

Digital pretreat for industrial DTG printing with M&R's POLARIS S4 platform

M&R Printing Equipment, Inc.
United States



Overview

M&R wanted to expand the capabilities of its POLARIS S4 Industrial DTG Platform with a pretreat process that could deliver chemistry only where required. Working with Xaar, M&R developed the POLARIS S4 Digital Pretreat Unit, which digitally applies pretreat “shape for shape” behind each print. The system enables garment-to-garment control via integrated workflow software, supporting broader fabric compatibility, improved print quality and streamlined direct-to-garment production.

The project

Pretreat is a critical stage in direct-to-garment production, influencing print quality, fabric compatibility and process consistency. Conventional pretreat approaches can limit material options and create risks such as boxing or UV staining.

M&R set out to embed a more targeted and controllable pretreat process within the POLARIS S4 Industrial DTG Platform. The goal was to support a wider range of garment types, constructions and colours while improving production workflow.

The client profile

M&R Printing Equipment, Inc. supplies screen and digital printing equipment to professional printers worldwide. With 40 years of experience, the company provides solutions from pre-press to product finishing and supports print shops of different sizes with durable, integrated production systems.

The solution

The POLARIS S4 Digital Pretreat Unit was developed as a collaboration between M&R and Xaar, using Xaar's aqueous inkjet technology. The unit digitally delivers pretreat chemistry exactly where it is needed behind each print.

The “shape for shape” application allows pretreat density and amount to be controlled garment-to-garment through integrated workflow software. This enables a more tailored process and reduces the limitations associated with less targeted pretreat methods.

The implementation

The full POLARIS S4 Industrial DTG Platform debuted at PRINTING United in Las Vegas in September 2024, where attendees could see the quality of prints produced using the digital pretreat unit.

Xaar’s technology and expertise enabled M&R to complete the project in record time, demonstrating the value of close collaboration between equipment engineering and industrial inkjet development.



The impact

Outcome 1

Digitally targets pretreat chemistry only where required behind each print

Outcome 2

Enables garment-to-garment control of pretreat density and amount through workflow software

Outcome 3

Supports more garment options, better print quality and a more streamlined production process

“Xaar’s technology is driving transformation across numerous industries, and we are delighted that our innovative technology and long-standing expertise enabled us to complete this project with M&R in record time. The POLARIS S4 exemplifies the power of collaboration across the industry and the major progress it can achieve.”

John Mills
Chief Executive Officer, Xaar

Technical highlights

Key capabilities

- Aqueous inkjet technology
- Digitally targeted pretreat deposition
- Workflow-controlled pretreat density and amount

Compatibility points

- Designed for industrial direct-to-garment platforms
- Supports wider garment fabric, construction and colour options
- Integrated into the POLARIS S4 production workflow

Deployment notes

- Integrated into M&R’s POLARIS S4 Industrial DTG Platform and debuted at PRINTING United in Las Vegas in September 2024.



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