

Seven ways AI is shaping commercial printing

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Ricoh Europe, London, February 27 2025 – “We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.” So states Amara’s Law named after its creator, Roy Amara.

Artificial Intelligence (AI) is a great example of Amara’s Law as I shared last night at Ricoh’s Time Jump VIP event as part of Hunkeler Innovationdays 2025. First studied in the 1950s, with programmes excitedly developed in the 1960s, commercialisation was slow. 60 years later applications are becoming more widespread, such as virtual assistants and chatbots emulating human interactions.

Today, with AI algorithms, everyday patterns from data are identified over time to educate recommendation engines for predictive maintenance and predictive forecasting. Multilayered neural networks that learn from vast amounts of data are refining natural language processing, image recognition, and autonomous driving.

In the printing industry AI is making its mark too. It is having a particular impact on seven key areas:

1. Enhanced print quality and consistency AI algorithms monitor production in real time to ensure optimal print quality and consistency and Machine Learning (ML) systems detect potential defects early and make automatic adjustments. This reduces waste, increases productivity by preventing downtime, and ensures consistent quality.

2. Predictive maintenance AI excels at predicting equipment failures before they occur. ML analyses device usage patterns, maintenance records, and system logs to forecast issues and schedule maintenance proactively. This improves asset utilisation, extends equipment lifespan, and minimises operational disruptions.

3. Personalisation AI enables unprecedented personalisation at scale in printing by analysing customer data to generate tailored designs, layouts, and content. This streamlines

the creation of effective print campaigns, increases engagement and conversion rates, and enhances customer satisfaction.

4. Workflow automation AI powered systems streamline workflows with the automation of end to end production processes by autonomously routing jobs and executing repetitive tasks. This optimises efficiency, reduces labour dependency and error potential, and allows employees to focus on more complex, creative, and collaborative work.

5. Sustainable printing practices AI is promoting sustainability within the printing industry by analysing the environmental impact of production processes and materials. This ensures efficient resource usage, reduces waste, lowers energy consumption and provides eco-friendly material recommendations.

6. Advanced data analytics AI processes vast amounts of operational data to improve outcomes via the provision of predictive and prescriptive insights from collected ML data. This enables faster, more accurate decisions, streamlines operations, and fosters innovation for competitive advantage.

7. Innovative printing technologies AI is advancing technologies like 3D and digital printing from smart layouts to automated die-cut algorithms and digital twin implementations¹. This enhances precision and capabilities, empowers less skilled operators, and simulates and optimises production processes cost effectively.

Ricoh is leveraging AI to revolutionise print production and deliver superior outcomes. For example, the [RICOH Pro™ VC80000](#) delivers increased automation of production, print quality control, and communication with many AI, ML, and data analysis features that ensure predictable and repeatable output with minimal operator intervention. New [RICOH Predictive Insight™](#) also uses AI and ML capabilities to provide data driven insights into device utilisation and operator productivity.

AI can also support makeready automation by scheduling tasks ahead of time. This streamlines operator workflows and informs remote support to predict potential failures and as a result minimises downtime and service calls.

¹ A **digital twin** is a digital [model](#) of an intended or actual real world physical product, system, or process (a *physical twin*) that serves as a digital counterpart of it for purposes such as [simulation](#), [integration](#), [testing](#), [monitoring](#), and [maintenance](#).

AI, once a futuristic concept, is now driving innovation across the graphic arts industry.

Commercial printing operations can enjoy:

- Faster ROI by overcoming production challenges and reducing costs quickly.
- Optimal prepress, printing, and post press workflows with automation.
- Improved print quality that ensures consistent output with real time monitoring.
- Personalisation at scale by tailoring print jobs effectively while maintaining quality and cost effectiveness.
- Fewer unexpected repairs and increased uptime with predictive maintenance.
- Boosted productivity with actionable insights and data driven decisions.

Explore how future ready, innovative, AI can support competitiveness and drive continuous improvement. Discover how it can become an effective everyday tool in your operational success.

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Ricoh is a leading provider of integrated digital services and print and imaging solutions designed to support digital transformation of workplaces, workspaces and optimize business performance.

Headquartered in Tokyo, Ricoh's global operation reaches customers in approximately 200 countries and regions, supported by cultivated knowledge, technologies, and organizational capabilities nurtured over its 85-year history. In the financial year ended March 2024, Ricoh Group had worldwide sales of 2,348 billion yen (approx. 15.5 billion USD).

It is Ricoh's mission and vision to empower individuals to find Fulfilment through Work by understanding and transforming how people work so we can unleash their potential and creativity to realize a sustainable future.

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