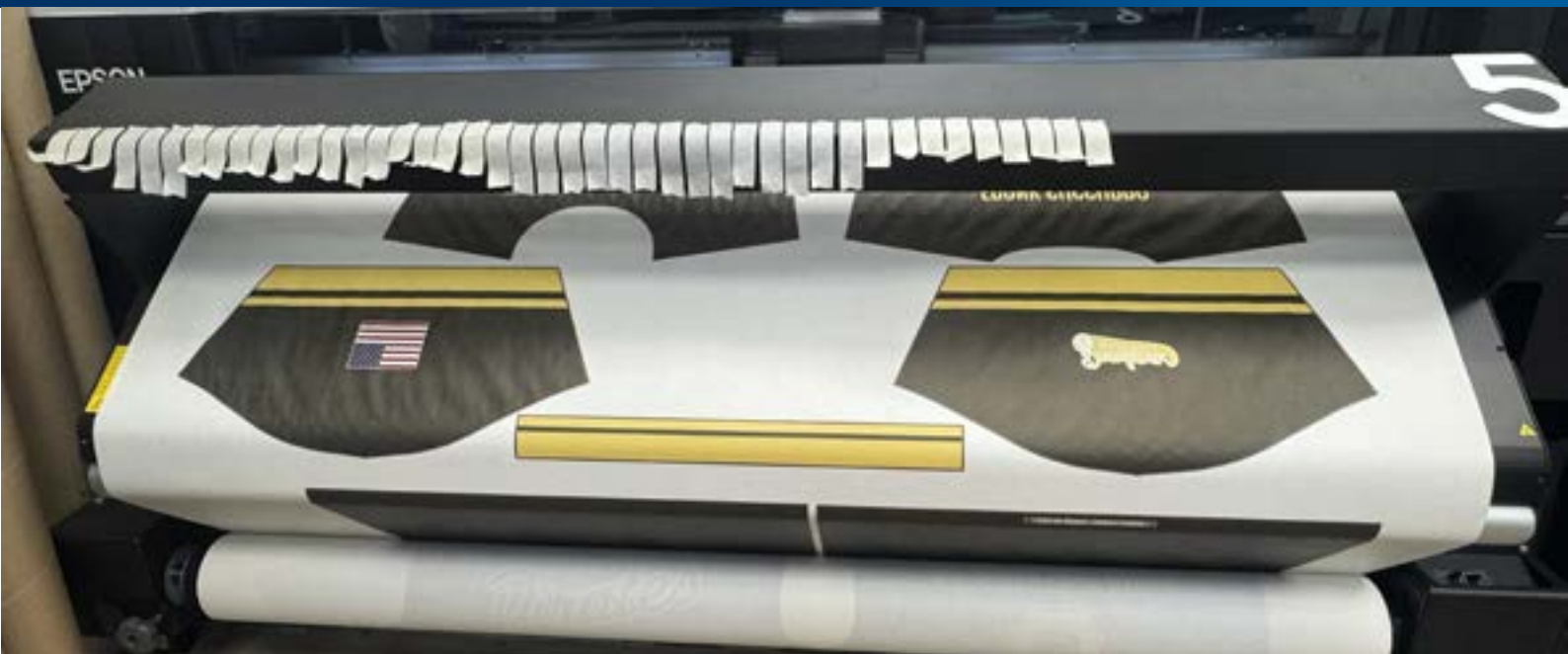




StealthColor® and Mako Core with Apex help DO Apparel scale high-performance textile printing

GPU-native rendering removes production bottlenecks while maintaining the exceptional color accuracy demanded by sports apparel brands

For DO Apparel, a leading US sportswear printer, exceptional color accuracy is a competitive advantage. Using StealthColor's® spectral color management technology, the company has built a reputation for consistently reproducing the demanding brand colors required by professional sports teams, colleges and apparel manufacturers. As demand for its services increased however, success exposed a new bottleneck - not in color quality, but in rendering performance.

The Challenge

Many customer files contain complex vector artwork with up to 40 spot colors, transparency effects, and opacity settings. Rasterizing these PDFs could take between 12 and 15 minutes before printing could even begin. While the printers themselves could maintain production speed, rendering increasingly became the limiting factor.

“The reduction in rendering times has improved our workflow and enabled us to process jobs much more efficiently, giving us greater capacity to take on additional business without compromising turnaround times.”

Matt McKae, owner and CEO of DO Apparel

Key facts

DO Apparel uses wide-format Epson F9570 dye sublimation printers.

File sizes up to 2GB can be rendered in 20 seconds, printing up to 1000 linear feet per hour in aggregate.

StealthColor's® spectral color management technology enables operators with no color management skills to quickly produce profiles with a larger gamut, use less ink and with more accurate color output.

In addition, as demand for DO Apparel's services continued to grow, owner Matt McKae wanted to expand production by investing in additional digital printers. However, increasing print capacity would achieve little unless the workflow could keep pace. Processing increasingly complex files had become the bottleneck, and simply adding more workstations would introduce additional cost and operational complexity. Instead, DO Apparel wanted to continue managing production from a single workstation while significantly increasing throughput.

The Solution: GPU-based rendering

StealthColor® had already begun investigating GPU-based rendering as a way of overcoming the bottleneck. The company estimated that developing its own GPU architecture would take around two years, forcing valuable engineering resources away from new color management innovations. When Hybrid Software Helix introduced Apex, a GPU-native renderer, into its Mako Core print software development kit (SDK), StealthColor® recognized an opportunity to accelerate development by building on technology it already trusted.

Mako Core with Apex is an SDK for high-performance print workflows. It provides deep access to PDF and other page description languages through its intelligent Document Object Model, enabling developers to inspect, edit, convert, optimize, and output complex print documents. Apex adds focused acceleration technologies for the most demanding parts of the workflow, including GPU-native rasterization and high-speed PDF output. Apex adds the acceleration technologies that help those solutions perform at scale, with significantly faster rendering and PDF output.

"When Apex became available we thought, 'Why reinvent the wheel?' We'd been using Mako successfully for years, so integrating Apex made far more sense than developing our own rendering engine," says Jesse Leskanic, CTO of StealthColor®. "Implementation took only a few weeks - it was the easiest implementation," added Leskanic.

“Improved quality and dramatically higher speed at the same time - that's rare. That's what Mako Core with Apex has delivered for us and for our customers.”

Jesse Leskanic, CTO, StealthColor®.

The Result: from minutes to seconds

The results exceeded expectations. Files that had previously taken between 12 and 15 minutes to rasterize were processed in as little as eight to 12 seconds. Beyond the dramatic increase in throughput, Apex also resolved rendering issues that had forced DO Apparel to fall back on conventional RIP technology for certain complex jobs. Those files could now be processed using StealthColor®'s own workflow, maintaining the color accuracy that DO Apparel was known for.

Matt McKae, owner and CEO of DO Apparel comments: "StealthColor® integrated with Mako and Apex has made a significant difference to how we operate at DO Apparel. The reduction in rendering times has improved our workflow and allowed us to process jobs much more efficiently, giving us greater capacity to take on additional business without compromising turnaround times."



The Epson F9570 dye sublimation printer.

Creating capacity for growth

The improvements extended well beyond rendering performance. McKae adds: "The increased efficiency has also given us greater confidence to continue investing in our production capabilities. StealthColor® has played an important part in supporting our growth and our decision to expand with five additional printers. It has not just saved us time — it's helped us make better use of our equipment and create capacity for the next stage of our business."

For StealthColor®, the integration also opened new commercial opportunities. High-speed, single-pass textile printers, previously beyond the practical limits of CPU-based rendering, are now realistic targets for the company's software, enabling it to address new areas of the textile printing market without diverting development resources away from its core expertise in color management.



Typical sportswear items printed by DO Apparel using the Epson F9570 dye sublimation printer.

"Improved quality is valuable," concludes Leskanic. "Improved quality and dramatically higher speed at the same time - that's rare. That's what Mako Core with Apex has delivered for us and for our customers."

About DO Apparel

DO Apparel is a full-service, custom sports apparel company offering full dye sublimation, direct-to-garment printing, and embroidery. It is passionate about outfitting youth sports with high-quality products, at the fastest turn-around times in the industry. From game day uniforms to training gear and team apparel, DO creates products that bring teams together and help athletes stand out. Its focus is on quality materials, thoughtful designs, and custom solutions that reflect each team's unique personality. doapparel.com

About StealthColor®

StealthColor® is a color software provider based near Atlanta, Georgia, USA. The company includes some of the world's most knowledgeable experts in color management, fabric manufacturing/finishing and chemistry, and works with wide-format digital printers in the dye sublimation sector using highly optical brightener material. stealthcolor.com

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