Color Keyless Inking Unit for Newspaper Offset Press

Mitsubishi Heavy Industries, Ltd. (MHI) is manufacturing and merchandising a BTO-N newspaper offset press, in response to the currently growing demand for factory automation of newspaper printers together with greater labor-savings and lower required skill levels. MHI delivered the first keyless printing unit for mono-color print in 1986, and 450 keyless printing units have been delivered since then. Now, a color keyless inking unit has been developed from a keyless printing unit for mono-color print to one capable of color printing, and has been delivered to The Yomiuri Shimbun and The Kochi Shimbun. A brief overview of the unit is presented below.

1. Specifications

Fig. 1 shows the layout of the color keyless inking unit delivered to The Yomiuri Shimbun, and its principal specifications are shown in Table 1.

2. Merits of this new product

(1) Keyless inking unit
- Conventional printing units have eight ink keys for each newspaper page, and the ink quantity is adjusted in proportion to the ink consumption on the printed paper according to extent of the keys are opened and closed.
- The keyless printing unit is a unit in which ink keys have been replaced by the adoption of a ghost eliminating blade in order to meet the requirements for labor-savings and lower required skill levels.

(2) Improvement of operating characteristics
- It is not necessary to adjust the amount of ink used for every key which also contributes to less need for special operator skills.
- An ink key which had been previously required for presetting ink so that it corresponds to the paper before printing has become unnecessary. Consequently, there is no longer any need for a presetting unit or film scanner resulting in the electrical control system being markedly simplified.

(3) Reduction in maintenance work force
- The ghost eliminating blade has made roller cleaning work to scrape residues, etc. off the roller after printing unnecessary.
- The change in the layout of the equipment necessary for performing maintenance (the ghost eliminating blade and inking blade) so that it can be done outside of the unit improves maintainability.
- The working time for periodic replacement of the ghost eliminating blade has been shortened by simplification of the operating method.
- Cleaning and checking work of the ink quantity adjustment key are unnecessary.

(4) Reduction in wasted copies
- Supply of fully emulsified ink and water makes the ink and water balance on the roller stable for a short time. As a result, the printing density during printing is notably stabilized.
- The number of wasted copies during printing is reduced to 100 or less, which is less than half that of conventional methods.

(5) High-grade printing quality
- Relatively high viscosity ink can be used, and its printing quality is the same as that of conventional methods.
- Differing from anilox type keyless units, the density of the ink applied onto the paper can be adjusted by changing the rate of revolutions of the ink supply roller.
- Optimization of the roller layout and roller diameter reduces the appearance of ghosts.
- By improving the scraping performance of the ghost eliminating blade, cross directional uniform ink supply has become possible.

(6) Adaptability to various types of printing units
- Keyless printing units for mono-color print and maintenance work are commonly used.
- An ink roller system capable of arranging a layout for both upstroke and downstroke streams has been developed, resulting in making it possible to work with various types of printing units.
- With the increase of color pages in newspapers, a keyless tower unit has been newly developed by utilizing this
technology for the tower unit to be the main current in the future. MHI has already received orders for keyless
tower units from a client overseas and two domestic clients.

1996 Year Unit of Mini Split Wall Recessed Type Heat Pump

Construction of new housing has been on the rise recently, and demand for inconspicuous installation of recessed types of heat pumps compatible with modern housing interiors is significantly increasing. In addition, there is a trend towards the construction of three-storied housing units in order to utilize land more effectively and in providing two household housing. Heat pumps to be used for such three-storied houses require outdoor/indoor connecting pipes with length of 20 m or more and installation at places where the differential head is 10 m or more. In addition, it is necessary that recessed types indoor units be compatible with trendy houses built using the framework (two-by-four) construction method which has a term of work shorter than that of conventional construction methods used in Japan.

Mitsubishi Heavy Industries, Ltd. (MHI) has developed a wall recessed type mini split inverter heat pump for residential dwellings capable of being installed in a three-storied house (with long piping and high differential head) as well as in housing built using the two-by-four construction method. A brief description of the system is presented below.

1. Merits of this new product

1.1 Improvement of installation characteristics

The installation and service characteristics of the indoor unit have been rearranged from the conventional configuration commonly used with other types of units to an appropriate unit configuration for wall recessed installation.

(1) The width of the unit has been reduced to 750 mm for installation in houses built using the two-by-four construction method.

(2) The installation is to be done from front so as to facilitate easy installation. Furthermore, size reduction and greater utilization of polymeric parts has resulted in weight savings of 25% compared with that of conventional type of units (from 16 kg to 12 kg in the case of the SKU 405) as well as easy installation work.

(3) For maintainability, most parts, such as the fan motor, tangential fan and the like, can be replaced from the front of the unit while the unit is still in place.

1.2 Improved comfort characteristics

(1) The blower incorporates newly developed large-diameter thin multi-bladed fan (ø100) and optimally designed low-resistance instruments for air blow. As a result, the unit has a cooling noise 35 dB (SKU 28) which is the lowest level in this industrial field and is 4 dB lower than that of conventional types of units.

(2) A swing flaps function has been added to the wooden front panel, itself readily harmonized with the room interior, so as to allow for changes in the direction of the air flow by remote control. In addition, the optimized contours for the swing flaps and air flow outlet provide for a 60° downward air flow, resulting in improved comfort when its hot.

1.3 Long piping and high head configuration

A DC motor scroll compressor with a low pressure housing is used in the outdoor unit, and a separate accumulator has been incorporated.

This combination allows a maximum indoor/outdoor piping length of 25 m and an indoor/outdoor differential head of 15 m, making installation in three-storied house possible.

2. Specifications

Fig. 1 shows an exploded view of the wall recessed inverter heat pump air conditioner and front panel, while Table 1 shows the principal specifications of the indoor unit.

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