

## Germany's mission... - Continued from front

Over the past year a choice of Service Contract options have also been available which, on critical installations of automated production cells for example, can provide a 24-hour call-out facility. Preventative maintenance is also provided.

Full hardware and software training, on-site commissioning, remote diagnostics and software upgrades complete an enviable all-round service.

"We are looking forward to EMO 2005 in September as this is an extremely important exhibition for System 3R Germany," says Peter Bilic. "We hope to see many of our customers there, to speak with potential new ones and to demonstrate our range of new products that will continue to provide substantial benefits for our domestic manufacturers in growing their businesses."

## WORKING 'HARD' FOR SYSTEM 3R – AND ALL OUR CUSTOMERS

One of the best kept secrets of our success is our metal hardening facility – Järfälla Hårdverkstad AB – on the outskirts of Stockholm. This provides the very necessary close tolerance heat treatment to a host of System 3R parts including pallets, holders, chucks and vices, ensuring guaranteed reliability and performance throughout the production process.

Originally opened by IBM in 1970 as the world's computer printer manufacturing centre, their hardening facility became a System 3R Company in 1995. Vital continuity and experience came in the form of Managing Director, Björn Henelius, who still owns 9% of the business.



Björn Henelius

"Even during IBM's ownership we started doing business with System 3R in 1988 and they rapidly became our largest customer as global printer technology changed," said Björn Henelius. "We also still retain other customers in a wide range of markets including surgical instruments, aerospace and automotive – wherever metal hardening is a requirement."

### A tradition in metal hardening

Sweden's long tradition in metal working can be seen from the Vikings with their swords and armour, to mining iron and

other minerals – in 1900 Sweden was the world's largest exporter of steel!

"Today, we insist on a 7 year apprenticeship in order to become a proficient metal hardener in our Company – and that's just the start of it. I have over 40 years' experience – 20 years with Järfälla Hårdverkstad AB – and our customers often seek advice on the heat treatment that they need," explained Björn Henelius.

The Company offers two types of heat treatment – vacuum and atmospheric – depending on the type of metal being treated and the final usage. The addition of carbon and other elements during the process is tightly controlled by using the latest furnace technology.

After heat treatment, parts and components go through annealing and cleaning processes.

The Company has Quality Assurance accreditation to ISO 9001 and meets Environmental Standard 14001. Järfälla Hårdverkstad AB is a clean facility.

### Big enough to cope – small enough to care

The Company has only 11 employees, but in keeping with other System 3R plants, works 24/7 with lights out production. "We are a small company with a high degree of craftsmanship," said Björn Henelius. "Our customers – who are all based in Sweden – prefer to deal on a highly personal basis with this critical element in their production planning. We are able to respond quickly to our customers' questions and needs, and have worked with many of them for a long period of time."

Such is the reputation of Järfälla Hårdverkstad AB that to accommodate the substantial growth of the business they have acquired another satellite facility in Hallstahammar, 100Km north of Stockholm.



One of the vacuum treatment chambers.

## A TIME FOR CELEBRATION

The System 3R distinctive orange logo made its first appearance some 35 years ago and we marked the occasion with a major event in Sweden to which customers and colleagues came from all over the world.

On a beautiful summer's day our guests were hosted by CEO, Håkan Näsström, who warmly welcomed them and outlined the successful history of the Company from its founding in 1967 to its position today as a world leader in tooling and automation systems.

"System 3R has become synonymous with quality, reliability and assured performance in delivering the productivity and

performance gains that have helped our customers survive and grow profitably, in this increasingly competitive world," said Håkan Näsström. "The growth in our global office network has reflected the changing production focus which has made our worldwide sales, service and consultancy network stronger than ever."

Our guests were given tours of the recently- expanded production facilities at Vällingby and our metal hardening plant at Järfälla. – who are also celebrating 10 years as a System 3R Company. Sneak previews of new product development projects were also unveiled to those present – with a number of advance orders being promised!



## World Round-up

### System 3R USA

Henrik Sedvallson has left System 3R Nordic to take up the post of CEO of System 3R USA Inc.

Back in 1988, with a mechanical engineering degree under his belt, Henrik started his career at System 3R in the production department. Over the next few years he held a variety of positions in marketing and sales in Sweden, Switzerland and Italy. In due course Henrik added a degree in market economics to his practical experience.

Henrik's broad experience of theory and practice, in both production and marketing, and not least his five years running System 3R Nordic, puts him in a strong position to take the step "over the pond" to head System 3R's US operation.

### System 3R Nordic

Dick Ottosson has been appointed Henrik Sedvallson's successor as Managing Director of System 3R Nordic.

Dick's last position was as Head of Product Marketing & Sales Support at System 3R International. Before that he was product manager for our die-sinking EDM range.



Henrik Sedvallson

His seven years at System 3R, combined with many years previous experience in selling CAD/CAM systems and production engineering, are an especially appropriate background for his new duties, now that he is taking charge of the Nordic sales organisation.

### System 3R UK

David Gibbs, one of the founders of System 3R UK, has stepped down from his post as CEO after successfully running the business for 25 years. But he will be not be leaving the company altogether as he is taking on the role of Senior Consultant.



Peter Lampitt (L) being congratulated by David Gibbs on his new appointment.

He is succeeded by Peter Lampitt, who has been System 3R UK's Area Sales Manager for the past three years. Peter, who has a degree in mechanical and production engineering from the University of Central England, has two decades of experience in EDM machines tools and running end-user companies. This experience will stand him in good stead in his new role as CEO of System 3R UK.

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The Newsletter of System 3R Group  
The articles in this edition can also be found at [www.3review.com](http://www.3review.com)

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WORLD ROUND-UP

Global competition manufacturing industry means constantly pursuing efficient production solutions. With its breadth and depth in almost every area of production, EMO will be the meeting-place for everyone and anyone who is interested in rational production.

The world's leading producers of machine tools and production technologies will be presenting their latest advances over the eight intensive days of EMO – and System 3R will, of course, be among them.

### New from System 3R

"Our worldwide sales, service and consultancy network is stronger than ever," explains Håkan Näsström, CEO. "System 3R's documented experience of production technology gives customers cost-effective and productivity-boosting solutions. Not least System 3R's 'open

effective with one-off manufacturing as with series production.

WorkPartner is compatible with most of System 3R's renowned reference systems. WorkPartner also handles cones for milling machine spindles.

### VDP – increased removal rate, better surface finish and reduced tool wear

The performance of a pallet system is determined by a number of parameters, one of which is static rigidity. However, research results showed that the dynamic characteristics, and above all the damping capacity, are crucial. So what one should aim for is a highly rigid coupling which also has a high damping capacity.

System 3R has now developed a product range with just those characteristics – Vibration-Damped Palletisation – VDP.

A patented product range which gives the user significant competitive advantages. Seldom has one of our products created such a high level of interest and gained such rapid market distribution as the VDP system. And now we present a broader range, which also includes MacroMagnum and Dynafix.

The obvious advantage of VDP products is that they allow machining with higher cutting data, in other words better exploitation of the machine capacity. A further result is better surface quality than machining with conventional mountings can offer. VDP also gives less tool wear, which reduces tool costs. Less vibration extends the life of the machine spindle. And last but not least, in some cases a lower noise level, improving the working environment in the workshop.

### Dolphin – unlimited possibilities

Dolphin is a machine-independent reference system which, in addition to increased productivity, gives a highly flexible production apparatus. The system satisfies in every way the requirements for quick changing and accurate positioning and fixing of the workpiece, so it is ideal for mixed production.

Dolphin is an "open" reference system which is not limited by standard pallet sizes. In principle, Dolphin is made up of only two parts – a chuck and a drawbar. The drawbar can be fitted directly to the workpiece or to the fixture, giving a very low overall height.

The system is modular. The user decides the number of chucks to be mounted on each machine table, angle shelf or cube. The configuration is simply adapted to the specific needs of each user.

In addition, you will find System 3R products and systems in other exhibitors' products, often as an integral part of the added value that the exhibitor's products offer in the pursuit of increased productivity.



Håkan Näsström (L), CEO of System 3R, at the Stockholm Press Conference hosted by Dr. Fred Steiner, Managing Director EMO, to emphasise the importance of this exhibition to European industry (Ole Skogman).

architecture", under which all our tool and automation systems are developed to suit every make and type of machine tool. Ultimately this rewards our customers with increased profitability and keener competitiveness, worldwide."

Here are some of the many innovations that System 3R will be presenting at EMO:

### WorkPartner – focus on productivity

Growing demands on manufacturing industry must be met with increased flexibility, increased quality and increased productivity. In the long term there is only one viable solution – automation.

Automation keeps production going every day of the week and every hour of the day. The result is shorter lead times, higher productivity and quicker payback of capital invested in machines.

WorkPartner is the latest addition to the System 3R automation range. A compact unit for pallet changing, both on the machine table and in the machine spindle.

WorkPartner is intended for applications in milling machines, grinders, die-sinking EDM and wire EDM machines. And it is just as

Make a note of Hall 27 Stand B20 on your list of stands to visit.



Head for our stand at EMO - HALL 27 STAND B20. It will be time well spent!

## SYSTEM 3R GERMANY'S MISSION IS TO HELP DOMESTIC INDUSTRY SURVIVE AND GROW

Investment in the latest automation technology is the only way forward

For nearly 30 years, System 3R Germany has been striving to increase productivity for their customers in Germany, Austria, Benelux and Hungary.

"We see our greatest challenge today as providing manufacturing industry with automation that enables them to run their machines 24/7. No longer is the solution to buy more machines, but to obtain greater utilisation from existing machines through 'lights out' production and minimising down-time," explains Peter Bilic, Managing Director of System 3R Germany. "Education is the key to stimulate significant changes in the working environment and to current shop floor practices."

From their Head Office in Gross-Gerau, on the outskirts of Frankfurt/Main, Peter Bilic and his 18-strong team currently work with over 7,000 customers who operate almost every machine brand on the market today. Key names include GKN Sintermetals, Wilden, IMS Gear, EADS, Kostal, Fico, Swarovski and Greiner Extrusionstechnik.

### Our neutrality is without question

"The important factor in our favour is that at System 3R we are totally neutral in our relationship with every machine manufacturer worldwide," continued Peter Bilic. "We often work closely with them to add greater productivity to their 'machine package' which customers demand today. Many machines are already homologated



Peter Bilic, Managing Director, System 3R Germany

for System 3R automation, for example, so that the customer is not paying a larger premium for bespoke manufacture."

System 3R Germany has an impressive market share in their traditional EDM business but have rapidly gained over 50% share in automation technology with their 'WorkPal' and 'WorkMaster' robots, driven by their powerful 'WorkShopManager' software-capable of connecting and running many different machine brands.



System 3R Germany's head office, Gross-Gerau.

### Unrivalled customer service

The field sales team of nine experienced engineers and automation specialists is supported by highly-trained service engineers and a knowledgeable office-based administration department under the direction of Mrs. Gisela Schäfer. Apart from the wide range of System 3R tooling and automation products, the Bilico Technik range also has its support team.

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# SYSTEM 3R IN ACTION AROUND THE WORLD

## A successful global strategy from GKN

 **A three-fold production increase from only a doubling of the workforce**

With 16% market share, GKN Sinter Metals are world leaders in powder metallurgy and their plant in Bad Godesberg, Germany produces a range of components for many



The triple cell at GKN, integrating 3 milling machines fed by the WorkMaster robot from System 3R

global automotive, office equipment, home appliance and power tool manufacturers, amongst others.

Their successful working partnership with System 3R stretches back over several years, when the need to maintain ever-tighter tolerances during grinding, milling and electrode manufacture led them to select and standardise on the MacroJunior and Macro systems.

With increasing worldwide demand for their products, together with shorter lead times and moulds of greater complexity, there were increasing pressures on the activities in Bad Godesberg. "We therefore had to move rapidly from 2D into 3D design and incorporated the Unigraphics system into our CAD department," explained Karl Borsch, Operation Manager Toolshop. "Hand-in-hand with this expansion was the need to harness new technology on the shop floor that would give us even greater speed in production for our 'internal' customers."



Karl Borsch and his team, with the Triple Cell.

**Saving time, money and a whole lot more...**

Yet again, the major competitive systems were interrogated by GKN for more efficient and economic electrode manufacture, and '3Ready-to-Run' came out on top. "We found that we could standardise on only 6 sizes of these factory-mounted graphite and copper electrode blanks, which saved us an enormous amount of time in preparation," continued Karl Borsch. "The cost of electrode assembly has been reduced by a factor of three!"

The '3Ready-to-Run' blanks are fitted on Macro holders, ensuring repeatable accuracy throughout every production process and were totally compatible with 28-position

changers on the EDM machines as well as the CMM at the pre-setting station. "This added security on assurance of performance was vital in relation to our Quality Assurance procedures," added Karl Borsch.

### Automation is the key

The move to '3Ready-to-Run' also opened the door to making further savings and efficiencies through increased automation.

"Our confidence in System 3R and our proven investment was the catalyst for our first automated HSM production cell in 2003. Their 'WorkMaster' robot was programmed to serve a Roders miller and Kern micro-miller at the same time. The close cooperation between the machine manufacturers, System 3R and GKN during the project stage ensured it all ran smoothly," said Karl Borsch, "and we were highly delighted with the final result!"

"We had a vision of reaching even greater heights of excellence and could see the very real advantages of moving to the 'WorkMaster' serving three machines, as System 3R had always assured us it would.

In 2003 GKN fulfilled this dream when another Kern micro miller was successfully added to the cell, with the 'WorkMaster' robot now operating within a 300° circle.

"What took us 3-4 weeks to manufacture a year ago now only takes 3-4 days. It is the answer to the serious question of 'Time to Market', said the quietly confident Karl Borsch.

This triple cell operates 24/7 and incorporates 100 Macro holders for electrode manufacture and 10 MacroMagnum pallets with clamped workpieces. System 3R's 'CellManager' software programs the 'WorkMaster' to select them from positions on the magazine racks, effected by an ID system carried by each pallet/holder. The possibility of lights out production and 168 hours a week output from the cell is at the heart of a fast payback on the investment made.

Palletisation and pre-setting outside the machines and automation has increased machine utilisation substantially – and it is still rising!

### A total 'One System Partner'

All machines at the GKN toolshop in Bad Godesberg now have System 3R tooling. In line with the die-sinking machines, the focus is now on pre-setting outside the wire cutters, thus incorporating them in their ultimate goal – plant-wide integration.

"With System 3R's help, we have proved that the projected efficiency and savings can be more than achieved. This has not only enhanced our own working practices but also cut our through-put time substantially," concluded Karl Borsch.

## Only the best is good enough

 When Erik Schildermans and his wife started E.S. Tooling n.v. just under ten years ago, their goal was clear – "We wanted to create a company where we could work like employees".



Erik Schildermans: "However high-class our machines, the company's most important asset is its workforce."

The company is totally directed at the production of accurate and complex parts, as a subcontractor to demanding customers in the optics industry, for example. 90% of orders are for a single part- parts that many other don't dare to make.

And E.S. Tooling is well worth a visit. Attractive premises, where the last extension was completed during 2002. Naturally, the entire workshop is climate-controlled to 20° Celsius, neither more nor less, summer and winter alike. And there are few firms with a better range of machines. Here, for example, they have the first Agiecut Vertex in the Benelux countries.

Erik Schildermans explains, "Yes, we have excellent machines, but however good your machines, it's the eleven employees who are the company's real asset. That's why we invest heavily in our personnel, not just in training but in everything that goes to create the team spirit which is so essential in a demanding operation such as ours."

### Doubling the spindle hours

"However good your personnel and your machine," Schildermans continues, "the business has to perform well in financial terms, and one good measure of its health is the number of spindle hours we achieve. And we didn't clock up as many spindle hours as we would have liked."

So in 2003 they installed their first automated production cell. A three-axis DMG 50V was upgraded with a WorkPal Compact with space for six GPS 240 pallets in the magazine. And the result was quick in coming: it wasn't long before they had almost doubled the number of spindle hours on that machine.

"There's no doubt about it," declares Schildermans. "Automation is the way to go!" "Soon we'll be investing to develop the business further, with higher spindle hours and better competitiveness. We have in mind

a double cell with two new five-axis machines served by a WorkMaster, as well as an upgrade to the coordinate measuring machine and the first cell. And, above all, System 3R's WorkShopManager production control system."

Erik Schildermans continues – "I have a vision of the machines producing round the clock, whether or not there are people in the workshop. The operators program, prepare and load the magazines and the machines produce. The employees are present for a limited time, but are available 24 hours a day. If a problem arises, the automatic cell sends a text message, for example, to the duty operator, who takes appropriate action, via remote control or on site."

In 2004, Erik Schildermans received the Hermes prize for successful enterprise from the hand of Crown Prince Filip of Belgium. Proof that his determined work has won appreciation far beyond the core activity.



The first automatic production cell.

## The future is already here

 Digital Tooling Service (DTS), a division of INCS Inc., has a clearly stated business idea.

Faster than any other company, and regardless of destination, Digital Tooling Service aims to supply the mould tools that manufacturers of mobile telephones require for their prototypes.

INCS is a young company. It considers that the world is facing a new industrial revolution. In expressing its thoughts, the

company talks about "Information Industrialisation", the breaking down of production processes and the standardisation of process stages – all the way from design to finished product. This can result in up to 1,000 process stages. The effect is an almost explosion-like increase in productivity.

In-house information, production and process technologies, as well as external consultancy assignments, are the cornerstones of INCS's operations. The putting into

practice of the company's ideas is the province of the Digital Tooling Service division.

DTS operates two factories, K1 and K2, both of them in the Ota-ku district of Tokyo. This is a district full of small and specialised factories. Most of these are subcontractors supplying high-quality products to the Japanese industry.

A computer half? Hardly, this is the milling shop in K2. Rows of special machines, each with Dynafix-served spindles.



### From 45 to 6 days...

DTS has now been operating for five years. It has a total of 100 employees, 24 of these being operators. The company has something over 50 machines. A few of these are EDM machines and jig drilling machines, the rest are high-speed milling machines. This means that, working a three-shift system, just eight operators take care of all the machines, twenty-four hours a day.

Manabu Takano, Engineering Group Manager, comments: "Compared to traditional mould tool manufacturers, we approach things differently. We produce precision parts. Typically, they are one-offs. The parts are put together to form sub-assemblies and, in the end, mould tools. We are currently producing 150 mould tools a month. We are very quick. Two weeks after the 3D data arrives here, the tool is delivered, along with injection-moulded samples, for the customer's evaluation."

DTS started with the standard machines that were then on the market. However, these did not produce up to expectations.

Consequently, a machine manufacturer was approached with an order for special versions of ten high-speed (50,000 rpm) milling machines. Made to INCS specifications, the machines also used software developed by INCS. The machines were installed and the order was repeated.

Takano continues: "Our tooling times were also too long. We installed the Macro and Dynafix systems and managed to bring the times down by 80 percent." Asked why



Manabu Takano: "Speed is absolutely crucial."

System 3R was chosen to supply the pallet systems, the answer was quite simply that, especially as regards milling, the products had proven their superior performance. The throughput time was now down from 45 to 6 days and there was still more to come.

### ... and down to 45 hours

A few years ago, DTS opened its new factory, K2. Here, the special machines were developed even further. Amongst other things, the milling head and workpiece were turned "upside down". This involves fixing the workpiece (on its Dynafix pallet) up on the machine spindle and the cutting tool at the bottom of the machine. The chips now fall directly through the machine onto a conveyor. This serves an entire machine line and takes the chips to a container outside the building!

Manabu Takano: "We are now down to a throughput time of 45 hours of machining for a complete tool. There are always parts for around 40 tools in circulation around the workshops. This means keeping track of 6,000 parts. On top of this, each part has to go through several separate machining operations. Here, it is a question of leaving as little as possible to the human factor. No human brain is able to keep track of every single part."

Powerful, networked computers are the core of operations and it is enormously important that all those involved are meticulous in the execution of their duties. Manabu Takano concludes: "Our own information, production and process technologies, partnered with special machines and efficient pallet systems, make us exceptionally productive. No one is faster than us. Believe me."



The workpiece on the Dynafix pallet on the machine spindle and the cutting tool at the bottom.



The magnificent double cell generates revenue during the dark hours. A DMU 50 evolution and a DMC 64 V Linear positioned at an angle to each other are served by a WorkMaster.

## Automated precision manufacturing

 In 1985, Hans BakKER and Thoe StrijBOS left the big Eindhoven concern and started their own company, KERBOS b.v., in the municipality of Son en Breugel, in the Netherlands. A modest start: two



Hans Bakker and Thoe Strijbos view the future with confidence.

lathes and a milling machine, in a rented space of 60 m<sup>2</sup>. From the outset, the operation was focused on the production of precision parts in small runs. Never more than fifteen parts, seldom more than five. Aluminium was and remains the most common material, but steel, plastics and other light alloys also occur.

Today they have 25 employees and a high-class machine park in premises of their own, covering 1,200 m<sup>2</sup>. Hans Bakker explained, "Four or five years ago we began to notice competition from the low-price countries in Europe and elsewhere. Admittedly we operate in a segment with high-quality products, with customers in the metrology, medical and shipping industries, who impose strict demands on their suppliers, but here too, global competition is getting keener."

"What to do? Soldier on in the same way for as long as possible, or take the bull by the horns and sharpen up our own

operation? We chose the second option and invested in machines and personnel."

And the machine park is top-class: Gildemeister, Hermle and DMU. All renowned makes. Hans Bakker continues, "High-class machines are one piece of the puzzle; skilled workers are another. It's not easy to find those today, and if you find them they're not keen to work nights."

The investments increased our productivity, but we were still a long way from our goal. Of course, the machines and the workforce were producing better than before, but only eight hours a day. I'm totally convinced that what ultimately determines the success of a company is the number of spindle hours a day."

"Obviously it's crazy to invest in costly machines and then let them stand idle for 16 hours out of every 24. The machines

only generate revenue when they are machining – and only then! So we're compelled to invest in automation."

Step one was palletisation of the workpieces in the milling machines. Tests showed positive results right away and step two soon followed: a fully-automatic production cell with two DMG machines served by a WorkMaster. The same robot but different pallet systems!

The five-axis DMU 50 evolution has a GPS 240 chuck on the machine table, and the magazine has space for 24 pallets. The four-axis DMC has four Dolphin chucks on the machine table and the magazine holds twelve 460x460 mm pallets.

"During the day, the machines are operated manually; the rest of the time, WorkMaster handles production. Guess whether our invoicing per man-hour has increased in this cell," concludes Hans Bakker.

## Times are changing – for the better!

 Faced with pressing demands for rationalisation and automation Simon & Membrez SA, specialist sub-contractors to the watchmaking industry, decided to modify and boost production by introducing high performance palletisation systems.

Simon & Membrez manufacture high quality watchcase bodies in steel, gold, titanium and platinum, supplying the world's most prestigious watchmakers. Based in Courteille in the Jura region of France, this family business employs 120 people and operates in conjunction with its smaller subsidiary, Terminboites SA of Courtemaiche, who specialise in polishing.

Using Delcam's Pro-Engineer software, multiple designs are produced in partnership with their watchmaking customers as well as the design of production tools such as punches and stamping dies.

The stamping and turning workshops already had equipment for the automated loading and unloading of workpieces and the milling department was their next focus in their productivity improvement programme.

### A new productivity mind-set

The introduction of System 3R's palletisation system on their milling machines has made an enormous impact in a short space of time, where productivity gains have made a significant impact on the bottom-line.

But in order to maximise the benefits



Mecatool palletisation at work in a milling machine.

obtained from this system Patrick Poule, Manufacturing Director, realised that they also needed to change the way their employees worked and he uniquely used video to advance this process. By filming how each production batch was prepared and loaded onto their machines they showed, in slow motion, the time spent and the actual down-time of each machine during this procedure. They thus identified and then achieved the elimination of costly non-productive time by standardising on one clamping and palletisation system for holding workpieces in the milling machines

Before the use of System 3R palletisation, it required no less than a full day's work by one man (and about 20 tools) before a new batch of workpieces could be loaded. Now, once all the stages of the changeover had been analysed, it takes less than 10 minutes for a new arrangement and a new schedule to be put in place.

This was certainly a visionary investment by the head of the company, Philippe Membrez, which has paid off handsomely!

### Increased flexibility

System 3R palletisation also facilitates rapid changeover of production when a machine tool needs maintenance or repair, as it now becomes possible to change machines and production with set-up times of less than 10 minutes. "We are delighted that this organisational change only took 6 months – with no break in production at all. The palletisation system has now been installed on 15 production machines and 2 machines in the mechanical workshop," said Patrick Poule.



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