

## Mitsubishi Heavy Industries, Ltd.

# Successfully reformed shipping and receiving work processes of the intelligent transportation system (ITS) products and fostered efficiency-improvement activities

### Challenges

- Arrival of equipment concentrated on certain days, which placed a burden on receiving work.
- Frequent changes and additions to shipping equipment, which often required unplanned responses.
- The reception period of equipment and the schedules for inspection and fieldwork were independently planned.

### Results

- We improved the completion rate of check-in from the date of arrival to the following day from 73% to 95%
- We reduced the frequency of changes in shipping requests by listing the equipment configuration information.
- We strengthened the system to check the entire process from reception to inspection and fieldwork.

In business, it is important to encourage the ability to make proactive improvements. The ICT Solution Headquarters of Mitsubishi Heavy Industries, Ltd. introduced Field Innovation in order to reform the Manufacturing Section, which handles the manufacture of the intelligent transportation system (ITS). The Field Innovators (hereafter Flers) worked with them to improve the shipping and receiving work procedures and it is expected that the productivity at the shipping site will increase by 30%

### Promoting their own small-group activities

#### Mitsubishi Heavy Industries started a small-group activity "V+30UP" when ICT Solution Headquarters were established

Since its establishment in 1884, Mitsubishi Heavy Industries has played an important role in Japan's modernization. It is continuing to support Japanese society and industry based on the four business domains of "Energy & Environment," "Commercial Aviation & Transportation Systems," "Integrated Defense & Space Systems" and "Machinery, Equipment & Infrastructure."

The ICT Solution Headquarters is responsible for the important mission of contributing to the information society in cooperation with each of these domains. "The headquarters were launched by integrating the IT-related departments of headquarters, the Electrical and Instrumentation Technology Department of the Nuclear Energy Systems Division, and the ITS Strategic Business Unit (\*SBU) of the Land Transportation Systems Division in the Commercial Aviation & Transportation Systems domain. We aim to promote business solutions utilizing ICT as well as the heavy industrial machinery and vessel business domains, for which Mitsubishi

Heavy Industries is known. It is our role to bring together and organize ICT engineers that belonged to each domain and promote ICT-related business domains," explained Hiroyuki Toda, general manager of the ITS SBU and deputy head of ICT Solution Headquarters.

"The headquarters needed to improve the sense of unity as an organization because the employees had previously belonged to different divisions and are now required to function as a team. Therefore we started a small-group activity called 'V+30UP' when the headquarters were established. This activity aims to improve value by more than 30% in any business. Each group set its theme and worked on improvement and innovation," Mr. Toda continued.

In addition, the headquarters introduced Fujitsu Field Innovation in order to promote this activity even more strongly. Mr. Toda explained the reason for this. "This started when members of the headquarters learned about Field Innovation at a seminar held by Fujitsu. When I heard the details and learned how it is contributing to improvements in many worksites, I thought I would love to adopt this know-how for 'V+30UP' as well."

\* SBU: Strategic Business Unit (a business unit in the evaluation system of strategic business)



Hiroyuki Toda  
ITS Strategic Business Unit General Manager  
Deputy Head  
ICT Solution Headquarters  
Mitsubishi Heavy Industries, Ltd.



Yasunori Takahata  
Deputy Manager  
Manufacturing Section  
Intelligent Transport System Manufacturing Department  
ICT Solution Headquarters  
Mitsubishi Heavy Industries, Ltd. (as of September, 2015)

### Customer profile

#### Mitsubishi Heavy Industries, Ltd.

**Head Offices** (Shinagawa) 2-16-5 Konan, Minato-ku, Tokyo  
(Yokohama) 3-3-1, Minatomirai, Nishi-ku, Yokohama

**Establishment** January 11, 1950

**Capital** 265.6 billion yen

**Number of Employees** 81,845 (As of end of March, 2015: Joint)

**U R L** [www.mhi-global.com](http://www.mhi-global.com)

Develops, manufactures and sells cutting-edge industrial products that support society and industry in the four business domains of Energy & Environment, Commercial Aviation & Transportation Systems, Integrated Defense & Space Systems and Machinery, Equipment & Infrastructure.

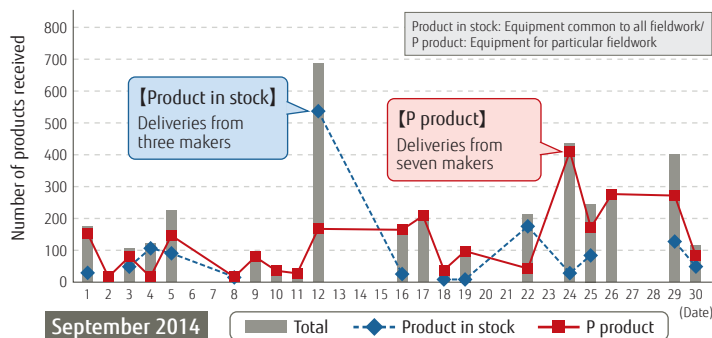




The third issue is that about 12% of the stock stored in the shipping base was long-term stock of more than seven years. "Even for products whose life cycle are about to end, there are cases where we need to hold some stock for repairs and maintenance. But, to be honest, we were surprised to learn that long-term stock of more than seven years is still being stored at this ratio," Mr. Takahata said.

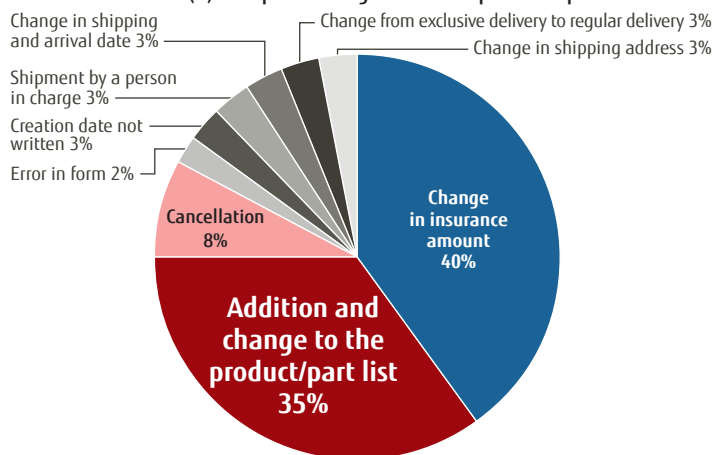
#### ■ Fact made visible (1)

##### "The volume of incoming shipments varies greatly and frequently"



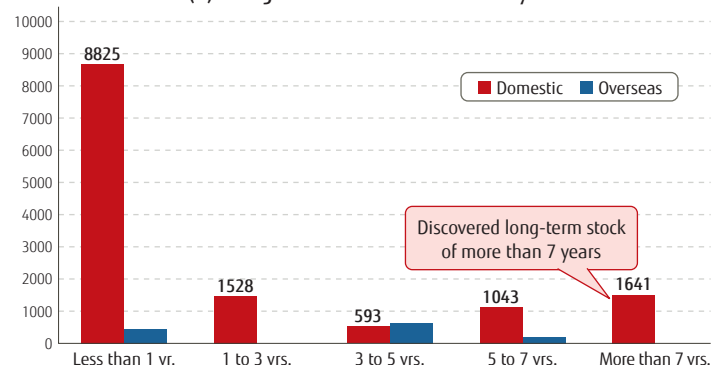
It became clear that incoming shipments from suppliers tended to concentrate on certain days. This was a major cause for overwork.

#### ■ Fact made visible (2) "Frequent changes in the shipment request details"



The fact that shipping requests made by an on-site representative were frequently revised was also an issue. It is mainly due to addition and changes to the equipment to be shipped, which accounted for about 35% of all changes.

#### ■ Fact made visible (3) "Long-term stock of more than 7 years"



After investigating the situation of long-term stock at the shipping base, it became clear that more than 12% of the stock stored was long-term stock of more than seven years

### Setting up three policy themes

We promoted concrete action for improvement based on the important issues that have been summarized

The members who participated in this action held an in-depth discussion to create a

solution plan based on these facts that have been made clear. After organizing a wide array of issues, we summarized the important issues that would be the key for our action into three points: "the arrival schedule of equipment, the in-house inspection schedule and the schedule for installation work on site are all independent," "there are many shipping requests that need urgent response and problems arise at the last minute due to inadequate confirmation of the details beforehand" and "incoming shipments concentrate on certain days"

Furthermore, we set up three tasks to work on to resolve these important issues: "enable the checking function of the installation work schedule and the equipment arrival

#### ■ Members having an intense discussion



We had an intense discussion in order to form a plan for policies based on the issues that have been exposed by making information visible. Active discussion for improvement was repeated.

period," "make equipment configuration easy to understand when installing it on site" and "visualize the expected dates of arrival and adjust the arrival dates beforehand." We categorized them into nine policy themes to implement in total, and promoted concrete activities.

Mr. Takahata added: "For instance, I was in charge of adjusting the equipment arrival dates and I worked on creating a list of items expected to arrive within the next four weeks so that each department related to the work could understand the arrival schedule clearly. By doing so, each department can freely access the information it needs to know in the integrated master. Also, if you can see the dates when the arrival may concentrate on in advance, you can change and equal out the schedule."

If you can visualize and control the arrival schedule, you can also reduce the waste that is caused in the following process. Mr. Iwasawa said: "What's most important is on what date the equipment ordered will arrive. Without this information, we cannot decide the order of inspection process and we also may need to struggle to find a place to store the equipment. I was in charge of clarifying the standard delivery time for each product, and having an understanding of the arrival schedule was key to this."

In addition, we made a component master of the equipment to ship and an accessory list that is different for each type of machine. These component masters and accessory lists contribute to reduce changes and additions of equipment to ship and urgent shipping work. We created them so the configuration of the equipment to ship will be clear and easy to understand. Mr. Himeno explained: "even if they are in the same series, required accessories are slightly different depending on the configuration on site. Traditionally,

#### ■ Important issues from the entire shipping work were summarized into 3 points

	Important Issues	Key Issues	Real Causes	Tasks
1	Arrival schedule of equipment, the in-house inspection schedule, and the schedule for installation work on site are all independent	<ul style="list-style-type: none"> <li>Inspection is not finished on the day of shipment</li> <li>Need to substitute with equipment reserved for other fieldwork</li> </ul>	Three independent processes are not adjusted and linked well.	Enable the checking function of the installation work schedule and the equipment arrival period
2	Many shipping requests that need urgent responses, and problems that arise at the last minute due to inadequate confirmation of details beforehand	<ul style="list-style-type: none"> <li>Frequent changes and additions to equipment to ship</li> <li>Request for change comes just before shipping day</li> </ul>	Equipment configuration is hard to understand when installing on site	Make equipment configuration easy to understand when installing on site
3	Incoming shipments concentrated on certain days	<ul style="list-style-type: none"> <li>Some products are arranged by three different departments</li> <li>Increase in arrival of shipments at the end of the month for the part maker's convenience</li> </ul>	No rules for setting the delivery time when ordering parts	Visualize the expected dates of arrival and adjust the arrival dates beforehand

After looking at a wide array of issues, we summarized the important ones that would be the key for our action into three points. We analyzed them further and thoroughly investigated the real cause behind the issues.

we had checked each by hand and requested shipment, which often caused failure in confirmation and mistakes. Therefore we are working on making a system so the necessary information will be automatically shown after you choose equipment to ship."

### ■ Tasks to work on were set up based on the real causes discovered from the analysis

Tasks	CSF*	Policy themes to implement
1 Enable the checking function of the installation work schedule and the equipment arrival period	• On-site representatives to make a precise plan for the installation work schedule	1 Establish an on-site representative support center
		2 Create and make clear a list of standard delivery times for each product
		3 Create a checkpoint list of fieldwork
	• Installation work schedule to be shared across the country • SWIH (Who, What, When, Where, Why and How) of the checking process of the work progress to be made clear	4 Make visible the schedule for all fieldwork and hold a schedule progress meeting
2 Make equipment configuration easy to understand when installing on site	• Creation process to list shipping equipment on the shipment request to be standardized	5 Create a configuration master for equipment to ship and distribute
		6 Create an accessory list for the types of product in stock
		7 Encourage the use of the fieldwork support system from outside the office
3 Visualize the expected dates of arrival and adjust the arrival dates beforehand	• Arrival schedule to be managed centrally	8 Make visible the arrival schedule up to four weeks ahead
		9 Establish a department (person in charge) that controls the arrival

Nine policy themes to implement were set up this time. Action for these is still being taken, bringing about positive results.

\*CSF=Critical Success Factor, meaning critical factors necessary to achieve a goal.

## Positive attitude to take action for improvement has taken root

### Promoting Field Innovation with our suppliers and customers

The experience has changed the mentality of the project members greatly. "I originally participated as someone in an office position, but by working on the actual improvement as one of the members, I learned about issues outside my own work. The experience of sharing the issues with other members and organizing them in order to make improvements became a big asset for me. I am sure this experience will be very useful in making future improvements as well," Mr. Takahata said.

Mr. Himeno added: "The biggest change is that we have started to work as a team. Now all the members face common issues together instead of only certain people in charge working hard on them. I actually withdrew from the project temporarily to work as an on-site representative during the activity period, but no delays were caused while I was away. We were able to keep moving forward with the improvements along with our busy regular work and this is probably because such a robust system was established."

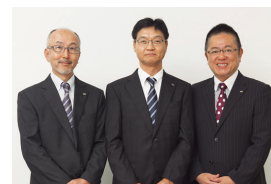
They also have a deep trust in the Flers who supported the project. "I was impressed to see not only their thorough knowledge of a variety of improvement methods but also their friendliness and facilitation skills. During meetings with all members, they always sought to create an atmosphere in which it was easy to talk so we could have an active discussion without hesitating to speak. We were able to proceed with the improvement actions with all members thanks to such attention from the Flers," Mr. Iwasawa said.

The improvement actions in the Manufacturing Section are ongoing, but the ICT Solution Headquarters are already developing a future-looking plan. Mr. Toda shares his ambition for the future and passionately said: "I would like to proceed with improvement and innovation with our business partners, which are our suppliers, and our customers. In this case, we have to be the promoter ourselves, so we need to master the method of Field Innovation. I would like to ask Fujitsu for their continuous warm support."

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### Throughout the project

It was the middle of October when the three of us gathered at the field office at the vast Kobe Shipyard in order to realize the hopes of the deputy head, Mr. Toda: "We want you to not only improve the shipping base but also optimize all the work including the upstream process. In the process to make information visible, the on-site observation at the shipping base—where sea winds blow so hard—was tough, but the warm words of encouragement from the local employees moved us to action many times. We still remember how happy we were at the intense discussion when the person in charge of the work, who had not spoken much until then, actively shared his opinions. The members repeated card sessions until they were satisfied, organized the issues and involved other departments to form a plan for policies, which will all lead to a successful outcome in the future. We heard from one member during this interview that the time to complete the check-in procedure has been largely reduced and this was a great reward for us. We are very happy that all members stood together to face and work hard on common issues together as a team."



From left: Hideo Yataka, Masayuki Hattori, Seiji Nojima



## Achieving the goal ahead of schedule

### We succeeded in improving the completion rate of check-in on the day following shipment arrival

We have also been taking a variety of other actions for improvement and innovation, which are producing positive results. For instance, one of the goals we set at the beginning of our action is "to improve the completion rate of the check-in procedure of received equipment by the following day from the current 73% to 95%." This goal was achieved more than two months ahead of schedule.

"Sometimes it used to take three or four days until the check-in procedure was completed, but now we can finish it by the following day unless there is a special reason. Being able to finish the check-in procedure quickly means being able to finish work in the following process quickly as well, this contributes to shortening overall work hours. Thanks to this, overtime hours have been remarkably reduced," said Mr. Himeno with a smile. We have also been striving to achieve the goal of reducing the frequency of changes in shipping requests by 30%, which was set up the same time.

Another major outcome is that "V+30UP" activity in the Manufacturing Section has gained momentum. Mr. Toda said: "We have a long history of forming small groups to address needed activity and we have repeatedly made improvements to the worksite, so we felt we should be able to handle this internally. But there is a limit to what we can do on our own when the business environment and improvement methods are frequently changing. By introducing Field Innovation at this time, we have been able to push our improvement actions forward to form a concrete plan of action and put it into practice. Looking at the atmosphere of the workplace as a whole, I feel that every member who participated in this project took action with a positive attitude."

## Contact information

### Fujitsu Limited

Shiodome City Center, 1-5-2 Higashi-Shimbashi, Minato-ku, Tokyo, 105-7123

<http://www.fujitsu.com/jp/about/businesspolicy/fieldinnovation/en/index.html>