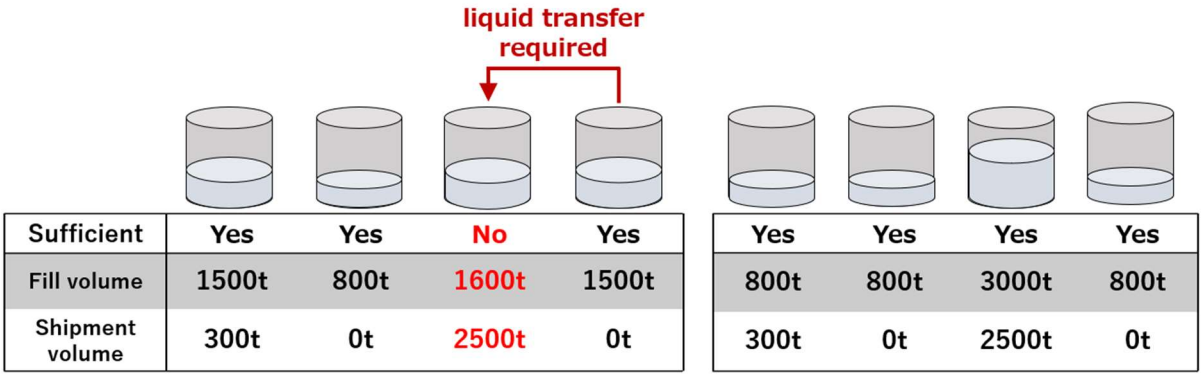


Overview of liquid product handling flow

Mitsui Chemicals has been working to develop a mathematical optimization tool that programs in the knowledge of experienced staff, allowing the company to automatically create tank allocation plans. This has now seen the company succeed in shortening planning time from the previous 30 minutes per session to 5 minutes per session, saving more than 100 hours per year. In addition, the user-friendliness of the UI allows even inexperienced personnel to use the tool.

Another issue with the manual approach has been that shipping schedules change frequently during busy periods, necessitating the transfer of liquid products from one tank to another. A lack of man-hours for planning has previously made it difficult to minimize this transfer work.

Automated tools, however, can quickly discover tank transfer patterns that would take a long time for a human to find, and are expected to reduce the number of product inspections required each time the product is transferred, as well as the number of transfer operations themselves. This should in turn reduce the labor burden on site and cut down on overtime work for employees.



Sufficient	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Fill volume	1500t	800t	1600t	1500t	800t	800t	3000t	800t
Shipment volume	300t	0t	2500t	0t	300t	0t	2500t	0t

Left: Tank allocation planning in which shipping schedules are not properly taken into account (Liquid transfer)
Right: Tank allocation planning in which shipping schedules are properly taken into account by automated tools

Furthermore, the newly developed tool can automatically create new tank allocation plans each time a shipping schedule changes – even when these changes are frequent – making it possible to create appropriate shipping schedules in a short amount of time. This is expected to prevent mismatches between tank fill volume and shipment volume, reducing the number of transfers during busy periods.

Going forward, Mitsui Chemicals plans to consider expanding the system to other plants in order to further standardize operations and reduce labor costs. The company also plans to foster a culture of utilizing data science technology within the company and accelerate the promotion of digital transformation at production and logistics sites.

Mitsui Chemicals will continue to utilize cutting-edge digital technologies to help achieve its corporate mission of "contributing broadly to society by providing high-quality products and services to customers through innovation and the creation of materials, while keeping in harmony with the global environment. "

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