



Total Service of Mitsubishi Printing Machinery to Meet Customers' Needs

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Eight years or so have passed since the Paper & Printing Machinery Service Center was established by Mitsubishi Heavy Industries, Ltd. (MHI) in October 1994 for the purpose of strengthening the service system so as to be close to customers. Since then, MHI has offered various levels of prompt and efficient services to suit the equipment maintenance systems of customers ranging from major newspaper publishing companies and printing companies through to customers who have purchased just one unit of printing machinery. MHI's customer service has been performed mainly by this Service Center through its distributors and selling agents at home and abroad. Upon publication of this article on the Mitsubishi Heavy Industries Technical Review, MHI will be grateful if every customer will take this opportunity of understanding MHI's desire to provide good service, and giving their opinions and suggestions on this article.

1. Introduction

The keynote of service is to ensure that all equipment delivered to customers can give its expected performance to the full extent and be operated in normal conditions. It is thus particularly important to offer the usual pre-service (preventive maintenance, assistance to customers' in performing maintenance themselves) and take quick measures in the event of any trouble.

In terms of parts supply, MHI is meeting customers' needs with a 24-hour system both by shipment from this Service Center as a parts supply base and by shipment from distributors and selling agents at home and abroad who hold parts independently to minimize equipment down time.

MHI is also accelerating sales promotion activities by listing up the new technologies that have been developed for new models and those in which customers' needs such as productivity growth and quality improvement have been incorporated, and by commercializing such lists as "Improvement Menu." This is also given as one of the features of MHI's printing services.

In the following, the services provided by MHI Paper & Printing Machinery Service Center are introduced.

2. Technical service

For three items of printing machinery sold by MHI ranging from sheet-fed offset presses (mass-produced products) to commercial web offset presses and newspaper offset presses (order-made products), different services are required depending on the product. (For sheet-fed offset presses, large models such as Series 5 and Series 6 are only produced in small quantities. Spe-

cial printing machinery such as tin plate printing machinery is also sold). MHI wishes to offer quick service to all customers for its products ranging from the latest-type printing machinery to printing machinery that was delivered tens years ago. MHI is offering such services to customers all over the world through six general distributors under its direct control in Japan, five distributors Mitsubishi Lithographic Presses (MLP) under its direct control and 30 selling agents outside the country.

The technical operations of the Printing Machinery Service Center can be broadly classified into after-sale service for existing equipment, and training & education of customers' operators and service staff of distributors and agents at home and abroad.

2.1 After-sale service

The term "after-sale service" makes us think of the actions to be taken at the time of equipment troubles and procedure following complaints. However, this Service Center intends to offer services for customers' satisfaction, including (1) appropriate service for coping with reduced performance of machinery that may be caused by long-term operation, and (2) proposals for improvement of productivity and profitability of machinery. Specifically, this Service Center is offering (1) guidance and proposals for routine maintenance, (2) proposals for equipment remodeling based on the Improvement Menu of Machinery and (3) proposals for overhauling, while making checks and diagnosis of equipment through periodical visits.

2.2 Training & education

As with after-sale service for existing equipment, it is also essential for every customer to operate and main-

tain the existing printing machinery delivered by MHI properly, allowing it to give optimum performance. For this reason, MHI has opened the "MHI Printing Machinery Training School" for customers who have been delivered MHI equipment. For sheet-fed offset presses, four courses ranging from a junior course for persons including those who have had no experience in printing machinery operation to a quality control course for improvement of printing techniques (senior course) are offered with as many as 40 classes per year at the Mihara Graphic Art Center and showroom in Tokyo Area. For the commercial web offset presses, a middle course is offered with six classes per year at the Mihara Graphic Art Center.

In addition, in response to the development of new printing machinery technologies and the sale of new products, a "Service Man Training" course is held with the purpose of giving education in service/maintenance of machinery to service staff for Mitsubishi printing machinery all over the world. Last year, 39 classes were given in which about 200 service personnel participated. MHI thinks that this course will lead to an improvement in customer service in various areas through technical improvements.

3. Parts supply system

It is a characteristic of printing machinery that machinery down time resulting from trouble may lead to deterioration in profitability and market reliability of the customer concerned. It is therefore absolutely necessary to reduce down time resulting from trouble and to minimize reduced productivity caused by lowered performance. In addition to prompt action to be taken by service staff, a system for rapid delivery of parts is required. MHI is giving priority to the establishment of such a supply system. In terms of parts supply, MHI is meeting customers' needs by shipment from this Service Center and by shipment from said distributors who hold parts independently. MHI also has a domestic parts supply base in Tokyo, and overseas bases in the United Kingdom, Singapore and Shanghai to enhance the efficiency of parts supply to neighboring regions (Fig. 1).

3.1 Service parts

Since sheet-fed offset presses, commercial web offset presses and newspaper offset presses are available in various models and have very long in service lives, it is necessary to offer a parts supply service on a wide range

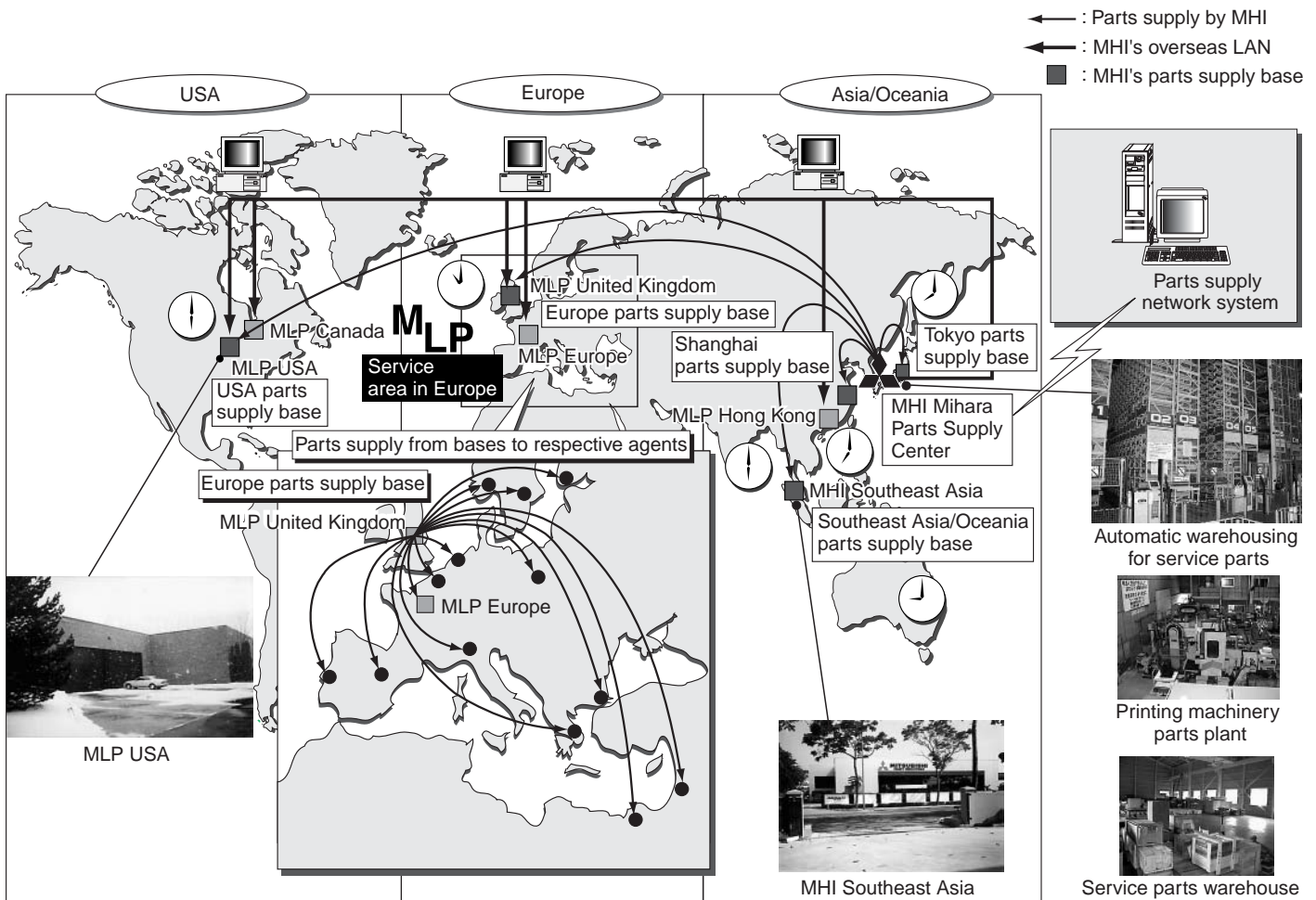


Fig. 1 Mitsubishi Printing Machinery Parts Supply Network

and long-term basis. Inventory control of all parts is designed so that proper inventories may be held by future parts demands forecasting system on the basis of past parts order records (Fig. 2).

In general, items of parts in stock are periodically subject to alteration and discontinuation based on the results of past orders received. Also, for parts for new models, stock building is conducted whenever necessary. Moreover, parts that require a long time for manufacturing even though they rarely fail under normal conditions of use are called "Vital Parts," and stock building is promoted for them.

3.2 Manufactured parts

In case of urgent requests from any customer to manufacture parts not in stock, MHI will manufacture such parts using a special service parts manufacturing machine and will supply them on a short-term delivery basis.

3.3 Inventory information

MHI provides world-wide inventory information to distributors and selling agents at home and abroad through the LAN circuit. MHI makes unceasing efforts to improve the parts supply system by providing inventory information as well as by reducing transportation time and establishing an emergency system for night-time and holidays.

4. Various items for improvement and maintenance work

In order to ensure greater customer satisfaction by keeping and improving the performance of existing printing machinery, MHI is proposing various items for improvement. The items for improvement include those to improve performance and add new functions by applying newly developed technologies to the existing machinery and those to remodel or revamp parts of machinery following discontinuation of production or model changes of parts and devices.

Items for improvement adopting the latest technologies include remodeling with a new ink key capable of reducing the load of inkfountain cleaning indispensable for high-quality print face, and UV combined remodeling that makes it possible to use hybrid ink having the characteristics of both conventional oil based ink and UV hardened ink. In particular, the UV combined remodeling has been realized for the first time in the industry through joint effort with ink manufacturer and users, and is now enjoying a high reputation among customers because it makes it possible to obtain printed matters of a quality equivalent to that of UV printing only by remodeling of UV dryer or the like without the necessity for large-scaled change or addition to the equipment.

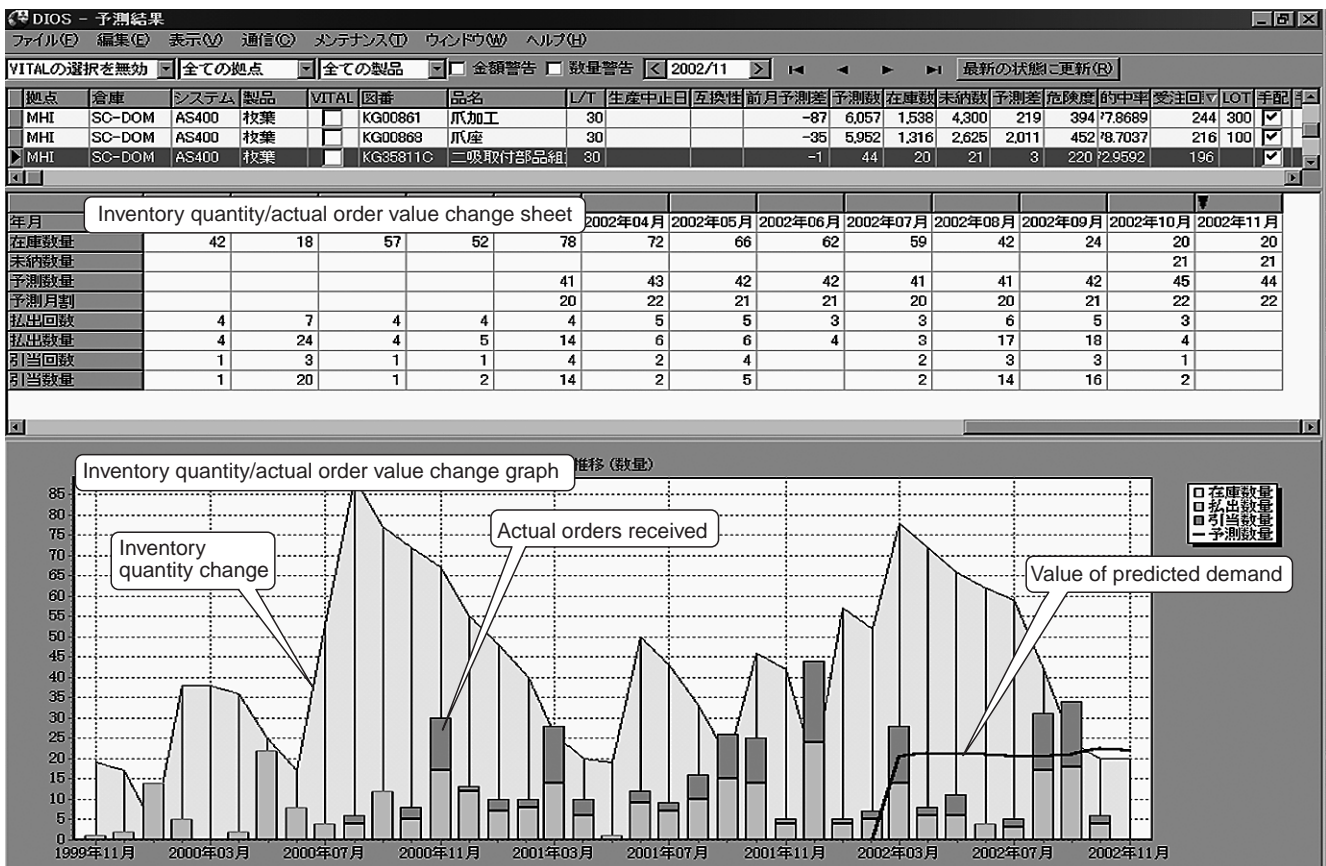


Fig. 2 Example system screen for prediction of service parts demand

In addition, addition of optional devices such as a plate changing device on new machine is also possible to meet requests. Moreover, extension of computer system/PPC (Prepress ciP3 Control) server, etc. aiming at integration of printing process with upstream divisions is attracting great interest since it contributes to promotion of IT revolution at printing worksites.

MHI is also making positive proposals for improvement and addition of functions jointly with other

specialized manufacturers. Remodeling for panoramic printing making it possible to print four consecutive double-spread pages in newspaper printing is a good example. This panoramic printing technique has been adopted by a local newspaper company in Japan, and is now attracting great attention as an epoch making development in advertising printing.

In response to the regional functional dispersion of newspaper publishing companies, MHI is recommend-

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| <p>① Feeder</p> <ul style="list-style-type: none"> ▪ Separator lifting/lowering remote control ▪ Separator front/back remote control ▪ Front air blast nozzle/sheet guide remote control ▪ Changing to G-type separator ※ Adding circumferential/lateral aligning device ※ Feeder auto non-stop device <ul style="list-style-type: none"> ▪ Feeder non-stop device (manual) ▪ Auto loading device ▪ Modification of maximum/minimum sheet size ▪ Changing to feeder auto side-lay ▪ Sheets folding device on feeder board ▪ Feeder timing adjustment remote control ▪ Feeder belt deceleration device ▪ Feeder board frame auto-open/close device ▪ Suction type feeder belt device ▪ Prevention of static electricity ▪ H-type separator | <p>④ Inking and dampening system</p> <ul style="list-style-type: none"> ▪ Changing to new type ink key (original, simple type) ▪ Adding ink oscillating roller water chiller ▪ Adding ink fountain roller temperature controller ▪ Adding ink oscillating roller dead point adjustment remote control ▪ Adding ink roller cleaning system ▪ Adding ink fountain roller individual drive unit ▪ Ink ductor roller on-off timing variable device ▪ Adding roller DR/DT quick on/off device ▪ Changing to DAIYAMATIC system ▪ Ink roller chiller (GAS-made) ▪ Ink form roller (W, Z) oscillation ▪ Ink clutch ▪ Ink key edge grinder |
| <p>② Register</p> <ul style="list-style-type: none"> ▪ Front-lay register remote control ▪ Side-lay lateral fine adjustment remote control ▪ Changing to pantograph sheet feeder board ※ Changing to side-lay push-pull device ▪ Changing to ultrasonic double sheet detector ▪ Prevention of overrun at front-lay and damage of back side of sheet ▪ Front-lay with jet air ▪ Suction type side-lay | <p>⑤ Coater</p> <ul style="list-style-type: none"> ▪ Changing to multi-type plate clamp ▪ Adding coater unit (including change to G-type coater) ▪ Changing to chamber coater or adding chamber coater ▪ Facilitating on/off operation of varnish pan |
| <p>③ Printing unit</p> <ul style="list-style-type: none"> ▪ Changing to Mitsubishi register system ▪ Changing to semi-automatic plate changing system ▪ Changing to full automatic plate changing system ▪ Changing to one action plate clamp ▪ Prevention of gripper shaft grease scattering ▪ Sheet thickness adjustment device ▪ Adding blanket cleaning device ▪ Adding impression cylinder cleaning device ▪ Adding plate hickey remover ▪ Changing to protective cover automatic open/close device ▪ Adding printing unit ▪ Adding another C/E unit ▪ Adding inter-deck UV unit ▪ Bearer wiper | <p>⑥ Delivery</p> <ul style="list-style-type: none"> ▪ Vacuum slowdown wheel front back remote control ▪ Delivery jogger lateral remote control ▪ Sheet releasing remote control ▪ Inserted board auto-down device ▪ Adding extended delivery ▪ Adding IR dryer ▪ Adding UV dryer ▪ Adding dryer for IR and UV ▪ Adding double delivery ▪ Auto-loading device ▪ Adding print quality monitoring device ▪ Prevention of static electricity ▪ Modification for both UV ink and Regular ink printable press by high-brid ink |
| <p>⑦ Others</p> <ul style="list-style-type: none"> ▪ R/D floppy ▪ IPC ▪ PPC Server ▪ Color control system ▪ Additionally providing dampening solution filtration system ▪ New DEMIA | |

※ shows the item for carton printing

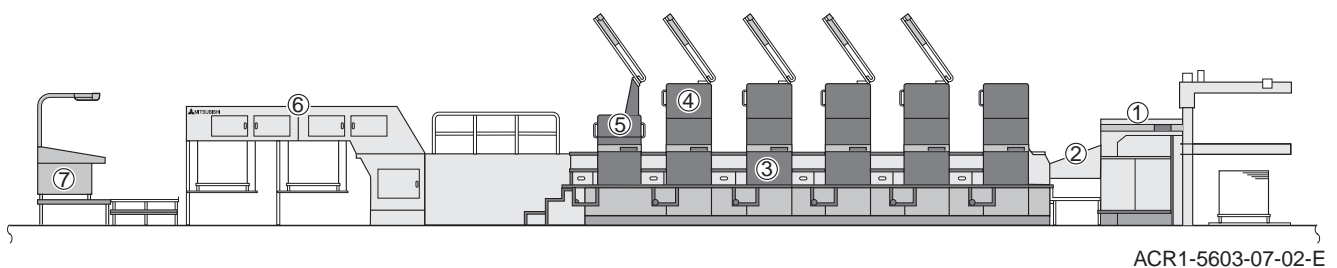


Fig. 3 Improvement menu item for existing presses (sheet-fed offset printing press)

ing them to adopt the remote maintenance system for newspaper offset presses.

On the other hand, MHI is also making positive proposals for remodeling that ensures long-term use of printing machinery. Regarding the magnetic card device in which data for printing conditions are stored, for example, MHI offers a versatile floppy-disk drive as a substitute for the magnetic card and its reader when there are no longer produced.

Apart from remodeling and improvement of existing machinery, MHI is also making proposals for maintenance and inspection works in combination, aiming to repair worn and deteriorating portions in the course of long-term operation. Until now, maintenance work has been conducted mainly on mechanical parts. However, since electrical and electronic parts have recently been in wide use in keeping with the tendency toward automation and electronics, thus leading to the necessity of revising or changing such parts, MHI is proposing maintenance work for electrical and electronic parts as a whole.

In addition, MHI is promoting the preparation of items for improvement incorporating customers' needs such as development of a folder for customers' requests and additional safety devices (Fig. 3).

5. New business projects

Apart from the items for improvement related to the performance/functions of printing machinery, MHI is also offering printing-related equipment. Particularly for technologies developed by the MHI Research & Development Center, MHI is proceeding with commercialization and sales promotion. A blanket washing solvent recycling device for sheet-fed offset presses and a micro-monitor for quality evaluation of printed matter have been named as examples.

MHI is also proposing the treatment equipment for the waster water containing oil and fat that is discharged every day from printing plants. This equipment is conventionally used to treat the bilge accumulated in ships' bottoms with bacteria. It can be used not only by customers who have purchased MHI printing machinery, but also by users of printing machinery manufactured by other companies.

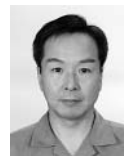
MHI has also successfully commercialized an ink transition evaluation device manufactured for research/development of printing machinery and is conducting sales promotion of the device to ink manufactures. Inquiries concerning this device have already been received from several major ink manufacturers at home and abroad, and MHI is now in the process of negotiations with them.

MHI is continuing development of new technologies through close cooperation of MHI Research & Development Center, affiliated companies and manufacturers belonging to other categories of industry, and intends to offer new products to customers in the future.

6. Conclusion

The Paper & Printing Machinery Division is conducting a "CS - KIK (Let's hear the customers' voice.)" campaign. The Paper & Printing Machinery Service Center is making positive proposals to customers regarding service including general service, parts service, improvement/remodeling works and pre-service, and is making unceasing efforts to secure customers' satisfaction and trust. In future, MHI intends to place greater importance on two-way exchanges of opinions with customers, making it possible to offer such services as meeting customers' expectations through the united efforts of the Paper & Printing Machinery Division with distributors at home and abroad.

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