POLARIS S4™

Polaris S4 Industrial DTG Platform

M&R

Where Image Quality and Productivity Meet

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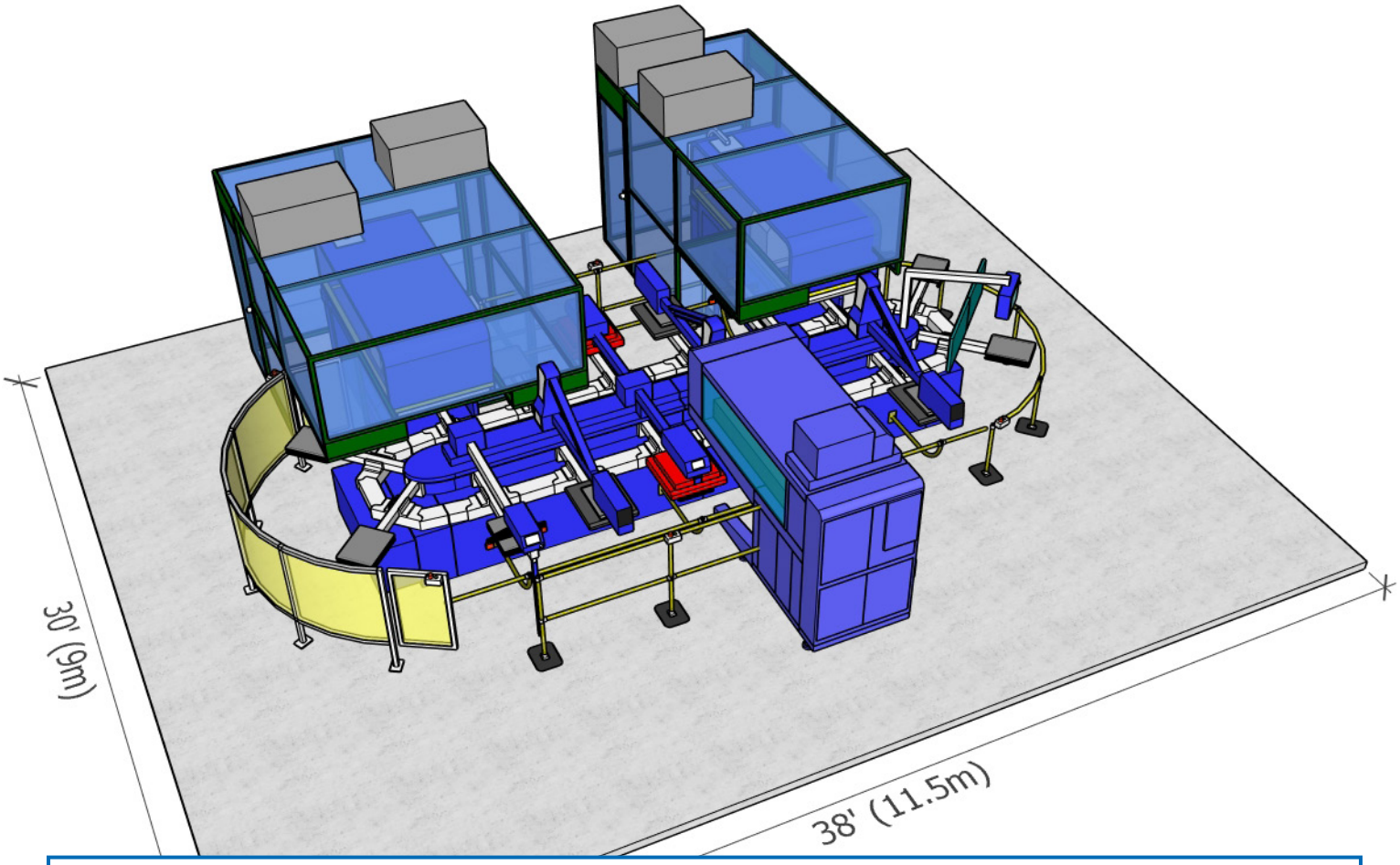
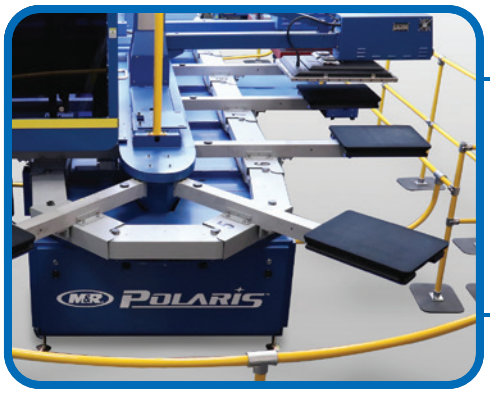


The Polaris™ S4™ Industrial DTG Platform sets a new standard with the latest generation of garment decoration technology from M&R. Designed to handle a sophisticated array of automation needs and quality requirements, the Polaris™ S4™ Industrial DTG Platform is set to accelerate growth and expand horizons.

- Industrial design with industrial performance
- Modular, upgradeable and expandable
- Retail-quality printing
- Impressive speed
- Targeted pretreatment—digital “Shape for Shape” (S4)
- Wet-on-dry print sequencing
- Widest range of substrates
- Optimized material usage
- Intuitive workflow and RIP integration with PDF workflow and bar code scanning
- Expanding recipe library
- Unparalleled service support and training in-person and online via SM&RT Academy
- Made in the USA by a company with 40 years of experience in textile printing

SM&RT™ ACADEMY

What Sets the Polaris Apart? Every Part.



16-Station Indexer

The indexing platform that the Polaris is built upon M&R's wildly-popular oval automatic printing press, known for dependability and longevity. Built of heavy-duty steel and premium components, the Polaris is built to last and here to stay.

Dual Digital Print Units

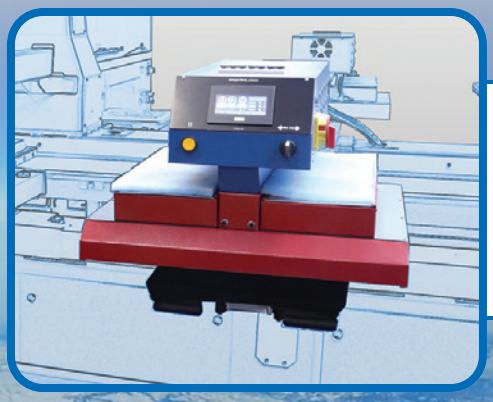
The Polaris features two high-speed digital print units with one dedicated to White and the second to CMYK. 16 Ricoh gen 5 industrial inkjet printheads arranged in a 15"-wide fixed array enable the Polaris to achieve industry-leading print production with high speed 4-, 6- or 8-pass, single axis printing.

S4 "Shape for Shape" Digital Pretreat Unit

The S4 digitally delivers pretreat chemistry where you need it… only behind the print! Not only is the pretreat digitally targeted as "Shape for Shape," but the density and amount of pretreat can be controlled garment to garment via the integrated workflow software.

Strategic Heat Presses

The Polaris utilizes multiple heat presses before and after the pretreatment process to create an ultra-smooth surface for the printing of white and CMYK inks. The heat presses are fully controllable through software to apply the correct level of temperature, pressure and time for the fabric type being printed.



High-Velocity Air Flow Quartz Flash Units

Evaporating the water out of pretreat and ink is a fundamental necessity, and our multiple quartz flashes are paramount to our rapid DTG process. Programmable time, temperature and quartz lamp intensity optimizes evaporative curing across multiple fabric types.

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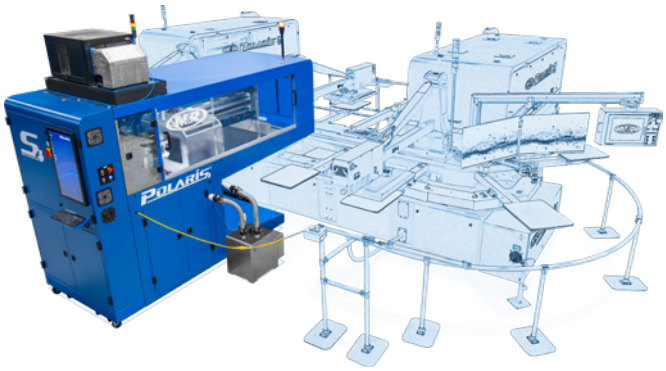


S4™ Digital Pretreat Unit

Targeted pretreat removes "boxing" or unwanted staining

Print on a wider range of fabric types

The S4 Digital Pretreat Unit is technological breakthrough that has further solidified Polaris's position as the industrial DTG solution of choice. The S4's innovative "Shape for Shape" approach to pretreat application has expanded DTG possibilities by targeting where and how pretreat chemistry is applied…
no more "boxing" or unwanted staining!

- The S4 Digital Pretreat Unit employs unique industrial digital print head and delivery systems design to eject challenging chemistries and viscosities
- "Triangle of Success"—M&R's engineering, product, development, programming and application teams have worked in unison with industry partners to develop a system that synchronizes digital ejection systems with specifically formulated chemistry
- The S4 Digital Pretreat Unit is packed with reactive and predictive inputs and outputs that communicate with sophisticated electronics, ensuring optimal performance for every demanding production schedule
- Conceptualized, designed, engineered and manufactured in Chicago, USA and supported by international reputed components

The S4 Digital Pretreat Unit has made possible:

- Efficient and economical use of pretreat chemistry (less use and less waste)
- Apply pretreat chemistry digitally where you require it—"Shape for Shape"
- Density and deposit of pretreat chemistry can be controlled via the control software or recipe
- Additional control can be applied to fade, feather, choke or spread the pretreat chemistry
- Wider range of fabric types, construction and colors can be explored without fear of "boxing" or staining associated with other pretreat solutions
- Accelerated recipe development due to predictable pretreat results. This has been made possible by "Shape for Shape" targeting
- Predictable uptime with predictable results

High Quality Prints at Screenprinting Speeds

The retail quality of color prints that the Polaris can produce is a sight to behold. Seeing the prints come off the Polaris in-person is stunning. Images jump off the substrate with depth and vibrancy, with low setup costs compared to screen printing pricing. The attractiveness of printing on the Polaris is based on speed and diversity—it can produce individual color prints, on different underbases, on different garment types—one after another, all shift long.

Cotton Dragon

- Retail Quality
- Image size 13.5"x 17.0" (34.3cm x 43.2cm)
- 100% Cotton Tee Shirt
- Dark 5 Pass Profile = Custom 6 Pass White with 4 Pass Color
- 6 gm White
- .5 gm CMYK
- 8.5 gm Pretreatment (17 gm 50/50 mixed with 8.5 gm water)

Cotton Skull

- Retail Quality
- Image size 12"x 16.25" (30.5cm x 41.3cm)
- 100% Cotton Tee Shirt
- Dark 5 Pass Profile = Custom 6 Pass White with 4 Pass Color
- 8 gm White
- 1 gm CMYK
- 8.5 gm Pretreatment (17 gm 50/50 mixed with 8.5 gm water)

Fleece Cat

- Retail Quality
- Image size 12.5"x 16.75" (31.8cm x 41.9cm)
- 50% cotton 50% polyester heavyweight black fleece
- Dark 8 Pass Profile = 8 Pass White with 4 pass color
- 10 gm White
- 2.5 gm CMYK
- 36 gm Pretreatment

Polaris S4 Industrial DTG Platform

RIP and Workflow

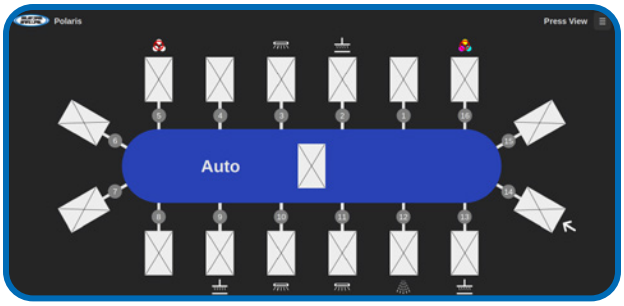
A RIP That Helps You Raster Faster

The Polaris is driven by a series of specially-developed software modules that work together to deliver a high-quality print experience. Operators will first notice the **Press View** module, which boasts a unique real-time animation of the press. This animation tracks jobs from station to station so operators can see the status of a specific job and pallet combination. The module also houses an hourly throughput meter, which updates after each print to show the current pace of the machine. Since the interface is browser-based, Production Managers can have the ability to see the Press View from another computer on a local network.

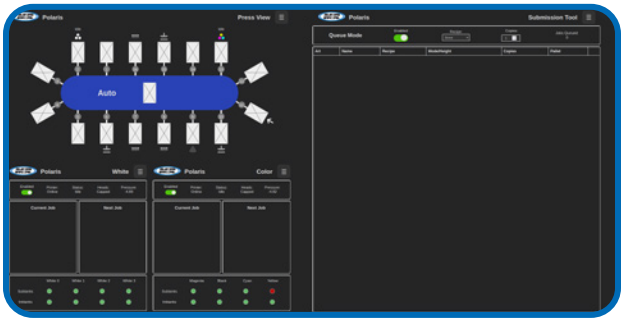
The **Submission Tool** module assigns jobs to the press and provides feedback as to how each job will be printed. In keeping the machine flexible, users have the option to manually browse and add print files, or they can take advantage of automation and utilize the integrated barcode scanner for true on-demand printing. When printing in either mode, users can see the recipe and mode being used for a specific print, the copy count and the assigned pallet numbers once the job has moved to the first station.

A Workflow That Flows with Your Work

For operations with workflow management software in place, the Polaris comes with an industrial barcode scanner that is integrated directly to the press at the load station, allowing operators to load and scan at the same time. Interfacing with the Polaris can be done via the Polaris API, and a barcode client is also included that can be used to pass the barcode to a web portal (if supported). For businesses that do not utilize workflow management software, the Polaris also supports manually adding jobs into a print queue.



RIP Press View



RIP Submission Tool

Workflow Barcode Scanner

Each of the digital print units are controlled by the Printer Module, which connects them to the queue and synchronizes print files. Advanced maintenance functions such as automatic cleaning cycles, head height adjustment and a hibernation mode are accessible through this module.

The system was designed with flexibility in mind, from covering long runs of the same design (much like screen printing), to true, on-demand (one-off) printing. Jobs are processed through the Accura-Tee RIP (powered by Caldera) to support excellent color management and automatic generation of white and color print layers. Each machine comes pre-loaded with a set of garment recipes. These recipes are used to automatically control the settings at each station and can be changed from pallet to pallet in support of printing on different materials.

DTG-Compatible Polaris Dryers

One of the key features of the Polaris is its short drying time. Most garments can be dried in around three minutes! Because of this short drying time, specific requirements must be met with a compatible dryer. Garments printed on the Polaris require a dryer that provides between 16' — 20' feet of heat with a 60" minimum belt width. M&R recommends the following Polaris-compatible dryers for an optimized DTG production cycle:

Sprint® 3000

Gas Textile Conveyor Dryer

The Sprint 3000 is the most dependable gas dryer in the industry. Sprint 3000 dryers use high-performance burners. The burner system includes its own combustion air blower, and a high-volume forced air system quickly brings the dryer to the desired temperature.

Sprint 3000 dryers are available in a wide variety of configurations, belt widths, and chamber lengths. Sprint 3000 dryers have the highest production capacity in their class and are the most energy-efficient. The Sprint 3000 Series is simply the world's most sought-after line of dryers.

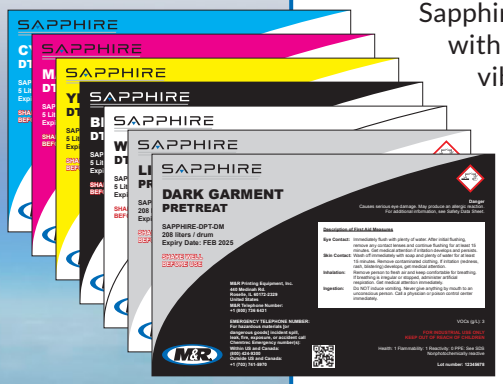
The Sprint 3000 D utilizes a stacked dual belt design, effectively doubling throughput while keeping a small footprint. It is designed to address new inks and printing methods such as direct-to-garment (DTG) and hybrid printing and their vastly differing cure rates, as well as traditional screen printing.

Sprint 3000 D dryers use a high-performance burner system that includes its own combustion air blower, and a high-volume forced air system that quickly brings the dryer to the desired temperature.

Sprint® 3000 D

Gas Textile Conveyor Dryer with Dual Stacked Belts

Sapphire™ Inks Provide Dazzling Color



Sapphire™ inks are proprietary waterbase inks specifically designed to function with the high speed of the Polaris. M&R formulated the inks to produce the most vibrant color matches with a wide CMYK color gamut. They have extreme durability, soft hand feel, abrasion resistance and wash-fastness for extended print life. They are available in Cyan, Magenta, Yellow, Black and White. They are sold in 5-liter containers that are poured into bulk holding tanks in each digital printer. Sapphire pretreat is available in Light for white/light-colored shirts, Dark for darker garments and are sold in 20-, 60- and 208-liter containers.

The Sapphire line complies with garment decorating industry standards that include OEKO Tex, EcoPassport, CPSIA and NIKE RSL.

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The Polaris S4 Digital Pretreat Unit

Improves print quality

Reduces consumption

Eliminates “boxing” and staining

Unlocks possibilities unheard of with traditional pretreat systems

SPECIFICATIONS	
Total Electrical Requirements [1] [2]	220 V, 1 ph, 188 A, 5 kVA / 110 V, 3 ph, 51 A, 6 kVA
Total Pneumatic Requirements	20 CFM @ 100 psi (566 lt/min @ 6.7 Bar)
WATER REQUIREMENTS	
Water Line In	Filtered water (not distilled): 9.5 mm (3/8") tubing, 762 cm (25 ft.) max.
Drain Line Out	9.5 mm (3/8") tubing, 762 cm (25 ft.) max. or dedicated drain pump
ENVIRONMENTAL REQUIREMENTS	
Work Room Temperature	20 - 25 °C (68 - 77 °F)
Work Room Humidity	50% - 70% (non-condensing)
GENERAL SPECIFICATIONS	
Digital Print Units - Inks	One Unit dedicated to White / One Unit dedicated to Cyan, Magenta, Yellow and Black
Printing Resolutions	600 dpi native printhead resolution. Maximum resolutions: 600x1200, 600x1800, 600x2400
Maximum Image Area	38 x 48 cm (15" x 19")
Standard Pallet Size	38 x 48 cm (15" x 19")
Overall Size (H x W x D)	290 x 874 x 699 cm (114" x 344" x 275")
Shipping Weight	8620 kg (19000 lb)

[1] If incoming voltage differs from the voltage(s) listed in this brochure, calculate amperage accordingly. Other electrical configurations (such as 380-415 V) are available: Contact M&R Printing Equipment, Inc. for details.
[2] An uninterruptible power supply (UPS) should be used to protect electrical components.

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