New Mitsubishi LITHOPIA MAX+BT2-850SSS
Commercial Web Offset Press with Single-Button Operation

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Think of how good it would be if starting printing operation only required the press of a single button! To make such a dream come true, Mitsubishi Heavy Industries, Ltd. (MHI) has developed a “single-button operation” machine that can automatically print more than one job, and has higher productivity while reducing paper waste. The result is the ideal press, the LITHOPIA MAX+ BT2-850SSS, which has just been introduced.

1. Introduction

Certain printing applications require wider pages, more pages, or larger machines. The global trend in commercial web offset presses, however, is toward the improvement of productivity by reducing changeover time and wasted paper. This trend has evolved because the demand for large-volume printing, such as magazines or leaflets, has been decreasing along with the number of copies per job due to alternate sources of information. This has resulted in better methods for producing small quantities of a wide variety of products. In addition, the transfer of skills from experienced workers to younger employees in printing factories has become an important and difficult issue.

The conventional LITHOPIA MAX series with a shaftless drive system has reduced the setup time and waste of paper to keep pace with market needs. The new MAX+ series has been developed to meet varied requests from end users (Figure 1).

![Figure 1 LITHOPIA MAX+ BT2-850SSS](image1)

2. Automatic Labor-saving devices and functions

The MAX+ series, whose key feature is single-button operation, is equipped with various automatic and labor-saving devices and functions to reduce even further the setup time, the waste of paper, and the training required to operate it. The MAX Simul Changer option (title photo) is a high-speed fully automatic plate-changing system that can change eight color plates in approximately one minute. This is half the time required by our competitors’ machines, and substantially reduces the setup time. Even during operation, this press can exchange old plates for new in both the upper and lower units simultaneously to reduce the setup and plate-changing time. It is possible to move the plate-changing system to the gear side during maintenance for continuous operation. Another automatic component is the MAX Pre-Cut, a cutoff control function that automatically detects cut marks based on data from the prepress, and automatically controls cut positions at startup. This reduces the waste of paper by approximately half and reduces the operator workload and skill required for efficient operation.
Figure 2 Example of one-button operation
This press has an optional MAX Color Navigator adopting a new interface and optional MAX DIAMOND EYE in-line print quality control device. The optional MAX Color Navigator is a revolutionary color-control interface that is able to judge and adjust colors more intuitively to provide “more red” or “less blue,” for example. This device enables even an untrained person to make precise color adjustments that would otherwise require a high level of skill and experience. MAX DIAMOND EYE, which compares the ink density with an image of the paper surface scanned by an in-line sensor for continuous automatic adjustment of the ink density to appropriate values, is also able to adjust colors fully automatically based on image data from the prepress. The combination of these functions results in substantial automation of the process and reduces operator skill-level requirements.

The MAX-EXPERT is a member of our highly regarded MAX series that reduces the waste of paper with its shaftless technology. Building on our experience with the MAX series, the MAX-EXPERT is an environmentally friendly machine that greatly reduces paper wastage. Here are some of its major features.

- Blanket-washer speed reduction control: While the blanket is being cleaned, the transfer paper speed is kept low to reduce paper waste.
- Blanket-washer-liquid reduction control: Centrifugal force pushes the washer liquid out of the blanket cylinder gap to reduce paper waste on startup.
- Smart print end function: The setting for the ink film on the ink roller is automatically reset at the end of a job to reduce the time to set the appropriate amount of ink for the next job.
- Pretension function: This prevents problems caused by slack in the web at startup.
- Quick-start inking function: An appropriate amount of ink is supplied to the roller train ahead of time to enable quick printing startup.
- Maximum dampening solution supply function: Prevents scumming at startup.

We also provide a small roll paste function for color matching as a standard item that uses small-diameter rolls of paper (minimum 180 mm in diameter) that previously went to waste. This helps reduce paper waste.

### 3. Improved Productivity through High-speed and Single-button Operation

Print quality control operations require initial register adjustment, as well as adjustment of the cutting position, color, and folding position. This usually requires two operators working simultaneously: one to perform the register and color adjustments, and the other one to adjust the cutting and folding positions.

Because the MAX+ series of printers combines the automatic devices described above, printing is now possible with only one operator. In addition, plate changing and/or startup adjustment can be performed automatically for successive jobs. In one demonstration, a single operator was able to handle three 1000-copy jobs in approximately 14 minutes (Figure 2).

Figure 3 shows the results for a customer who printed 30,000 copies in 10 jobs. Compared with a conventional press, the MAX+ series reduced various adjustment times and the plate changing time, and increased the operating speed by 50 rpm through the use of a newly developed high-speed stream delivery B4 2-page folder (Figure 4) to reduce the total operating time by 15%.

Actual printing with this press requires only one operator to press a single button. However, the supply of rolls and the transport of finished production do require other people. Therefore, Figure 3 indicates “1.5 people”, assuming that each person handles two printing presses.

### 4. Design Combining Form and Functional Beauty

The design concept of the Mitsubishi DIAMOND series sheet-fed offset press was recognized by a gold distinction in the 2008 Good Design Prize showing “the fusion of Northern European style with a simple and warm design featuring round form and Japanese style with precise design …with soft geometric style.” A multifunction display with a pattern of three solid colored and blinking lights on the side of the printing units enables checking the machine status safely from a distance (Figure 5).
5. Customer Feedback

We provided the MAX+ series first LITHOPIA MAX+BT2-850SSS press to the Wakakusa Printing Company, Ltd., at the end of October 2008. This was a five-color press equipped with the MAX Simul Changer, MAX DIAMOND EYE, and MAX Pre-Cut options. In one month, Wakakusa handled 880 jobs involving 3500 plates. The average number of jobs per day was 44, and the average printing lot was 20,000 copies. Most of these jobs involved changing only the upper plate, so the MAX Simul Changer proved to be quite useful. The customer made the following comments about the MAX DIAMOND EYE: “Our main job is printing many leaflets in small lots, which requires frequent job changes. Therefore, we use the Startup Control Function for fully automatic color adjustments.” Commenting on the cutoff operation, the customer said, “We used to determine the cutoff position by ourselves after printing, and we had to climb up on the folder for cutoff control. With MAX Pre-Cut, the cutoff position is automatically determined according to the image data, and it performs cutoff control fully automatically. This helps us a lot.” We are certain that both devices met the customer’s expectations.

The demonstration described in Section 3 took place in February 2009, and involved continuous printing of three 1000-copy jobs at a new model preview held in cooperation with Wakakusa Printing. This attracted the interest of many visitors.

6. Conclusion

By improving the shaftless technology and developing new automatic devices and functions based on the MAX series of developing technologies, we significantly reduced the preparation time and waste of paper in printing processes. We continue to improve the MAX+ series to respond to customers’ needs by producing a wider variety of products in small quantities while requiring a lower level of operator skill.
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