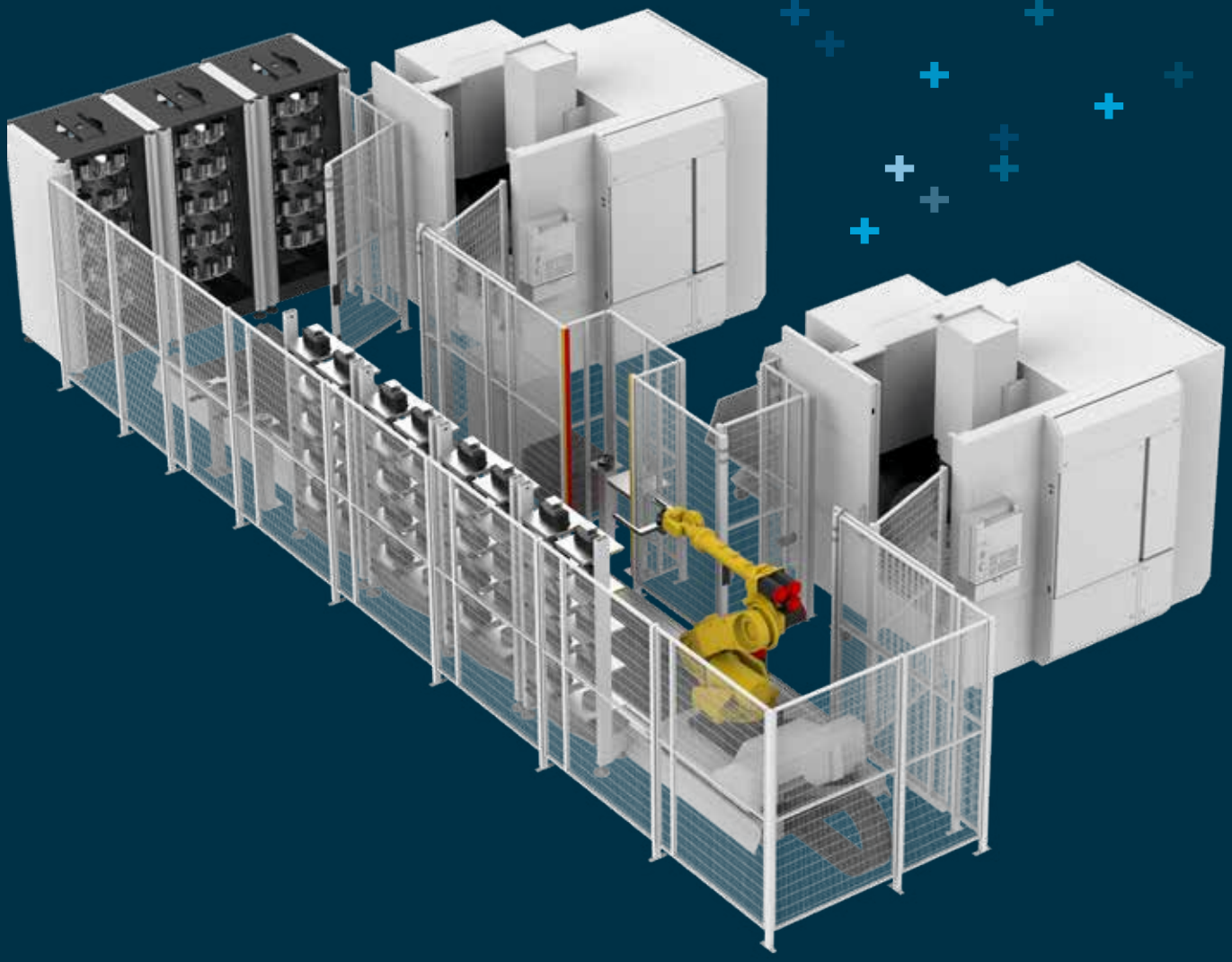
Automation



System 3R

When all you need is everything, it's good to know that there is one company that you can count on to deliver complete solutions and services. System 3R equips world-class electrical discharge machines (EDM), Laser texturing and Additive Manufacturing through to first-class Milling by Tooling, Automation and software systems — all backed by unrivalled customer service and support — we, help you raise your game and increase your competitive edge.

Swedish design and quality

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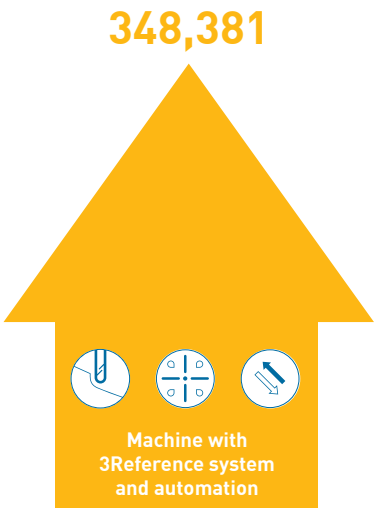
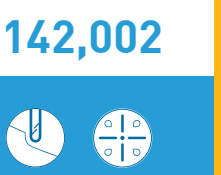
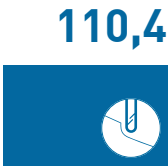
Calculation examples

One manned shift – eight hours (5 days per week)







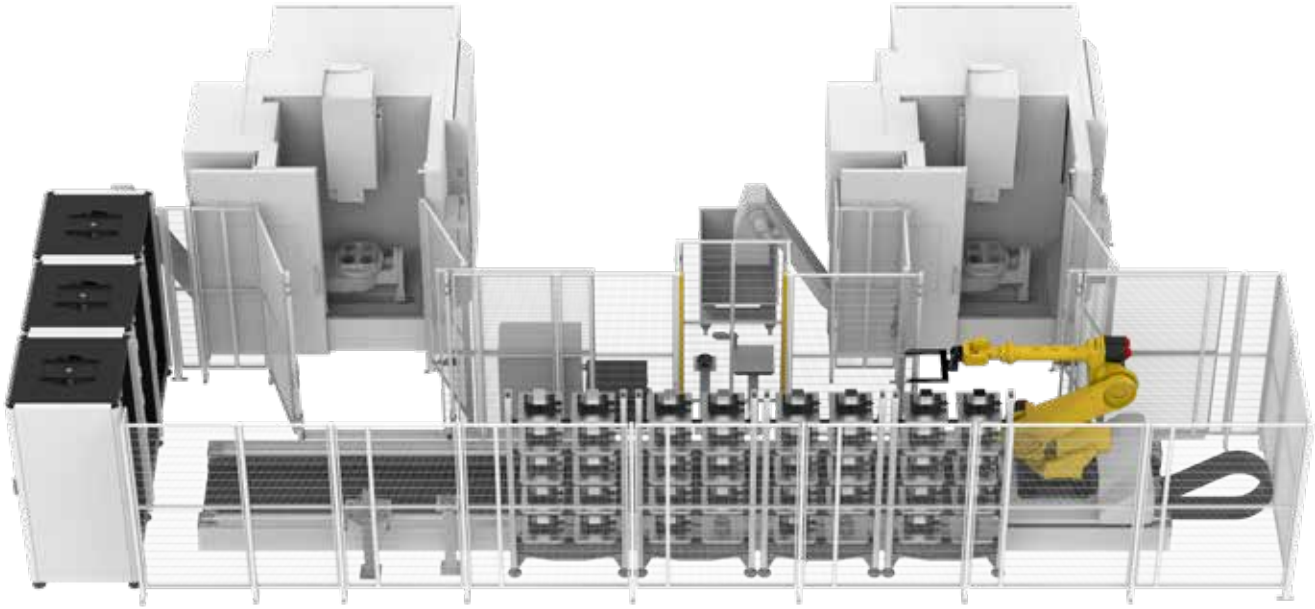
	Machine without 3Reference system	Machine with 3Reference system	Machine with 3Reference system and automation
Machine cost per hour	90	90	90
Number of machines	1	1	1
Unmanned machine capacity per working day	–	–	10
Working hours per day	8	8	8
Set-up time per day	2	1	1
Rejection	3	2	1
Unproductive downtime per day	0.5	0.5	0.5
Working days per week	5	5	5
Working weeks per year	46	46	46
Machine investment	400,000	400,000	400,000
3Reference system investment	–	35,000	50,000
CMM investment	–	–	–
Installation cost	–	–	10,000
Automation investment	–	–	120,000
Education and training	–	–	3,000
Results			
Annual capacity (hours)	1,265	1,610	3,910
Annual net income	110,434	142,002	348,381

Increased profitability is within your reach

Higher productivity and faster payback

Experience has consistently shown that reducing a machine's downtime is significantly more worthwhile than chasing seconds in the actual machining process.
A rigid and exact reference system is the way to achieve this. It lets you preset away from the machine and then get it running with minimum down time. Quickly and precisely!

Fitting all your machines with the same reference system means that electrodes and workpieces can be moved between them without subsequent re-alignment and checking – **One Minute Set-up.**



A reference system minimises set-up times
Every minute converted from internal to external set-up time increases a machine's spindle time and business productivity.

Increased profitability is within your reach
A machine generates revenue when its spindle is turning. Your profitability depends on this.
Work smarter, not harder.

Scalable automation

Grows with your needs

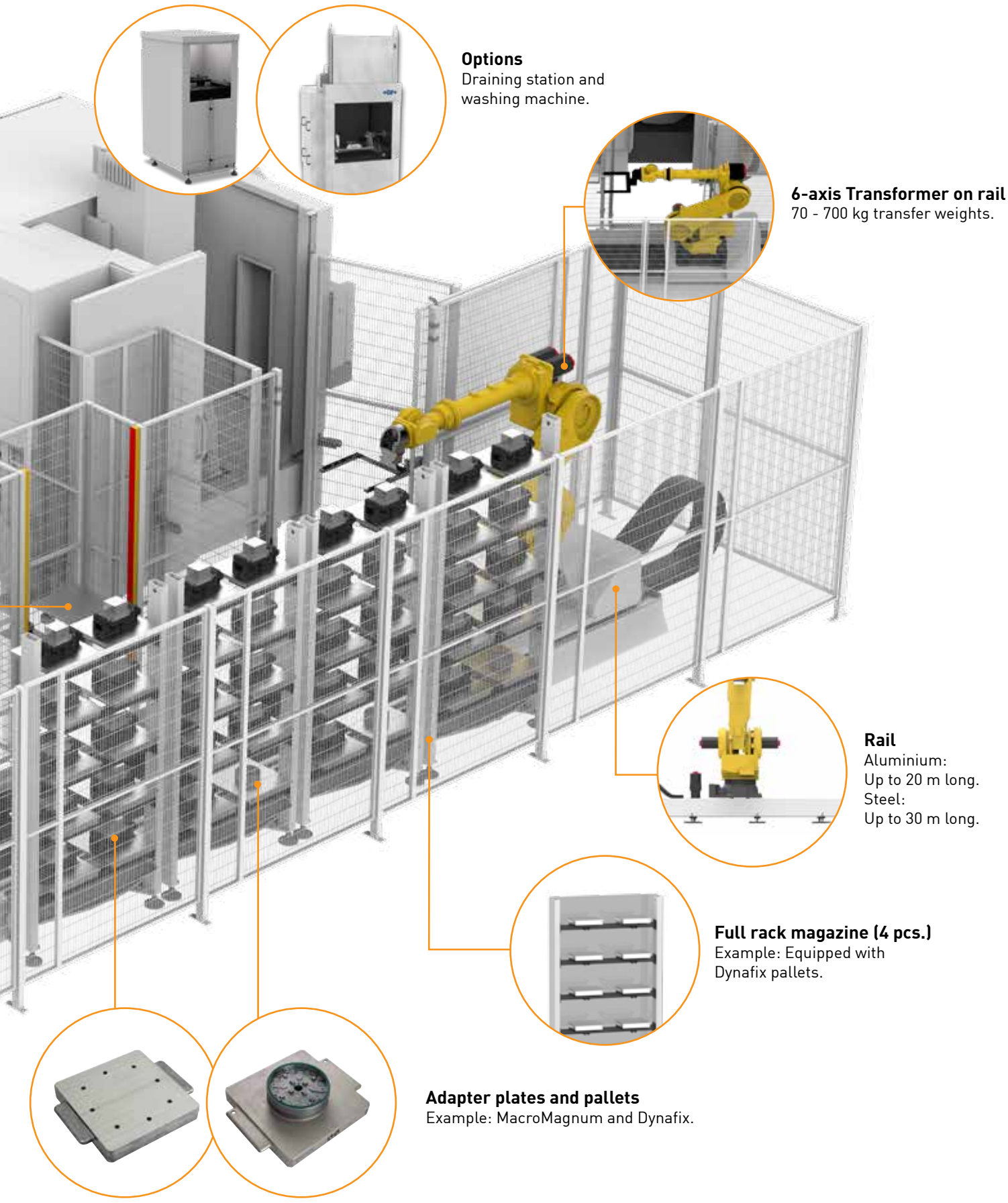
Rotary magazine (x 3)
Large capacity in a small footprint.
In this case, equipped with Macro and MacroMagnum pallets.

WSM – WorkShopManager
Supports 1 - 12 machines in a cell.
Wire EDM, EDM, mill, laser and CMM.

Milling machines

Pallets
Example: Macro and MacroMagnum.

Loading station or ULD station
Load and unload parts without stopping the automation cell.
In this case, prepared MacroMagnum and Dynafix pallets.



Options
Draining station and
washing machine.

6-axis Transformer on rail
70 - 700 kg transfer weights.

Rail
Aluminium:
Up to 20 m long.
Steel:
Up to 30 m long.

Full rack magazine (4 pcs.)
Example: Equipped with
Dynafix pallets.

Adapter plates and pallets
Example: MacroMagnum and Dynafix.

Work smarter, not harder

Smallest footprint

WorkPal 1 is a pallet changer that requires minimal floor space. It is designed for automatic changing of pallets in chucks on machine tables in:

+ milling machines
+ wire EDM machines
+ laser machines
+ grinding machines
+ CMM.

With glass doors across one full side, the WorkPal 1 gives maximum access to the magazine. This greatly facilitates the loading and unloading of pallets.

The changing arm lifts the pallets over the tank in wire EDM machines.

Wire-cutting EDM (wire EDM)
WorkPal 1

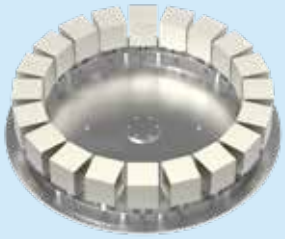
Optional: WorkPal 1 equipped with Cell PC and WSM.

Milling
WorkPal 1

Laser
WorkPal 1

Flexible magazine configuration

12 positions ...



20 positions ...

or 60 positions

Specifications, WorkPal 1	
Maximum weight handled (incl. gripper, pallet, etc.)	50 kg
Maximum number of machines served	1
Maximum number of tooling types	1
Chuck adapter support	–
Technology	Milling, wire EDMing, grinding, laser and CMM
Linear rail	■ Manual movement
Loading station support	–
Tilting and draining station support	–
Drying station support (wire EDM)	■
BatchBuilder	■
CellManager	■
EasyCellManager (mill, laser)	■
Hybrid station support (milling)	–
Pallet station support (milling)	–

WorkPartner 1+

Modularly adapted to your needs

- Can serve one or two machines in a production cell.
- One, two or three magazine capability gives exceptionally flexible capacity.
- Large doors facilitate loading of workpieces and tools into the magazines.
- Integrated pneumatic control of gripping devices and table chucks.
- Minimal floor space requirements.

Achieve greater return on your investment!

Milling
WorkPartner 1+ (HH version).
Large magazine capacity.

Two types of tooling.
Heavy loading station.

Wire-cutting EDM (wire EDM)
WorkPartner 1+ (HH version).
Heavy loading station.

EDM
WorkPartner 1+ (LH version).
Heavy loading station.
Draining station.

Laser
WorkPartner 1+ (LL version).

Mixed technologies EDM & Milling
WorkPartner 1+ (LH version).
Large magazine capacity.
Two types of tooling.
Heavy loading station.
Draining station

Specifications, WorkPartner 1+	
Maximum weight handled (incl. gripper, pallet, etc.)	80 kg
Maximum number of machines served	2
Maximum number of Tooling types	1 - 2
Chuck adapter support	■
Technology	Milling, EDMing, wire EDM, grinding, laser and CMM
Linear rail	■ Manual movement
Loading station support	■
Tilting and draining station support	■
Drying station support (wire EDM)	■
BatchBuilder	■
CellManager	■
EasyCellManager (mill, laser)	■
Hybrid station support (milling)	–
Pallet station support (milling)	–

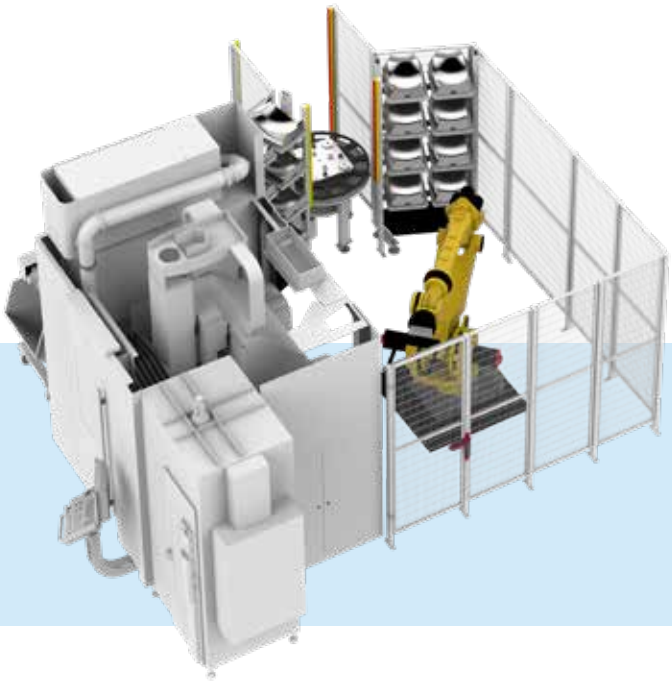
Scalable automation with Transformer

Grows with your needs

System 3R's offerings include automation solutions with industrial robots (stationary and linear) in many sectors (e.g. die and mold as well as precision production).
Our Transformer solution covers applications that involve transfer weights of 70 - 700 kg, radial reaches of up to 3,400 mm, complex transfer movements and/or parts handling.

+ Whatever the automation requirement, our Transformer can be specifically customised to your needs.
+ Modern technology and smart technical solutions using standardised modules ensure cost-effective yet flexible automation
+ User-friendly cell management software – complex automation made easy!

Achieve greater return on your investment!

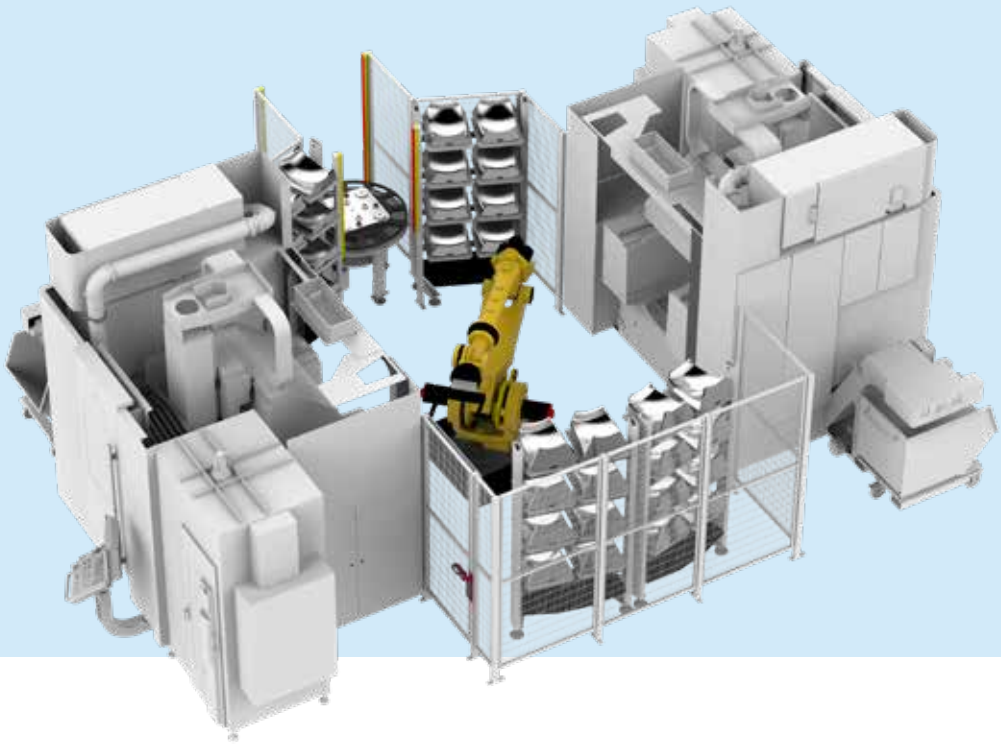


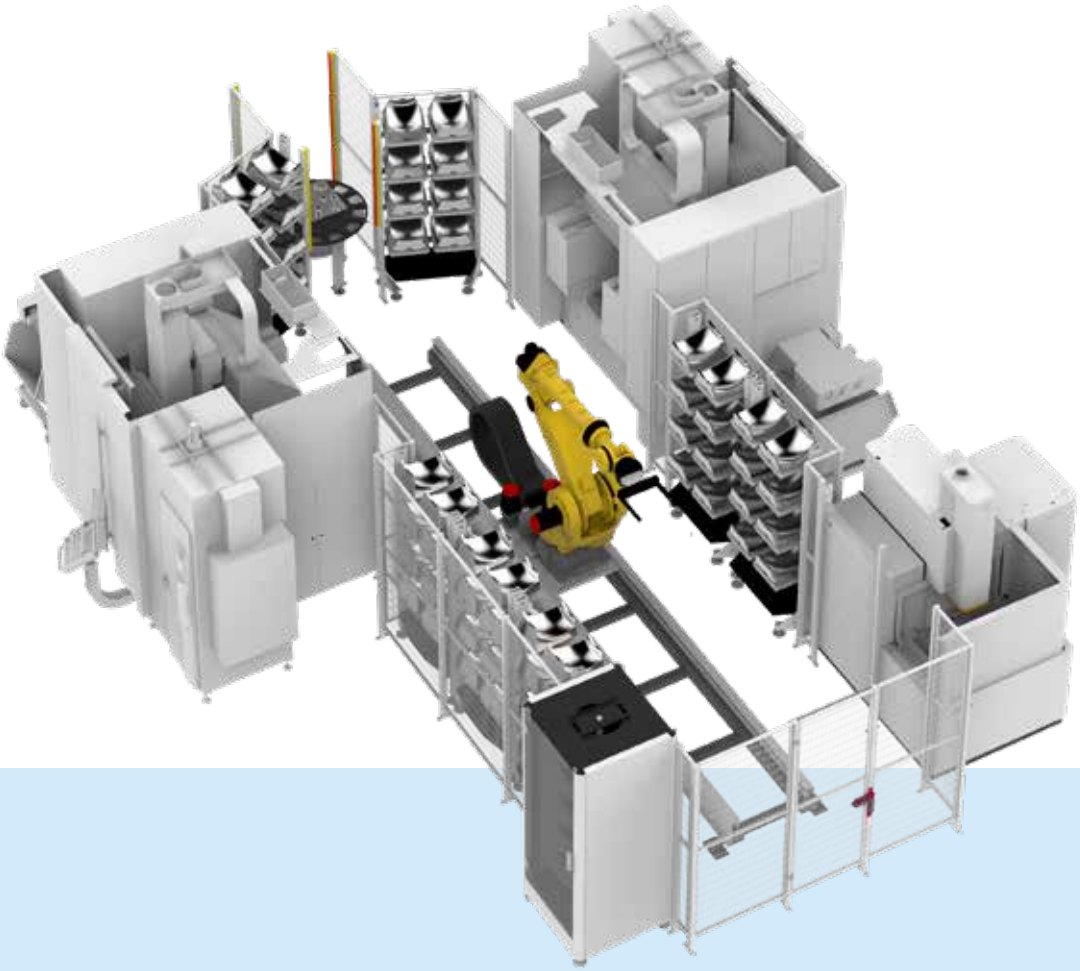
Begin

Begin with a single machine and small magazine capacity.

Add

Add a second machine for more capacity.





EXTEND

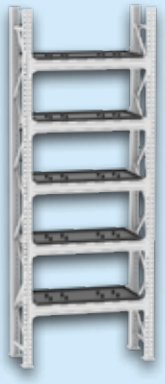
Place the robot on rails and add magazine capacity to serve additional machines. Alternatively, start with a similar solution from the beginning.

Specifications, 6-axis Transformer	Model T6-70	Model T6-165	Model T6-210	Model T6-360	Model T6-700
Maximum weight handled (including gripper, pallet, etc.)	70 kg	165 kg	210 kg	360 kg	700 kg
Maximum number of machines served	1 - 12	1 - 12	1 - 12	1 - 12	1 - 12
Maximum number of tooling types	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5
Chuck adapter support	■	■	■	■	■
Technology	Milling, EDMing, wire EDMing, Grinding, laser, CMM and washing machine				
Aluminium linear rail, maximum length	20 m	20 m	20 m	–	–
Steel linear rail, maximum length	30 m	30 m	30 m	30 m	30 m
Loading station support	■	■	■	■	■
Tilting and draining station support	■	■	■	■	■
Drying station support (wire EDM)	■	■	■	■	■
BatchBuilder	–	–	–	–	–
CellManager	■	■	■	■	■
EasyCellManager (mill, laser)	■	■	■	■	■
Hybrid station support (milling)	–	■	■	–	–
Pallet station support (milling)	■	■	■	■	■

Standardised modules

For cost-efficent solutions

Rotary magazine



LFT half-rack magazine

LFT full-rack magazine

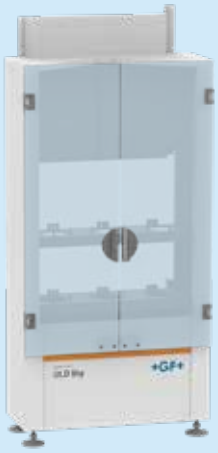
Half-rack magazine

Full-rack magazine

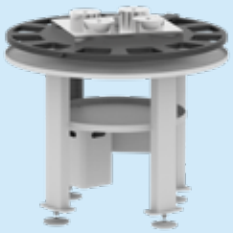
Drying station

Draining station

ULD Small



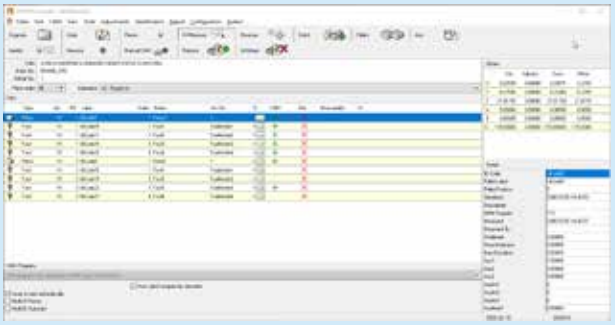
ULD Big



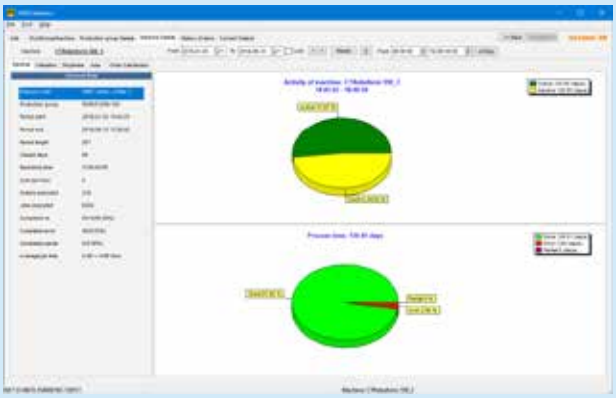
Loading/index station

Washing machine

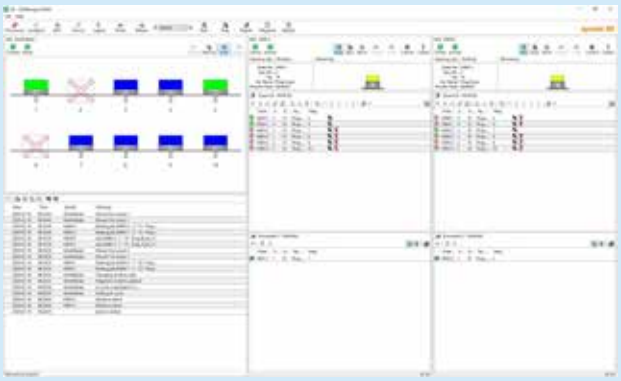
Software highlights



Preparation – WorkCenter



Statistics



Execution – CellManager

CTM – CutterToolMonitor

Software summary

WSM module	Process support	Robot type	Machines	Rail	Supported options
CellManager	EDM, wire EDM, mill, laser, CMM & clean	WP1, WPT1+ & 6-axis Transformer	1 - 12	■	CTM, AES, Alarm Server, pallet/hybrid station, statistics, monitor and MPS2WSM
CellManager Light	EDM, wire EDM, mill, laser & CMM	No robot	1	–	CTM, AES, Alarm Server, statistics, monitor and MPS2WSM
BatchBuilder (without ID)	EDM, wire EDM, mill, CMM	Pallet/electrode changer, WP1 & WPT1+ & 6-axis Transformer	1	–	
BatchBuilder (with ID)	EDM, wire EDM, mill, CMM	Pallet/electrode changer, WP1 & WPT1+ & 6-axis Transformer	1	–	Alarmserver, statistics and monitor
EasyCellManager	mill, laser	WP1, WPT1+ & 6-axis Transformer	1 - 4	■	CTM, Alarm Server, statistics and monitor
JobToolManager	mill	Mikron WPC	1	–	CTM, Alarm Server, statistics and monitor

WSM options	Technology	CellManager	CellManager Light	BatchBuilder	EasyCell Manager	JobTool Manager
CTM – cutter tool monitoring	Mill	■	■	–	■	■
Alarm Server	All	■	■	–	■	■
AES – automatic electrode selection	EDM	■	■	–	–	–
Hybrid station (pallets & raw mtrl)	Mill	■	–	–	–	–
Pallet station (re-fixturing)	Mill	■	–	–	–	–
Cell statistics	All	■	■	–	■	■
Cell monitor	All	■	■	–	■	■
MPS2WSM	All	■	■	–	–	–

Hybrid automation

Easy, Step-by-step

Prepare

Prepare cassettes and jobs.
Load cassettes into magazine.
Execute the jobs via CellManager.

Choose

Choose specific chuck adapter/
vice needed for the material.

Bring

Bring the cassette with materials to the
intermediate station.

Load

Using predefined raw material
gripper, load each material into
the chuck adapter/vice and start
first job in the queue.

Hybrid automation

+ For mixed pallet automation combined with workpiece handling.
+ Fully automatic change from workpiece A to workpiece B in the machine.
+ The system keeps track of NC program, cassette, gripper, chuck adapters, quantity, etc.
+ The workpiece handling concept is ideal for workpiece families. Thus, grippers and fixtures can possibly be used for more than a single, unique workpiece.

ECM – easy cell manager

+ For milling and laser machines.
+ With System 3R robots, support 1 to 4 machines.
+ Supports loading station.

Options:
+ CTM – cutter tool monitoring.
+ Alarm server.

JTM – job tool manager

+ For milling machines.
+ Supports One Mikron Mill with WPC.
+ CTM – cutter tool monitoring.

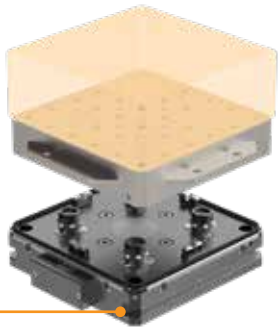
Options:
+ Alarm server.

Tooling highlights

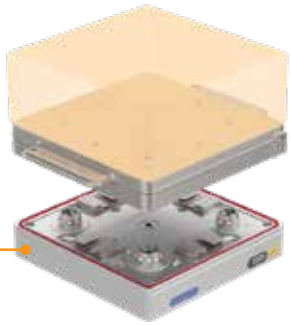
Macro

MacroMagnum

Matrix



GPS 240



Dynafix

Delphin

System 3R can provide an exceptionally wide range of tooling from very small (25 mm pallets) to very large (Delphin BIG, up to several meters). No matter what customers require, the materials they work with and the machines they have, our solutions deliver the best possible accuracy. We can help each customer find the right chuck system and pallets for the application in question. Our tooling systems can work in all environments encountered in modern production. We can equip wire EDM, EDM, milling, laser, grinding, additive manufacturing and CMM machines of all brands. We have also developed tooling for extreme use in environments e.g. ECM, AM, water, oils, etc. This has been achieved by using materials such as cemended carbide, Inconel, ceramic, diabase, etc.

Submicron accuracy – Already here!

Submicron is achivable with Nano.
Our Macro and the Matrix systems are outstanding for submicron accuracy.
System 3R was the market's first supplier of Nano tooling.

+ Consistent accuracy ‹ 1 µm.

‹ 1 µm proven

Vibration dampening pallet (VDP)

Our VDP system offers increased removal rate, better surface finish and reduced tool wear.
One obvious advantage of our VDP products is that they allow machining with more complex cutting data – in other words, better exploitation of machine capacity.
A further plus is better surface quality than when machining with conventional mountings. VDP also reduces tool wear and consequently, tool costs. Similarly, reduced vibration extends the life of the machine spindle. Last but not least, the lower noise level may, in some case, improve the workshop environment.

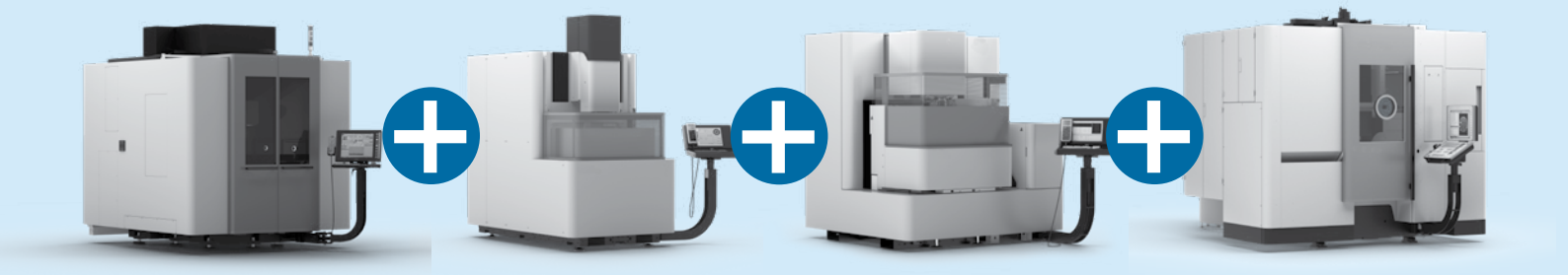
Matrix

System 3R is constantly working to develop its product ranges – not least with a view to entering new fields of application.
Mainly for powder pressing in the production of indexable inserts, we have, for several years, been supplying pallet systems to the cemented carbide industry.
This is an industry in which flexibility and quick deliveries are an essential for competitiveness and where demands for accuracy are strict.
Consequently, System 3R has adapted its powder-pressing pallet system so that it can be used in a significantly wider field of application, i.e. metal-cutting machining. Here, it is being launched under the product name Matrix.

ROI – Return on investment

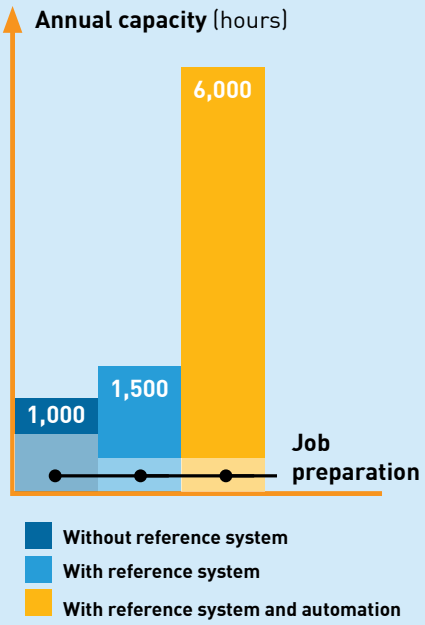
Automation is a way of creating long-term security for survival. Currently, many expensive machines are not being used to more than a limited part of their real capacity. By helping you to increase this use, System 3R also improves your ROI. We help you organize and structure your production from a holistic, process perspective.

Capacity



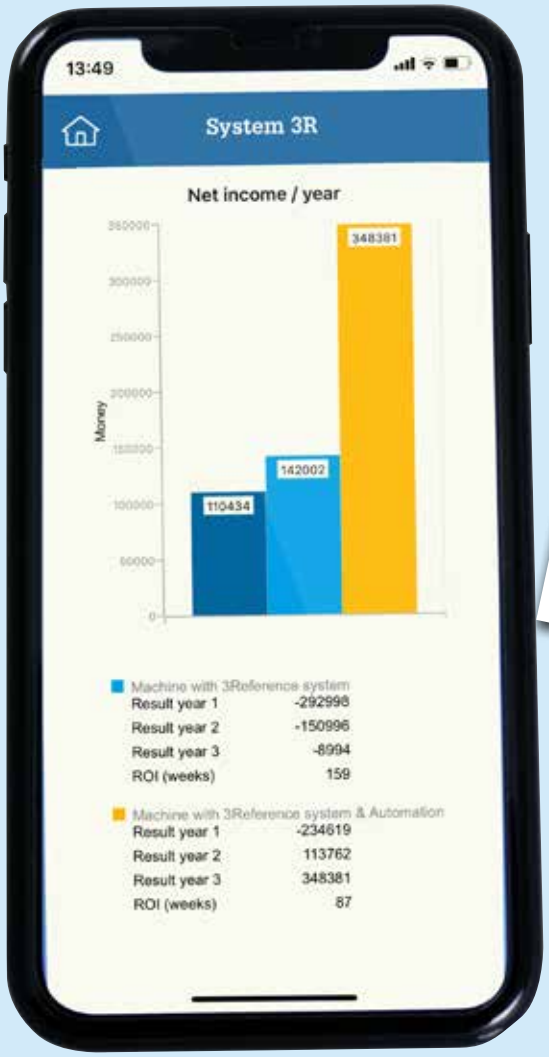
Productivity

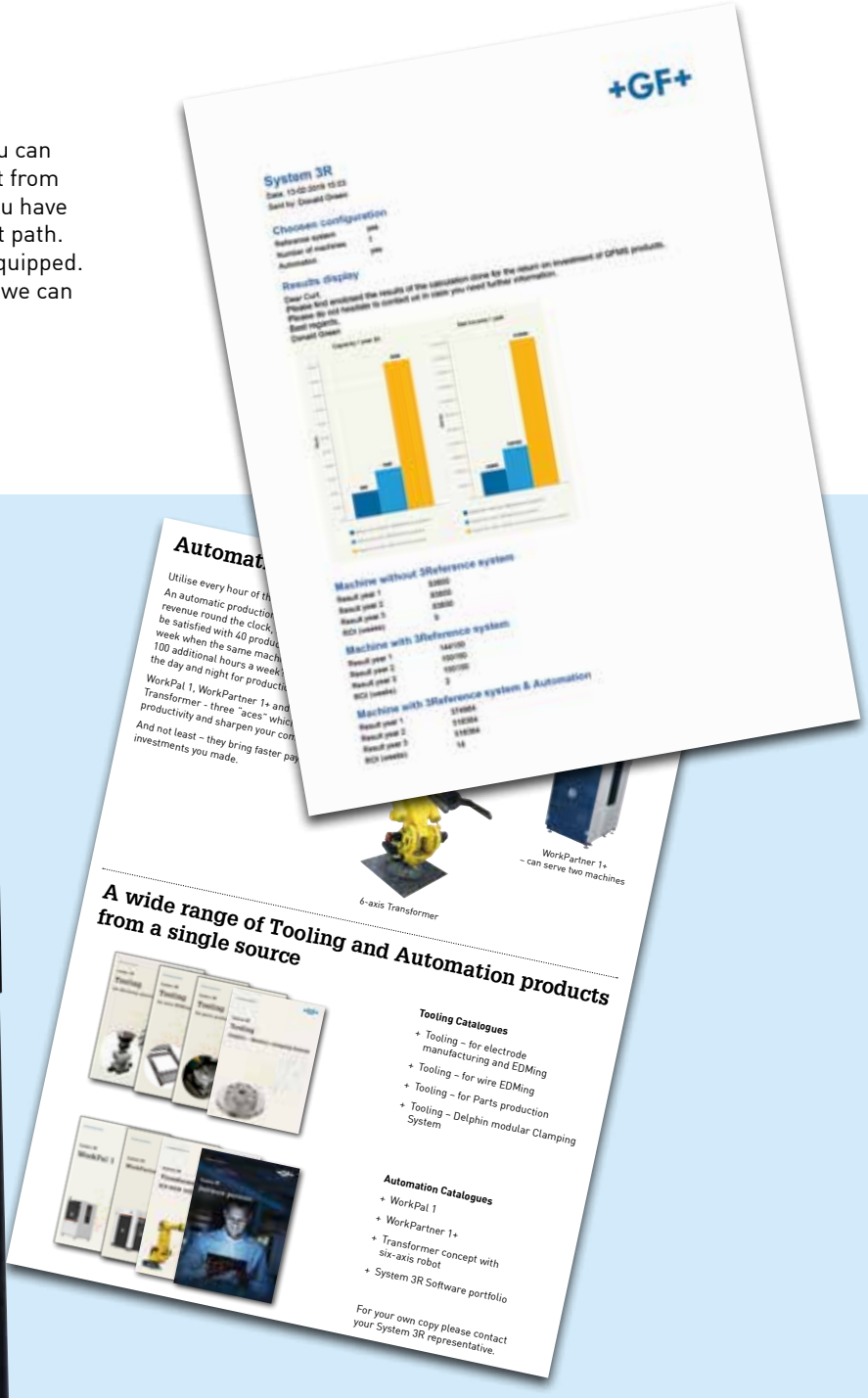
Tooling | Automation | Software



Reduce set-up times
+ Reduce set-up time by more than 85% per operation.
+ Add automation (e.g. workpiece transfer) and work 24/7.

System 3R offers you great potential
By using System 3R equipment and software, you can almost immediately start reaping greater benefit from your investments. We are convinced that once you have started with automation you will continue on that path. We help you reach the future faster and better equipped. Furthermore, with our newly developed ROI App we can help you with the figures.





Easy calculation of costs and returns:
+ Machine investment.
+ Machine + tooling investment.
+ Machine + tooling + automation investment.

A wide range of Tooling and Automation products from a single source

Tooling Catalogues

+ Tooling – for electrode manufacturing and EDMing
+ Tooling – for wire EDMing
+ Tooling – for Parts production
+ Tooling, Delphin modular Clamping System

Automation Catalogues

+ WorkPal 1
+ WorkPartner 1+
+ Transformer – WorkMaster
+ Transformer – 6-axis robot
+ System 3R – Software portfolio

For your own copy please contact your System 3R representative.

Optimize the uptime of your equipment with our Customer Services

System 3R's Customer Services is uniquely positioned to help you maximize the availability, value, precision and productivity of your System 3R equipment. Our cost-effective, customer-centric and expert services put your success at the center, 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 more info ask your local System 3R dealer.

For contact details, please refer to:
www.system3r.com.

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