



Spierings Mobile Cranes

SPIERINGS INCREASES OUTPUT WITH WELDING AUTOMATION

Kuhn Huard S.A.

KUHN HUARD: "THE SECRET OF VALK WELDING LIES IN THE CALIBRATION"

VTS Track Solutions

CYCLE TIMES REDUCED BY A FACTOR OF 2.5

Saxas Gruppe

SAXAS WELDS SPECIAL VEHICLES

WELDING OF THIN-GAGE MATERIAL IMPROVED

COLOFON

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Valk Welding anticipates further growth

Considering the current market demand for automation solutions for welding production, Valk Welding expects further growth the coming years in the construction and delivery of the quantity of welding robot installations. In the past year, Valk Welding has built around 200 installations per year and delivered more than 650 tons of solid welding wire per month. Also more than 250 employees of customers have received operator and software training. Assuming an expected growth of 15% (comparable to the growth in recent years), these numbers will increase sharply in the coming years. In order to meet this growing demand, Valk Welding has therefore worked on redesigning its organization and expanding its business premises during the previous years.

All countries with their own branch manager, specifically the Netherlands, Belgium, Czech Republic, France, Denmark, Poland and Germany, now work on an independent basis under the leadership of the Valk Welding Group in the Netherlands. Together with the Consumables, Marketing, HR and Legal departments, the Group management in the Netherlands supplies the required services and resources to the various countries.

Members Valk Welding group



CEO
Remco H. Valk



CTO
Adriaan Broere



CFO
Kees Barth



CCO
Peter Pittomvils



www.youtube.com/valkwelding



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In addition to the reorganization, Valk Welding has also taken major steps in the area of accommodation.

- In A new 3,800m² facility was constructed in the Czech Republic. This allows Valk Welding to better serve its customers in that region with direct distribution of parts and consumables, as well as providing training and service. Moreover, the new facility also offers space for the assembly for the central European market of welding robot installations, as a result of which the capacity of the Valk Welding group will increase by 30-35% in 2 years.
- At the main location in Alblasterdam separate production lines have been set up for the construction of standardized H and E frames. This increases the quantities assembled and drastically shortens delivery times to 8 weeks for H-Frames.
- Valk Welding is working on expanding the number of employees for engineering, software, assembly, service and project management in all country branches.
- Valk Welding has integrated the service module in its own portal, giving employees all over the world access to the history and current status of installed welding robot installations. In this way, a full service support is realized, from which all customers can benefit.

VALK WELDING GROUP IN NUMBERS:

Year of establishment	1961
Number of robots delivered since the start in 1978	+3500
Number of licenses for DTPS offline programming software	1000+
Monthly supply of welding wire	650+ tons
Experience with robots	40 years
Number of employees	160+
Number of companies in Europe	7
Country branches	4



New welding wire for intensive use: Valk HD Super/ V3L-5



NETHERLANDS

With the increasing demand for welding wire for very intensive use, mainly for the welding of heavy parts where multiple layers are needed, Valk Welding has developed a new wire in cooperation with its supplier.

The Valk HD Super/V3L-5 wire is a GMAW (Gas Metal Arc Welding) wire with an increased manganese content and excellent running characteristics. These properties provide higher performance thanks to a very stable, tight arc and almost no spatters. In addition, we also see better penetration and less sharp edges, which is an advantage with dynamically loaded parts. An additional feature is that the silicates loosen

more easily, which is a great advantage for multi-layer welding, both in terms of quality and in terms of production gains. This is especially important when welding is done fully automatically.

The welding wire is available in the usual diameters and packaging forms.

For more information please contact us:

sales@valkwelding.com

Demo's Offsite VR teaching at Welding Week

Offsite VR teaching now fully integrated in DTPS



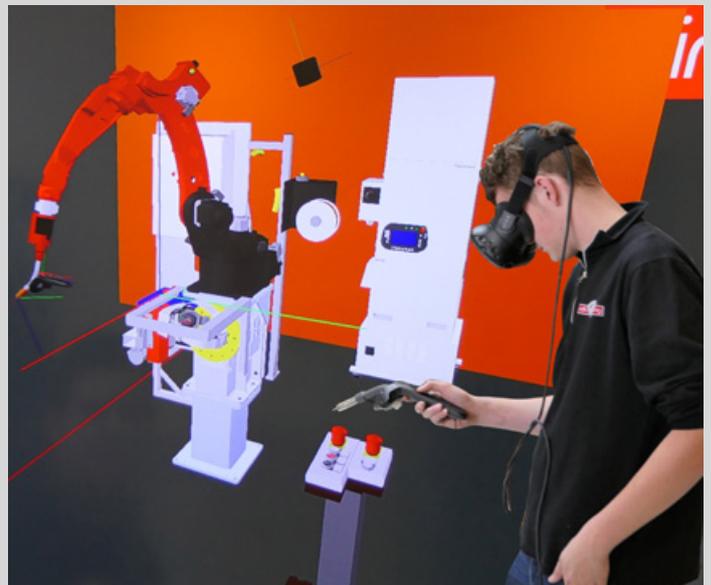
BELGIUM

2 Years ago Valk Welding introduced the of Offsite VR teaching at the fair Schweissen und Schneiden in Germany; a new way to program a welding robot using VR technology. A robot programmer sees in VR glasses the welding robot installation together with the workpiece in a virtual 3D environment and indicates the welding positions with a handheld torch, which will be translated by the software into a program for the welding robot. What are the advantages and how does Offsite VR teaching work together with the offline programming software DTPS?

Software developer **Job Verhaar**, who has been involved in the development of Offsite VR teaching from the start: "Because you have a more realistic feeling of depth in VR glasses than on your screen, it is easier and faster than to zoom in on details and better to perform visual inspections in simulation mode. Everyone who steps into the virtual world has the right feeling and more insight into the project than from behind a screen. What programmers are used to offline behind the computer, they can now do virtually faster, simpler and more sensitive in VR."

PROGRAMMING WITH OFFSITE VR TEACHING

Job Verhaar: "Using the supplied handheld welding torch to click on the welding points and keep the handheld welding torch in the desired position is an intuitive way of programming. All welding positions and the position of the torch are recorded by controllers and converted into a program for the welding robot. For example, with VR teaching you can program something and check the process afterwards before you actually start welding. You can immediately see if you are missing something and easily remove the errors."



FULLY INTEGRATED IN DTPS

"Over the past 2 years, we have developed the technology into a version that is fully integrated into DTPS. As a result of the integration, both are 100% linked, so that users can now switch between VR and DTPS at any time. In order to achieve this, we worked together at code level at Panasonic in Japan for 3 months. The challenge was that everything in VR must be 100% in line with what you see in DTPS and to ensure that the powerful calibration methods that are present in DTPS can also be used in VR," explains **Job Verhaar**.

www.valkwelding.com

Automated welding of aluminium tankers



BELGIUM

As an important manufacturer of commercial vehicles, LAG from Bree (Belgium) has now also taken a major step towards the automated welding of aluminum fuel tanks.

With the order of 2 large state-of-the-art full option Valk Welding welding robot systems, they are taking a big step forward. In addition to Valk Weldings Arc-Eye CSS laser camera realtime seamtracking solution, LAG is also using the new Valk Welding VWPR QE Servo Pull welding torch for an even better welding wire supply, which means a great added value for the welding of aluminum.

This project is also closely followed up by the Chinese CIMC group that has chosen LAG in Bree as the center of competence within this segment. This first project is considered within the group as a strategic pilot project with the aim of rolling out the Valk Welding technology across multiple production lines and production plants.

CIMC is a global supplier of equipment for the logistics and energy industry.



www.lag.eu
www.cimc.com/en/



Assembly of frame constructions in new hall of Machinefabriek Otten



NETHERLANDS

For more than 30 years, Machinefabriek Otten has been building the base frame's and manipulator frames, the Otten Dice manipulators and the welding robots shifters. During this period, the company has grown as a result of the increasing demand for its welding robot systems from Valk Welding. In addition to the standard H-frames of which Otten has already built more than 500 for Valk Welding, the larger steel structures for the XYZ gantries are also produced by Machinefabriek Otten. This summer, Otten took a new hall into use, intended for the assembly of the larger frames and structures, in order to follow the expansion from Valk Welding in this market segment

The new building, with a floor area of 1,500 square meters is equipped with hoists for the heaviest structures. "We are currently working on assembling the frames for the largest installation that Valk Welding will ever build for a Dutch customer. With the extra assembly space, space limitations are now a thing of the past and we are optimally prepared for further growth," says owner Ben Otten.

LARGE SIZE PORTAL MILLING MACHINE

Turning and milling operations, welding and assembly are the core business of the company. **Ben Otten:** "We have the most modern turning and milling machines. But we had to outsource milling of the very large parts. Because we no longer want to depend on third parties we have invested in a large CORREA gantry milling machine. With a range of 11 m long, 2.5 m wide and 1.5 m high, we can process both the columns and the beams of such large systems over the entire length with very high accuracy. In addition, we can mill the larger individual parts that do not fit on the machining centers. As a result, we expect to be able to significantly boost our efficiency and reduce delivery times considerably, as we can make changes



Remco H. Valk congratulates Ben Otten on commissioning the new portal milling machine.



immediately, because we no longer have to wait for subcontractors. With this investment, we are also responding to the expected further growth in the number of welding robot systems sold by Valk Welding passen. Wir erwarten eine deutliche Effizienzsteigerung, zumal wir direkt wechseln können, nicht mehr auf Lieferanten warten müssen und letztlich die Lieferzeiten deutlich verkürzen können. Mit dieser Investition reagieren wir auch auf das erwartete weitere Wachstum von Valk Welding."

www.ottenbv.nl



Spierings increases output with welding automation

Spierings, the Dutch builder of mobile cranes is facing a big challenge to increase production capacity, now that the demand for mobile tower cranes has increased dramatically, in the last few years. Automation of welding production is one of the keys how this manufacturer wants to increase output, as well as guarantee the high quality of its tower cranes. This is why Spierings has moved ahead rapidly with welding automation and, among other measures, entered into a cooperation with Valk Welding. "We see Valk Welding as a partner that can help us move forward to be prepared for the future," according to Operations Manager Gijs Delissen.

Spierings offers the largest mobile tower crane in the market which can be assembled and operated by one person. Due to the strong recovery of the construction sector and expansion of market outside of the Netherlands, the demand for these tower cranes has risen rapidly in recent years. In addition, the introduction of the first hybrid tower crane is being planned, with which the manufacturer has the ambition to grow further into a global brand. As much as possible, all components, including the chassis, masts and booms, are manufactured in-house. The assembly and welding of the masts and booms takes up most space and increasing the throughput had to be achieved within the same space.

ACCELERATING KNOWLEDGE ACQUISITION REGARDING WELDING AUTOMATION
Gijs Delissen: "Together with Valk Welding, we looked at the welding process where we could reduce handling and welding time. For the mast production line, a concept was developed consisting of a linear system for automation of the welding of the longitudinal seams, and a welding robot installation for the welding of the sub, end and head parts. Both complex installations had a delivery time of one year. We used that time to familiarize ourselves thoroughly with welding robotization. To this end, we purchased a welding robot for less complex parts. Consequently, we were able to take early measures in the upstream process to control the tolerances to align with the requirements of robot welding."

LEAD TIME LONGITUDINAL SEAM WELDING GREATLY REDUCED
 Spierings already has been using a welding tractor to weld the longitudinal seams of the 8 different models of masts. **Gijs Delissen:** "By combining rotation and welding with multiple welding tractors in one set-up, we wanted to greatly reduce the cycle time of 10 hours. To achieve this, Valk Welding developed a new concept in which the mast segments are rotated and welded, so that the longitudinal seams can be automatically welded on both the inside and outside simultaneously. This has reduced the cycle time of this part of the process from 8.5 hours down to 2.5 hours."





WELDING ROBOT USED FOR THE FINAL PHASE

Next, the sub, end and head parts are attached to the masts and welded on four sides by the larger welding robot system. For this purpose, the installation is equipped with a rotation system, driven by positioners. **Gijs Delissen:** "This is about complex welding performance, where the accessibility of the welding robot and the accuracy of the welding are crucial. A completed mast consists of three parts that must be able to slide exactly into each other, so there cannot even be a deviation of a millimeter. Partly because rotation of the mast has now been automated, the robot can now continue for several hours without to much human assistance. For us, this is a substantial gain in terms of time, welding quality and output. If we can weld a mast every day, we are doing well!"

BOOMS, NEXT STEP

Together with Valk Welding and Spierings engineers, Delissen is now researching how the welding process of the booms can be automated as well. **Gijs Delissen:** "We may also have to look at how we can take into account handling of individual parts. An exciting process!"

CRANE CONSTRUCTION IS AT THE FOREFRONT OF HIGH-STRENGTH STEEL APPLICATIONS

The use of high-strength steels plays an important role in achieving a weight advantage in crane construction. Spierings has been using high-strength steel since 1998 for the load bearing parts, mast, boom and tension rods. "When designing construction cranes, our goal is to be able to lift loads as high as possible within the permissible weight on the pavement of 12 metric tons per axle. Accordingly, in our designs the focus is always on where materials and weight can be reduced. Our model 1265, developed in 2003, is still very popular and is the largest mobile tower crane in the market. This tower crane has a reach of 60 m, a maximum lifting capacity of 10,000 kg and a maximum capacity at the tip of 1,700 kg. Without the use of high-strength steel, we would not have been able to build a tower crane with such capacity.

Valk Welding is also our partner for the supply of welding wire for this high strength steel application, another benefit from Valk Welding as supplier. They can advice us not only for the complex robot welding system, but for the total application, including the welding process." concludes **Gijs Delissen.**

www.spieringscranes.com



"Valk Welding is also our partner for the supply of welding wire for this high strength steel application"



Fortaco is experiencing the advantages of Valk Welding Technology in Heavy Welding Applications

In the off-highway industry, the use of robots in welding production is pretty much a necessary requirement to be able to meet this sector's high quality and safety requirements. Fortaco JL, the Polish plant of the Fortaco Group in Janów Lubelski, which mainly produces parts for excavators, already has several years of experience with welding robotization but ran into the limitations of

online programming and problems with locating welding seams on their present robot systems. Development Project Manager Krzysztof Jaroszyński, and Engineering & Technology Manager Maciej Złomański explain how Valk Welding's technology helped. "Valk Welding has proven itself as a strong and reliable supplier of welding robots and technology partner."

Maciej Złomański: "Hardware and software are 100% integrated at Panasonic and developed specifically for the welding process."

The Fortaco Group is a leading brand-independent strategic partner (Tier 1 supplier) for the heavy off-highway industry and maritime sectors. Fortaco Group serves these sectors with the production and assembly of cabins and the supply of welding assemblies. With 7 branches in Europe, 2,600 employees and more than 50 welding robots in use, this Finnish group processes 80,000 metric tons of steel per year.

INTRODUCTION TO ROBOTIC WELDING AUTOMATION

"With the deployment of a welding robot from another location, we at Fortaco JL were first introduced to welding robot automation in 2014. As always with the introduction of a new technology, that was a major challenge, but the support of Fortaco Wrocław, which already had 8

robots, helped us overcome that. With the installation, configured for a number of customer-specific products, we were able to double the output for those products and increase the quality and repeatability. This positive experience was a good reason for us to start welding other products using robots. For this, we had approached various suppliers, including Valk Welding. "We were not yet familiar with their technology at the time," Jaroszyński explains.

PROGRAMMING AND WELDING SEAM LOCATION BOTTLENECK

"The search and arc welding functions of our previous welding robot installation were not reliable, and the results were not satisfactory. A properly functioning weld seam search system was, therefore, the first requirement. We also wanted to get rid of online programming, because it

caused the welding robot to be unavailable for production for several hours or even a number of days. Programming for the implementation of new products or optimizing the program took so much time that we constantly had to interrupt the planning and work weekend overtime," continues Jaroszyński.

HARD-AND SOFTWARE FULLY INTEGRATED

Maciej Złomański, Manager engineering and technology: "Offline programming would, therefore, be a better solution. Our requirement was that the offline software had to be fully integrated into the hardware and have a modern and user-friendly interface. Panasonic fully meets these requirements with its welding robots and DTPS software. Both the robot and the software are specifically designed for

welding applications, while other solutions are usually based on universal applications with added welding modules. "

THICKPLATE WELDING

"Because of our high product specifications for welding thick plates, we have particularly searched for a suitable solution in this area. Valk Welding offered the best solution with the "Thickplate welding" option in the DTPS off-line programming software. "Thickplate welding" makes it possible to apply multi-layer welding technology very easily, without having to program each layer separately. Of all potential welding robot integrators, we have chosen to conduct a full-scale test phase with Valk Welding only. The welding tests with thickplate welding were performed at the Valk Welding technical center in the Czech Republic. "Based on these tests, we were able to evaluate the results of thickplate welding, the welding quality and the accessibility of the robot arm and welding torch in narrow operational areas within the simulated configuration. In addition, together with Valk Welding, we also made a reference trip to Wielton, one of the largest trailer builders in Europe. This manufacturer has a long history of collaboration with Valk Welding and their feedback was essential for us."

TWO DIFFERENT ROBOTIC WELDING CONCEPTS

We made a selection of the most "robot-friendly" products, the quality requirements and requested quantities, and have opted for two different concepts with separate workstations, each being developed for a specific group of products.

The first is an welding robot installation with a Panasonic welding robot hanging from a movable galleys' construction for long products on 1 workstation with a 1-axis positioner. The second is an welding robot installation with a standing robot on a shifter with two separate workstations, one with a double-axis workpiece manipulator.

SIMULATING IN DESIGN PHASE

In addition to the Valk Welding DTPS offline programming system, offers several options. "We also perform simulations in DTPS to check the accessibility of the welding robot and welding torch inside the workpiece beforehand. Another aspect for which we use DTPS is the preparation of proposals for our customers. In DTPS we can prepare very detailed and accurate simulations and draw up a reliable quotation based on that. In addition, thanks to this possibility, we can advise our customers early on to optimize their designs for robot welding.

TECHNOLOGY PARTNER

"During the development phase, we worked closely with Valk Welding. The collaboration was intense and at a high technological level. We felt that we not just worked with a robot supplier, but more with a highly skilled technology partner with strong proven experience in the field of welding. We are now working together on developing subsequent welding robot installations and tackling other technological challenges," concludes **Krzysztof Jaroszyński**.

www.fortacogroup.com



FORTACO



Kuhn Huard: "The secret of Valk Welding lies in the calibration"

Kuhn Huard S.A., manufacturer of agricultural machines, is confronted with the combination of great seasonal fluctuations in demand and a large number of product variants. Kuhn Huard is yet another user of Panasonic welding robots and DTPS off-line programming software for welding production, to achieve great efficiency. We asked those responsible for production and automation at Kuhn Huard in Châteaubriant in France about their experience with welding robotisation and about any aspects of Valk Welding technology that offer specific advantages.

Kuhn Huard is a renowned French company, and a member of the Kuhn group with a number of production facilities in France and the rest of the world. The branch in Châteaubriant produces ploughs, cultivators and precision saws, among other equipment. Due partly to a shortage of trained professional welders, the company is developing a Lean Manufacturing process, the aim being to robotise 100% of the welding work.

MANY YEARS' EXPERIENCE WITH ROBOTISED WELDING

Each of the group branches is fully autonomous when choosing its production processes and strategies, geared to the various machines to be produced. Various robots are deployed at the Châteaubriant branch such as: ABB and IGM. Valk Welding has supplied the last robot systems. "Besides aiming for a long cycle time of the welding robots, the required manual finishing work also needs to be drastically reduced. Faced with such stringent demands, Valk Welding scored better than other robot integrators in the end," explains **Michel Le Grumulec**,

who is responsible for industrialisation

3-D MODEL EXACT MATCH IN REALITY

"Thanks to the DTPS off-line programming software, Valk Welding offers a refined and extremely accurate method of programming," explains **Damien Collin**, head of production automation for new products. "It's the specific options of the Valk Welding robots that save us so much time:

- 1.** When programming off-line, we can import the 3-D model as early as the design phase in order to assess the accessibility of each welded joint and to prepare the welding templates.
- 2.** "The 3-D cell programmed by Valk Welding in DTPS matches the cell on the work floor exactly. Each program written using DTPS is therefore almost immediately usable on the robot system. Of course we always need to make a few adjustments before activating the robot, but the torch positions are already set and the tolerances are within a millimetre.

This is extremely important, as it's not the first off-line solution used by the company. This function saves us a great deal of time when programmers need to use the software," adds programmer **Mickael Rouesne**.

EXCHANGE OF PROGRAMS

According to Damien Collin, the general programming philosophy at Valk Welding differs strongly from other systems:

- 3.** "In DTPS, the torch and the piece to be welded are associated, and the resultant axis movements do not affect the position-

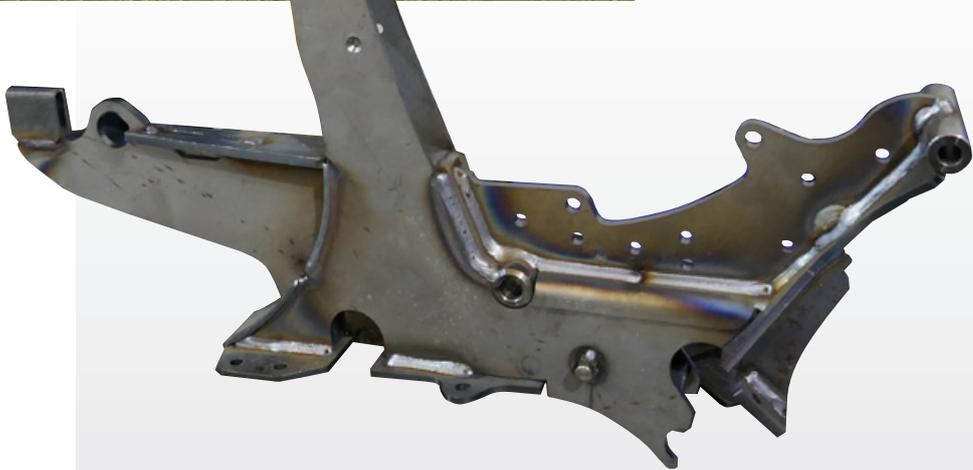




FRANCE



Damien Collin, head of production automation:
"Calibration forms the basis for reuse of the programs."



KUHN HUARD: THE FOLLOWING POINTS SAVE US A LOT OF TIME:

- Being able to assess the accessibility of the 3D-CAD model in the design phase
- Programs can be used directly on the robot
- Programs interchangeable
- Automatic calibration procedures
- The programs can be used immediately after a collision without having to reset the TCP.

ing of the torch. In the other systems we used, it was the robot that generated the position of the torch, based on the position of its various axes. While this is a very subtle difference, it offers us considerable technological advantages. Thanks to this approach, we can very simply transfer programs from one welding robot system to another compatible robot system, even though they may have different configurations. On non-Valk Welding systems, we would have needed to completely reprogram them," explains the **Damien Collin**.

DIRECT CONTINUATION FOLLOWING COLLISION

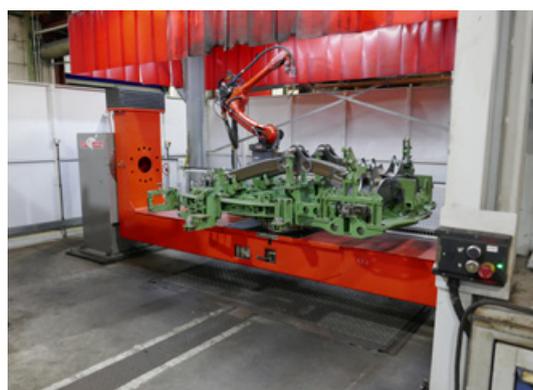
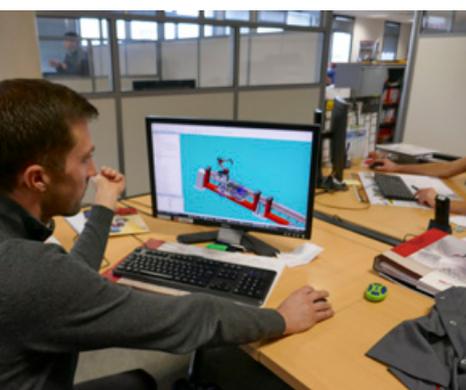
4. This also offers advantages in the event of the robot torch colliding with the work piece. "Such incidents cannot be completely prevented, but after calibration of the Valk Welding robots, we can continue to use the programs immediately, whereas the other systems would have required the programs to be rewritten because the TCP needed to be reset", **Michel Le Grumulec** continues.

A PERFECT DIGITAL TWIN

"Much of the success and the expertise of Valk Welding lies in the calibration according to a generally unique procedure applied as standard by Valk Welding to all welding robots, by integrating all mechanical elements in the control procedure when establishing the TCP." Over the years, the control procedure has been improved with automatic calibration procedures to be conducted by the client in order to establish the zero adjustment setting of each of the axes. For that purpose, the control procedure also features numerical calibration of each cell following commissioning on location. "This calibration forms the basis for re-use of the programs," **Damien Collin** concludes.

Kuhn Huard uses 20 welding robots by now. The most recent five have all come from Valk Welding, and a further three welding robot units are to be supplied at the end of this year.

www.kuhn.fr



Photo's: copyright Vincent Lebugle



CZECH
REPUBLIC



KOVONA-SYSTEM uses Valk Welding robots for production of large-scale series

In Český Těšín in the Czech Republic, the KOVONA-SYSTEM company welds table frames, among other products. "The furniture industry is extremely demanding in terms of welding quality, the weld appearance and positional repeatability. Our older welding robots simply could not achieve that. In our quest for a robot integrator, we were also very interested in the technical support, programming, safety aspects, price/performance ratio and achievable delivery times," explains Zdeněk Luzar, project manager at KOVONA-SYSTEM, who decided to invest in new welding robot technology in collaboration with Valk Welding.



Table frames on the robot



VALK WELDING ROBOTS

Based on our successful welding tests, we purchased our first Valk Welding robot in 2016, specifically designed for the production table frames. "The Panasonic TM1600WG3 is fitted with SP-MAG welding technology for that purpose, allowing us to reduce the cycle times by 25% versus the former robots, while also minimising manual finishing work," explains the project manager.

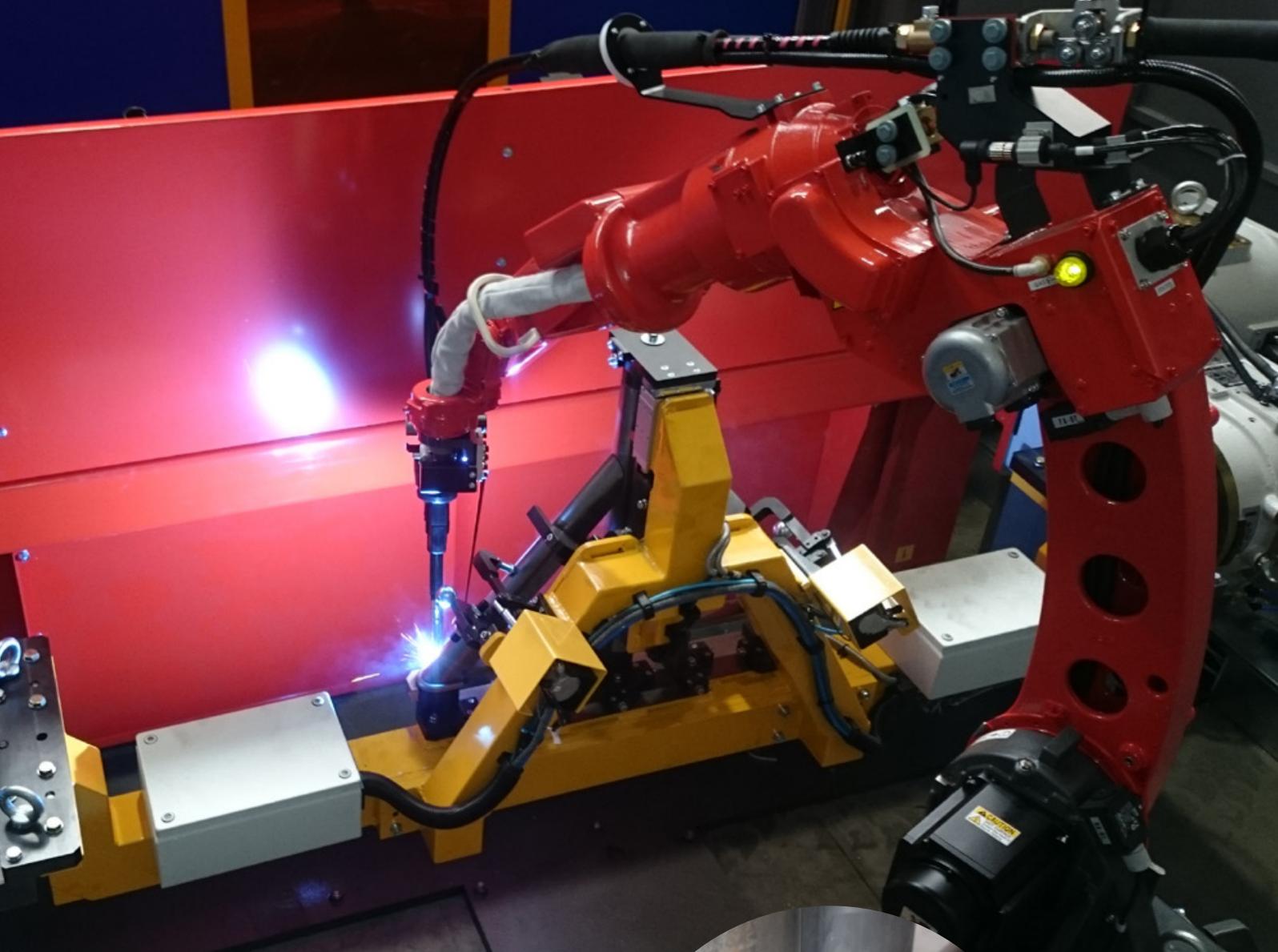
USER-FRIENDLY CONTROLS

The initial welding robot unit, featuring two workstations that rotate according to the Ferris wheel concept, has very user-friendly touchscreen controls. Even inexperienced personnel can check the status of production at any point, can input data and can initiate the welding robot. **Zdeněk Luzar:** "This welding robot unit allowed us to both meet the required production capacity for the table frames and comply with the required welding quality. Based on these

results, we have also conducted welding tests for the development of a new table design. The appearance of the welding seams and the successful stress tests jointly resulted in a new order, and in us ordering three extra welding robot units from Valk Welding."

ACTIVE WIRE PROCESS (AWP)

The company has opted for the Active Wire Process for the three extra welding robot units, a process specifically developed for welding thin-walled materials. AWP is a combination of SP-MAG and wire feed control, in which the welding wire is pulsed at a high frequency. AWP enables quicker welding of thin-walled materials without spatter, resulting in minimal manual finishing work. These welding robot units were commissioned early in 2018, and have been deployed in around-the-clock shift rotations virtually all year.



EXPANSION

The production welding of new products at KOVONA SYSTEM is likely to result in further collaboration and installation of extra welding robots in the future. "Due to our focus on large-scale series production, nearly all our processes are strongly automated. The market demand (forecast annual growth is 10 percent) or expansion of the portfolio of our products will also require extra investment. We're currently involved in the development of a number of new products, that will require expansion of capacity and technology in the future," explains project manager **Zdeněk Luzar**.

www.kovona-system.cz

SP-MAG WELDING TECHNOLOGY

The SP-MAG Panasonic welding technology is an arc welding process with limited spatter, superior welding quality, good gap bridging, improved fluidity of the weld pool and an nice seam appearance. The SP-MAG technology is possible thanks to the extremely fast 100 kHz inverter power source with a regulating cycle of 10 μ s. This extremely high short-circuit frequency results in lower heat at the same level of power, thus greatly reducing deformation and spatter. The SP-MAG technology also enables new functions for the reduction of drop formation at the start and finish of a weld, and so also contributes to an nice bead appearance .

Frames for Track rollers on the welding robot

Strong ambitions for growth and the desire for higher welding quality prompted VTS Track Solutions, producer of Crawler Track Undercarriages, to take the step towards welding robotization. With a welding robot on an XYZ construction that serves two working stations, the company has now gone through a major professionalization and efficiency improvement with respect to welding. "Because the welding robot forces you to make product design as robot-friendly as possible, we have adjusted the dimensions in the preliminary phase so that openings, radii, corners etc. fall within the tolerances that the robot can handle," says Lesley Laenen, who as IWT- and welding robot programmer, coordinates the welding technical aspects within the company and is responsible for welding automation.

VTS Track Solutions is specialized in the development, production and maintenance of crawler track undercarriage for OEM suppliers as well as end customers. The company started 11 years ago as a production company within the Verhoeven Group and is currently going through a professionalization phase. Operations manager Joep Schoenmakers: "We see sufficient market potential to expand the production numbers from 300 tracked undercarriages to 400 units on an annual basis." This is why VTS has put its first welding robot installation into operation.

ASSEMBLY AND WELDING ARE THE CORE BUSINESS

Lesley Laenen: "Assembling and welding are the mainstream in the production, where we make the center frames and track rollers for the track undercarriages. We have 6 employees who assemble and weld and 1 full-time welder, supplemented by 2 temps. In order to achieve growth, we do not want to hire extra welders, but only assemblers. The foreman and 1 assembler are being trained to become operators."

WORKING ACCORDING TO QUALITY STANDARD

"We build in accordance with the machine guidelines. All our assemblers / welders are NEN-EN-ISO 9606-1 qualified. In the welding department, we will increasingly work according to the NEN-EN-ISO 3834-2 quality standard and possibly get certified in this in the future. The NEN-EN-ISO 5817 is a standard where the quality levels (B, C, D) for welding imperfections such as excess thickness are stated. More and more customers are demanding this visual check and for ourselves we also want to

meet at least level (C) on average," explains **Lesley Laenen**.

MOVING TOWARD ROBOTIC WELDING

A lack of professional welders was one of the reasons for VTS to take the step to welding robotization. **Lesley Laenen**: "But that is only one aspect. With a welding robot we have perfect control of the welding quality. Moreover, the welding robot makes a continuous weld over the full 360° of the center frame. Something that can't be done manually. Of course, the fact that the cycle times at the robot are 2.5 times lower plays a decisive role in the investment."

Lesley Laenen: "The welding robot forces you to look critically at the preparatory stage"

ADJUSTED PREP STAGE

VTS has found that the accuracy of the supplied bent and cut parts must fall within the tolerances that are acceptable to the robot, so that the assembler has to weld as little as possible in advance. **Lesley Laenen**: "Because we still use many weld seam shapes such as v seams and outside corner welding, problems can arise in the robotized process. In contrast to the manual welding process, where the welder has control over his weld pool over the entire weld seam and can continuously correct his speed, welding movement and possibly other parameters, the robot cannot. That is why we have adjusted the dimensions in the preliminary process in such a way that openings, radii, angles etc. fall within the tolerances that the robot can handle."





VTS Track Solutions takes big step with first welding robot installation

UNIQUE WELDING PROGRAMS FOR THE ROBOT

The welding robot installation, which Valk Welding has installed at VTS, consists of 2 working stations along which a Panasonic TM-2000 WGHIII welding robot on an XYZ construction moves along a track. Lesley Laenen: "Our goal is to be able to transfer the welding program for the frames and slides to the welding robot without corrections. A requirement for this is that the welding robot must be able to follow the weld exactly. The offline program DTPS from Valk Welding with accompanying software (Arc Sensor and Quick Touch) allows for this. Only the welding parameters for new products are still adjusted at the robot. Because reality (the online world) does not always correspond with the virtual world (offline in DTPS), we use Touch Sense (Quick Touch) to measure deviations in the product with the welding wire or gas cup (XYZ direction) and where necessary make corrections in the program. During welding, the Arc Sense software ensures that the welding robot keeps the center of the seam in real time. Arc Sense is a system that measures the Amperage in the weld pool with pendulum movements and corrects any deviation directly in the controls.

THICK PLATE WELDING SOFTWARE

A highly efficient software module that is optionally available for DTPS is the Thick Plate welding software from Panasonic. Thick Plate technology plays a role in welding robot applications where thick, heavy plate parts are used and where large welding heights are required. These are welded in multiple layers starting from a cross section of A8 in 3 layers or more. The manual programming of multiple layers provides a multitude of teaching points and is therefore extremely time-consuming. When applying the Thick Plate software, only the first layer is defined, after which the software automatically builds up all the other layers. "The use of Thick Plate software therefore makes the entire programming a lot faster and easier," concludes Lesley Laenen.

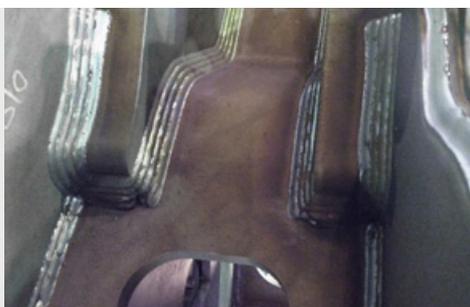
SWITCHED TO VALK WELDING WELDING WIRE

To exclude all risks that could negatively influence welding quality, Valk Welding always provides a complete concept with components developed in-house, such as a welding cable package, robot torch, pneumatic shock-sensor, calibration and wire transport system. The quality of the welding wire plays a big role here. Based on positive test results with Valk Welding welding wire, VTS has also decided to use Valk Welding SG3 welding wire in the manual welding department. **Lesley Laenen:** "It feeds better and has less projections than what we were used to, and as a result we have less malfunction and post-processing."

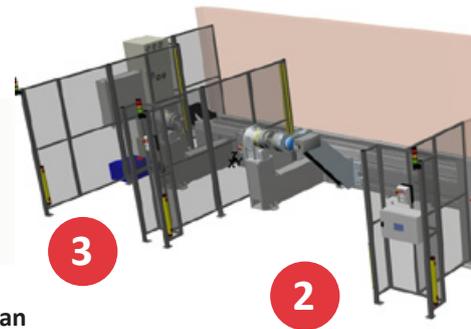
www.vtstracksolutions.com



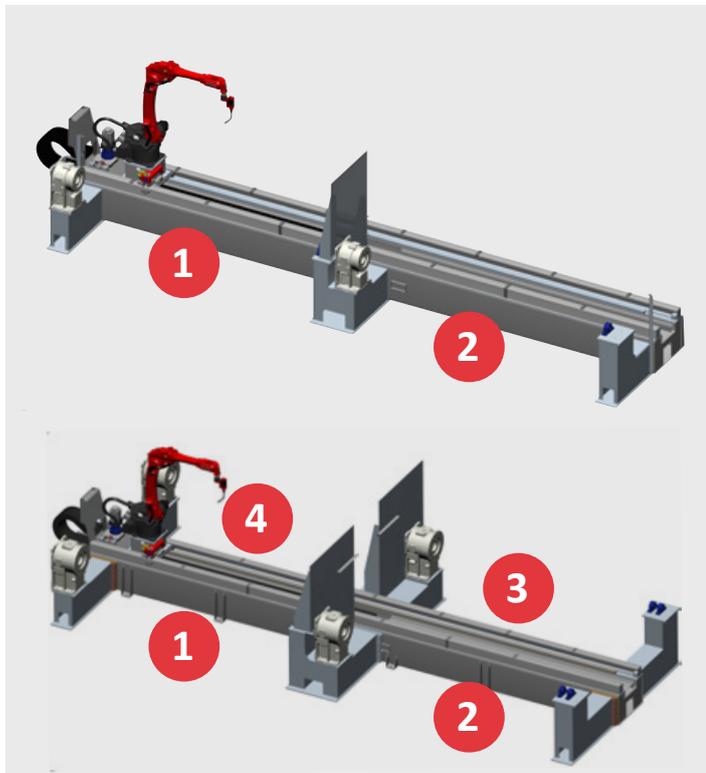
Thick Plate welding



Welding robot on footprint-saving E-Frame setup



Most welding robot systems are equipped with several workstations, so the welding robot can continue welding while the product is changed at a second (or third) station. Valk Welding offers various standardized concepts to allow this, such as the H-, T, E and Z-shaped frames and systems with a "indexing/turn-table." These concepts are footprint-saving and based on self-supporting (torque-free) stable, steel structures, on which all components, such as the welding robot, workstations and positioners, can be completely assembled and moved as a whole, without influencing the created programs.



30% LESS FLOOR SPACE

The concept based on an E-frame setup is very successful and increasingly being produced. Because the workstations are positioned side by side in this E-frame arrangement, they are accessible from one side, which requires fewer movements for the operator. Moreover, the concept saves space. Compared to the "indexing/turn-table" and the H-frame, the E-frame requires 30% less floor space (Footprint).

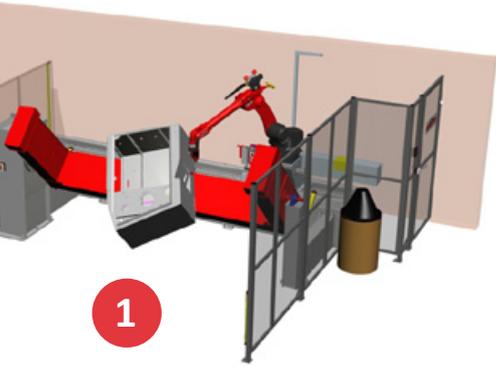
WELDING ROBOT MOVES ON A TRACK

The welding robot moves along the workstations on a track. By using this guiding system, the accessibility of the workstations is perfect, as a result of which the cycle times can be reduced also. An important factor is that, due to the longitudinal movement, the welding robot can always be programmed to be in the best welding position with respect to the workpiece, whereby optimum welding quality is achieved.

ADVANTAGES E-FRAME SETUP

- Saves space / smaller footprint
- Several loading locations so the welding robot can continue to weld, while the product is changed at a second (or third) station.
- Optimal accessibility by the welding robot
- Movable without any distortion of existing programs





Three welding locations, one robot

Last year, Valk Welding supplied a welding robot installation on an E-frame concept to the Czech company Vares Mnichovice a.s. The company has 30 employees and makes landscaping equipment and industrial kitchen equipment under its own brand name, among other products.

Eva Vodenková: "It is our mission to supply the market with only perfectly manufactured and technologically dependable products. That's why we continually innovate in the field of production technology."



The welding robot installation at Vares is equipped with 3 workstations. "Because every workstation is set up for a specific product group, we can weld three different products simultaneously. This means that the robot has an extended performance cycle and the output is greatly increased. Because some of our products are seasonal, we can now make and deliver more products in the same time span," says Sales and Marketing Director **Eva Vodenková**. "Without the welding robot we would not have been able to deliver 50 percent of the orders."

PERSONNEL SHORTAGE

In addition to the benefits of higher output and better welding quality, a chronic shortage of personnel was another reason to start with automating welding production. **Eva Vodenková:** "Unemployment around Prague is virtually zero, robotization offers a solution to increase output with the same number of employees."

WELDING ROBOT FROM VALK WELDING

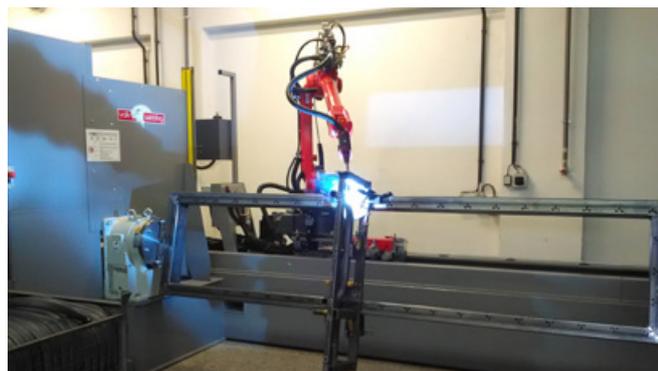
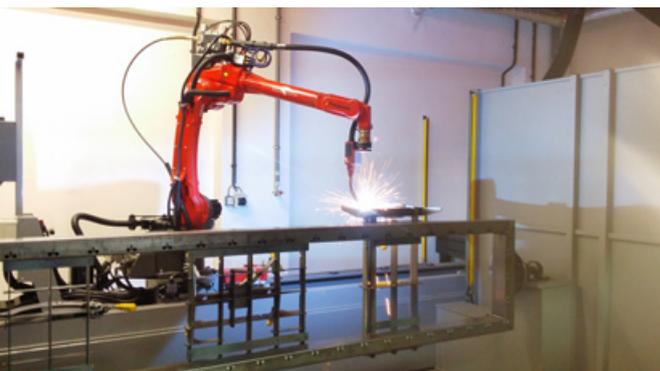
"We had contacted several suppliers and chose for Valk welding based on their excellent communication, the price/performance ratio, and their service and training capabilities within the Czech Republic. The welding robot installation is now used for steel and stainless-steel components for large and small

series welding. We only see advantages, such as the significant increase in labor productivity, high degree of flexibility and also the variation in production, so that we can weld three different product lines at the same time. A big plus is the very high and persistent quality of the welding jobs. We especially appreciate this in regard to the products in the gastro-department and the fruit-processing machines."

FULL SUPPORT FROM VALK WELDING

"Valk Welding also supplied the offline programming software DTPS and provided training for our employees at the Ostrava-Mošnov location. In addition, they provided assistance with starting up the welding robot here in Mnichovice. We are really satisfied with Valk Welding," says Eva Vodenková. "Due to the strong competition in European markets and the lack of staff, on the one hand we are looking at how we can improve the design of our products and develop new VARES products. And on the other hand, we look at how we can produce those products more efficiently with the latest production technology. Expanding the number of robotic work locations is certainly the solution for us," concludes **Eva Vodenková**.

www.vares.cz





SAXAS enters the market for special vehicles using large welding robot installations



Nico Boden, Director
Saxas Nutzfahrzeuge GmbH

Counting the order for special vehicles, the SAXAS Group is heading for an annual production of 8,000 units per year. Truck body systems, trailers and complete transport systems for civil and special applications are all part of the portfolio of this specialist in utility vehicles based in Werdau, Germany.

In the coming years, the German SAXAS Group intends to build a large number of special vehicles that must meet the highest requirements in terms of welding quality. The use of welding robots played a crucial role in this decision. Taking into account flexibility, programming and trust, SAXAS has entered into a partnership with Valk Welding as a project

In addition to having a large market share in Germany, SAXAS Nutzfahrzeuge GmbH is also one of the largest manufacturers in Europe of truck body systems for the distribution sector. In order to spread risk, in 2014 the manufacturer made the decision to enter the market for special vehicles. "Logistical transport systems that must be suitable for off-road use," explains graduate engineer **Nico Boden**, director of SAXAS Nutzfahrzeuge GmbH.

partner. Valk Welding has supplied five welding robot systems on E-frame arrangements and a large welding robot installation using a gallows construction (-XYZ arrangement), in which large frames will be welded by 2 hanging welding robots. 10 large frames between 6 and 7 m long and 2.5 m wide are completely welded in 2 shifts, daily.

EXPANSION OF WELDING CAPACITY

Today, SAXAS delivers transport solutions for special vehicles in large series in Germany and around the world. "In the longer term, we want to consolidate and further expand this business segment. In contrast to the traditional truck body systems where the focus is on assembling different materials, special vehicles are mainly constructed completely out of steel. In order to deliver these, we had to further increase the welding capacity."



GERMANY

VALK WELDING PROJECT PARTNER

To be able to show what you can offer the customer as far as technology, we have proactively invested in expanding our welding robot capacity. In addition, we wanted to use multiple cells for single-piece production and also to be able to use all cells to weld the same product in series. Valk Welding, known to us as a renowned European supplier of welding robots, could offer exactly what we wanted. Valk Welding uses Panasonic welding robots in its systems and is the right project partner for us with its expertise and support in regard to offline programming."

HIGHEST REQUIREMENTS FOR WELDING

In the branches that we operate in with our specialty vehicles, very high demands are placed on the welding quality. We must carefully document the requirements for both the process and the weld seam control, repeatable accuracy, welding dimensions, etc. Deployment of welding robots is crucial because you can guarantee the customer a consistent welding quality. "If you let ten welders make the same product, the possibility of different results is very high," **Nico Boden** emphasizes.

"We use the new welding robots for both subassemblies as well as for complete products. This also enabled us to convince new customers that we could offer them both the capacity and the desired welding quality," says the director.

OFFLINE PROGRAMS 1: 1 IN THE ROBOT

All welding programs for the robots are produced offline during the work preparation phase and then copied into the robot during the welding robot installation phase. Robot programmer **Stefan Jonas**: "Of course it is important that we first check the position of the weld using a gas nozzle search, or preferably with a wire search (Quick Touch). For long seams we use the Arc-Eye laser camera, which makes it possible for the welding robot to follow the weld in real time. The Arc-Eye laser camera is adapted automatically using a tool changer for better accessibility. Furthermore, it's important that the position of the welding torch is always the same. The slightest deviation translates into a deviation from the weld seam. That is why we have an extra set of robot torches, of which we check the gooseneck after every assembly group."

ALL UNDER ONE ROOF

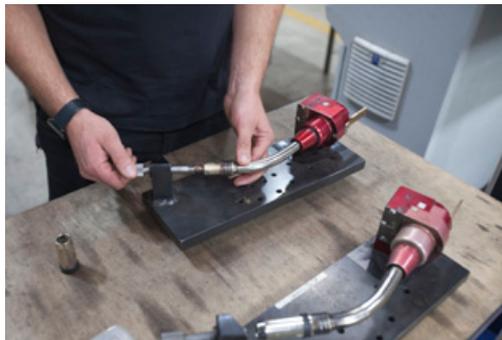
The SAXAS Group has a large sheet metal department where the components for both product groups are made. After sheet processing and welding, the different construction groups are powder-coated in their own paint shop and then put together in the assembly line. "The fact that we do everything under one roof is crucial for our customers to want to work with us," explains **Nico Boden**.

PREMIUM WELDING WIRE FROM VALK WELDING

The Saxas group also uses the premium quality welding wire from Valk Welding on all their robotic systems in order to have smooth and fricting free wire feeding. The premium welding wire from Valk Welding, in combination with the Wire Wizard feeding systems give the robot systems a very high performance.

www.saxas.biz.de

Director **Nico Boden**: "All programs are interchangeable among the different welding robot installations from Valk Welding."



Robot programmer **Stefan Jonas**: "Through careful preparation, such as robot-friendly designed products that meet the high customer requirements and standards, documenting the pre-bonding procedure, system design, program optimization, maintenance, training and continuous improvement, it is possible that products with sometimes more than 750 robot-welded seams can be produced quickly and reliably, with consistently high quality."

Bollegraaf: "Valk Welding robo

As a global player in the field of waste processing systems, Bollegraaf Recycling Solutions is currently experiencing strong growth. With the creation of turnkey total solutions, the company is a front runner in this sector and reports to have a market share of over 50% worldwide. In order to maintain and further develop that leading position, the company is constantly working on the development of new solutions and continues to invest in process optimization. Investing in state-of-the-art production technologies such as welding robotization play an important role here to be able to produce efficiently and competitively. "The welding robot can make the difference," according to CEO Edmund Tenfelde.



CEO Edmund Tenfelde (left)
Product Manager Hessel van der Werff, (right)
Production Manager Welding Division Peter Boltjes (middle)

The large welding robot installation with a longitudinal displacement of 33 meters comprises 3 Panasonic TA1900-WG welding robots in a gantry construction, all mounted on a X- and Z-shifter in order to increase reachability. The large frames of the balers are positioned by a 25-ton manipulator and welded simultaneously by two robots in 21 hours. For manual welding of the frames, with 3-layer angle welds, the Bollegraaf welders needed 2 weeks (including post-processing).

ts are making the difference”

Bollegraaf's waste processing systems are used worldwide for recycling waste into reusable raw materials. Bollegraaf builds the hardware such as sorting systems, transport systems and balers, as well as the software to be able to monitor and manage the entire recycling process remotely.

FOCUS ON TOTAL SOLUTIONS

Until a few years ago, the focus was on the construction of machines, with the baler as the key component. Tenfelde: "With our know-how and more than 56 years of experience in this industry, we are able to deliver total solutions, including process monitoring systems. That is why we have shifted the focus toward Total Solutions, which enable us to offer vertical integration to our customers and, hence, do more for them," explains **Edmund Tenfelde**. "Part of these market players want to establish themselves as a supplier of raw materials instead of a waste processor. We can supply the systems for that."

OVER 10 YEARS OF EFFICIENCY ADVANTAGES

through Robotization
Bollegraaf has been using robots for welding and bending for over 10 years. Valk Welding supplied a large system on which the complete frames for Bollegraaf balers are welded. Subparts are welded by a welding robot on an E-frame. "The welding robots make it possible to produce cost-efficiently. Mainly due to the strong reduction of the total welding time of the complete frames. But the fact that welding quality is high and constant also plays a crucial role in the quality of our products that are known to be robust," emphasizes **Edmund Tenfelde**.

GROWTH DEMANDS AN INCREASE IN CAPACITY

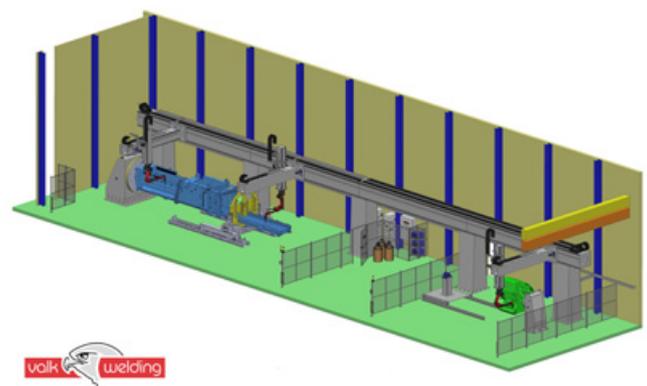
By investing more in people and training, standardization and re-design of subgroups, the company wants to further improve efficiency in regard to welding robotisation. "We want to squeeze everything out of it," says CEO Edmund Tenfelde. "If we want to achieve growth and maintain competitive advantage, the utilization

of the welding robots will go up even more. This means that we have to train additional employees to be able to operate and program the robot installations as well. For this purpose, we gratefully make use of the training options that Valk Welding provides at its Technical Center in Alblasserdam."

SORTING ROBOT

Bollegraaf's waste processing systems make it possible to sort plastic, paper, cardboard and cans, as long as they are not contaminated by organic waste, and process these into bales of reusable material. "Worldwide much is still sorted manually. In order to improve both safety, as well as living and working conditions, we developed a sorting robot. It is now operational. With the help of vision systems, various materials are removed or blown out at the molecular level. This means that the no-people plant is gradually becoming a reality and we are making an important contribution to the circular economy," concludes **Edmund Tenfelde**.

www.bollegraaf.com



Welding of thin-gage material improved

SERVO TIG TORCH for steel and stainless steel

In the sheet metalworking industry, we are increasingly seeing a trend towards the use of lightweight metals. Which means thinner, thus often more difficult-to-weld materials. Moreover, the bar is being raised higher and higher in terms of quality and appearance. This requires improvement of existing technologies and, where necessary, development of new technologies.



Detail of welding seam of stainless steel sink



VWPR QE SERVO PULL TIG II Robot torch

In terms of welding technology, the TIG welding process is still one of the most elegant processes for welding thin-gaged stainless steel and offers numerous options in terms of purity, accuracy and welding quality. For TIG welding with a robot, optimal wire feeding is crucial for both quality and appearance. Panasonic has been a technology leader in this field by applying a servo-driven motor in its welding robots on the TAW-ERS™ platform. This wire feeder creates the highest accuracy for this delicate welding process.

RESEARCH WITH CUSTOMER CZECH CUSTOMER

Blanco Professional CZ, specialized in the production of high-class stainless steel kitchen appliances, approached Valk Welding with the request to be able to weld its products with a higher quality, stability and appearance. Valk Welding did several tests together with Blanco. Based on positive results the customer decided to replace an Cloos robot by a Panasonic welding robot with TIG wire and servo-controlled wire feed. "Due to the gradual development, cooperation and the gaining of common experience, the welding quality was continuously improved," says **Mr. Krompolc** of Blanco Professional CZ. With a new project in which the end customer only accepted 100% tight and beautiful welds without finishing, further research was needed.

DEVELOPMENT OF NEW ROBOT TORCH

Engineers from both companies discovered that, despite the perfectly controlled wire feed, in the very low current range, small imperfections were caused due to an excessive distance between the wire feed and the welding arc. Valk Welding decided to initiate the development of a TIG robot torch in which the servo-controlled wire feed unit is integrated into the robot torch, while the wire feed motor is controlled separately as an servo driven axis of the robot. As a result, the distance between the actual wire feeding and the arc is reduced to the absolute minimum. This resulted in the development of the VWPR QE SERVO PULL TIG II robot torch. A torch with integrated servo-controlled wire feed and a modified gooseneck to further optimize the wire feed.

TIG WELDING WITH COLD OR HOT WIRE TO A HIGHER LEVEL

With this innovation, which immediately became a huge success, Valk Welding has taken TIG welding with either cold or hot filler wire to a higher level.

Valk Welding CCO **Peter Pittomvils**: "In the meantime, we have already been able to attract assigned projects from companies who, after a long search, found no solution anywhere and judged the new development to be revolutionary during the first tests.

In addition, our solution can also be applied to the Super Active Wire MIG welding process, which gives our customers enormous flexibility for future production. Flexibility that fully fits in Valk Welding's DNA. The development of our VWPR robot torches can already count on so much admiration from Japan that Panasonic wants to apply our high-end solutions in other projects."



NETHERLANDS



FRANCE

Stitch Pulse für Aluminium

Using constant arc welding on thin-walled material with fast heat transfer and a likelihood for cracks, has the disadvantage that the material can burn through. Toward the end, a constant arc always gives too much of heat input, which means that the conditions across the material can differ too much. "You start with a cold bead and end up too hot, whereby the material burns through if welding parameters are kept constant." actually, very little heat input is required to cause fusion, but that minimal heat is already too high to weld the product when using a constant arc voltage.

In the past, a manual welder solved this issue by alternating welding and cooling, a.k.a. prop welding; because he would "stuff" the material in order to close it. During welding there would be sufficiently high heat to create a weld pool, while during the time needed to perform this procedure, the material could cool down and allow the weld pool to solidify.

STEADY START

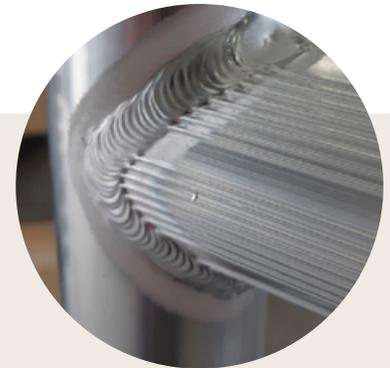
The Stitch Pulse function has been around for a number of years and is lately included standard in the Panasonic controller's software. In this case the power source is "switched on and off". In aluminum welding Panasonic has taken another step forward in the application of Stitch Pulse by integrating Super Active Wire into the process. Super Active Wire ensures a steady start by withdrawing the welding wire from the molten welding pool very frequently. By starting with Super Active Wire and switching to a normal pulse during the pulse itself, there is on the one hand sufficient energy to bring about the fusion and on the other hand a

spatter-free arc start.

Panasonic provides a steady start with Super Active and switches to a normal pulse as soon as the arc is established, after which the material is given time to cool down. The result is that the weld pool flows nicely, which is not possible with ordinary prop welding. Furthermore, this development is only possible due to the unique Tawers platform provided by Panasonic, in which only one CPU controls both the robot, servo-controlled wire feed and the 100 kHz inverter.

STITCH PULSE FOR ALUMINUM

As far as the hardware, for working with aluminum a servo-driven drive motor is used because the distance between wire motor and contact tip must be as short as possible. For this, Valk Welding is applying its own in-house developed Servo Pull robot torch in combination with the electronically controlled Wire Booster from Panasonic.



The Stitch Pulse process offers a strong improvement for all types of aluminum products, such as scaffolding materials and other thin-walled, lightweight aluminum products.

Iveco Bus applies Stitch Pulse



The first customer who has started using this method is Iveco Bus, France using the Stitch Pulse for welding aluminum doors. (refer to video). These were previously welded manually with TIG and now semi-automatically with Stitch Pulse taking a fraction of the time.

www.iveco.com/Pages/welcome-ivecobus.html



Aluminium doors welded with Stitch Pulse



JAPAN

Panasonic and Valk Welding, partners for more than 30 years



MY 30 YEARS RELATIONSHIP WITH VALK WELDING

When I worked with Valk Welding as young engineer it was a most enjoyable memory. Valk Welding always gave us customer's requirement for robot development and it was sometimes very severe.

I always try to deal with it's requirement.

Some of the requests were able to achieve quickly, some of them could not be achieved from the next new model, and some of them were unfortunately unable to be realized.

We had discussed issues honestly and frankly with each other and try to find out the compromising point and stepped forward one by one and as a result of that, both of our company and products made a significant growth, I believe.

I especially remember when I actually visited and supported customer concerning new products which was developed by myself.

I received an emergency call since proper welding condition about new arc sensor could not be realized at very end of the year.

I visited Dutch and Belgium customer from the beginning of new year and tried to solve the problem with excellent Valk engineers although at the customer site it was freezing, I will never forget it.

Since then, I had transferred to manufacturing department and to China factory from engineering department and intercommunion with Valk Welding became very low.

When I visited Valk Welding 10 years later, I was very much impressed to see new expanded factory and I felt the company was strongly developed.

As you provide a solution to the customer with DTPS, Valk Welding are always thinking new solutions and challenging many thing.

We felt there are many things Panasonic need to learn.

We are trusting Valk Welding as a partner who transfer market needs or customer requirement to Panasonic and provide value to the customer together from now on. We feel strongly that Valk Welding will develop furthermore in the future.



I got away from welding business now, but I am still looking forward to working with you in the near future.

Sincerely,

Manabu Takahashi

Managing Director, Panasonic Corporation AIS Company

CONGRATULATE AND APPRECIATE FOR 30 YEARS ANNIVERSARY OF BUSINESS RELATIONSHIP BETWEEN VALK WELDING AND PANASONIC.



We have mutually developed and built a strong relationship of trust in last 30 years. Especially, I believe outstanding management capability of CEO Mr.Remco H. Valk contribute the development Valk Welding.

Welding robot system made by Valk Welding is the best in the world.

The reason is that Valk Welding always think about customer need, understand customer field site, and produce systems which improve customer's productivity.

And also Valk Welding always grasp working situation of the systems and provide appropriate after care for the customer.

Therefore Valk Welding receive high degree of trust from the customer.

In order to achieve this situation, Valk Welding always give strong request to Panasonic and sometimes allied technical development is born.

We hope both of the company develop mutually for next 50, 100years and further strong relationship will continue.

Sincerely,

Syunji Sawai

Tradeshows

HI Industri Herning

Herning, Danmark

01-03 October 2019

Metavak 2019

Gorinchem, Netherlands

08-10 October 2019

MSV Brno

Brno, Czech Republic

07-11 October 2019

Sepem Industries

Angers, France

08-10 October 2019

Welding Week

Antwerpen, Belgium

19-21 November 2019

Sepem Industries

Rouen, France

28-30 Januar 2020

MNE Prototyping

Kortrijk, Belgium

05-06 Februar 2020

TechniShow

Utrecht, Netherlands

17-20 March 2020

Industrie Paris

Paris, France

30 March-03 April 2020

Vision, Robotics & Motion

Veldhoven, Netherlands

10-11 June 2020

The strong connection