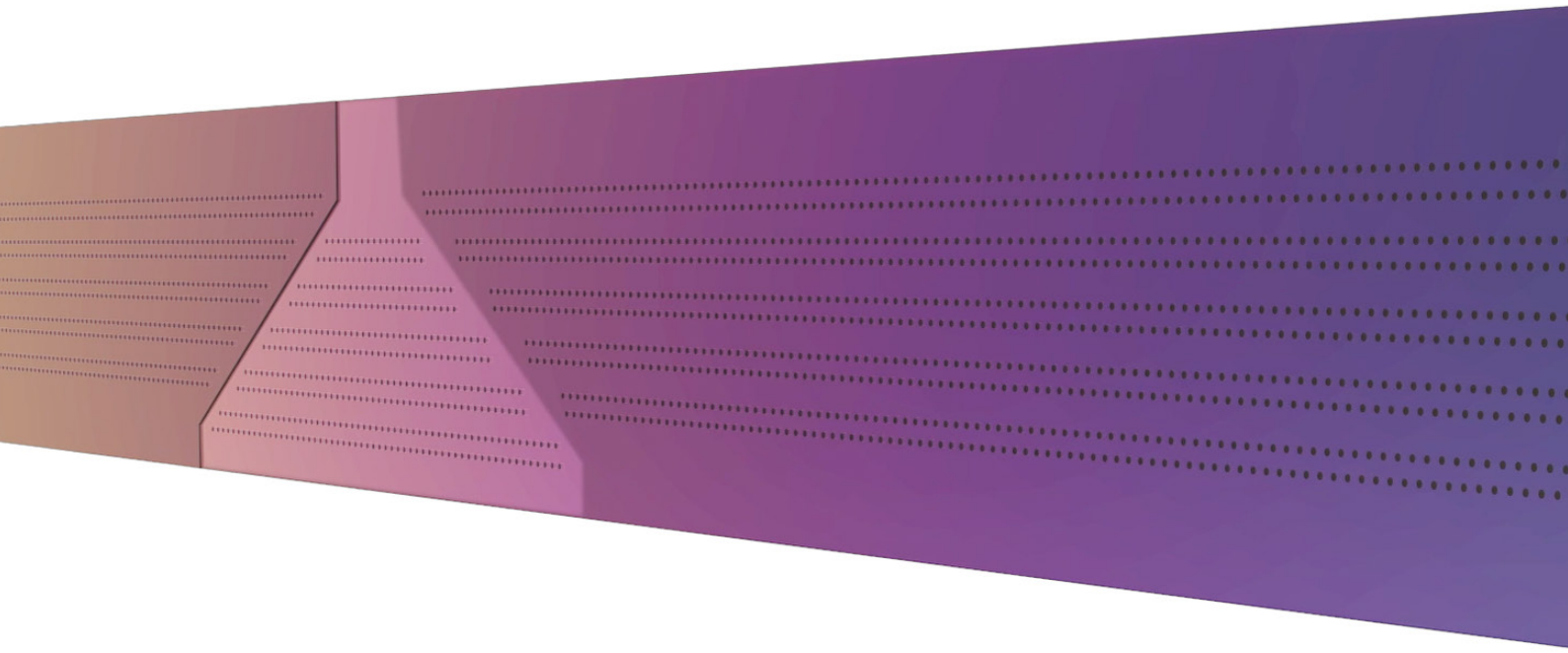
We Are R&D

MEMJET'S SETANTA CMOS

NEXT-LEVEL CONTROL FOR NEXT-GEN RESULTS



memjet®

Beautiful Precision, Simplicity and Flexibility

The Next Leap in Printhead Technology

Memjet's smart technology just got even smarter. With the introduction of Setanta, our next-generation nozzle control system, we've redefined what's possible in high-performance printing.

Setanta is Memjet's newly engineered complementary metal–oxide–semiconductor (CMOS), embedded in the heart of our ThunderBolt and Arsenal printheads. By governing the firing sequence of the dropped triangle nozzles independently from the main body nozzles, Setanta widens the spectrum of professional-grade print modes, reduces print artefacts and preserves the operational simplicity that has made Memjet a leader in single-pass inkjet printing.

What Makes Setanta Unique? Discover the Key Benefits

Every Setanta-enabled printhead will provide unprecedented freedom to adjust speed and resolution, extending Memjet's hallmark precision across more print scenarios. The new CMOS fully supports Memjet's existing print modes, giving identical drop placement and parameters. It will also enable a broad range of additional modes through future software releases. This finer control over print mode configurations makes it easier and faster to support new applications with minimal engineering effort. Beyond speed and resolution, Setanta releases will also introduce more refined temperature regulation and improved declog functionality—all without changing the mechanics of existing printheads and print engines.

Intelligent Thermal Regulation in Real-Time

Setanta delivers smarter thermal control by dynamically adjusting the sub-ejection pulses used to maintain inactive nozzle temperature and ensure nozzles are ready to fire. This allows the printhead to regulate heat more precisely without affecting active ink ejection. Combined with optimized sensor placement at the center of each thermal control group, this results in faster warm-up times, finer temperature stability, and reduced risk of banding or other thermal artefacts during print runs.

Declog Efficiency, Redefined

Memjet printheads are programmed to fire a high-energy sequence of ejections to clear dehydrated ink from the nozzle—this is the declog functionality. Setanta will significantly accelerate the declog routine, allowing it to be carried out in a fraction of the time (and substrate space) previously needed. By issuing more efficient ejection commands, Setanta clears dehydrated ink with faster pulse sequences. It then reverts back to standard printing with markedly more efficient reconfiguration. The result is reliable, inter-page declogging that keeps long runs flowing. Less wasted paper, quicker job turnarounds, and consistently crisp output—Setanta turns nozzle upkeep into an almost invisible step in your workflow.

What Stays the Same?

All mechanical, electrical and MEMS elements in Memjet's printheads remain untouched. Ink ejection physics, fabrication processes, printhead life and service routines are identical to current specifications. This safeguards your investment in existing designs.

Seeing is Believing.

Watch Memjet® technology in action at Memjet.com/technology

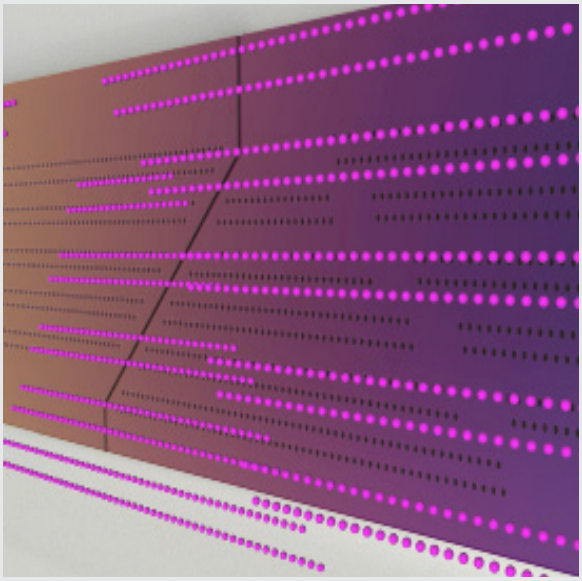
We Are R&D

The Hidden Precision Behind Flawless Lines

Setanta extends Memjet's dropped triangle advantage across a wider range of print modes—unlocking greater flexibility without sacrificing quality. Understanding how the dropped triangle innovation works is key to envisaging the full power of Setanta.

Bridging the Gap: The Dropped Triangle Advantage

Memjet's printheads are built from multiple integrated circuits (ICs) that house a microscopic array of nozzles and ink chambers. These printhead ICs are precisely aligned to form a continuous print bar, with ink ejection controlled at nanosecond precision. However, ink chambers can't be placed at the very edge of these ICs, creating a natural gap. Memjet's patented dropped triangle design bridges this gap with an innovative array of nozzles that "stitch" the image seamlessly across the join. With Setanta, this bridging mechanism gets even smarter. By decoupling the firing instructions for the dropped triangle from the main nozzle array, Setanta delivers unparalleled control over dot placement, ensuring flawless, uninterrupted print lines across a finer granularity of speeds and resolutions.



Moving to Setanta. Your Upgrade Path

Setanta's advanced capabilities rely on dedicated firmware. This means print engines must run matched sets of Setanta printheads and software. Once the software is upgraded, it can't be reversed. Therefore, in single-head systems, the Setanta-enabled printheads can be introduced during routine head replacement (with firmware upgrade) after using your existing printhead supply. In multi-head arrays, a coordinated line change and firmware update is needed and should take into account calculations of existing inventory. Once upgraded, your engine can unlock the growing Setanta feature set, paving the way for the next generation of Memjet innovations.

To assist you with the Setanta upgrade, Memjet's team will provide technical documents, customized support and inventory planning advice to ensure a friction-free, one-time rollover.

Setanta Rollout and Availability

The ThunderBolt printhead line will be the first to transition to Setanta. Based on current projections, Setanta-enabled ThunderBolt printheads are expected to be available to OEM partners for evaluation in late Q3 2025, with full production capacity anticipated by the end of the year. As with all technology rollouts, timelines may adjust slightly as production ramps. To support a smooth transition, firmware updates and technical documentation will be provided ahead of availability, enabling you to prepare and profile engines in advance. Following the ThunderBolt rollout, development will begin on Setanta-enabled Arsenal printheads.

We Are R&D

Future Proof Compatibility

Continuing the Memjet Legacy, Future Proofing Performance

The first release of Setanta will match every existing print mode, ensuring Memjet's legacy of beautiful precision remains. It also lays the groundwork for tomorrow's enhancements, with advanced drop-placement algorithms opening the doors to additional specialty print modes. The tables below provide a glimpse of the future, giving you a look at the first additional print modes that will be supported as the Setanta software evolves.

DURAFLEX AND DURACORE LEGACY PRINTMODES (CONTINUING)				
*DURAFLEX AND DURACORE ADD-ON PRINTMODES (FROM 2026)				
RESOLUTION		SPEED		
DPI	DP/um	IPS	FPM	MPM
640	39.7	45	225	69
832*	30.5*	35*	173*	53*
954	26.6	30	151	46
1228*	20.7*	24*	118*	36*
1386*	18.3*	21*	104*	32*
1600	15.9	18	90	27

TANDEM DURABOLT & TANDEM DURACORE LEGACY PRINTMODES (CONTINUING)				
*TANDEM DURABOLT & TANDEM DURACORE ADD-ON PRINTMODES (FROM 2026)				
RESOLUTION		SPEED		
DPI	DP/um	IPS	FPM	MPM
640	39.7	90	450	137
816	31.1	71	353	108
952	26.7	61	303	92
1108*	22.9*	52*	260*	79*
1280	19.8	45	225	69
1424*	17.8*	40*	202*	62*

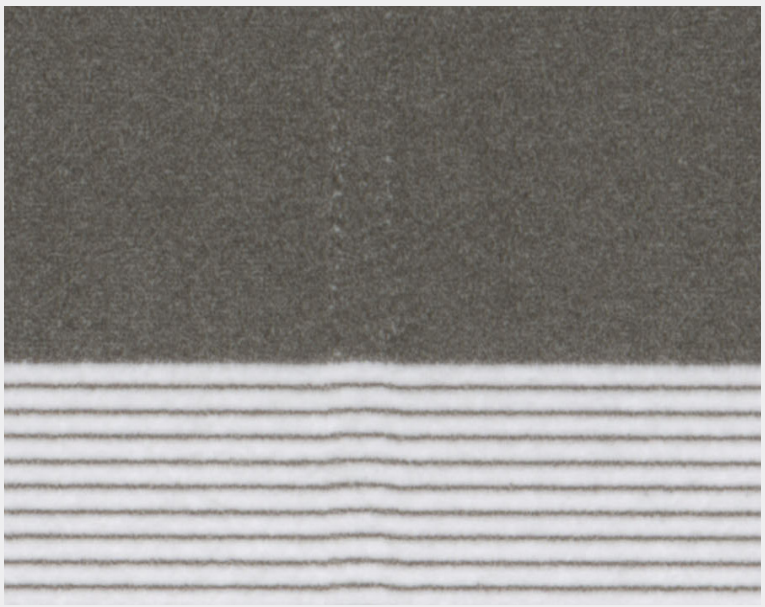
We Are R&D

Seeing is Believing: Showcasing the Setanta Edge

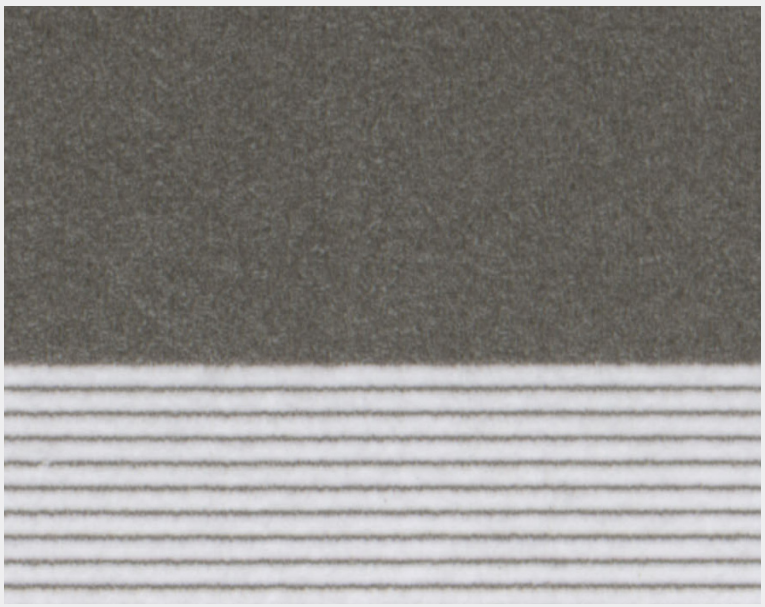
The images below provide direct visual comparisons of Memjet's new Setanta CMOS technology versus the previous-generation Rooster CMOS—both operating at an 832 dpi print mode. This mode was not practical with the Rooster CMOS due to the artefacts seen in the images below. It is enabled by the Setanta CMOS. Each image is printed on high-resolution Mitsubishi matte-coated media, selected for its low dot gain properties to reveal fine detail and print precision.

To more clearly illustrate the difference between Rooster and Setanta, simulated dot placement patterns are also shown below. The test patterns use a centered dropped triangle, with single-pixel lines spaced at 0.25 mm and a 50% density area fill to stress-test dot placement accuracy and consistency. The superior dot control of Setanta delivers a visibly cleaner result—with sharper lines, reduced artifacts, and more stable area fills—especially in demanding mid-range print modes like 832 dpi.

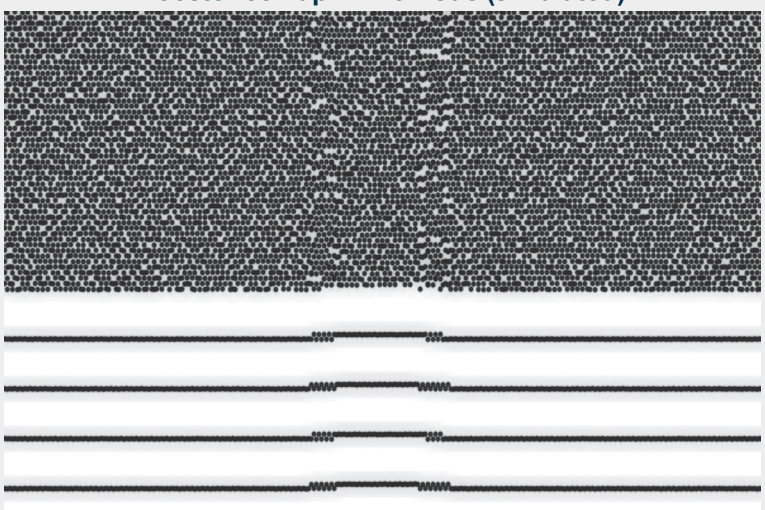
Rooster 832 dpi Print Mode (2400 dpi scan)



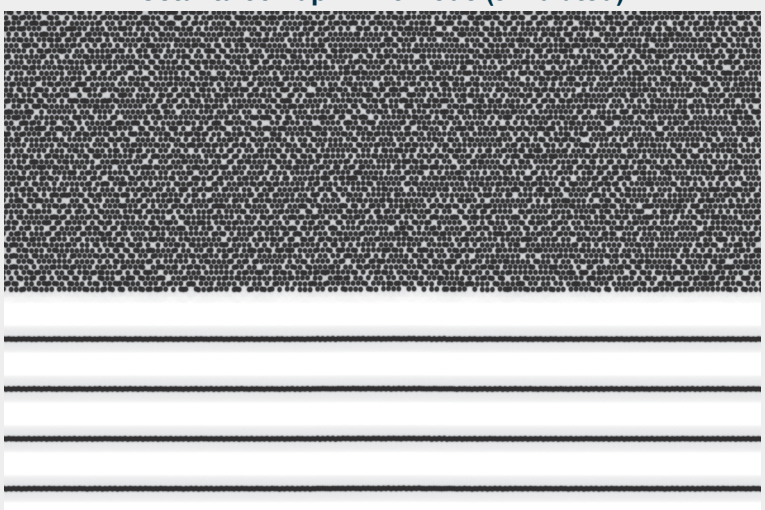
Setanta 832 dpi Print Mode (2400 dpi scan)



Rooster 832 dpi Print Mode (simulated)



Setanta 832 dpi Print Mode (simulated)



BEAUTIFUL PRECISION, SIMPLICITY and AFFORDABILITY

Memjet's Setanta CMOS
Next-Level Control for Next-Gen Performance

Precision Evolved.
Performance Unlocked.

memjet®

Explore your Press Options
memjet.com/technology