



CASE STUDY:

Manufacturer deploys on demand print to enhance customer service, cut costs, and eliminate manual errors



Variable Frequency Drive manufacturer Invertek Drives gains new workflow efficiencies by switching from traditional to on demand print with Ricoh.

COMPANY & CHALLENGE

Invertek Drives, based in Wales, UK, manufactures sophisticated variable frequency drive technology to control electric motors in a wide range of industrial and commercial applications. The company builds its drives at a dedicated global assembly facility using the latest technology. The company employs around 220 people, generates revenue of over £50 million, and manufactures more than 260,000 drives a year, of which 90% are sold internationally.

Invertek Drives continuously innovates and updates its technologies, always seeking to improve product design and performance. Managing the overnight printing process for essential user and technical guides became a taxing, complex task, absorbing significant time. How could Invertek produce the guides in a way that better matched its very flexible build-to-order manufacturing process while eliminating manual errors?



OBJECTIVES

From conveyor systems to water pumping stations and almost every conceivable manufacturing process, modern industrial automation relies on electric motors to keep production lines running. Invertek Drives serves this essential market sector, and manufactures highly sophisticated variable frequency drives that provide flexible power, up to 250 kW, sold worldwide.

Each Invertek drive is built to order, which requires meticulous planning, from the arrival of goods inwards to the final picklist and packaging. Naturally, every drive despatched to a customer must include the appropriate user guide, updated to match the latest specification. To meet urgent customer demands, every day the team would plan out the next day's production, which included user and technical manuals.

Nigel Evans, Marketing Manager, explains, "Naturally, electrical and electronic components must be accompanied by the correct safety and technical data. Not only must we comply with international regulations, but also ensuring that manuals are fully up-to-date is part of customer service. The guides help customers operate



The Ricoh solution gives us very flexible, full control of our processes, helping Invertek on its mission to offer customers high efficiency drives that are manufactured to the highest technical and sustainability standards.

Nigel Evans, Marketing Manager



"The production planning solution simply delivers a message to the Ricoh software to run the print on demand process, delivered as the drive is completed. There's almost zero human interaction, apart from filling the machine with paper - saving time and eliminating errors."

Mark Walling, Manufacturing Engineer



their drives as effectively as possible, and reduce the number of calls to our service teams – which in turn ensures greater customer satisfaction."

In the past, Invertek relied on a company to print user guides overnight in small batches to match the next day's manufacturing plan. The team meticulously checked that the correct manuals had been delivered, and these were then stored on site ready to be dropped into delivery pallets.

Mark Walling, Manufacturing Engineer, comments, "Updating user guides, reviewing proofs, tracking editions, and managing the daily deliveries all absorbed significant time. We devoted considerable effort to the process, such as cross-checking language versions and much more, with a constant flow of emails and spreadsheets within the team and to the print company."

He continues, "By the time we had completed proof reviews, it could be more than a week before we saw revised copies. With our build-to-order processes, this represented a significant lead time and potential delay, and the overnight print costs were substantial."

SOLUTION

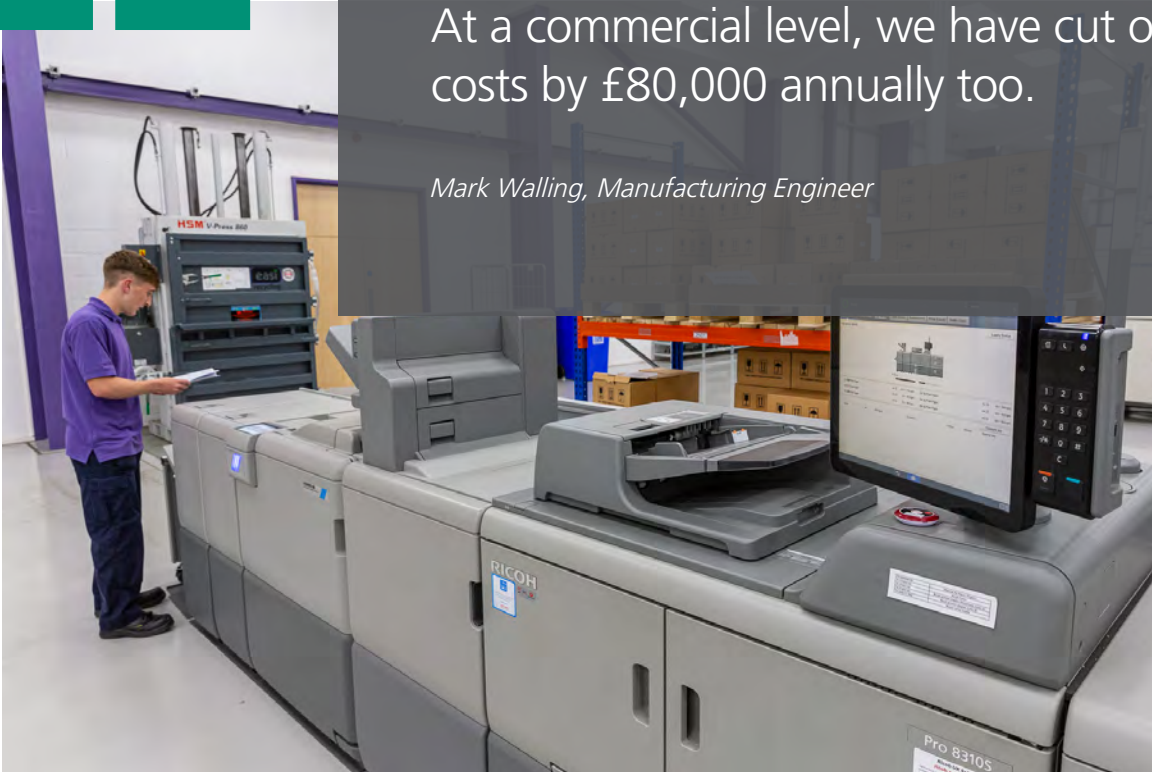
Working with a print consultant, Invertek realised that on demand technologies could offer a better fit with its custom-build manufacturing processes. Using on demand print, guides could be printed for each customer order, eliminating the complex and time-consuming tracking of versions, overnight print deliveries, and stock. It would also reduce paper waste.

To turn the concept into reality, Invertek turned to Ricoh and within six weeks implemented an on demand print solution with PlockMatic inline booklet finishing. The system handles the complete print production process, from plain sheets through to final bound copies, at the touch of a button. The solution sits on the factory floor alongside the drive production lines, and prints the completed booklets, ready to drop into the delivery box.



We estimate that the Ricoh solution has saved around 80% of the time we spent managing production of the user guides. At a commercial level, we have cut our costs by £80,000 annually too.

Mark Walling, Manufacturing Engineer



Initially, Invertek used the Ricoh solution as an in-house replacement for the external service; for each drive, the production team selected and printed the appropriate guide to be included in the despatch pallet. Both guide and drive carry barcodes, which enable operators to ensure a match.

Two months after the deployment, Invertek created a fully automated, integrated process using the Ricoh workflow solution. As each customer's drive starts its manufacturing journey, the company's production planning system sends an xml message to the Ricoh workflow solution to print the correct user guide, using the latest updated document.

Mark Walling comments, "The production planning solution simply delivers a message to the Ricoh software to run the print on demand process, delivered as the drive is completed. There's almost zero human interaction, apart from filling the machine with paper - saving time and eliminating errors."

BENEFITS

Using the in-house Ricoh and TotalFlow print on demand solution has transformed and streamlined the production of user guides.

"At the most basic level we no longer spend time on checking user guides as they arrive each day, and we have released valuable storage space. Most importantly, we have saved literally hours of spreadsheet manipulation, and eliminated supplier and team email exchanges. Automation eliminates possible human error, and we can now be certain that we have the correct guide with each drive," says Mark Walling.

"We estimate that the Ricoh solution has saved around 80% of the time we spent managing production of the user guides. At a commercial level, we have cut our costs by £80,000 annually, too. For example, a guide that previously cost £3 to produce now costs less than £1, a

66% saving. Some of the smaller guides were proportionally even more costly per page: with on demand printing enabled by Ricoh, the savings are even greater, in some cases moving from 40p per booklet to 5p, a cost saving of more than 80%”

Nigel Evans comments, “The Ricoh solution gives us new, very flexible capabilities, and we can update the guides at any time without waiting for the external printing company. With exact knowledge of when we make technical changes, we can help customers get the best out of their Invertek products as we can track manuals right back to individual drives. As well as our own brand, we manufacture drives for other suppliers, who send their user guides as PDFs to us for print. Similarly, if they want to update or revise their user guide, with the Ricoh solution we can implement the change very quickly, offering outstanding customer service.”

He continues, “In common with many businesses, we are committed to sustainable manufacturing. For example, Invertek is accredited to ISO 14001:2015, a standard designed to address the balance between maintaining profitability and reducing environmental impact. The Ricoh solution enables Invertek to print manuals and user guides matched one to one to our manufacturing processes, ensuring reduced waste and greater total production efficiency.”

Nigel Evans concludes, “The Ricoh print on demand capabilities, integrated with manufacturing systems, deliver lower print costs, reduced waste, and time released from administration. Most importantly, the Ricoh solution gives us very flexible, full control of our processes, helping Invertek on its mission to offer customers high efficiency drives that are manufactured to the highest technical and sustainability standards.”



ABOUT RICOH

Ricoh is empowering digital workplaces using innovative technologies and services, thus enabling individuals to work smarter. With cultivated knowledge and organisational capabilities nurtured over its 85 years' history, Ricoh is a leading provider of document management solutions, IT services, communications services, commercial and industrial printing, digital cameras, and industrial systems.

Headquartered in Tokyo, Ricoh Group has major operations throughout the world and its products and services now reach customers in approximately 200 countries and regions. In the financial year ended March 2021, Ricoh Group had worldwide sales of 1,682 billion yen (approx. 15.1 billion USD).

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