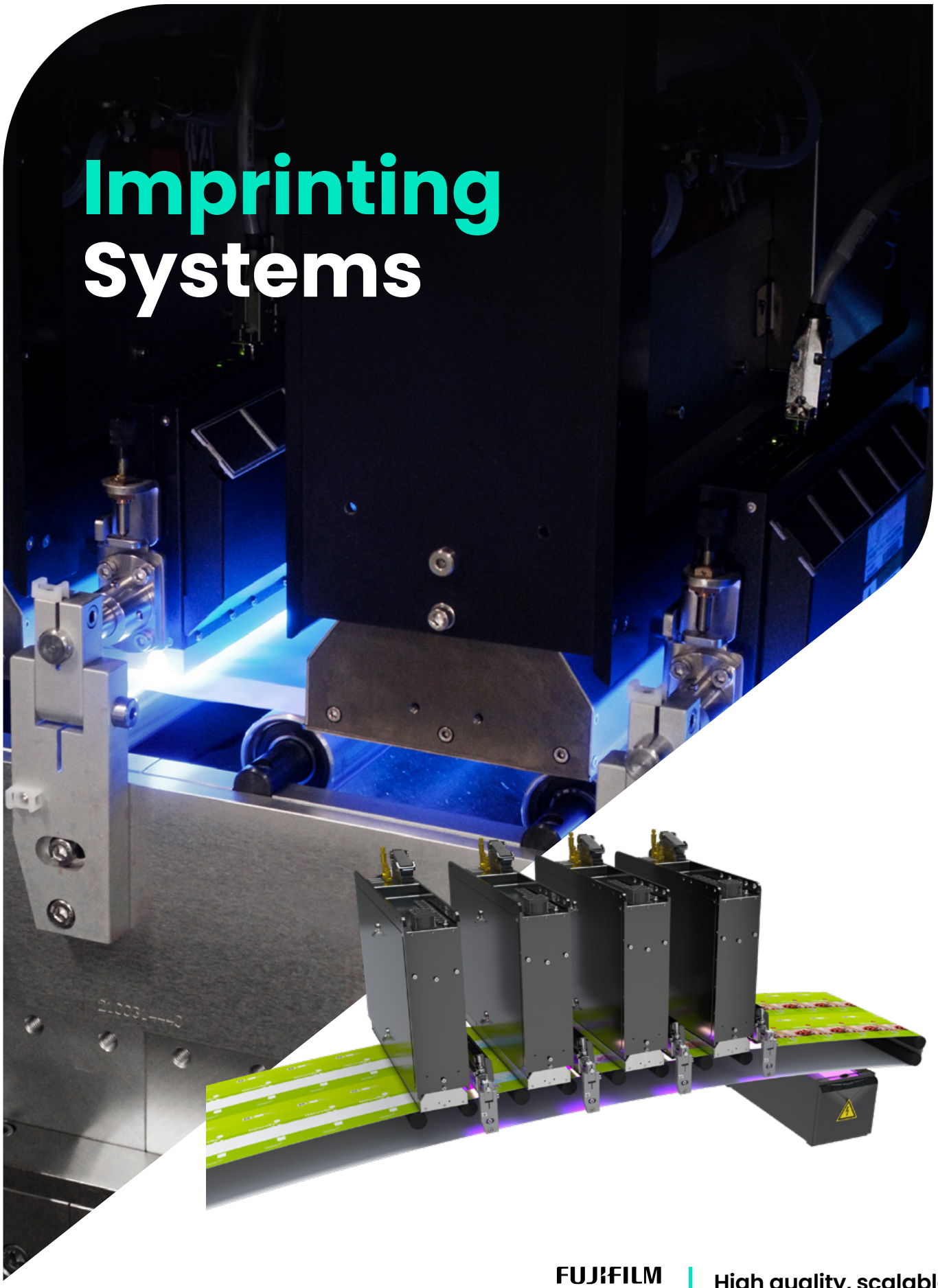
FUJIFILM
Value from Innovation

Imprinting Systems



FUJIFILM INKJET TECHNOLOGY

High quality, scalable imprinting solutions

Industry-leading technologies

Fujifilm imprinting solutions

Fujifilm's imprinting solutions allow digital inkjet printing to be integrated directly onto existing analogue production lines for a broad range of printing and industrial applications.

Fujifilm is unique in that it is a company that has developed its own industry leading core inkjet technologies, and added the ability to integrate these technologies into existing processes. This means that Fujifilm's printhead designers, ink technologists and integration specialists work together to ensure optimum system performance and reliability for the required application, and once built, are able to take ownership of the complete solution.

Fujifilm can therefore provide all components necessary to successfully integrate a digital solution into an existing production line:

- Printhead & printbar design
- Inks & substrates
- Electronics & software
- Print systems
- Transport systems (web and sheet)

What also sets Fujifilm apart are the industry leading printheads and ink at the heart of the company's imprinting solutions. Samba printheads are found in many of the industry's leading digital printing systems, as they combine the very highest quality, productivity and reliability, with the flexibility to be used with a variety of different inks and fluids. Fujifilm has now built these printheads into a number of scalable printbar configurations which, when combined with UV or aqueous ink technologies, result in best-in-class imprinting solutions.

A solution configured to your application

Fujifilm's approach is critical to ensure that any imprinting system can be configured to meet specific application requirements. This is achieved by a dedicated team of multi-disciplined engineers working together to understand the print performance demands and production process. This then results in a specification for a system configuration that delivers exactly what is needed, including attributes like print width, print quality, colour channels, pre- and post-treatment, printed product performance and regulation compliance.

Integration into your production process

Many production setups are different, requiring a customised approach to integrate imprinting. Other production setups demand the scaled deployment of standard systems across sites. Fujifilm has the expertise and scale to accommodate both types of approach, and for the latter, can provide standard designs to accommodate multi-site roll outs and standard operating interfaces so workforce training is streamlined and consistent across sites. Whatever the configuration, proof-of-concept, testing and validation stages are built into the system development to ensure streamlined implementation on site.

A choice of high performance inks for your application

Fujifilm has a long history of developing world-leading ink technologies, with a global R&D and manufacturing infrastructure that is second to none. As a result, Fujifilm can supply inkjet ink optimised to work perfectly with your production process and application.

Ink for your application

Ink performance and material compatibility, combined with image quality, colour and durability, are critical to the success of an imprinting solution. They also have to be entirely compatible with the production process and post-print finishing, and meet the end use performance and regulatory requirements. For Fujifilm, ink is an integral part of the system development and supply, so that chemistry and hardware are optimised for reliable system performance. In addition, Fujifilm's extensive technology and patent portfolio allows the right ink to be chosen for every application, whether it's a UV, LED UV, aqueous, solvent or hybrid ink solution.

Regulatory compliance

Compliance is integral to the system development process and Fujifilm has a range of options to ensure regulatory requirements are met, such as Nestle guidance, Swiss Ordinance, EuPIA guidelines for indirect food contact packaging, GMP and European Framework Regulations. Fujifilm ensures materials used in the ink are registered in the target markets and that the product labelling and safety information meets regional requirements.

High performance

Samba - the heart of Fujifilm imprinting systems

Samba is a quantum leap forward and is redefining how inkjet technology is designed, manufactured and applied.

The jetting of ink onto paper is a well established process in consumer printers, but scaling up the technology to meet the quality and productivity needs of industrial printing is not easy. Fujifilm's answer is Samba – a 'printhead on a chip'. This printhead is fabricated on silicon wafers, in much the same way large scale integrated circuits found in computers are made.

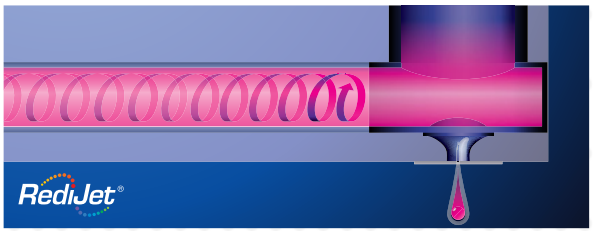
Due to its scalable design, Samba enables individual printheads to be placed close to each other to form single, tightly integrated printbars. It is the first piezo drop-on-demand inkjet platform that truly delivers wide-width, high resolution, single pass inkjet printing without the typical trade-offs in quality, redundancy or print width.

Fujifilm's Samba drop-on-demand printheads deposit billions of drops per second, each directed to a precise location, producing high-resolution single-pass imprints at an incredible speed. Each industrial Silicon MEMs constructed printhead has 2,048 nozzles to deliver a native 1200 dpi resolution with an ink drop size as small as 3 picoliters.

High uptime and reliability for excellent total cost of ownership

The silicon MEMS design of a Samba printhead is rated for trillions of actuations to ensure reliable and profitable operation. This is coupled with a patented REDIJET® ink recirculation system. This system ensures that ink is constantly recirculating in a closed loop that will not disrupt printing, resulting in uninterrupted production. When coupled with a Fujifilm ink in an imprinting system designed to leverage this capability, it results in fast startup times, simplified printhead cleaning procedures, and consistent print quality.

Samba printhead life is measured in years, not hours, and in Fujifilm printbar systems, is not considered a consumables part. Ultimately, the design of our Samba imprinting systems means there is less production waste, lower ink consumption, and lower operating costs.



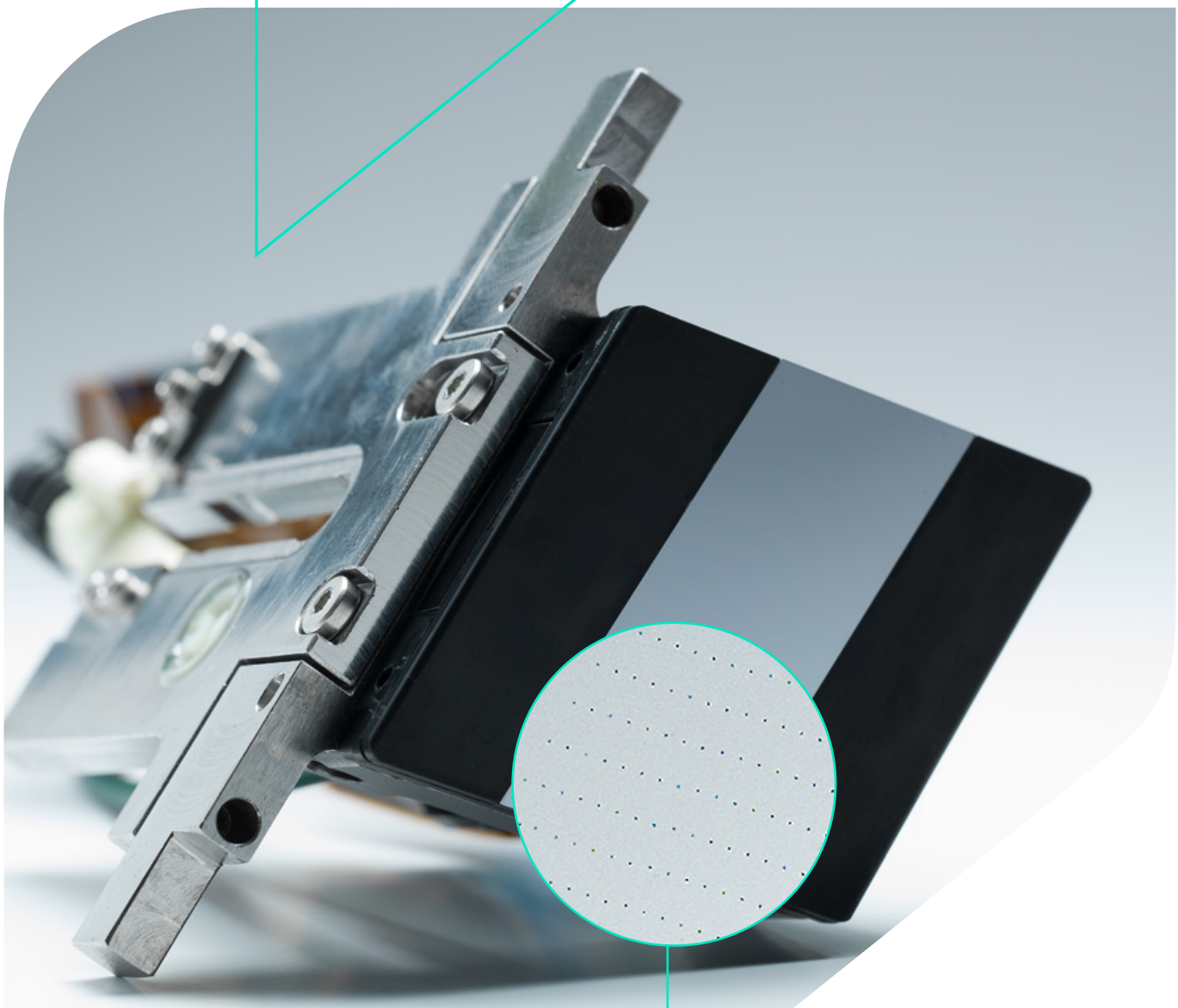
Fujifilm's patented REDIJET® recirculation system ensures printbars are quickly primed with minimal waste and improved reliability.

Benefits of Samba

- Ultra-high resolution ink deposition
- Rated for trillions of actuations for ultra-high reliability
- Closed loop ink recirculation for uninterrupted production
- Fast start-up times and minimal printhead cleaning and refurbishment
- Suitable for multiple fluid types
- No refurbishment needed

Samba printhead. Not visible to the naked eye, 2048 nozzles are contained in the silver coloured silicon chip which measures just 44 mm wide by 18 mm deep. There are also 2048 dots on this page.

Groundbreaking



Scalable architecture design

Fujifilm's Samba technology platform is based on a scalable architecture design, so the print width can be configured to meet the needs of a particular application.

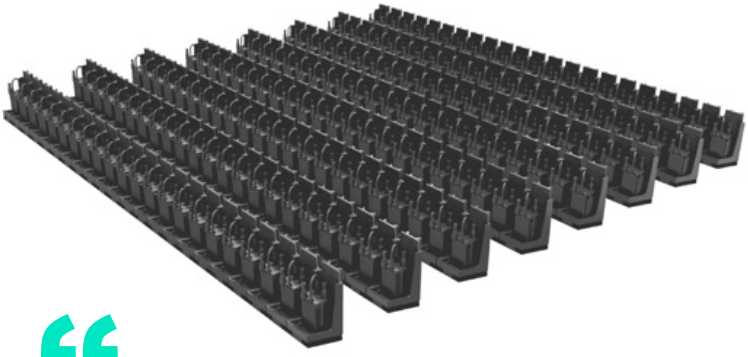
Due to the trapezoidal design of Samba printheads, scaling the printbar width is achieved with no compromise to quality, and results in a very efficient system design. In addition, the scalable system architecture means integrated components, electronic systems and software can all be scaled to create a system for the print width and colour channels required.

From single printhead to complex multi-channel configuration

Printbar configurations can be scaled from a single printhead, single colour system for coding, language changes or simple promotional versioning, to a printbar system with multiple printheads for the printing of full colour images over wider print areas.

Wide ranging Samba printbar portfolio for any print width in 40 mm increments

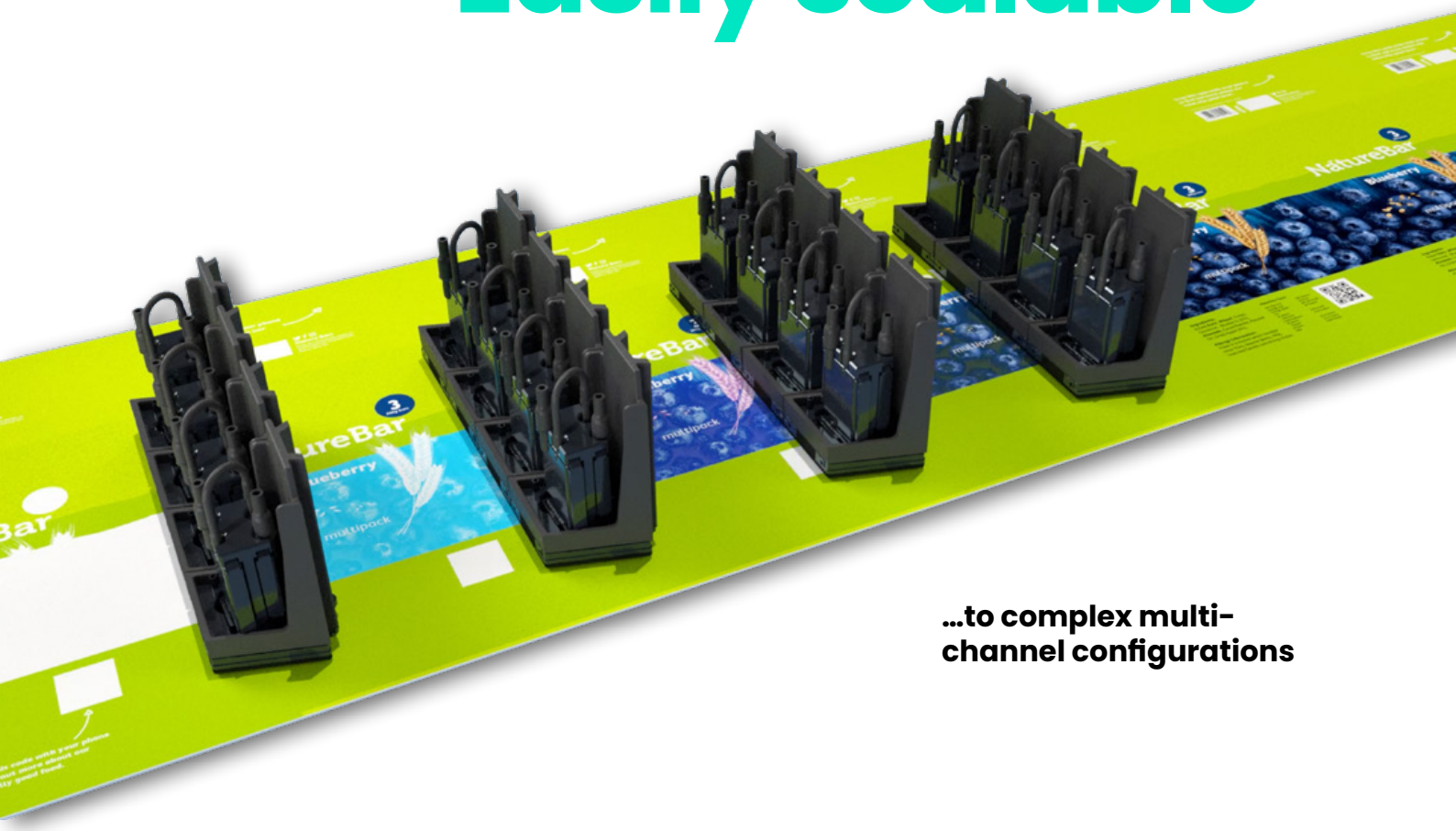
- Monochrome, spot colour, process colours
- Imprinting lanes or full digital print
- Digitise existing analogue assets



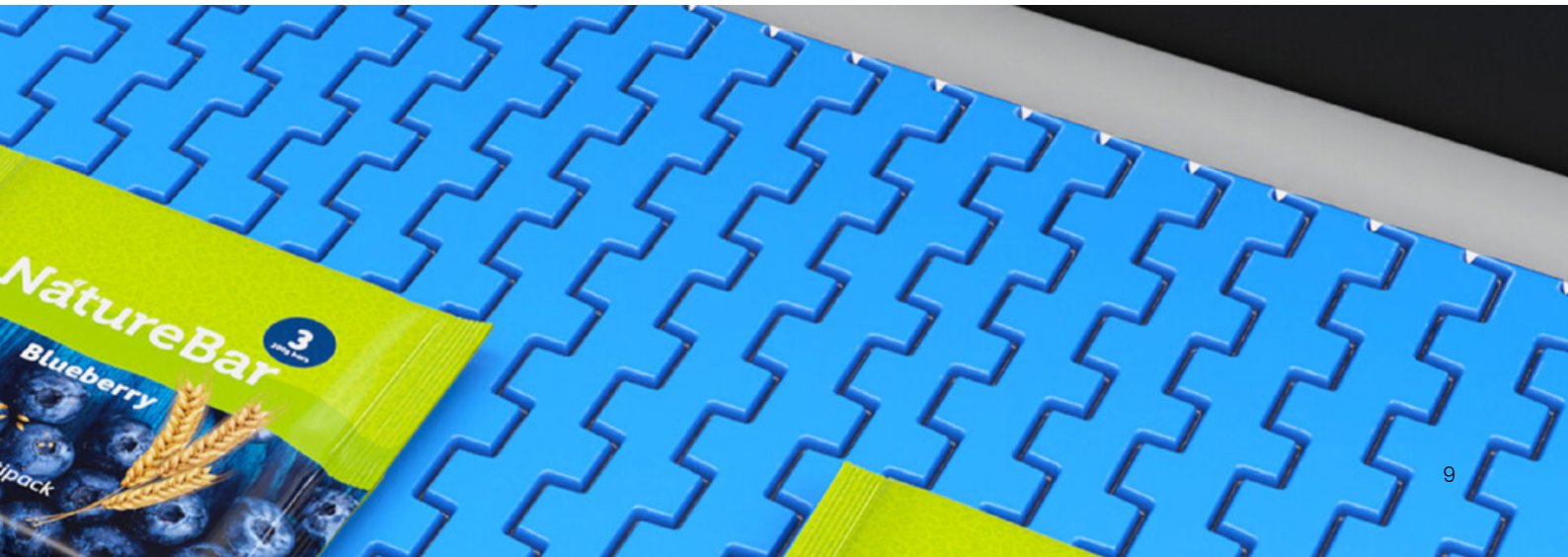
"Due to Fujifilm's unique data processing architecture, the print width and number of printbars can increase to massive scales for industrial production."

From a single printhead configuration...

Easily scalable



...to complex multi-channel configurations



Hi-speed media transport

Transport systems

Fujifilm offers two different types of high-speed media transport systems, called TransJet R and STS Series, for use in conjunction with the company's portfolio of inkjet printbar systems for applications where an off-line media transport is needed. The resulting combination of transport and printing system can be retrofitted to an existing analogue production line or be a hybrid of an existing asset with new digital printing capabilities.

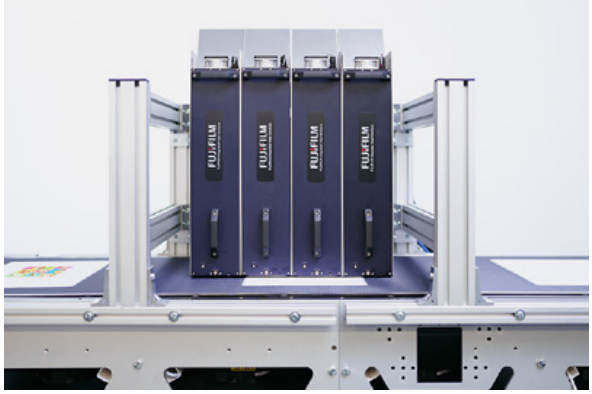
TransJet transport systems can be configured for reel to reel, reel to sheet, sheet to sheet, or reel to fanfold operation without significant modification. Configurations are scalable and modular, and can support monochrome and colour, simplex and duplex digital printing with options such as pre-treatment, curing, drying, and quality inspection. Support is also provided for finishing operations such as perforation, plow folding, punching, varnishing and systems can support up to 10 colours including specialty inks. Equipped with Fujifilm digital printbar systems, TransJet systems are capable of printing on paper, carton board, film, and metal. The reel-to-reel version has a productivity up to 300 m/min, and the sheet-to-sheet version up to 200 m/min.

Benefits include:

- Flexibility for a wide variety of applications and site conditions
- Compact design
- Consistent and reliable susbtrate/media handling
- Simple user interface
- Various programmable options
- Piece tracking

TransJet systems are also designed to work in coordination with finishing functions, including:

- Inserting
- Cutting
- Binding
- Book-on-Demand
- and many more...

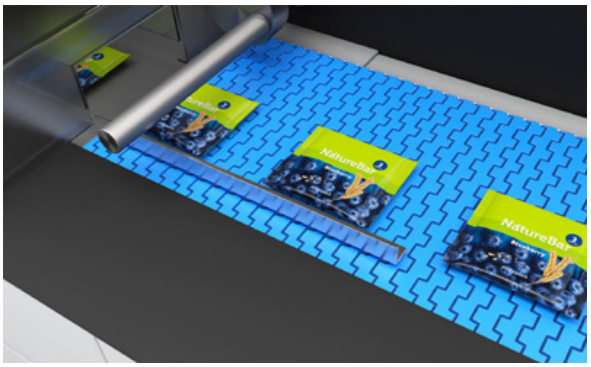


Opportunities for inkjet to complement existing production processes

The Fujifilm imprinting range comprises a number of different scalable printbar solutions and formats, combined with a variety of different ink types. This means that there are opportunities for Fujifilm's imprinting solutions to be integrated onto many different types of production equipment, whatever the format.

1. Package converting in a web process

2. Package converting in a sheet process



3. Late stage packaging

Applications

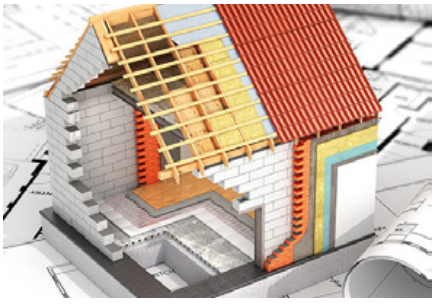
The wide variety of Fujifilm imprinting solutions makes it possible for many different applications to be enhanced by digital inkjet, from direct mail and transactional applications in commercial printing, to label, packaging and industrial production processes.

1. Direct mail

2. Commercial

3. Direct to food

4. Packaging



5. Industrial

6. Transactional

Enhanced by inkjet

Mini 4300 Series: versatile printbar system

The Mini 4300 has speed, performance and consistency in a compact form. This enables the incorporation of digital printing into an ever-expanding number of new applications and challenging conditions for equipment integration.

Flexibility for a broad range of markets

The Mini 4300 is configurable with up to four individually controlled printbars. The system provides single pass printing in monochrome or process colour for a wide variety of production applications, including:

- Addressing
- Coding & marking
- Serialisation & package tracking
- Narrow width direct mail imprinting
- Consumer facing coding
- Variable data images
- Demonstrations
- Tickets and cards
- Short notice changes in art/imagery
- Printed electronics
- Deposition of high-value fluids
- Labels

Key features

Single pass inkjet imprinting system

Each printbar contains a single 1.6" width printhead (40 mm)

Up to 4 printbars per system

1200 dpi Native Resolution

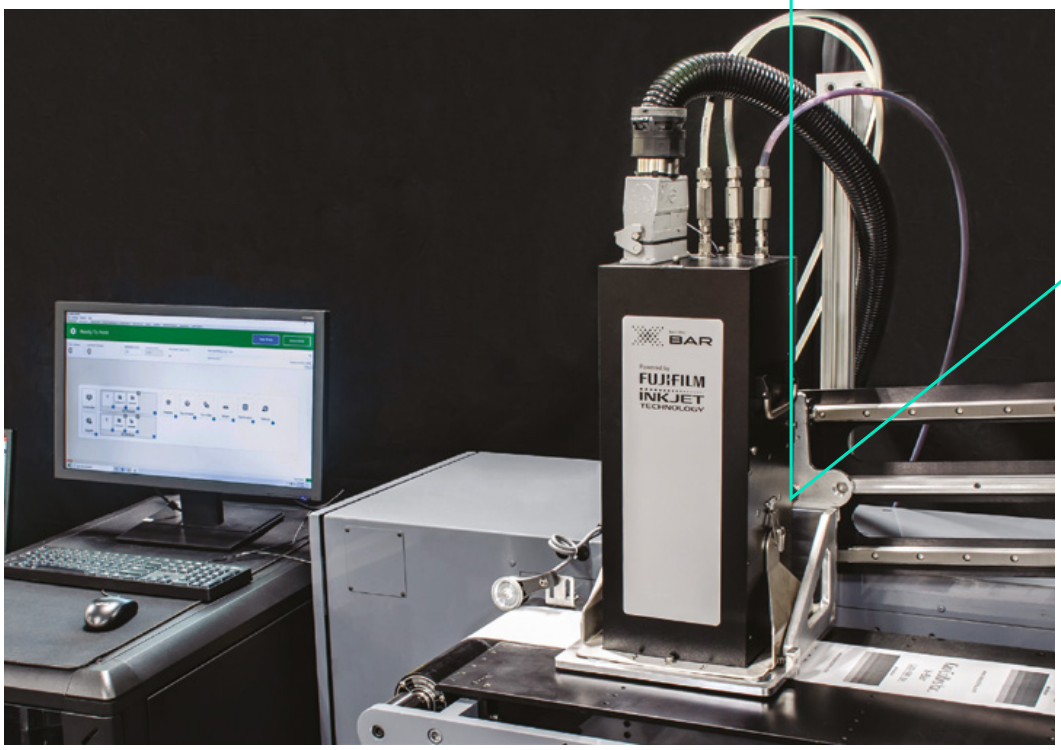
Speeds up to 1000 feet per minute

Monochrome, Spot color or 4-Color

Aqueous & UV

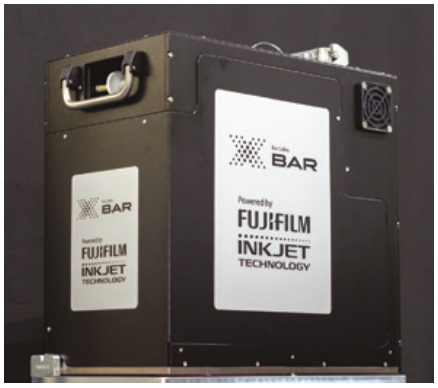
Key specifications	Mini 4300 Printbar
Configurations	Roll fed, sheet fed, inline/nearline, single or multiple printheads
Resolution	Up to 1200 x 1200 dpi
Dimensions	581 mm x 190.5 mm x 92 mm
Productivity	Up to 1000 fpm [305 m/min]*
Print width	1.6 in [41 mm] per printbar
Smallest font	2 pt (4 pt knockout)*
Native drop size / max drop size	2.4 or 3.5 pL / 13 pL
Compatible fluids	UV, aqueous, and speciality

*Results may vary depending on application



X-BAR: drop-in imprinting solution

The X-BAR brings digital, variable data printing such as barcodes, text elements, logos and more, to conventional analogue presses.



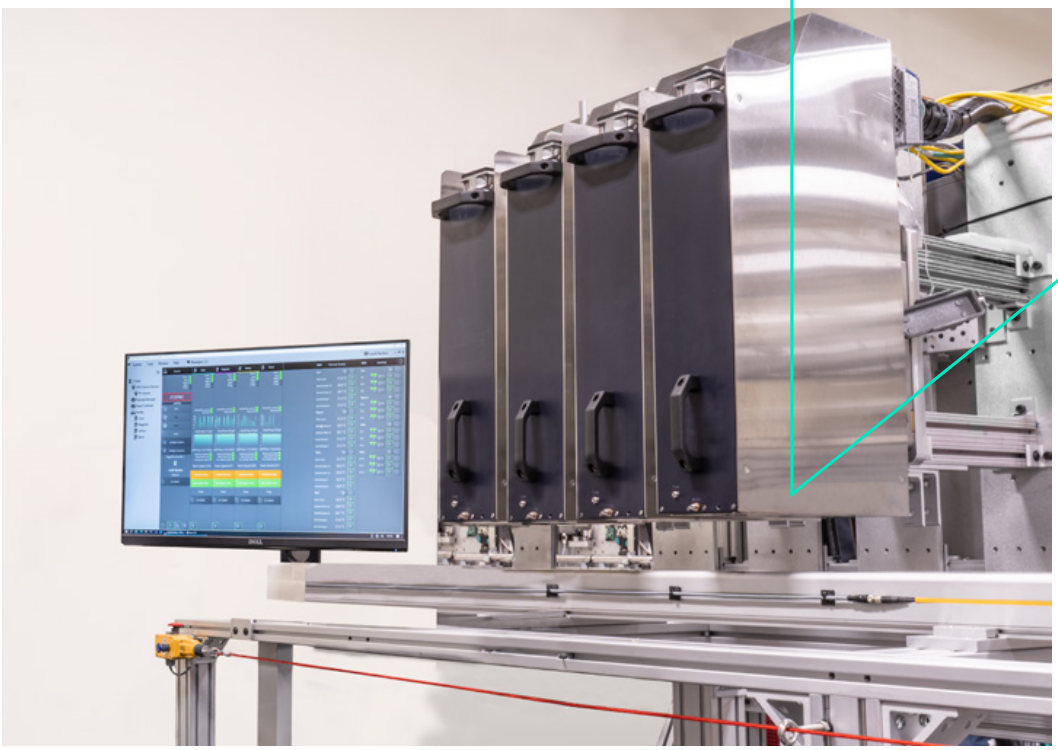
Key features

- Lane printing with 4.5" and 9" print width offerings
- Controller capable of running X-BAR and some existing legacy printers
- Workflow based on IJPDS page description language
- Familiar user interface to support transition from legacy technology
- Modular fluid management for future expansion
- No refurbishment needed

The X-BAR system's drop on demand inkjet printing is reliable, cost effective, and provides excellent image quality in font sizes as small as 2 point and 1D barcodes as small as 6.7 mils. It is compatible with legacy systems and is backed by Fujifilm's world-class technical support, to provide a smooth transition to modern inkjet technology for direct mail, transactional print, promotional materials and more.

Key specifications	X-BAR
Line speed	Up to 1000 fpm / 305 mpm (1200x600 dpi), 328 fpm / 100 mpm (1200x1200 dpi*)
Number of colors	One color system: black or spot color
Print width	119 mm or 239 mm
Ink	Aqueous inks
Drying	Customer supplied
Cross process resolution	1200 dpi
Process resolution	300/600/1200 dpi
Text quality	Excellent image quality to 2 pt font*
4.7 in (119 mm) printbar	193 mm x 188 mm x 546 mm
9.4 in (239 mm) printbar	663 mm x 155 mm x 678 mm

*Capabilities may vary depending on application and substrate



12K Printbar: compact printbar system

The 12K Printbar System puts 4 colour inkjet printing technology into an all-new condensed form. It supports use where space is limited, such as integrating into existing production equipment.

The 12K Printbar System is a turnkey digital inkjet printing system for installation onto your analogue printing press or other production line equipment. It is most commonly used for adding variable data to analogue pre-printed shells (imprinting) or can be used to add a digital print capability when changing printing plates is not practical for short runs. It has a print width of 127 mm, and provides 1200 dpi, 4-colour inkjet print. The printbars occupy only 53.3 cm in the print process direction, with their small size meaning digital inkjet printing can be added to many types of production lines where it was previously impractical.

Key applications

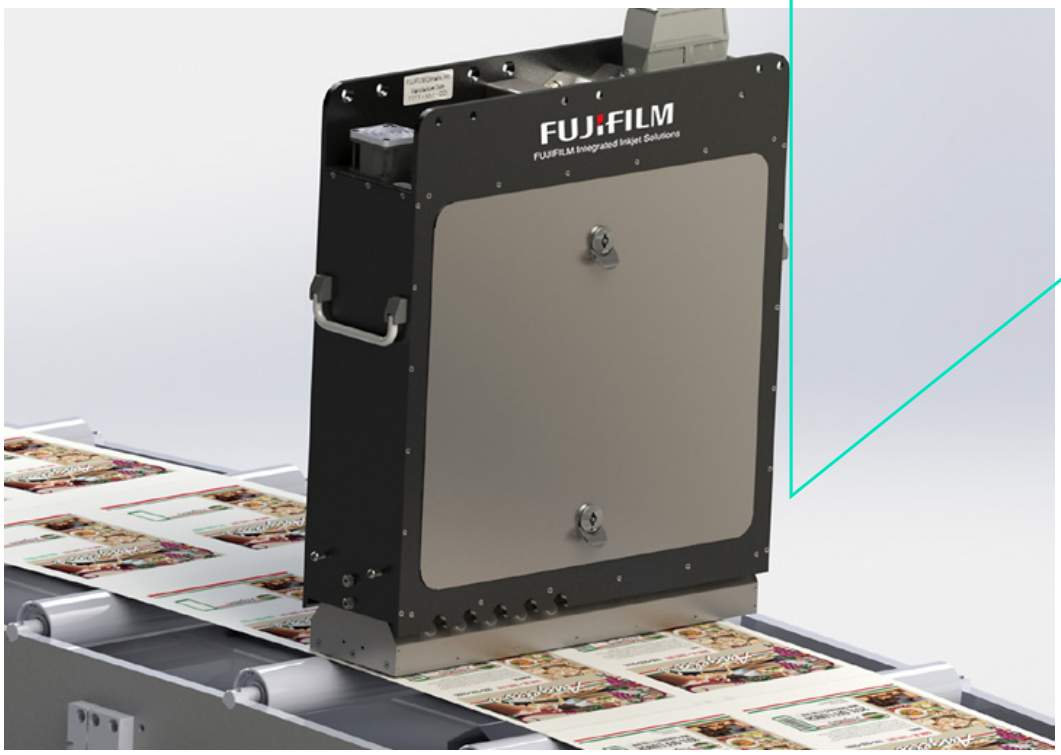
The 12K Printbar System can be used in a wide variety of applications, including:

- Commercial printing
- Direct Mail
- Transactional
- Folding Cartons
- Corrugated

Key features

- Add 4-colour variable print to existing equipment
- Compact for ease of integration
- Does not require printbar refurbishment
- Fast startup
- 1200 dpi or speeds of up to 300 m per minute
- Each printbar is small enough to be removed by hand for servicing or storage

Key specifications	12K Printbar System
Print width	Up to 127mm width
Print speed & resolution*	Cross process resolution 1200 dpi 425 FPM / 129.5 mm (Resolution: 1200x1200 dpi) 615 FPM / 187.5 mm (Resolution: 1200x600 dpi) 1000 FPM / 304.8 mm (Resolution: 1200x300 dpi)
Fluid	Aqueous, UV and solvent inks
Color & quality	Monochrome CMYK (CMYK to monochrome conversion) 2-bit grayscale Native drop size 2.4 pL Max drop size 13pL Smallest font 2pt (4pt knockout)*
Printbar dimensions	1 printbar: 352.4 mm x 127.8 mm x 667.0 mm



42K Printbar: scalable printbar system

The 42K Printbar System is designed to add variable data printing to your conventional press in any print width needed, and is able to span the media from edge to edge.

The 42K Printbar System uses Fujifilm's renowned Samba printhead in a highly configurable form. With 1,200 dpi ink deposition, the 42K Printbar system is designed to meet print requirements from single page to multiple pages in any print width needed, and with print speeds over 300 metres per minute.

Flexibility

Since the 42K System can be integrated in line with your system, you can maximise your productivity and return on investment while supporting existing, legacy or proprietary workflows. These will be integrated into our print controller and fluid management technologies to deliver a compact and capable system designed to meet your needs for monochrome, colour, or speciality printing.

Key applications

- Personalised direct mail
- Form-based transactional imprinting
- Book and publication printing
- Corrugated cartons
- Folding cartons
- A broad range of coding and marking applications

Key features

Modular design to meet typical press widths

Pre aligned to eliminate stitching

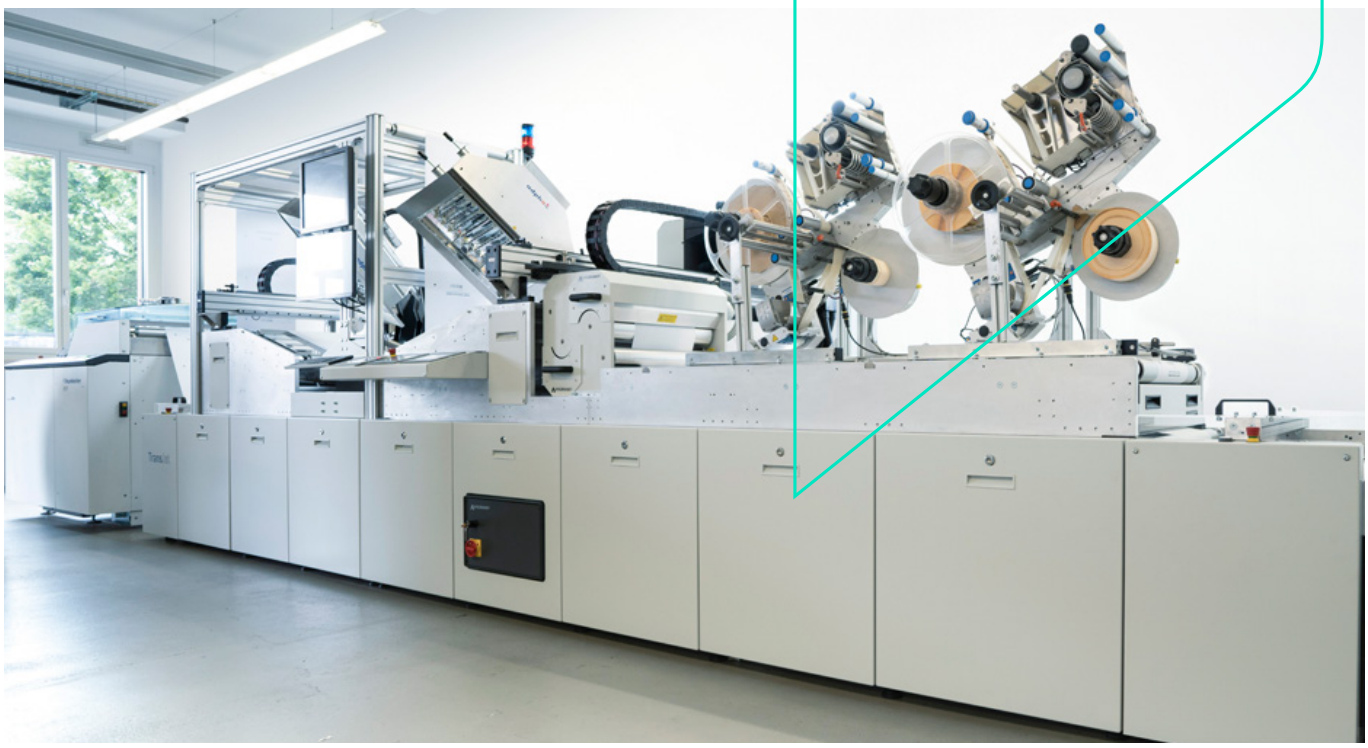
Options for monochrome, spot and process color printing

Configurable software with Fujifilm supplied workflow or connect to an existing customer workflow

Imprint or full digital print capability

No refurbishment needed

Key specifications	42K Printbar System
Print width	Scalable to meet application needs in 4.06 cm increments
Print speed & resolution	Cross process resolution 1200 dpi 425 frames/min / 129.5 m/min 615 frames/min / 187.5 m/min 1000 frames/min / 300 m/min, 1800 frames/min (548 m/min in dual array configuration)
Fluid	Aqueous inks
Colour & quality	Monochrome
	CMYK (CMYK to monochrome conversion)
	Native drop size 2.4 or 3.5 pL
	Max drop size 13 pL
	Smallest font 2pt (4pt knockout)



TransJet R Series:
reel-to-reel transport systems

The TransJet R reel-to-reel high speed transport system is a precise and application independent solution for digital printing. It enables easy integration of upstream or downstream processes such as unwinders, rewinders, or cutting lines over existing controllers.

Wide range of applications

- Security printing
- Personalised addressing and direct-mail messaging
- Forms and catalogues
- Barcodes
- Statements and bills
- Lottery and gaming tickets
- Book on demand
- and many more...

Inspection

- Dual-sided inspection
- Transmitted light inspection

Key features

Application independent precision transport system

Computer controlled servo motors can be operated by touch pad

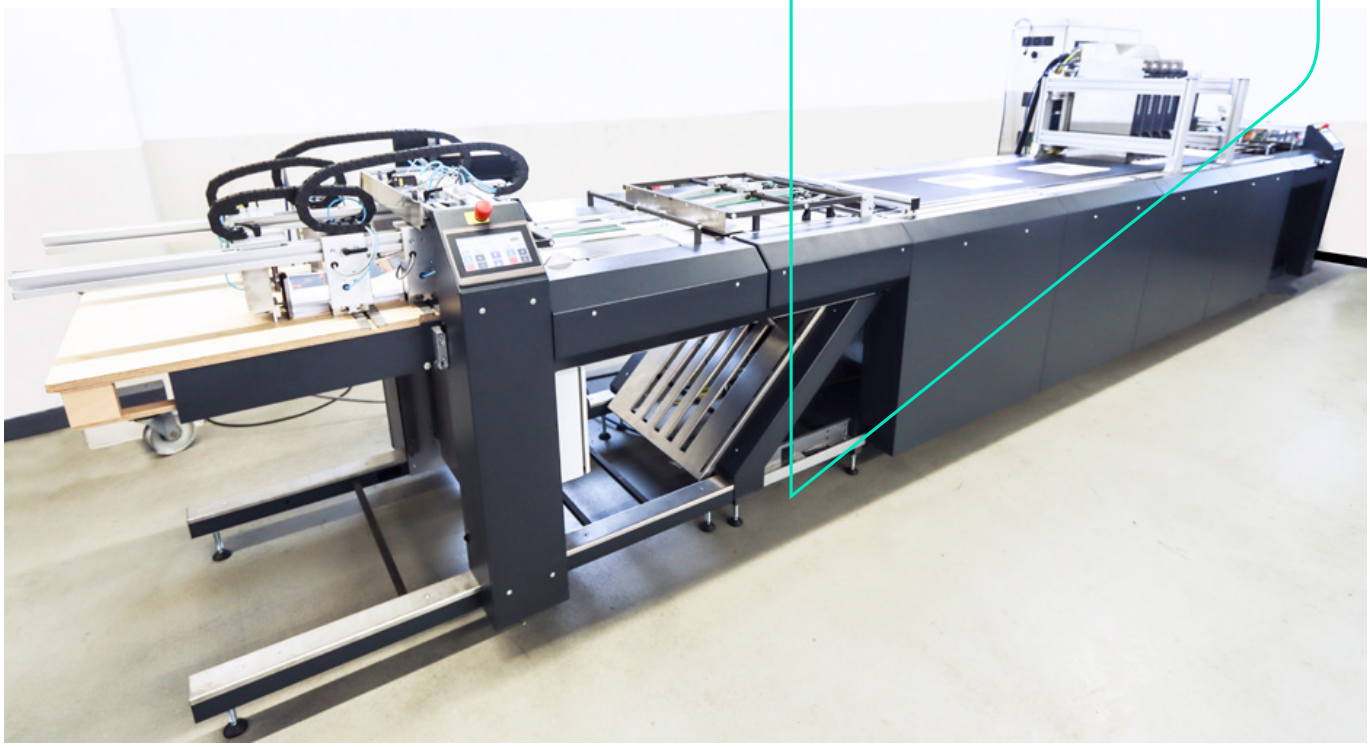
Easy integration of upstream or downstream systems

TransJet transport system can be operated with a single, consolidated user interface

Individual adjustable web tension enables processing of thin and thick substrates (up to 300g/m²)

Key specifications	Transjet R S/D 300 520/1040			
Type	Reel transport system			
Front/backside print	Simplex		Duplex	
Web width	520 mm	1040 mm	520 mm	1040 mm
Web width min	120 mm			
System speed	Up to 300 m/min*			
System prepared to accommodate	Inkjet system Dryer Camera Splice detection Flexo printing unit Plasma, corona treatment Other aggregates on demand			

*Capabilities may vary depending on application and substrate



TransJet STS Series:
sheet-to-sheet transport systems

The TransJet STS sheet-to-sheet high speed transport system is designed for digital printing, sheet separation, inspection, sorting and stacking. It accommodates easy integration of process-related functionalities such as inkjet system, camera supervision, laser microperforation, and other aggregates on demand.

Wide range of applications

Inkjet printing

- Security printing
- Packaging printing
- Commercial printing

Inspection

- Dual-sided inspection
- Transmitted light inspection
- Magnetic control

- and many more...

Key features

The TransJet STS transport system consists primarily of the following modules, and is an interface to standard finishing systems:

- Flat pile feeder
- Round table feeder
- Vacuum-belt-table
- Reject gate
- Delivery conveyor or stacker

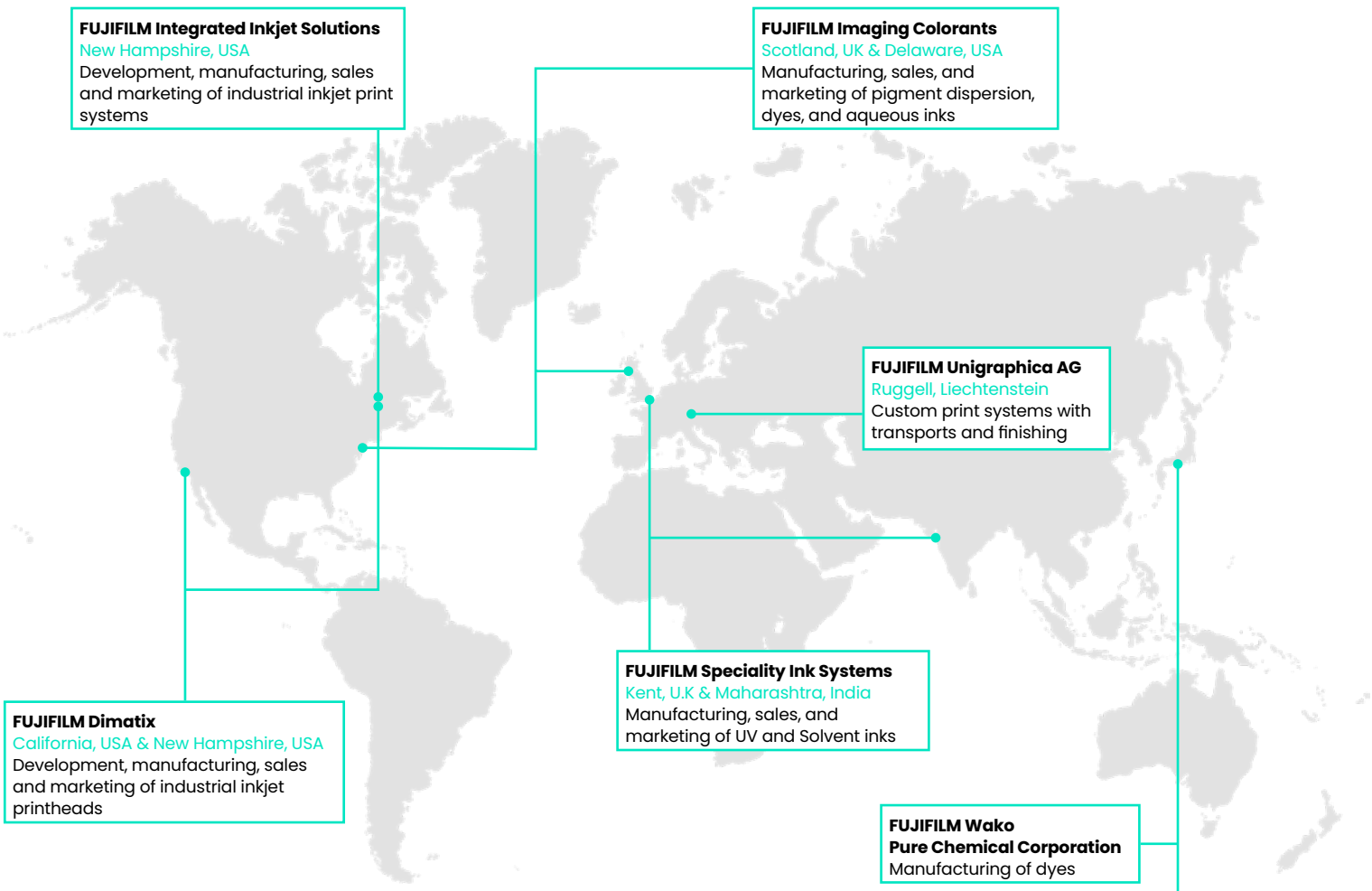
Key specifications	Transjet STS S/D 200 520/1040			
Type	Sheet transport system			
Front/backside print	Simplex		Duplex	
Sheet width	500 mm	1000 mm	500 mm	1000 mm
System speed	up to 200 m/min*			
Substrate thickness	0.07-0.5 mm (standard system - thicker substrates such as corrugated material and metal plates are also possible to process, depending on the application)			
System prepared to accomodate	Inkjet system Camera Laser microperforation Other aggregates on demand			

*Capabilities may vary depending on application and substrate

Fujifilm's global inkjet infrastructure

Global Fujifilm support

Our global inkjet infrastructure is second to none, and all our imprinting systems are backed up by a world-class Fujifilm support team, with a single point of contact for all support enquiries.



FUJIFILM Integrated Inkjet Solutions
New Hampshire, USA
Development, manufacturing, sales and marketing of industrial inkjet print systems

FUJIFILM Imaging Colorants
Scotland, UK & Delaware, USA
Manufacturing, sales, and marketing of pigment dispersion, dyes, and aqueous inks

FUJIFILM Unigraphica AG
Ruggell, Liechtenstein
Custom print systems with transports and finishing

FUJIFILM Speciality Ink Systems
Kent, U.K & Maharashtra, India
Manufacturing, sales, and marketing of UV and Solvent inks

FUJIFILM Dimatix
California, USA & New Hampshire, USA
Development, manufacturing, sales and marketing of industrial inkjet printheads

FUJIFILM Wako Pure Chemical Corporation
Manufacturing of dyes

FUJIFILM Corporation

Inkjet Business Division
Formulation of business strategy

Sales and marketing of inks, printheads, components, and system integration

Advanced Marking Research Laboratories
Development of ink formula, marking process technology and printhead handling

Development of image processing technology

Synthetic Organic Chemistry Laboratories
Development of unique proprietary materials

Functional Materials Manufacturing Headquarters
Manufacturing of dyes and aqueous inks

For further information: Please contact your local Fujifilm partner

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