SERMAR MACHINES S.r.l.

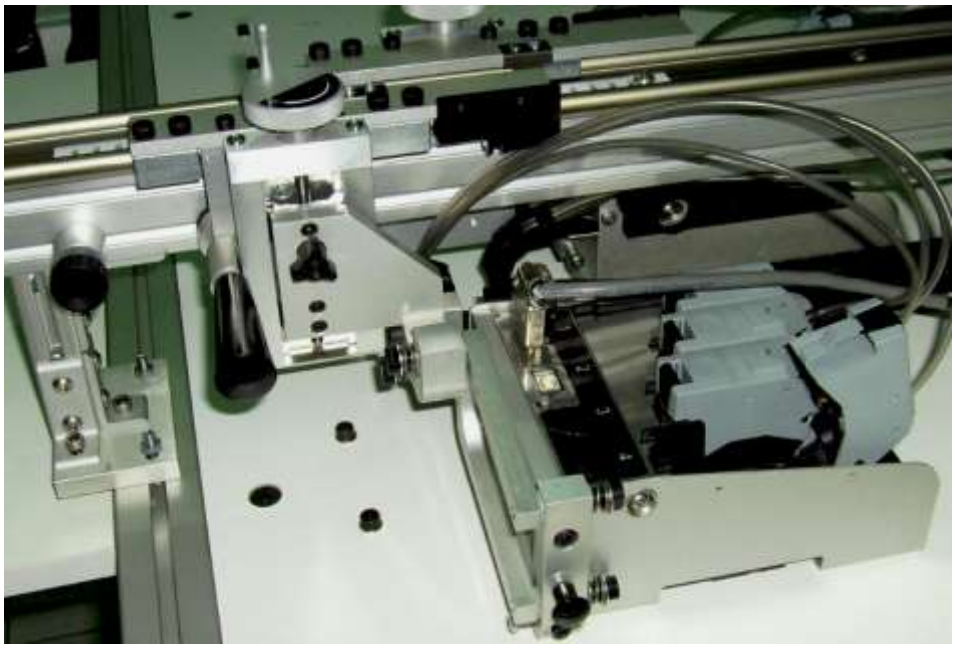
CONVERTING AND FINISHING EQUIPMENTS

Sermar Machines – Lexmark

Lexmark's Mustang Industrial Inkjet Printer

is a ready-to-run digital printing solution designed for OEM to easily integrate Lexmark's low-cost, high-performance thermal inkjet technology into a broad range of variable data industrial printing applications.

Lexmark's Mustang Industrial Inkjet Printer

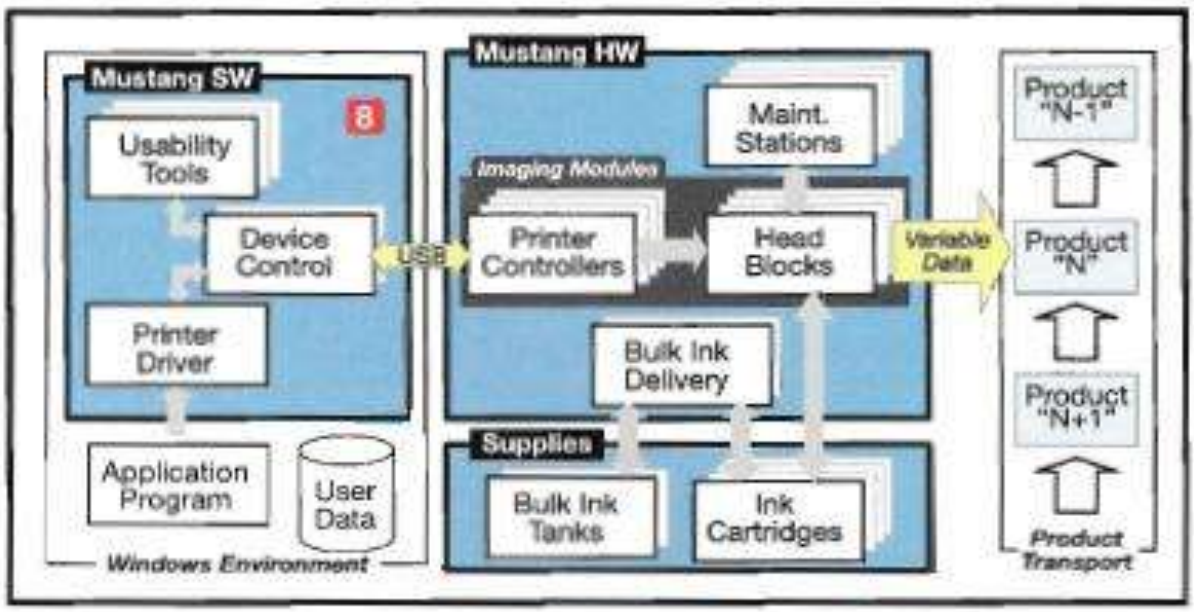


Lexmark's Mustang Printer brings an innovative, easy-to-use, complete system solution to the growing needs of many variable data applications in the industrial printing marketplace. This printer provides high-performance, cost-effective imaging solutions for OEM partners. At speed up to 760 feet per minute, print resolutions up to 600 dpi and print swaths up to 8 inches, this high-quality, robust printing system is ideal for mail addressing, product coding, primary and secondary packaging, tickets, barcode, labels, bills and statements. Lexmark's unique modular design can provide OEM customers a variable data printing solution with scalable performance capabilities at costs that are but a small fraction of the costs of comparably performing thermal inkjet industrial printers.

Why Lexmark?

Lexmark is a worldwide leader in imaging and printing technologies. As a core developer of both thermal inkjet print technology and system software, Lexmark is able to provide both an optimized off-the-shelf solution and the support each OEM partner needs for their specific system integration.

Lexmark's approach can take much of the work out of designing and implementing your



industrial printer. A flexible modular architecture allows Lexmark system engineers to work quickly with you to tailor a solution to your specific needs. Continued support during the system integration and test phases can enable you to have your system up and running - and in the marketplace – on a best possible schedule. Lexmark-tested components can reduce your tooling costs and provide reliability.

The heart of the system is an imaging module that creates a 2-inch print swath. Your system can be configured in a 2-inch print swath or can be modularly expanded in 2-inch increments up to 8-inch print swath (four print modules). The 2-inch print swaths can be imaged independently or stitched together up to the full 8 inches.

The imaging modules are available with either disposable ink cartridges (for short runs or spot-colors jobs) or bulk ink cartridges (for long runs and more economical operating costs). The bulk ink cartridges are replenished via 400 ml bulk ink tanks that can be replaced by the operator without interrupting a production run, reducing operation costs. Cartridges and ink tanks are easy accessible, making replacement quick and clean.

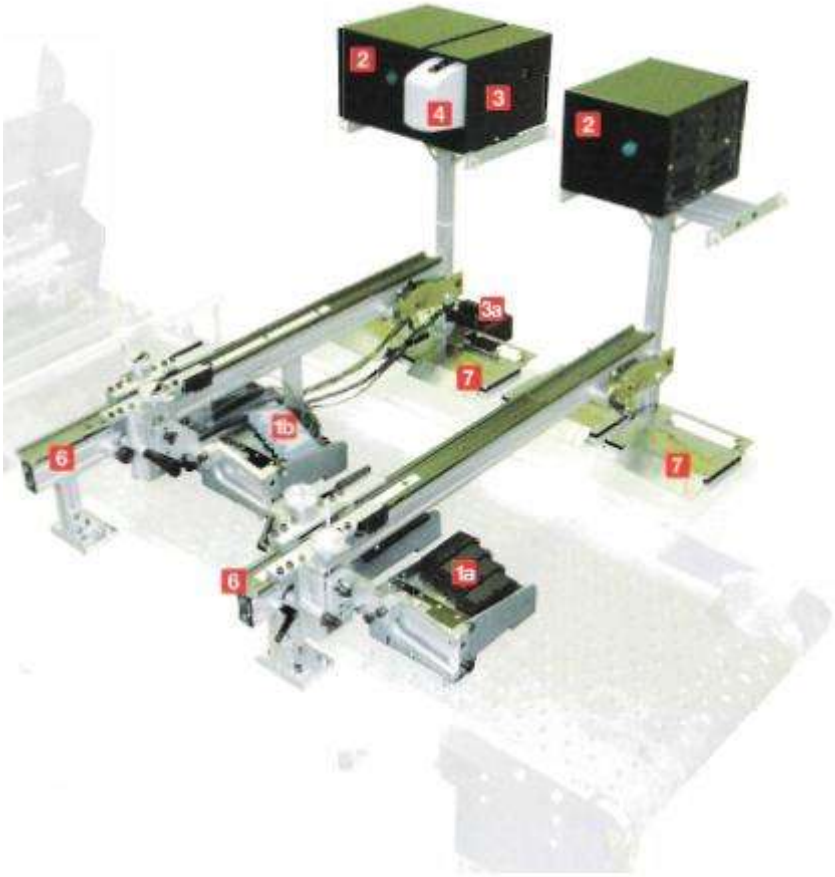
Lexmark's uniquely formulated pigmented aqueous inks work on a variety of industrial porous, semi-porous and aqueous coated substrates. These inks produce sharp, crisp output.

Application Solutions

Windows-based industrial application programs can interface directly with the Lexmark Mustang Printer via a Windows printer driver. Lexmark's partnership with FlexSystems BV has resulted in the printer being fully supported via a high-performance printer driver integrated in FlexSystem's latest release of its industry leading Windows-based mail addressing and personalization application software, FlexMail 3.1.

The Lexmark Mustang Printer and FlexMail 3.1, on a suitable product transport, create a ready-to-run, complete mail solution that can be easily integrated with any product transport that provides suitable encoder and product detect signal (encoder signals are not required for fixed speed systems). FlexMail 3.1 provides a scripting interface module for those industrial applications requiring a read-and-print or a print verification capability. This FlexMail scripting interface can also be used to control other mailing equipment configured with Mustang such as feeders tables, etc.

Component Specifications:



1. The **imaging module** includes the **printer controller** and the **head block**.

• The **printer controller**:

- Receives data via USB port,
- Maintains system clock and print head operating parameters,
- Processes commands from the PC, and
- Maintains a status structure which is communicated to the PC

• The **Head block** (either disposable [1a] or bulk [1b]) is comprised of a tooled mounting assembly that houses the printer controller, four print head ribbon cables and latching mechanisms for four ink cartridges.

2. The **interconnect/power** unit distributes power to the imaging module and the maintenance station; it houses an interconnect card that receives and distributes the encoder speed and the product detect signals as well as managing signals to and from the imaging module, the ink delivery system and maintenance station.

3. The **bulk ink delivery system** houses and controls the 400 milliliter bulk ink tanks and up to two intermediate ink cartridges. Ink level sensing in the intermediate ink reservoirs [3a] allow the bulk ink to be hot-swapped.

4. The **bulk ink tank** contains aqueous based pigmented ink for excellent optical density on porous and/or aqueous coated substrates. A memory device stores unique ink type and real-time ink level information.

5. The **ink cartridges** are designed with Lexmark's most advanced thermal inkjet technology. Available as disposable (5a) or bulk (5b) or, either cartridge operates at native resolution of 600 dots per inch and provides two rows of 320 redundant nozzles, which provide inherent image integrity in cases where an intermittent or permanent nozzle outage occurs.
Drop volume is 24-26 picoliters and maximum effective firing frequency is 24 kilohertz.

6. An optional **crossbar** and **slide assembly** that allow for the mounting of **imaging modules**, **interconnect/power units** and **ink delivery systems** to a product transport is available

7. The optional **maintenance station**, once manually engaged, automatically maintains (spits/wipe/cap) the print heads.

8. Windows software includes:
• The **printer driver** is the user's interface from industrial application program to the printer.
• The **device control modules** are the lower-level programs that provide the interface between the printer driver and the USB port. If a user desires to have an embedded printer driver in its application program, then the application can directly interface with the device control modules.
• The **usability tools** are the user's interface to the printer and provide functionality that allows a user to configure the printer, align the ink cartridges, and/or monitor the status of printer.

System Level Technical Specifications

Print swath	2” Imaging Modules, extendable to 8”
Maximum throughput and print resolutions (@24 KHz)	760 ft / min - 230 m / min at 158 dpi 540 ft / min - 165 m / min at 221 dpi 420 ft / min - 128 m / min at 284 dpi 270 ft / min - 82 m / min at 442 dpi 200 ft / min - 60 m / min at 600 dpi
Nozzles	2560 nozzles per imaging module
Printing orientation	Horizontal (down) and/or vertical (side) jetting orientation
Recommended bulk print head replacement interval	1.0 ÷ 1.5 liter per print head (depends on ink type and application)
Inks and Media	Portfolio of inks to cover: plain paper or porous, semi-porous and aqueous coated substrates
Dry time	0.5 ÷ 1.5 sec using off-the-shelf dryer on porous paper
Operation conditions	16 ÷ 32°C; 8 ÷ 80% RH
Printable images	Text, barcodes, graphics
Print head maintenance	Manual or via optional maintenance station
Certification	CE and UL
Upgrade capabilities	Easily upgradable to future software / ink systems
Power requirements	Range line voltage: 100 ÷ 240 VAC Line frequency: 50 / 60 Hz
System requirements	PC with Windows XP / 2K / Vista Encoder (for variable speed applications) Photo sensor / trigger
Interface	USB 2.0 High Speed (one for imaging module)