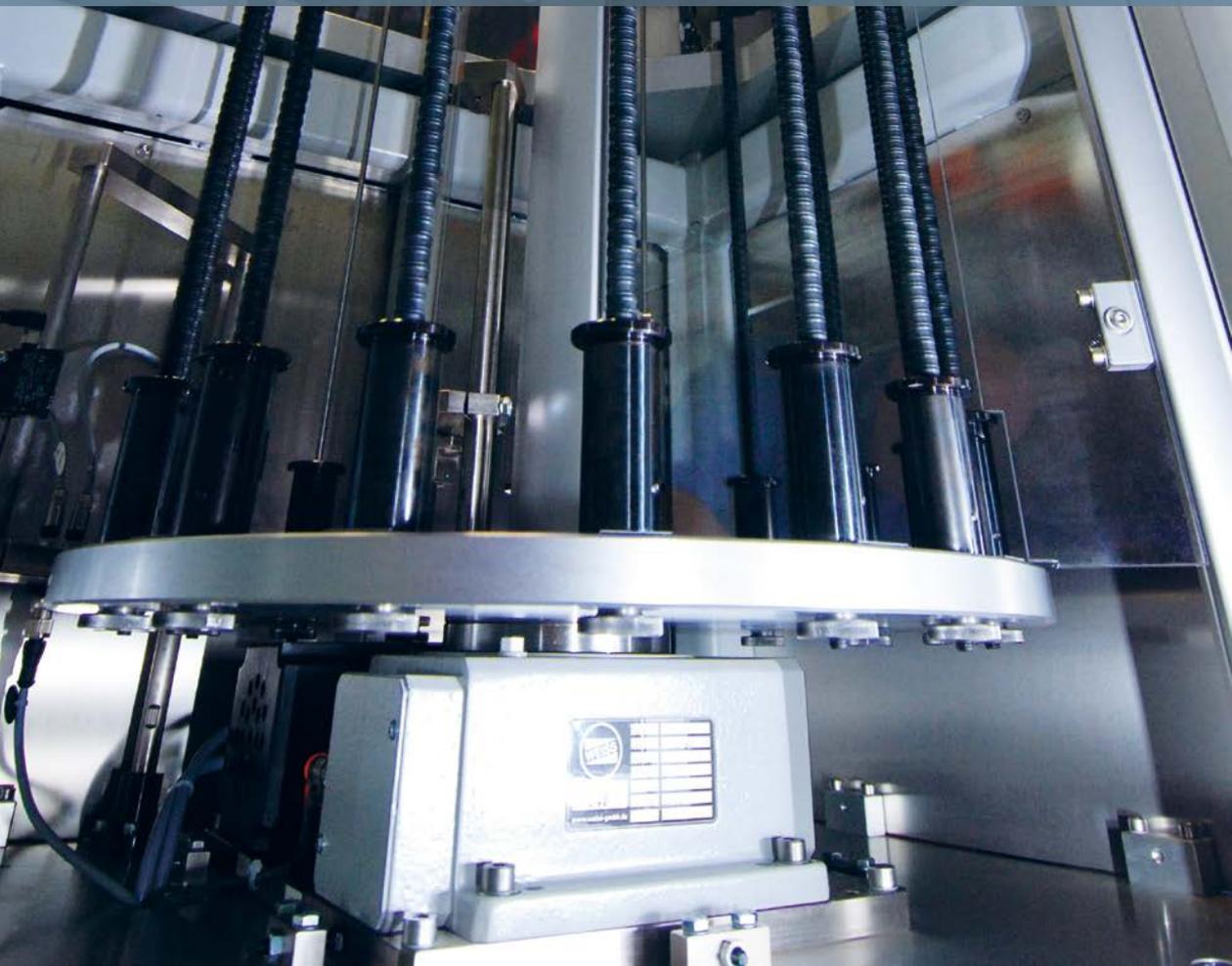




# WEISS NEWS 1-2015

**MAXIMUM CONVENIENCE IN CONVERSATION WITH UWE WEISS  
FIVE TABLES WORKING TOGETHER CUSTOM MACHINE FOR SEALING  
RING ASSEMBLY AT GRÜN & KÖDER FOUR AXES ARE ONE TOO  
MANY SCARA ROBOT IN COMPARISON WITH A 3-AXIS SYSTEM  
THE WEISS APP CALCULATE, SELECT, GET STARTED SIZE DOES  
MATTER AFTER ALL PLATES WITH DIAMETERS OF UP TO 2,800 mm**





# DAS HERZ DER AUTOMATION



In conversation with Uwe Weiss, Managing Partner at WEISS GmbH

Maximum convenience for customers:

## THE DEVELOPMENT OF THE WEISS PRODUCT PORTFOLIO

*Mr Weiss, WEISS GmbH has developed into a global solutions partner to the automation sector. But am I right in thinking that it all started around 45 years ago with the rotary indexing table?*

**Uwe Weiss** That's right. My father already had a clear vision of what he wanted to achieve back then. This revolved around creating rotary indexing tables that were not only well ahead of their time in terms of design, but also virtually indestructible. Our first generation of cylindrical cam-driven rotary indexing tables, the world's first rotary indexing ring and our tables with hybrid drive are all good examples of this. All of these products show how we have

repeatedly driven forward progress in our sector through new approaches and ways of thinking. To this day, every product we manufacture is extremely robust, durable and virtually maintenance-free.

*The fixed-speed rotary indexing table remains a core product at WEISS, although further components have since been added.*

**Uwe Weiss** Even I find the range of basic machines we currently offer highly impressive. Alongside classic electromechanical tables, we also offer heavy-duty tables with servo-mechanical drive and high-speed units with direct drive. A whole range of different models and sizes is available for all drive types. We have even developed an elegant solution for inline transport

with the LS linear assembly system. These systems are then complemented by an entire range of direct-drive handling units, including pick & place modules, axes and rotating units.

*So customers can rely on WEISS to supply them with the right solution for virtually any task or application?*

**Uwe Weiss** Yes, this is precisely our objective. We want to make life easier for our customers, which includes reducing commissioning and engineering costs. This philosophy of combining optimum solutions with user convenience is a common thread that runs throughout our company's history and portfolio. It all started with the rotary table control system. Back in the 1980s, we were already able to demonstrate how much emphasis we place on user-

friendliness with the TS control board. Today, all products come with matching control system and software packages.

*Isn't it rather unusual for a mechanical engineering company to also offer software?*

**Uwe Weiss** That may well be the case, but the key for us is being able to offer our customers genuine added value. In the past, working with complex

programming experts. This saves a great deal of time, as commissioning can then be completed very quickly.

*You presented the latest version of the WEISS Application Software at the Motek fair. So what is the background behind W.A.S. 2?*

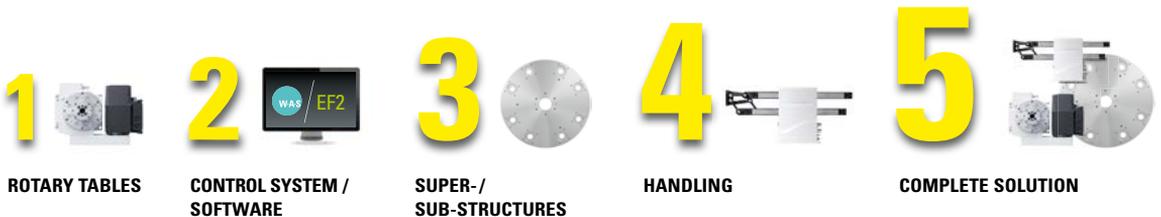
**Uwe Weiss** Our customers are having to meet increasingly complex requirements, while also complying

complex, multi-component systems to be set up. The software can handle all conceivable system combinations.

*Mr Weiss, you are standing directly in front of a large „heart of automation“.*

**Uwe Weiss** Yes, it looks good, doesn't it? In our latest campaign, the heart motif serves as an icon for the WEISS rotary indexing table. It acts as

## FROM THE ROTARY INDEXING TABLE TO THE INTEGRATED AUTOMATION



*Our modular component portfolio offers users everything from a single source: from a basic machine with control system and software, through specially tailored superstructures/substructures, all the way up to matched handling units. Integrated and ready-for-installation system modules combine our automation expertise at the highest level. This holistic solution expertise offers customers many benefits. Among other things, it allows them to significantly reduce their engineering and commissioning costs. It also provides them with the security of knowing that everything works perfectly together.*

technologies such as direct drive applications often involved time-consuming programming of the control

with ever shorter development times. As a solutions partner, we offer individual automation solutions on the basis

of every system. If it fails, everything comes to a standstill, so we place great emphasis on ensuring both reliability and robustness. However, the heart also stands for the way in which we approach automation solutions: with passion and enthusiasm.

**“The rotary table remains the central ,pacemaker’, representing the heart of every system.”**

system. This required dedicated experts, but many custom machine builders simply did not and still do not have any such staff available to them. Thanks to our WEISS Application Software (W.A.S.), this is now history. The interface is so easy and intuitive that users can set up modules on their own without the need for special

of our modular component system. Our ready-for-installation sub-systems are both quick and easy to integrate, thereby saving our customers a great deal of engineering work and time. In the past, each module had to be controlled individually via dedicated software. We have changed this with our new W.A.S. 2, which now allows





An unusually compact system layout with five rotary tables.

Table 1: NC 320, tables 2-4: NC 150, table 5: TC 150

# FIVE TABLES WORKING TOGETHER

**A total of five WEISS rotary tables all work together in precise synchrony in the sealing ring assembly operations at Grün & Köder GmbH. In spite of this complexity, there is no jostling or jams – on the contrary.**

Walter Grün, sales engineer at Grün & Köder, inspects the custom machine for the assembly of sealing rings for fuel pumps. The WEISS rotary table 1 is a large, user-programmable NC 320. Tables 2, 3 and 4 are smaller NC 150s, all user-programmable with 6-point or 7-point indexing. In contrast, table 5 has fixed cycles with indexing of 16.

Walter Grün and his colleagues make clever use of one of the rotary table's greatest strengths – its space-saving design. How else could two material feeds, 27 processing stations and 76 workpiece mounts be accommodated on a footprint of just under five square metres?

So why are a total of five rotary tables needed? The answer is simple: ever stricter quality requirements are making more and more inspection and verification steps necessary. „Apart from this, we no longer simply pick up the finished sealing rings as bulk material,“ explains Walter Grün, „but rather in a magazine, for which we use an additional rotary table.“

## The assembly process in detail

Let's start with rotary table 3 (NC 150 with 6-point indexing): the etched blanks are fed into the machine and are both punched and bent in a single process.

The actual assembly takes place on table 2 (NC 150, 7-point indexing).

„We use the table as a buffer – this is the main application for user-programmable rotary indexing tables in

our operations,“ explains Walter Grün. Each sealing ring travels through two circuits, meaning that the processing stations can be used for both assembly and testing of the upper and lower springs. The tables of the user-programmable NC range are perfect for this application, as they can be positioned dynamically and extremely precisely at any angle – making them ideal for intermediate steps.



***The assembly of sealing rings for injection pumps requires maximum precision. This is ensured by rotary indexing tables and coordinated rotating plates supplied by WEISS.***

The sealing ring, which is now fully assembled, is transferred to central rotary table 1 (NC320 with a diameter of 115 cm). This takes up the blanks, transfers them to table 2 for spring assembly, collects them again and then forwards them to the final processing stage.

Alongside the programmability, the mechanical strengths of the NC rotary tables from WEISS are what convinced the team at Grün & Köder. Optical measurement of the small sealing rings requires a high degree of positioning accuracy. With its 35 arc seconds, this is no problem for the NC320. The fact that Grün & Köder have ex-

clusively been using rotary tables from Buchen for decades serves to underline just how much sales engineer Grün appreciates the reliability of the WEISS products.

After the ‚large circuit‘ on table 1, the sealing rings finally reach rotary table 4 (NC 150 with 7-point indexing). Here they undergo further testing, and off-spec products are rejected. The sealing rings are then discharged from the machine in four-second cycles. „The travel times are naturally much shorter,“ adds Grün. For example, the large table 1 takes the seals to the next processing station in just half a second, which leaves lots of time for the actual

process – which is particularly important in such a complex system with five tables all working together.

The fifth and last of these tables, an electromechanical TC 120 with 16-point indexing, serves as a magazine for the finished sealing rings that are picked up on 16 long mandrels. The space-saving design was once again behind the decision to opt for a rotary table.

Walter Grün has more work to do – as two new systems of this type have to be planned and costed. Will they also feature WEISS rotary indexing tables from Buchen? „Of course!“ he calls over his shoulder.

**I don't want to get my fingers burnt because of a rotary table. In WEISS, we have a partner that knows what they're doing. '**

*Walter Grün, sales engineer at Grün & Köder GmbH*



**Both spring rings are placed into the seal during two circuits on table 2. The user-programmability of the NC 150 permits the required intermediate processing stage.**



**Rotary table 1, a user-programmable NC320 supplied by WEISS, is at the heart of the system: it brings the seal and springs together and forwards the components to the other tables.**

# FOUR AXES ARE ONE TOO MANY

SCARA industrial robots typically have 4 axes. However, this is one axis too many for a lot of applications. As such, they can be too costly and take too long to program – especially when simpler alternatives such as intelligent 3-axis systems are available.

## SCARA robots, the best possible solution for palletising applications? Maybe in the past.

SCARA robots remain a very popular solution for palletising. Indeed, they are very highly rated by many users for tray packing applications. However, this has more to do with tradition than performance, as underlined by the significantly more economical new concepts from WEISS.

## Why pay for four axes when I only need three?

Due to their design, SCARA robots typically have four axes. And although the fourth axis, the swivel unit, is generally not needed for most palletising applications, users obviously still have to pay for it.

## 3-axis combinations are more economical than a SCARA robot for many handling tasks

So what is the alternative? Intelligent 3-axis handling solutions are ideal for applications of this type. They rely on standard components that have been proven in many thousands of applications and combine these to create matched sub-systems. For our



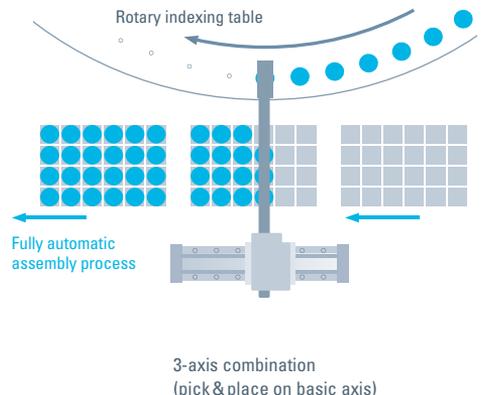
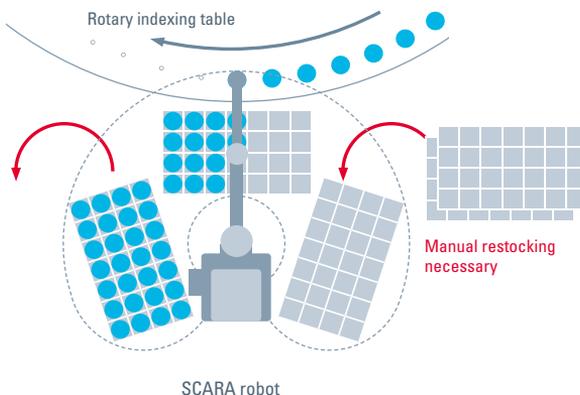
3-axis combination

palletising task, we have selected a type HN 100 linear motor axis as the basic axis. The HP 140 direct-drive pick&place module, which is permanently connected to the basic axis, forms the 2nd and 3rd axis. Unlike a SCARA robot, the strokes of the axes can then be precisely matched to the dimensions of the tray.

## More affordable and efficient

With this system, users only pay for what they actually need. The procurement costs for the three axes are significantly lower when compared with a 4-axis SCARA.

However, the main benefit is that the assembly process becomes visibly more efficient. This is because the action radius of a SCARA robot means that in many cases only three pallets can be positioned in a semi-circle around the robot. This semi-circular arrangement then makes it extremely difficult to achieve linear 'advancing' of the pallets within a fully automated assembly process. A square pallet simply does not fit in with a curved robot action radius. This makes manual intervention or pallet replacement necessary.



Comparison of SCARA robot with 3-axis combination from WEISS

**THE NEW  
WEISS APP  
IS HERE!**  
FOR SMARTPHONES  
AND TABLETS.



## CALCULATE, SELECT, GET STARTED.

The free-of-charge practical tool for smartphones and mobile terminals

The key in the planning phase is to correctly assess the physical circumstances of an application and then design the components accordingly. The new smartphone app from WEISS calculates the forces acting on rotary indexing tables both quickly and conveniently. In just a few steps, the app calculates the mass moment of inertia, which is crucial for choosing the right table. Only the most important dimensions and weights are required. The graphic and intuitive system of user navigation makes entering the correct parameters child's play.

The app is now available both for Android (Google) and iOS (Apple) devices and can be downloaded free-of-charge from the respective app stores.

SCAN  
QR CODE



## DATES FOR 2015 MARCH TO AUGUST

### MARCH

**SIAF**  
9 – 11 March  
Guangzhou, China

**Automate**  
23 – 26 March  
Chicago, USA

### MAY

**SPS IPC Drives  
Italia**  
12 – 14 May  
Parma, Italy

**IPAR NAPJAI  
(MACH-TECH)**  
12 – 15 May  
Budapest, Hungary

**SMART Automation  
Austria**  
19 – 21 May  
Linz, Austria

**22nd International  
Engineering Fair**  
19 – 22 May  
Nitra, Slovakia

### JUNE

**Vision & Robotics**  
3 – 4 June  
Veldhoven,  
Netherlands

**Intec 2015**  
5 – 9 June  
Coimbatore, India

**Essen-Welding**  
16 – 19 June  
Shanghai, China

**Automation  
& Electronics**  
17 – 18 June  
Lausanne,  
Switzerland

**Automation  
& Electronics**  
24 – 25 June  
Zurich, Switzerland

You may withdraw your permission for us to use or process your personal data for the purpose of sending you this newsletter at any time with effect for the future. If you no longer wish us to use your personal data, please either send an e-mail stating this to [info@weiss-gmbh.de](mailto:info@weiss-gmbh.de) or address your letter to WEISS GmbH, Siemensstraße 17, 74722 Buchen, Germany.

# SIZE DOES MATTER AFTER ALL

Advanced manufacturing expertise facilitates plate diameters of up to 2,800 mm while maintaining low weight and impressive axial runout values.



**Wolfgang Lehnert knows what works, as he has been developing optimum solutions for WEISS customers for 20 years.**

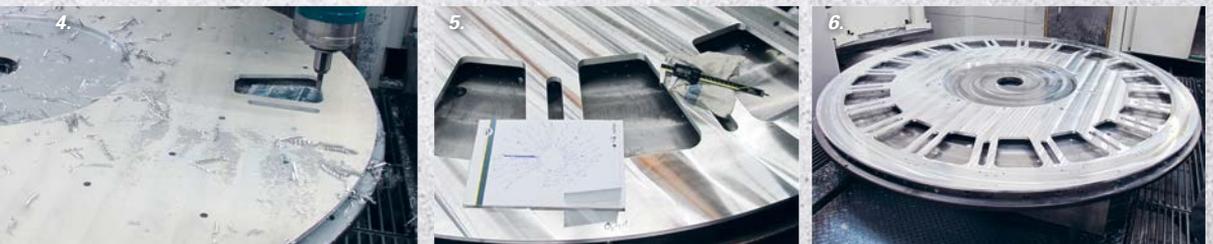
Plate manufacture at WEISS. Wolfgang Lehnert, sales engineer, is right at the heart of the action. „We manufacture each plate individually. The customer determines the design – from the desired precision, through the dimensions, all the way up to the surface treatment.“ This results in a perfectly tailored solution that combines a rotary table with a custom plate, all from a single source. „In the last few years, we have invested heavily in new production technologies, so we can now also offer plates with diameters of up to 2,800 mm,“ explains Lehnert, while pointing to an enormous rotary table plate in front of him. „The

challenge with this unit was to combine the necessary plate size with the requisite precision.“ After all, anyone looking for a plate with axial play of no more than 0.25 mm will always choose a plate that has been turned. However, this generally only works up to a diameter of 2,500 mm, so a different solution had to be found for the required diameter of 2,700 mm. „Working together with the customer, we spent a lot of time intensively addressing the precision requirements,“ explains Lehnert, who often refers to himself as a kind of interpreter in the key interface between manufacturing and the customer. „In a complex process, the plate is milled and the necessary tolerances achieved in multiple steps.“ It is impossible to ignore the proud smile on Lehnert’s face. And when asked what he enjoys most about his work, he responds immediately: „Satisfied customers.“

## FROM RAW MATERIAL TO THE FINISHED PLATE



**1./2. The first operation creates the round plate from a square cast aluminium block. The flat surfaces are then milled in multiple steps – to establish the necessary thickness. 3. In the first milling step, the rotary table surface is produced. This is then followed by the remaining areas. The plate itself is continually realigned between the various steps to ensure a precise finish.**



**4. The drilling work can now be performed. When this is complete, the surface is then machined again with stricter axial runout tolerances. 5. The quality, in the form of flat surface tolerances, is checked after virtually every operation. 6. The finished plate.**