system 3R

TOOLING I AUTOMATION I SOFTWARE

Transformer T3-600

Design and quality by System 3R

Contents

4	The Transformer concept
6	Standard modules
8	Mixed technologies
10	Technical specifications
11	Grippers for all your needs
12	Magazines, tooling types and accessories
14	WorkShopManager 5 (WSM 5)

TRANSFORMING YOUR BUSINESS BY...

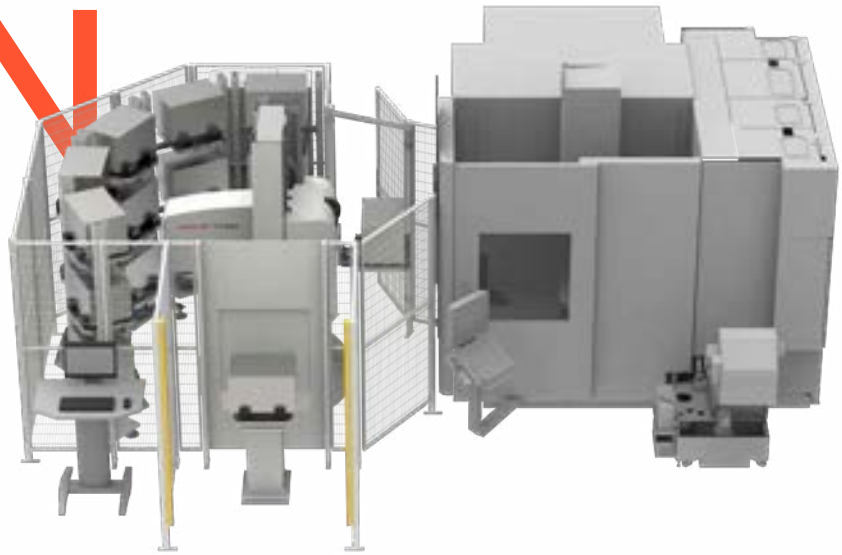
- providing scalable automation solutions for various types of machines from a multitude of machine tool manufacturers
- implementing a concept tailored precisely to your needs and giving a specific, productivity-boosting solution,
- ensuring cost-effective and flexible configuration through modern design and smart technical approaches,
- delivering quick set-up and easy operation in all situations (standard and critical alike),
- interfacing seamlessly with WorkShopManager 5, our user-friendly cell-management software,

...AND ACHIEVING A GREATER RETURN ON YOUR INVESTMENT!

THE TRANSFORMER CONCEPT

Growing in response to your needs

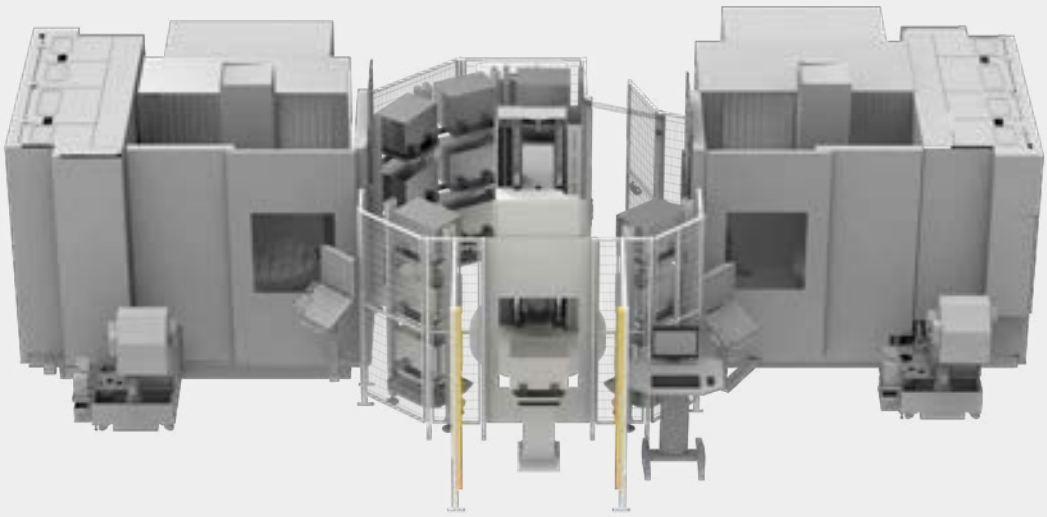
BEGIN



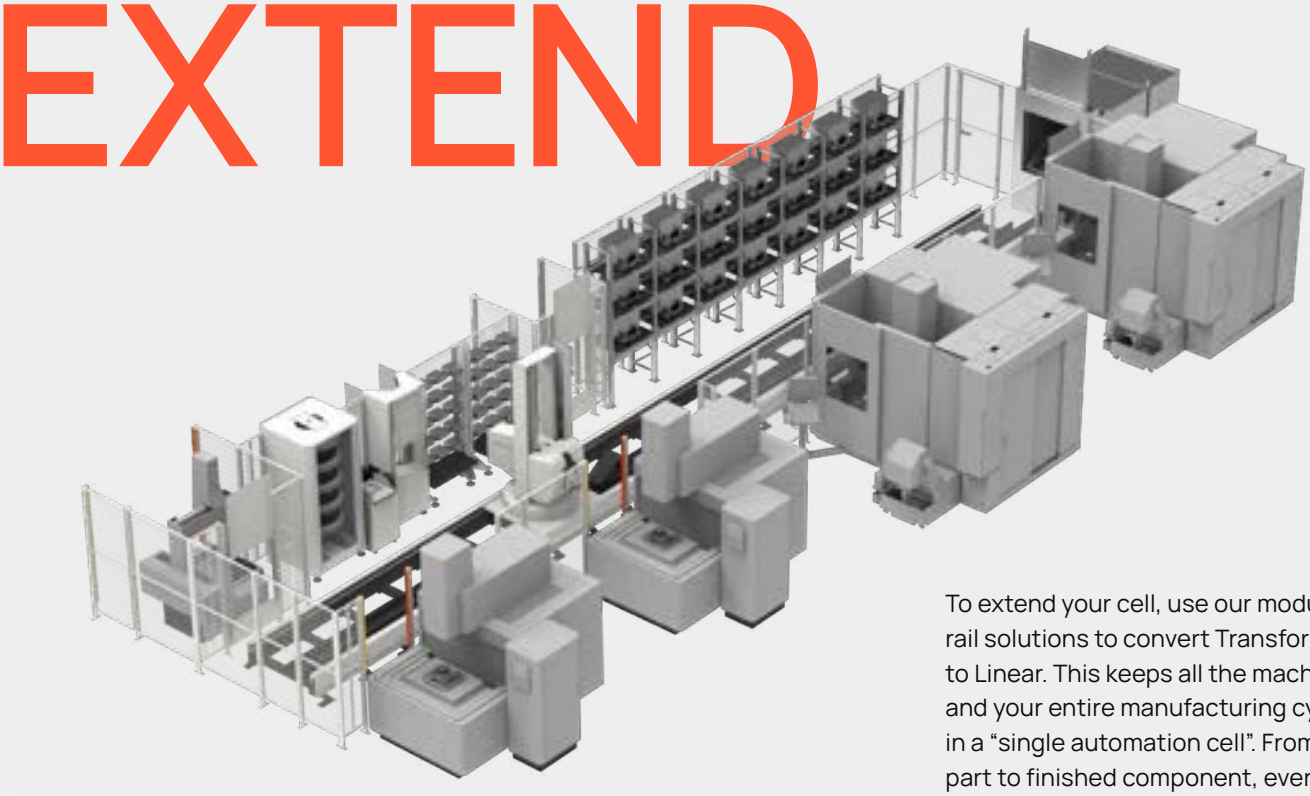
Begin with the essential. Most often, this is a cell comprising a single machine with a loading station and a suitable number of magazines (i.e. one or multiple). You are now equipped to unleash maximum machine productivity. Right from the beginning, the Transformer concept ensures that you have all the elements necessary for autonomous production!

ADD

When it is time to increase overall workshop capacity, simply add a second machine to your cell. For optimum flow between machines carrying out different production phases (operations), technologies can be mixed. Magazines from a single-machine cell can also be rearranged without sacrificing overall storage capacity. Rotary magazines are just one solution for further capacity increases.

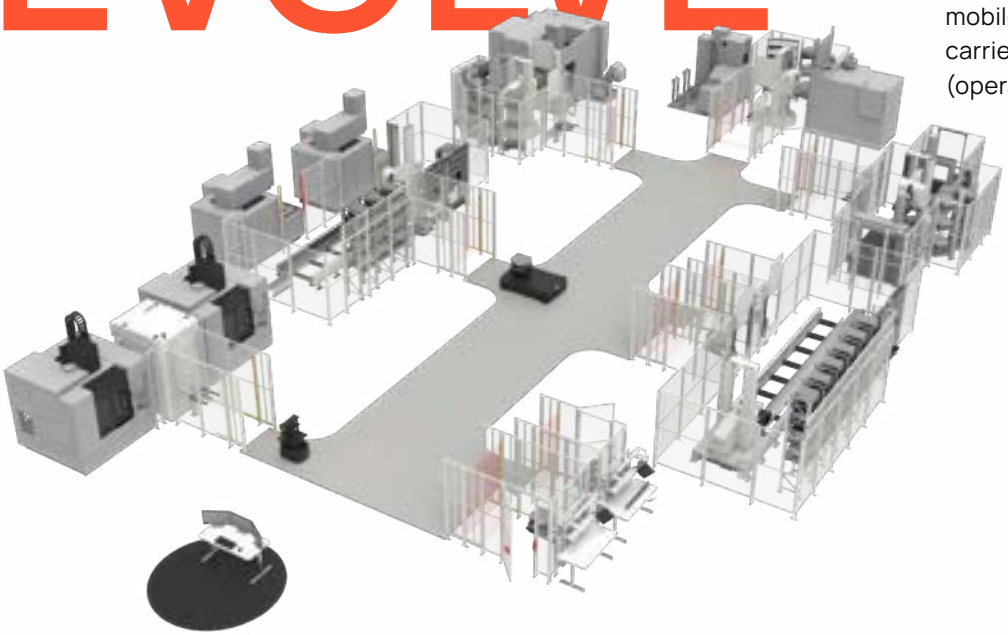


EXTEND



To extend your cell, use our modular rail solutions to convert Transformer to Linear. This keeps all the machines and your entire manufacturing cycle in a “single automation cell”. From raw part to finished component, everything is there, washing and quality checks included!

EVOLVE

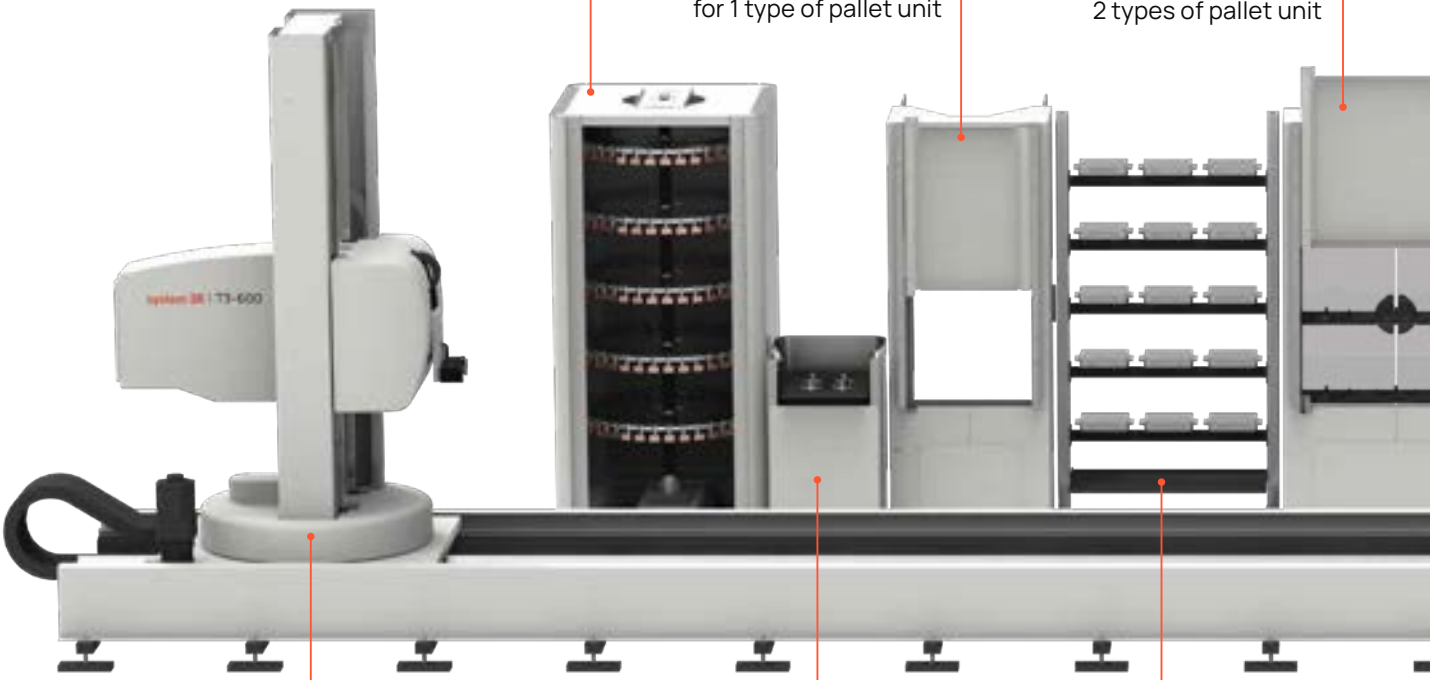


LIGHTS-OUT FACTORY

Transformer’s “technology-cells approach” to the manufacturing cycle facilitates the development of large production plants. Comprising a single type of machine, each dedicated cell executes just one phase of this cycle. Controlled by WorkShopManager 5, an autonomous mobile robot (AMR) network carries parts between the phases (operations) in the different cells.

STANDARD MODULES

For cost-efficient solutions



ROTARY MAGAZINE
Large capacity
in a small footprint

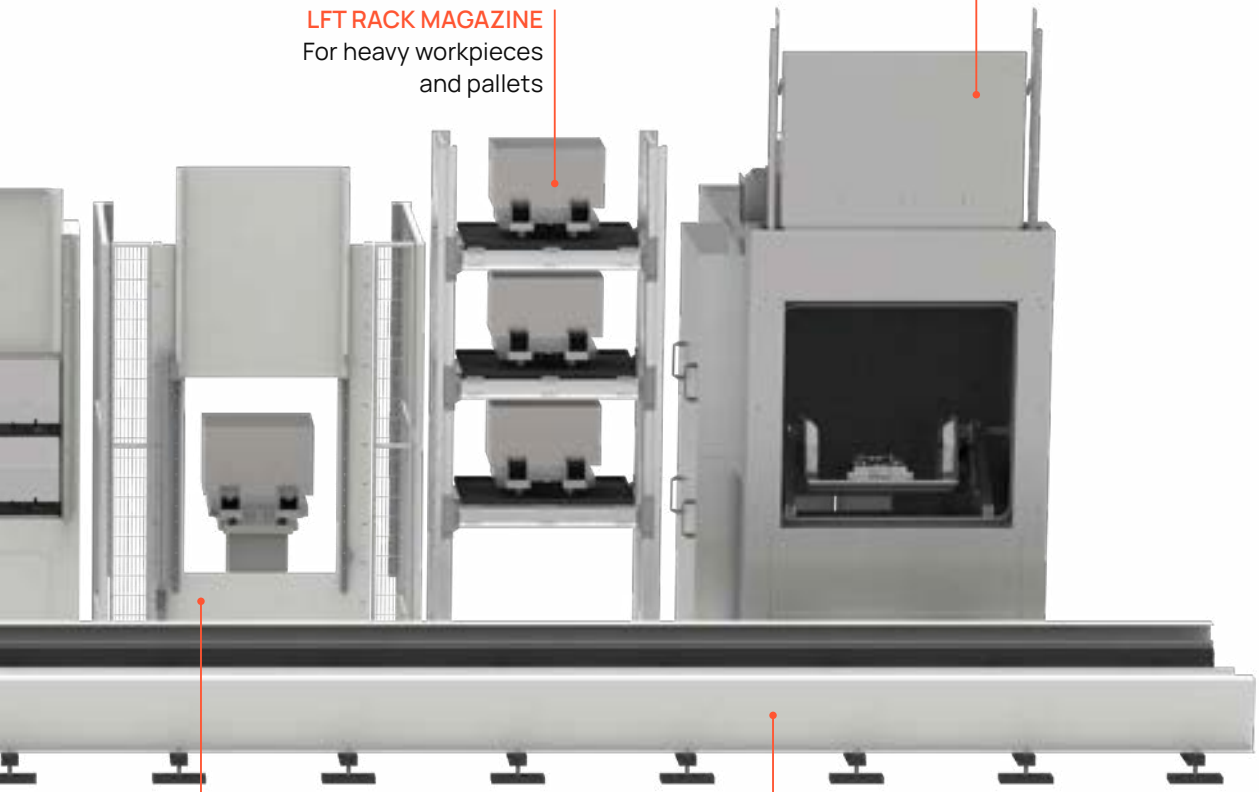
SMALL ULD
With preparation option, loading station for 1 type of pallet unit

BIG ULD
With preparation option, loading station for 2 types of pallet unit

DRANING STATION
Drains dielectric fluid from workpiece cavities

TRANSFORMER UNIT
For up to 600 kg transfer weight

RACK MAGAZINE
Full or half-rack magazine for electrodes or workpieces



WASHING MACHINE
Washes, rinses and dries workpieces

LFT RACK MAGAZINE
For heavy workpieces and pallets

LOADING STATION
Wide pallet access, indexing and preparation options, up to 600 kg and docking for AMR

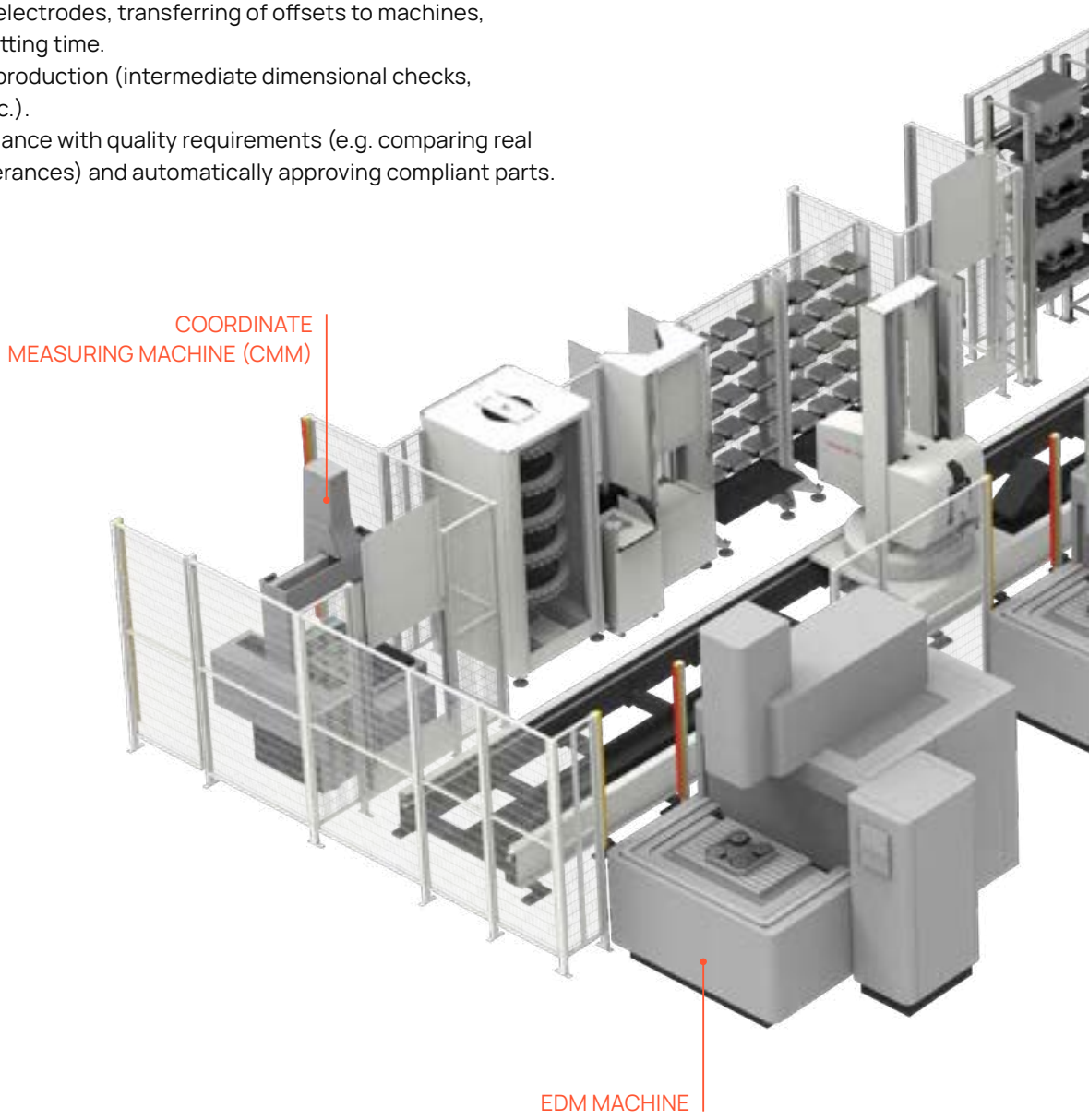
RAIL
Modular linear solution (up to 30 m)

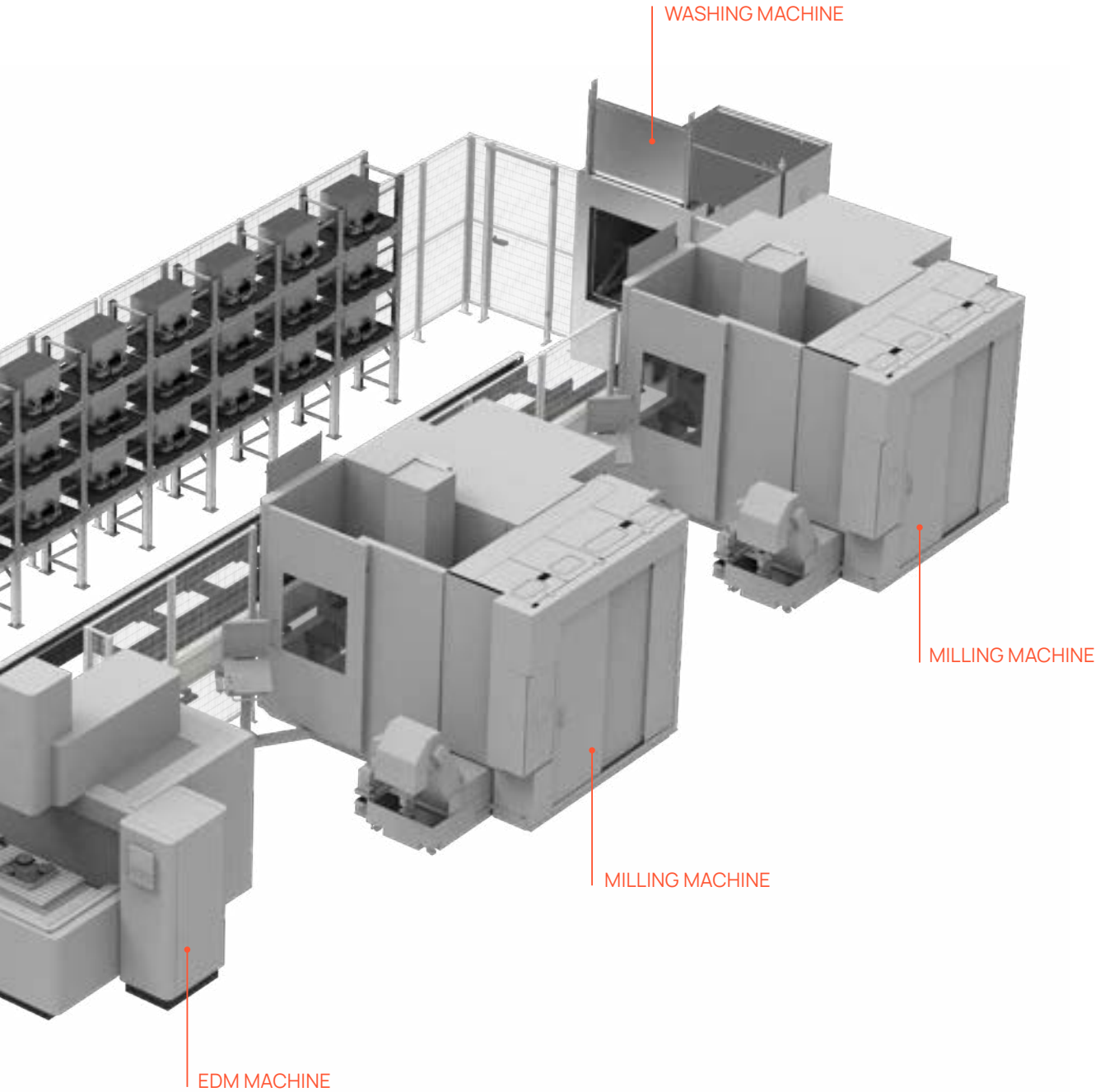
MIXED TECHNOLOGIES

Automation with Transformer 3-axis 600

Transformer makes it easy to integrate various technologies (milling, grinding, EDM, wire EDM, laser, etc.) and a number of fundamental functions (presetting, measuring, marking, washing, etc.). This integration is in a single cell. The cell covers all manufacturing phases from raw material to finished part.

- The integration of a coordinate measuring machine (CMM) adds extra facilities:
- Presetting of raw parts/electrodes, transferring of offsets to machines, cutting of internal presetting time.
- Ensuring quality during production (intermediate dimensional checks, tool wear monitoring, etc.).
- Determining final compliance with quality requirements (e.g. comparing real dimensions with set tolerances) and automatically approving compliant parts.





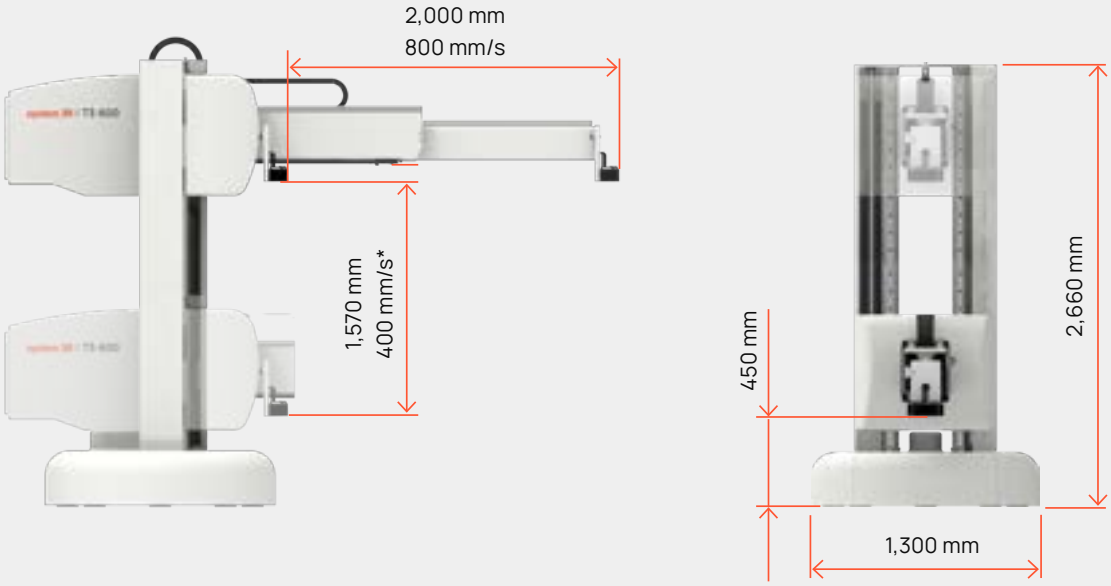
Continuously updated machine processors are used to integrate machines from many original equipment manufacturers.

- Taking care of complex functions and maximising flexibility, the following are just some of the features of our WorkShopManager 5 cell-management software:
- Simple programming, part-job assignment and priority changes.
- Production grouping of equivalent machines and alternative routings between different machines.
- Advanced equipment-management and communication functions.

TECHNICAL SPECIFICATIONS

Transformer 3-axis 600

Manipulator	Value
Payload (workpiece, pallet and gripper)	600 kg
X axis reach	2,000 m (up to 800 mm/s)
Z axis reach	1,500 m (up to 400 mm/s)
C axis range	0-340 ° (up to 90 °/s)
Air pressure and flow	6 bars (± 1 bar), 150 l/min
Power supply	Three phase (200, 230, 400 or 500 V AC
Frequency	50/60 Hz ±1%
Power consumption	< 4,0 kVA
External fuse	20 Amps, type D
Electrical interface	RS-232 Standard - Parallel port 24V Isolated Standard - RS-422/485 option
Floor requirements	Concrete quality, C20/25; thickness, > 180 mm thick (for fixing through anchors); planarity, < 5 mm/m
Temperature	Operating temperature, +5°C to +30°C (control cabinet)
Humidity	RH, max. 95%
Noise level	< 77 dB (A) ISO/DIS 11201
Rail	**Value**
Length	Up to 30 m
Number of machines	Up to 20
Rail axis speed	Max. 1.2 m/s
Floor requirements	Concrete quality, C20/25; thickness, > 180 mm thick (for fixing through anchors); planarity, < 4 mm/m
Accessories	**Description**
Rotary magazine	Open or closed
Rack magazine	Full or half
LFT magazine	Up to 4 levels with full weight
Loading and preparation station	Loading pillar (small/big), Loading station (ULD small/big), indexing option, preparation option
AMR bay	Docking station with lifter
Drying station	For wire EDM (fluid blow-off and air-drying as determined by integrated functions)
Draining station	For EDM, with dielectric pump-back function
Washing machine	1 or 2 tanks, small or big



Grippers for all your needs

Our Transformer concept is designed to handle a wide variety of tools; everything from the small Macro (54 x 54 mm) to the large DelphinBIG (800 x 800 mm). Other manufacturers' tools can also be handled.

In each automation cell, all the machines and accessories have chucks suitable for getting pallets from the manipulator.

The automation cell's desired storage capacity is achieved by using a suitable number of magazines and adapting the layout appropriately.

Standard grippers

MACRO GRIPPER

MACRO WEDM GRIPPER

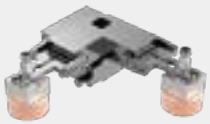
MACRO MAGNUM GRIPPER

DELPHIN 498X498

PALLET GRIPPER

PALGRIP

Optional grippers



DOUBLE GRIPPER

TILTING GRIPPER

TURNING GRIPPER

TECHNICAL SPECIFICATIONS

Magazines and tooling types

ROTARY MAGAZINE

FULL RACK

HALF RACK

LFT FULL RACK

LFT HALF RACK

Magazines are available in two basic designs: rack and rotary. Each magazine unit comprises of a number of shelves (determined by the height of the workpieces in question).

ROTARY MAGAZINE (EXAMPLES)

Tooling	Positions*	Size in mm (inches)
Dynafix	4	320 x 320 (12.5 x 12.6)
	5	290 x 290 (11.4 x 11.4)
GPS 240	4	320 x 320 (12.6x12.6)
	5	290 x 290 (11.4x11.4)
	6	260 x 260 (10.2x10.2)
MacroMagnum	8	210 x 210 (8.27 x 8.27)
	10	185 x 185 (7.28 x 7.28)
	12	160 x 160 (6.3 x 6.4)
GPS 120	12	160 x 160 (6.3 x 6.3)
Macro	36	65 x 65 (2.56 x 2.56)

FULL-RACK MAGAZINE (EXAMPLES)

Tooling	Positions*	Size in mm (inches)
Delphin 400x400	1	700 x 500 (27.56 x 19.68)
	2	400 x 400 (15.75 X 15.75)
Dynafix	1	700 x 500 (27.56 x 19.68)
	2	400 x 400 (15.75 x 15.75)
GPS 240	2	400 x 400 (15.75 x 15.75)
	3	275 x 275 (10.83 x 10.83)
MacroMagnum	4	210 x 210 (8.27 x 8.27)
	5	170 x 170 (6.7 x 6.7)
Macro 116	6	150 x 150 (5.9 x 5.9)
GPS 79	10	95 x 95 (3.74 x 3.74)
Macro	12	70 x 200 (2.75 x 12.2)

HALF-RACK MAGAZINE (EXAMPLES)

Tooling	Positions*	Size in mm (inches)
Delphin 498 x 498	1	500 x 500 (19.68 x 19.68)
Dynafix	1	480 x 400 (18.9 x 15.75)
GPS 240	1	480 x 400 (18.9 x 15.75)

LFT FULL-RACK MAGAZINE (EXAMPLES)

Tooling	Positions*	Size in mm (inches)
Delphin	1	850 x 800 (33.4 x 31.5)
	2	400 x 800 (15.7 x 31.5)
Dynafix	1	850 x 800 (33.4 x 31.5)
	2	400 x 800 (15.7 x 31.5)
GPS 240	1	850 x 800 (33.4 x 31.5)
	2	400 x 800 (15.7 x 31.5)

LFT HALF-RACK MAGAZINE (EXAMPLES)

Tooling	Positions*	Size in mm (inches)
Delphin	1	850 x 550 (33.4 x 21.6)
	2	500 x 500 (19.7 x 19.7)
Dynafix	1	850 x 550 (33.4 x 21.6)
	2	500 x 500 (19.7 x 19.7)
GPS 240	1	850 x 550 (33.4 x 21.6)
	2	500 x 500 (19.7 x 19.7)

Optionally available with rotary magazines: Rapid ID scanning.
Optionally available with rack magazines: Additional shelves. Door for loading from behind.
* Positions per level. Maximum workpiece height is determined by the number of levels.

Accessories

MULTIPLE LOADING STATION – ULD BIG

PREPARATION STATION

WASHING MACHINE

DRYING STATION

DRAINING STATION

MULTIPLE LOADING STATION – BIG ULD

Enables loading and unloading without stopping the automation cell.

- The station has ID antennas and presence sensors.
- It can be configured to meet the requirements imposed by tooling types and part sizes.

PREPARATION STATION

An optional, functional add-on for loading stations and loading bays. Features include:

- Max. load and max. dimensions for loading stations, 200 kg and 450 x 450 x 450 mm.
- Max. load and max. dimensions for loading bays, 600 kg and 800 x 800 x 800 mm.
- Presence monitoring and ID chip antenna.
- Manual indexing function (4 x 90°)
- Preparation via pedal-actuated chuck.

WASHING MACHINE

The unit comprises an insulated cabinet (accessed via a raisable door), a fixed spraying system and a rotating fixture for the pallets.
Loading is automatic via a robot.

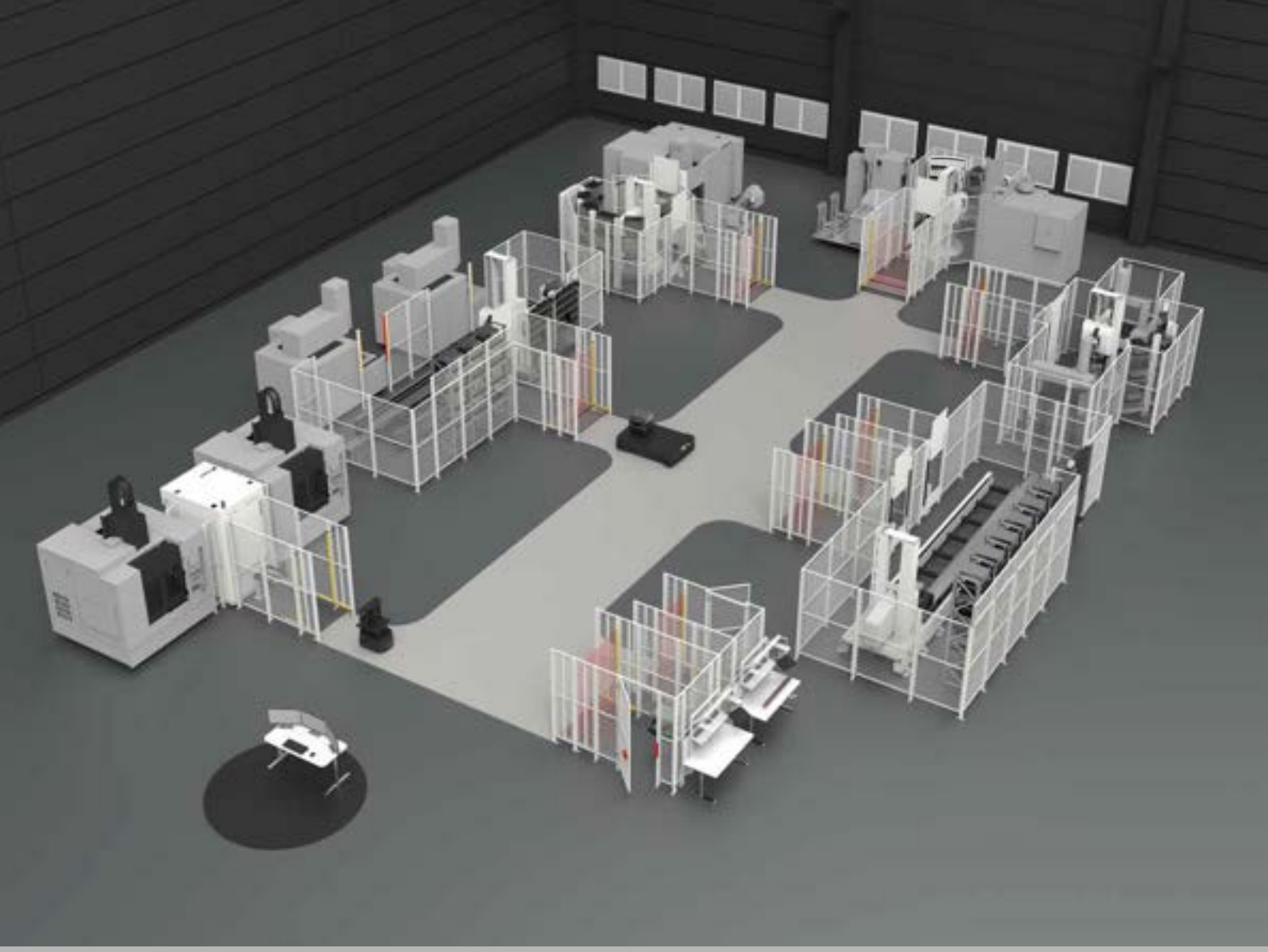
- The dimensions are 500 x 500 x 500 mm (pallet, chuck and workpiece included).
- Its maximum load (pallet, chuck and workpiece included) is 200 kg.

DRYING STATION

A two-stage unit for drying workpieces.
In the first stage/compartment, compressed air blows fluids off workpieces. The workpieces are then air-dried in the second stage/compartment.

DRAINING STATION

After machining, workpieces are placed here. Any remaining dielectric is tipped out of the cavities and fed back to the machine. Optional flushing nozzles available.



WorkShopManager 5 (WSM 5)

WSM 5, our user-friendly cell-management software

- Rapid and structured entry of required data
- Quick, precise overview of the entire process chain
- Increased flexibility (can change order priority at any time)
- Simpler, safer preparation of automated cells
- Risk of human errors minimised
- Enhanced process safety

Production Data Manager

This is where orders are created and operations and NC programs assigned.
Once offset values have also been assigned, orders can be released for production

CellManager

For viewing and controlling a production cell (automation, machines, magazines, cutting tools, etc.).
Create and edit live priority lists.
Store and update machining times in the database.

Magazine Job handler

Here, jobs for a specific fixture/pallet can be directly assigned and prepared for a rotary magazine.

Load station application

For assigning and preparing jobs for a specific fixture/pallet in a loading station.

Operation scheme editor

For visualising and editing all the steps any part goes through in the process flow.

MPS to WSM

MPS (ERP) interface for easy communication between office and workshop.

Cell OEE

Via an intuitive human-input interface, measures automation cell or single machine performance in terms of overall equipment effectiveness (OEE).

Mobile application

For viewing production information and cell status on mobile devices (iOS or Android).

system 3R

Use our Customer Services to optimise your equipment uptime

System 3R's Customer Services department is uniquely positioned to help you maximise the availability, value, precision and productivity of your System 3R equipment. Our cost-effective, customer-centric and expert services put your success at the centre, ramp up your productivity and ensure predictable, uninterrupted uptime.
System 3R's service engineers are your expert partners for a wide range of success-triggering services.
For further details, contact your local System 3R dealer.

www.system3r.com

TOOLING I AUTOMATION I SOFTWARE

T-2725-E 25.09

Combi, Delphin, Dynafix, Locx, LX, Macro, Matrix, One Minute Set-Up, One System Partner, R2R, System 3R, VDP, WorkMaster, WorkPal, WorkPartner, WorkShopManager, 3HP, 3R, 3Ready-To-Run and 3Refix are registered trademarks of System 3R.

System 3R Int'l AB, 2025.
Subject to modification.