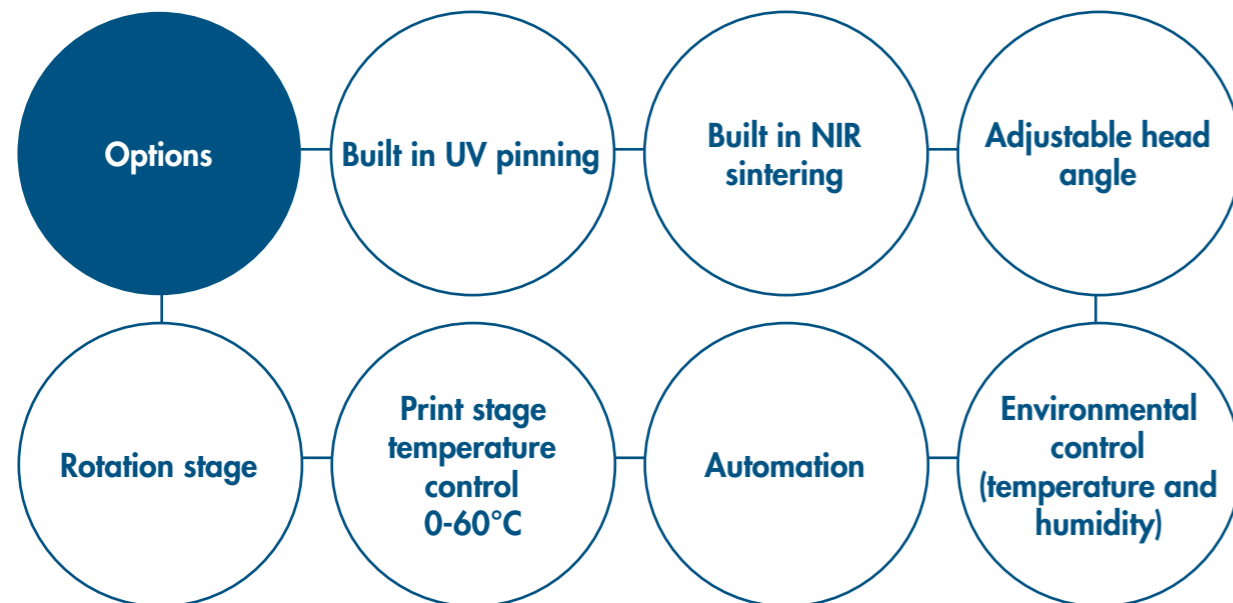# n.jet lab

NOTION
S Y S T E M S

WE SCALE INKJET FROM LAB TO FAB
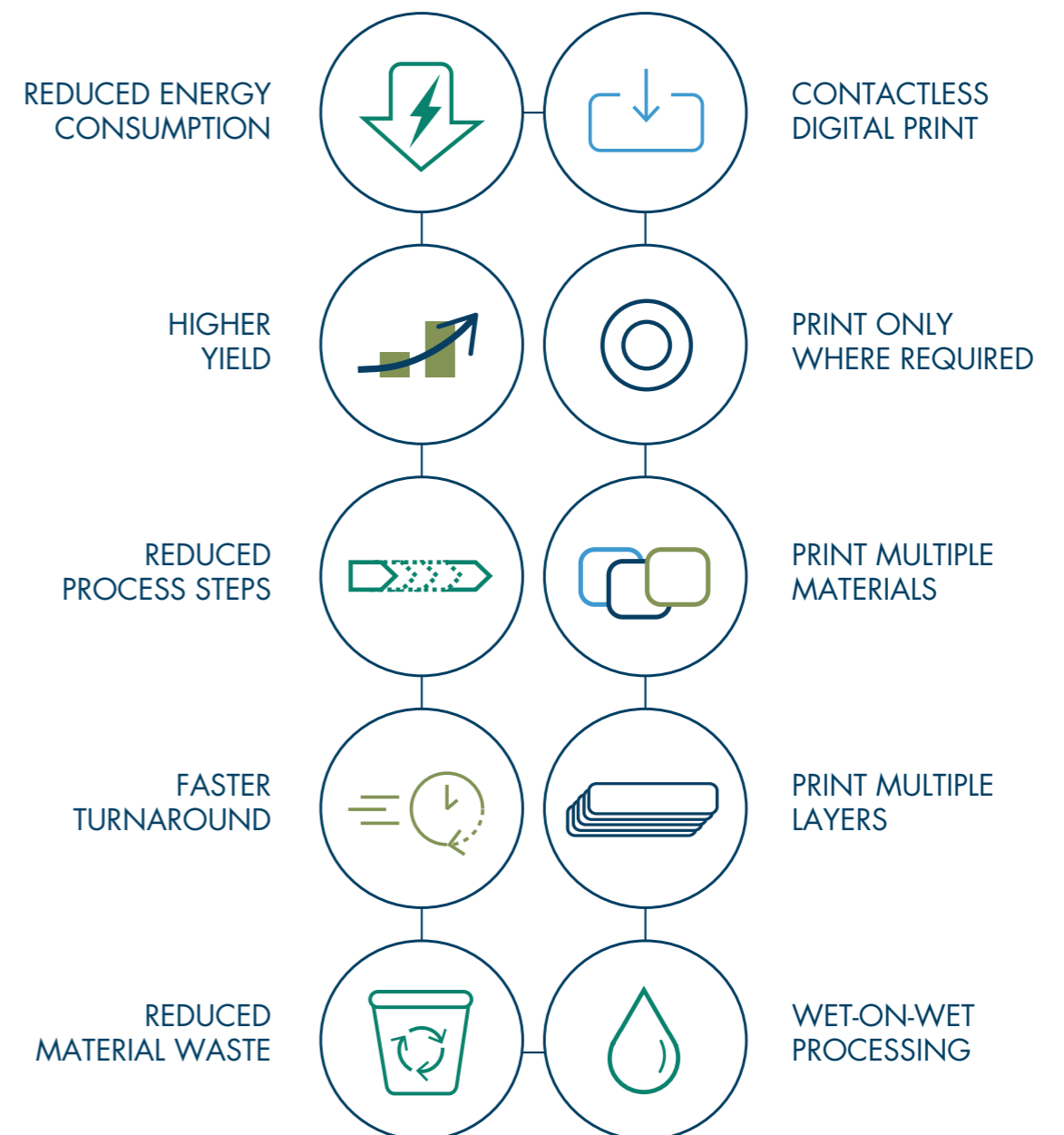
The n.jet lab Platform

- Open platform that provides access to all process parameters
- Smooth scale-up from R&D to 24/7 industrial production
- Versatile applications with printheads from all major manufacturers
- Multiple configurations with heads and inks from different suppliers possible
- Up to four different active printheads per configuration
- High precision mechanical design with self-calibration including nozzle calibration and nozzle replacement strategies
- Clearly structured graphical user interface

Options — **Built in UV pinning** — **Built in NIR sintering** — **Adjustable head angle**

Rotation stage — **Print stage temperature control 0-60°C** — **Automation** — **Environmental control (temperature and humidity)**

NOTION SYSTEMS

Advantages of Inkjet Printing

Inkjet is a non-contact, digital printing technology which creates fine structures of 30 microns and below. The fully digital non-contact printing enables wet-on-wet processing without the need for masks or screens.

Inkjet is used to replace established subtractive process sequences and reduces waste and energy consumption, which makes electronics production more economical and ecological.

REDUCED ENERGY CONSUMPTION

CONTACTLESS DIGITAL PRINT

HIGHER YIELD

PRINT ONLY WHERE REQUIRED

REDUCED PROCESS STEPS

PRINT MULTIPLE MATERIALS

FASTER TURNAROUND

PRINT MULTIPLE LAYERS

REDUCED MATERIAL WASTE

WET-ON-WET PROCESSING

Vision Systems

Alignment

Alignment types:	2... 4 fiducial marks
Alignment light source:	Selectable ring light source, coax light

Drop watcher

Drop watcher:	Visualisation of drop formation process
Drop formation analysis:	Measurement of drop volume, speed, angle, number of satellites, ...

Printheads

Number of heads:	up to 4 printheads
Head types:	Fuji Dimatix, Konica-Minolta, Xaar, Kyocera, Toshiba, Ricoh, others on request
Calibration:	All nozzle positions calibrated better than 1 µm
Print resolution:	Up to 5080 x 5080 dpi
Drop placement:	±5 µm
Print repeatability:	±1 µm
Jetting parameters:	Full access to waveform and all other jetting parameters

Ink System

Ink types:	Fluid, Hotmelt (up to 120°C)
Tank volume fluid S:	Cartridge 2,5 - 50 ml
Tank volume fluid XL:	up to 600 ml
Tank volume Hotmelt:	50 - 100 ml
Recirculating tank system:	100 - 150 ml (circulation volume)
Optional:	Up to 1000 ml

The n.jet drop watch

The n.jet drop watch is a very compact and highly integrated measurement system under real production environment. The measurements of droplets under different process conditions helps to optimize the inkjet process, the fluid formulation, and the overall system performance.

The n.jet dropwatch serves the two main purposes of vizualization and analysis of the drop formation process.

Visualization is used to optimize fundamental quality parameters, like

- Drop appearance
- Drop formation representability
- No satellites
- No misting
- No wetting of nozzle plate
- Jetting performance at different frequencies

Analysis can be used to optimize advanced parameters, e.g.

- Drop volume
- Drop velocity
- Drop travel angle
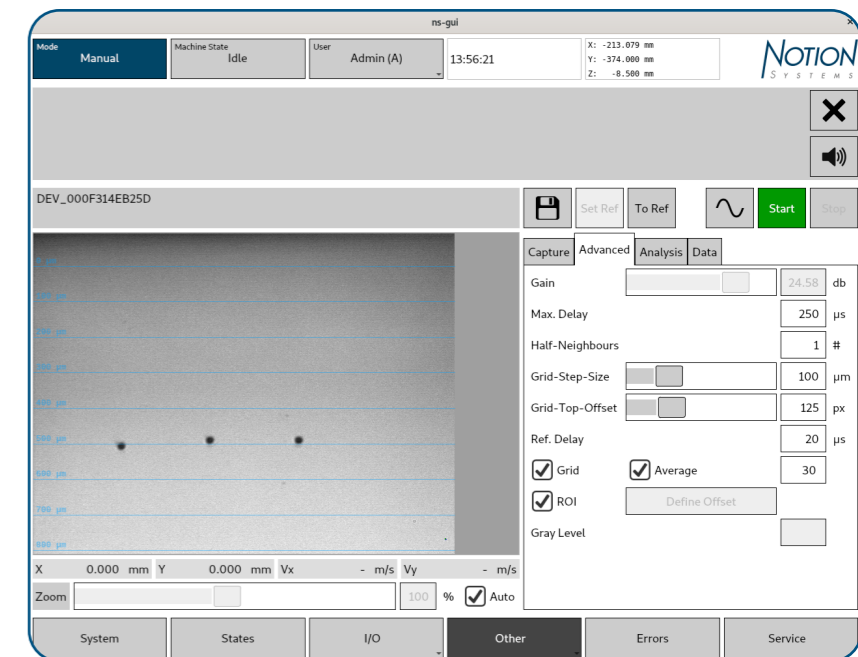
Dimensions & Specifications

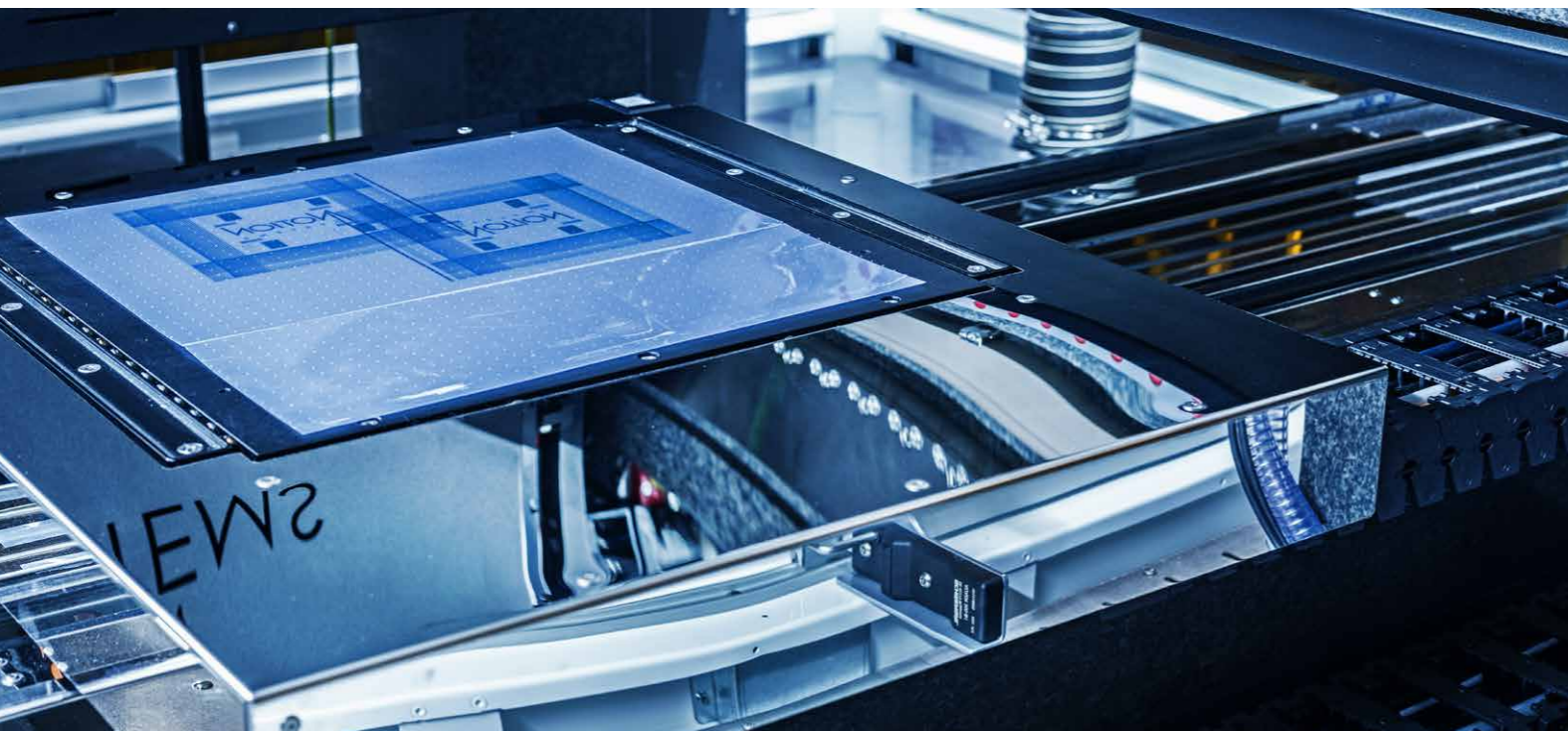|	
Stage size:	156 x 156 mm, 305 x 305 mm
Substrate height:	Up to 80 mm
Substrate fixture:	Vacuum hold down
Print speed:	Up to 500 mm/s
Self calibration:	Automated self calibration
x & y axis type:	Ironless linear motor
x & y repeatability:	±1 µm
z axis type:	Servo motor spindle drive
Dimensions (LxWxH):	1800 x 1600 x 1900 mm
Electrical interface:	400 V / 16 A, 3 phases
Transformer:	Supplied by Notion Systems
Power consumption:	< 2 kW
CDA:	6.5 bar - 8.5 bar
CDA consumption:	< 1 liter per minute

Process Development

Process development helps optimize various parameters such as

- Ink formulation,
- Printhead selection,
- Substrate choice,
- Substrate preparation,
- Printing speed, and
- Image resolution.

By systematically adjusting these parameters, process development can enhance the **printing quality, efficiency, and reliability of inkjet printing**.

This is particularly important for industrial applications, where consistent and high-quality printing is required for mass production. Additionally, process development can help **minimize the environmental impact of inkjet printing** by reducing ink and energy consumption and waste generation.

1 Printhead selection

2 Ink selection & material compatibility

3 Waveform development

4 Print process implementation

5 System development

6 On-site process support

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