

FOR IMMEDIATE RELEASE

Hitachi Establishes High-Efficiency Production Model Using IoT at Omika Works

Promoting Collaborative Creation with Customers toward its Provision
as part of Lumada's Solution Cores in Fiscal Year 2017

Tokyo, October 25, 2016 --- Hitachi, Ltd. (TSE:6501, "Hitachi") announced that the establishment of a high-efficiency production model that makes use of IoT, which reduces the production lead time for the representative product*¹ by 50%, as part of the production innovation efforts at Omika Works for designing and manufacturing information control systems and devices. In future, the high-efficiency production model will be applied to other products manufactured at Omika Works to enhance the precision and versatility of the system. In addition, Hitachi will share information on the production model with its customers and partner companies by showing Omika Works to them. Through collaborative creation with the customers in this way, Hitachi plans to provide it as one of the solution cores for the IoT platform "Lumada" starting from Fiscal Year 2017.

For many years, Hitachi has been striving to enhance the manufacturing efficiency as well as quality at Omika Works. At the same time, as part of Hitachi Group's "Hitachi Smart Transformation Project", an "RFID*² Production Monitoring System" has been introduced, which eliminates redundancies by making use of about 80,000 RFID tags to visualize the processes. In addition, efforts have been made to shift toward high-mix low-volume manufacturing that is highly efficient, flexible and sustainable. One of the examples is by introducing a "Modular Design System", which reduces the proportion of job-order production as well as individual designs to shorten the production lead time in the design and procurement processes.

Meanwhile, with the rapid development of diversification in customers' needs and digital technology, manufacturers are required to construct production systems that are able to respond promptly to the wide variety of needs with the use of IoT.

In this background, Omika Works has been deepening its existing efforts with the use of IoT since 2015 to digitize the supply chain and production activities at the factory from an EtoE (End to End) perspective. By doing so, Hitachi aims to achieve an "Optimized Factory*³" that is able to address changes in the demand immediately, allocate resources such as personnel and parts optimally, thereby optimizing the

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entire production process and quality. As part of the efforts to achieve this, Hitachi has established a high-efficiency production model that creates a cycle for information on Man, Machine and Material by linking four systems, which include a new “Work Improvement Support System” and a “Factory Simulator” in addition to the existing “RFID Production Monitoring System” and “Modular Design System”.

Specifically, the “RFID Production Monitoring System” is used to grasp the progress of each process and for considering the countermeasures to adopt when delay occurs in a process. Meanwhile, the “Work Improvement Support System” implements measures to address issues and make improvements by detecting production processes that are taking a longer time than usual and visualizing issues such as through image analysis. Improvements that are accumulated over time are reflected in the product design, for example, through the “Modular Design System”. Production performance data obtained from these three systems, together with information such as delivery deadlines, are made use of in the “Factory Simulator” for formulating the optimal production plan that allocates resources including personnel and parts optimally, thereby shortening the production lead time and preventing the early arrival of parts. With these four systems, Hitachi aims to create a cycle for circulating information, grasp the progress of the production plan and implement the necessary measures for addressing issues and making improvement, reflect the results of improvement in new product designs, formulate production plans with a higher level of accuracy, and carry out repeated improvements to enhance production efficiency. At Omika Works, introduction of such a production model has successfully shortened the production lead time of the representative product by 50%.

In future, Hitachi will apply the high-efficiency production model to a wider range of products at Omika Works, while enhancing the precision and versatility of each system at the same time. Hitachi will also share information on the production model with its customers and partner companies by showing Omika Works to them. Through collaborative creation with the customers in this way, Hitachi plans to provide the model as one of the solution cores for the IoT platform “Lumada” starting from Fiscal Year 2017.

■ High-efficiency production model that creates a cycle for information on people, goods and equipment

The “RFID Production Monitoring System” grasps the progress of each process in real time, and is capable of implementing countermeasures promptly when delay occurs in

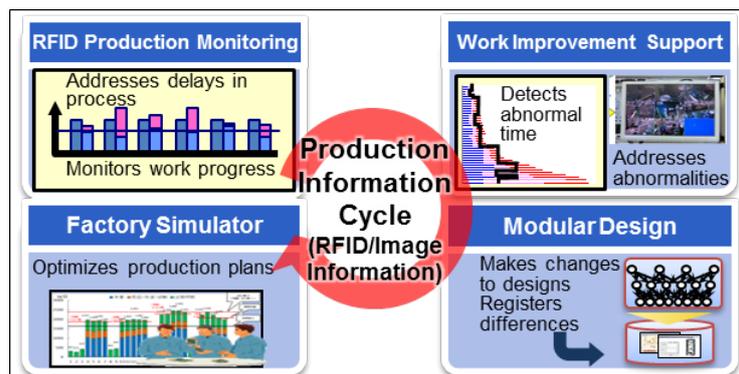
a process, such as by shifting personnel.

The “Work Improvement Support System” improves work quality through issuing work instructions using 3D images and recording the different work operations as images. Also, it detects bottlenecks in the production process when the operating time is longer than usual, visualizes the issues through image analysis, and implements the necessary improvement measures.

Based on data accumulated by the two systems, results on process and work improvement are sent as feedback to the “Modular Design System” to increase the application of modular designs*⁴, thereby reducing individual designs.

Based on the primary units*⁵ as well as the latest production capacity information on each process that is obtained from the system, the “Factory Simulator” optimizes the production plan of the entire factory, formulates a corresponding process that is feasible, and ensures the optimal ordering quantity for parts according to the production specifications as well as requested delivery deadline of the received order. Primary units with an even higher level of accuracy are then obtained from the difference between the standard primary units (items for which standards have been established, such as parts, production procedure and standard operation time) and the actual results to further enhance the precision of the simulation.

With these four systems, Hitachi aims to create a cycle for circulating information, grasp the progress of the production plan and implement the necessary measures for addressing issues and making improvement, reflect the results of improvement in new product designs, formulate production plans with a higher level of accuracy, and carry out repeated improvements to enhance production efficiency.



High-efficiency production model that creates a cycle for information on people, goods and equipment

- *1: Representative product refers to the control devices for the power and social industry sectors which account for about 20% of the total production at Omika Works.
- *2: RFID is the abbreviation for Radio Frequency Identification. It is a non-contact automatic detection technology that reads information through radio waves from media such as tags and cards that are incorporated in ICs and small antennas.
- *3: Optimized Factory is a next-generation manufacturing solution that is developed based on the concept of a

“symbiotic monozukuri society” which Hitachi has proposed in “Factory of the Future”, a white paper that is published by the International Electrotechnical Commission (IEC) on the future direction of standardization at “future factories”.

- *4: Modular design aims at promoting standardization of the components (parts) to reduce mutual dependency, thereby shortening the time needed for adjustment during design and manufacturing.
- *5: Primary unit refers to items for which standards have been established, such as parts, production procedure and standard operation time.

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society’s challenges. The company’s consolidated revenues for fiscal 2015 (ended March 31, 2016) totaled 10,034.3 billion yen (\$88.8 billion). The Hitachi Group is a global leader in the Social Innovation Business, and it has approximately 335,000 employees worldwide. Through collaborative creation, Hitachi is providing solutions to customers in a broad range of sectors, including Power / Energy, Industry / Distribution / Water, Urban Development, and Finance / Government & Public / Healthcare. For more information on Hitachi, please visit the company’s website at <http://www.hitachi.com>.

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Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
