



VALK MAILING

a publication of Valk Welding

24th year - 2024-1

Unmanned robot with a 72-pallet buffer

Lacom



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Colofon

The Valk Mailing has been put together with care by Valk Welding. From concept to creation, our team has worked hard to realise this magazine and provide you with relevant information, inspiration and insights into the world of welding technology and automation. For any questions, comments or suggestions, please feel free to contact us at info@valkwelding.com. Thanks to all employees and partners who contributed to the success of this magazine.

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Dear reader,

Welcome to the first edition of the Valk Mailing in 2024. We are delighted to share this new edition with you, full of inspiring topics and innovations.

In this edition, we focus on the power of total automation and how it is transforming production processes. We show how unmanned production is made possible by our advanced logistics solutions.

We also discuss how Automatic Robot Programming (ARP) is facilitating the transition to robotic welding for suppliers and subcontractors. We have a special focus on companies that are opting for high mix/low volume production or solely producing on-demand. We will demonstrate how our technologies can help them to overcome the shortage of manual welders or to move away from serial production and become more flexible in their production processes.

Additionally, we highlight Valk Welding's role as a technology partner for other integrators.

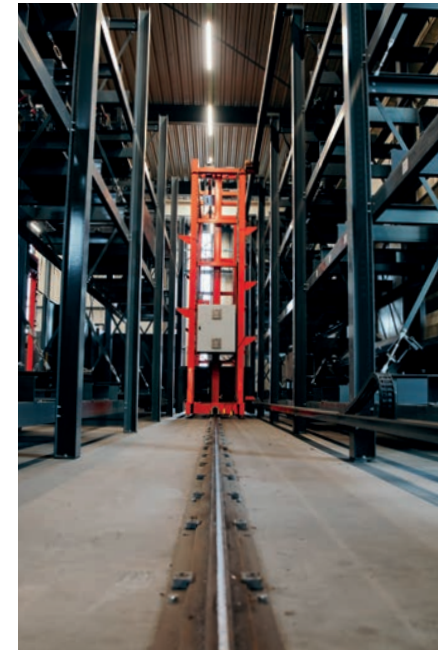
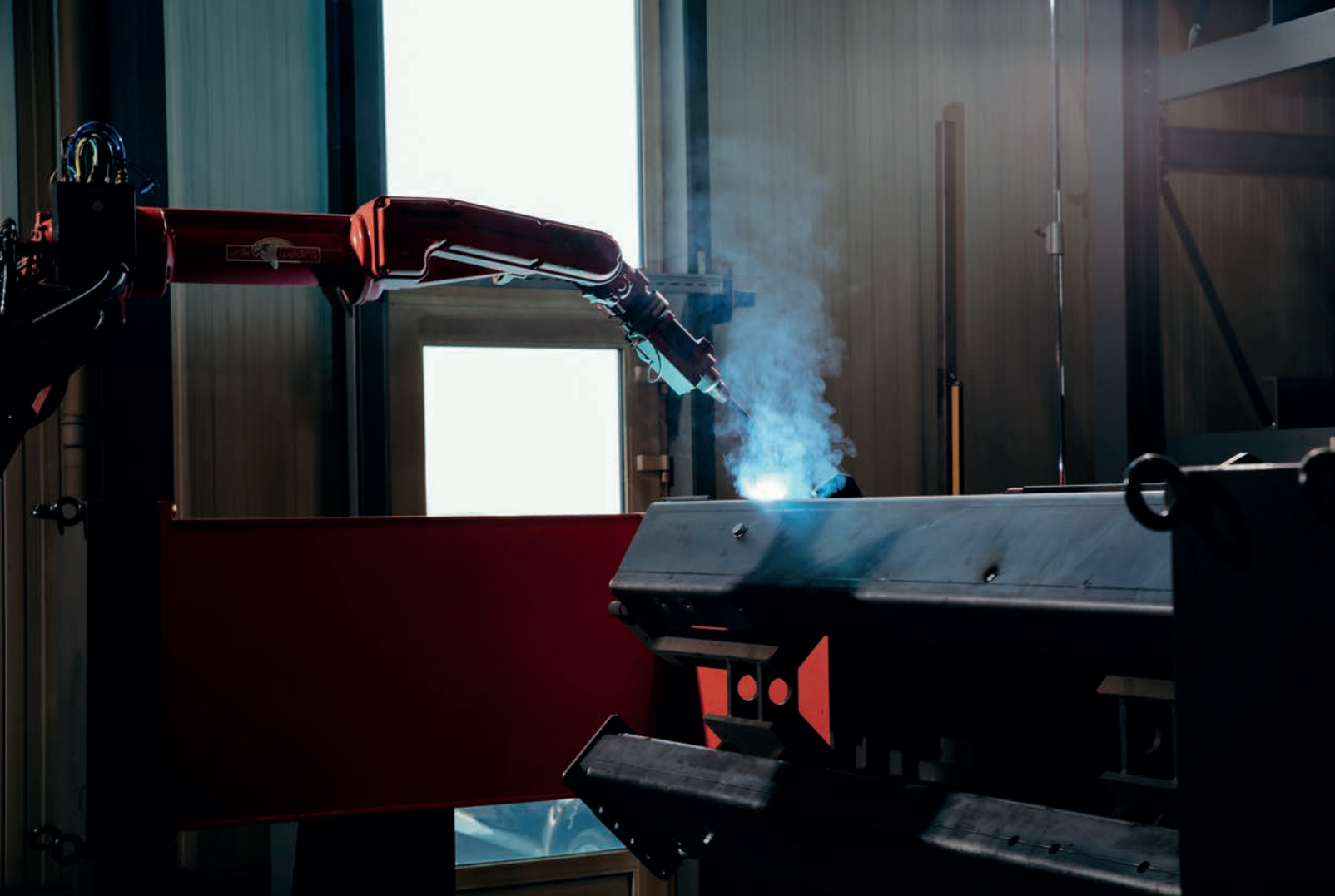
We are proud of the collaborations we have built and are pleased that our technological solutions are increasingly adding value to the manufacturing industry worldwide.


We are also proud to present another world first: the ARC-EYE CSS laser camera with Adaptive Welding and Automatic Multipass functionality. This ground-breaking technology promises to boost the heavy welding industry in a high mix/low volume that is often typical of this type of industry.

The market is changing, but at Valk Welding we keep going forward and pushing the boundaries. We continue to grow with our customers, extending our geographical reach, and innovation remains a priority to further strengthen our loyal customer base.

We hope you enjoy this edition of the Valk Mailing. Happy reading!

Peter Pittomvils (CCO Valk Welding Group)





DTPS ARC-EYE

Unmanned robot system with a 72-pallet buffer

The Netherlands

Lacom Machinefabriek B.V. is a Dutch metal specialist with a unique combination of CNC turning, milling and automated robotic welding at its production site in Budel. In 1999, the company welcomed its first Valk Welding robot, and since the beginning of 2023, unmanned welding production has become a reality thanks to a new system with 72 pallet positions.

Driek Lammers, Technical Director at Lacom, shares more about this system.

Together with Valk Welding and Kuunders Technoworks, Lacom has developed a unique concept for logistical automation. The robot system includes a 30-metre-long warehouse rack containing pallets with products attached in fixtures. "A shuttle drives through the warehouse unmanned, taking pallets from the warehouse and placing them on the welding robot system", explains Driek Lammers.

"The welding robot recognises the product, measures it, locates the possible deviations of weld seams and then starts welding. Afterward, the shuttle transports the product away and picks up the next one. We determine the product sequence ourselves using a HMI."

Flexible and spacious storage

Thanks to automated logistics, Lacom can store products up to 7 metres high in any of its 72 pallet places. Each place can store one long product of up to 3 metres and 1,500 kg, or two cubical products of 1.5 metres per side. Lacom mainly produces small product series of complex welding assemblies (high mix, low volume), both for subcontracting and for its own welded parts of the Kinetic truck cranes, which the company has been producing completely in-house since 2020.

Faster programming with DTPS

Lacom uses the DTPS offline programming software in combination with the ARC-EYE seam tracking system. Driek Lammers says: "We were amazed. Offline programming, locating products with the tracking system and welding, it is phenomenal. The quality of the work is also great. As we wet paint a lot of products for end customers, we can definitely tell the difference from manual welding. Customers pay for quality and that is why we do not weld any part of our own products by hand."

Unmanned welding

The Valk Welding robot cell is able to weld unmanned through the day and night, thanks to automatic wire and torch changing systems. "The robot can change six welding torches," says Driek Lammers, "you hardly see that anywhere else." Lacom will carry out 4,000 welding hours per year with one robot, which is equivalent to 10,000 hours of manual welding with six welders.

"We did not want a larger welding department and there are no more available welders here. Now our throughput times are incredibly high, and even the set-up times on our manned welding robots have been reduced because we can now provide these robots with more fixture jigs per product type."

Ready for the future

At the moment, Lacom is making more and more fixtures for an increasing number of new products for their supply work, and is preparing for even higher productivity. "Thanks to this system, we have a very high continuity and delivery reliability, which allows us to phase out more and more manned welding robots. When the robot reaches its maximum capacity, we can switch and scale up very quickly with low set-up costs, because everything is already prepared for a second Valk Welding robot installation", reveals Driek Lammers.

www.lacom.nl

At Lacom, one robot welds as much as 6 manual welders!



Watch the video of Lacom here

An entrepreneur's guide: insights from 77-year- old Bengt-Olof Hammar

Sweden

Swedish tech enthusiast Bengt-Olof Hammar grew up devoting his free hours to tinkering with Meccano sets. At just 16 years old, he managed to repair his personal 1,200cc Indian motorcycle. Decades later, at the age of 77, he continues to find happiness in the technical field as the successful CEO and owner of the Hammar Group, the world's leading side loader manufacturer. Inspired by his journey, we asked him for his best advice for aspiring entrepreneurs.

What has contributed most to your success as an entrepreneur?

"Almost every single day when I go to work, I enjoy it. As an owner, I have been able to entrust many tasks to very good people who have been with me for a long time – many for twenty to thirty years. We are like a family, and everyone is equal, which is important for our business. Having something you can trust and get advice from is also crucial: when you invest a lot of money in a new building, you cannot predict what the market will be like twelve months later. That is why I personally believe another reason for our success is God's blessing."

You always keep going, even at an older age. Why is it so important for businesses to keep moving forward?

"In my view, standing still and not growing means slowly fading away. I want everything to keep growing and I always have plans for how it should grow: with new markets, new products, new employees, and new technology. If we follow the same path as everyone else, we will achieve the same results as everyone else. But if we stay at the forefront and do things in a new way, that will be the future. Whoever has the smartest customer wins, and I would like to win."

Do the Hammar Group and Valk Welding share a similar mindset?

"Yes, we both value delivering what we promise without promising too much, and we both specialise in a certain field. When we were looking for a sorting robot for steel plates, Valk Welding recognised that this was not their area of expertise, and that was the correct answer. Just like in the Olympics, by competing in ten different disciplines, you will not be the best in any of them. If you specialise, you can reach much better results. So instead of having many products and a small market, we both have a global market and are very specialised."

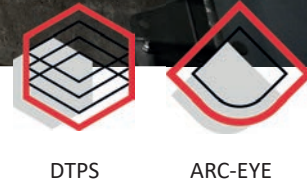
www.hammarlift.com

*"In my view, standing still
and not growing means
slowly fading away."*

*- Bengt-Olof Hammar, CEO and owner
of the Hammar Group*

Mr Hammar has five key pieces of advice for young or aspiring entrepreneurs:

1. Do not be too broad; specialise in one thing.
2. Keep production in-house to control quality and times.
3. Minimise your dependency on banks to avoid problems later on.
4. Stay away from agencies and engage directly with end users to learn, adapt, be flexible and have and keep loyal salespeople.
5. Go and export. With different markets you have more legs to stand on and they will not know how big your business is.



Second welding robot fuels 25-30% production increase at Container Modul

Poland

Container Modul produces specialised platforms and hook-lift containers for trucks, and since 2020 it also produces trailers. In 2022, the first welding robot was purchased for the production of container components, and a year later the company decided to invest in a large welding station for complete large-scale products.

Container Modul employs around 170 people and supplies its products mainly to the Scandinavian market and, to a lesser extent, to Germany and Switzerland. "Our priority is to tailor our products to the individual customer needs", says Katarzyna Okuń, Director of the Ryman plant. "Our products are characterised by their high volume and low tare weight. We achieve low weight by using high strength steel with high abrasion resistance and hardness." The robot has to meet these requirements by automatically correcting the torch movement trajectory (thanks to the adjustment of dimensional tolerances of large products) and welding difficult-to-weld materials, while also allowing for easy and fast programming of new products.



Watch the video



Teamwork has brought results

"Before purchasing the first robot, we had no experience in robotic welding. Coordinating all activities and acquiring the right skills proved to be the most challenging part", says Piotr Hawrylak, Director of Technical and Production. Container Modul opted for a step-by-step approach to robotic welding, buying a smaller station first and then a larger one. The small station welds container components and spare parts for containers as service parts, while the large station welds complete vehicle containers. The welding fixturing mounted to the positioner was designed and manufactured in-house by Container Modul. Visiting companies that use Valk Welding's robotic systems allowed them to select the most optimal welding jig concept.

Quality matters

"We put a lot of emphasis on the quality of our products, which is one of our differentiators and competitive advantages", says Piotr Hawrylak. Proper preparation of the parts to be welded is important in manual welding to ensure high quality, but it is even more important in robotic welding. It helps to reach full production on the robotic station faster and to achieve the right quality and efficiency. Earlier processes such as precision cutting or sheet metal bending are also important to the final result. Adapting production for robotic welding sometimes requires structural changes to the manufactured parts, but all with the aim of achieving an optimised design that reduces production costs while improving quality.

Production increase of 25-30%

"The most important benefit is the possibility to increase production by 25% to 30%. Given the current shortage of skilled welders, this is a big plus. The operator does not have to be a welder, so it is easier to find such a person in the labour market", explains Piotr Hawrylak. Container Modul

already employs three women as robot operators, and they are doing an excellent job. To facilitate work at the robot station, it is equipped with a number of functions that make the programming and welding process easier. This involves offline virtual robot programming using DTPS software, as well as full sensor capabilities such as Quick Touch Sensing and the ARC-EYE laser camera. These functionalities are essential tools for the Valk Welding robot systems at Container Modul.

Choosing the right integrator

Container Modul began considering robotic welding of its products several years ago. "We talked to a company about introducing this into our products, but the project did not materialise because they could not meet our requirements", says Tomasz Piskorz, Production Manager. "After a few years, the subject resurfaced and we started looking for a company again. We invited several companies for discussions, including Valk Welding. We had to turn down many companies due to their lack of experience in welding products similar to ours. Through conversations and reference visits to companies where Valk Welding had installed its robots, we realised that this was the right direction to take", concludes Tomasz Piskorz.

www.cmodul.pl

"Offline DTPS programming reduces implementation time and allows quick adjustments to the robot program."

- Tomasz Kozłowski, robot programmer at Container Modul.



ARC-EYE

A technology partner for integrators to manufacturers

As a welding robot integrator, you do not want to miss out on a promising project due to a lack of technology. Collaboration takes you further, and that is why Valk Welding supports Panasonic integrators and other companies worldwide with its own welding technology, software solutions and seam tracking systems. Two of our partners share more about this.

Orion Automation Systems Pty Ltd, the distributor of Panasonic welding robot systems in Australia and New Zealand, faced a major challenge in 2016 with the robotic welding of large aluminium structures. The company decided to partner with Valk Welding. Their reason? "Because Valk focuses entirely on robotic welding and the ARC-EYE's tracking ability was an essential requirement for this project", explains Technical Director Jeff Fordham.

Partner in camera technology

Since then, Orion Automation Systems has been supplying the ARC-EYE laser camera system, specifically suitable for the reflective aluminium fabrications of its customers. "It is an essential tool for complex constructions in a high mix, low volume environment," says Mr Fordham, "and the strong partnership between Valk Welding and Panasonic Japan ensures seamless integration of both hardware and software."

Joining forces

Voortman Steel Machinery, a leading manufacturer of steel processing machines, and Valk Welding have been

working together since 2009 to develop the Voortman 'Fabricator' - a welding system for structural steel where the variety of connection types is a challenge. This does not involve repetitive and pre-programmed welding, but real-time analysis per assembly through Voortman software. The intuitive operation supported by the software elevates the Voortman Fabricator to an unprecedented level in the industry.

Software and knowledge

According to Gerald Pas, Project Buyer R&D, the choice for Valk Welding was quickly made. "It was a win-win situation for both parties: with our software and the collective knowledge with Valk, we created a complete welding robot." Gerald also emphasises that a high level of mutual trust was established: "It may not be our own credo, but I dare say that our relationship is based on a strong connection."

More and more requests

Valk Welding is currently receiving more and more requests for collaboration. "With our unique solutions, other Panasonic integrators worldwide are increasing their chances of winning major orders", shares Peter Pittomvils, CCO, with pride. "This new way of working together brings nothing but benefits for themselves, their customers, Panasonic and, of course, for us. Strong together!"

www.voortman.net

www.orionautomation.com.au



Watch the video's



Optimisation of welding robot systems: increase your efficiency and social stability

Welding automation with robots is already effective, but can't we do even better? What if we made our robotic welding installations an integral part of an automated ecosystem, aiming for a completely unmanned welding process? Optimising both robots and the logistics around them can significantly increase the efficiency of welding robots while promoting social and economic sustainability. Let us delve deeper into how this is possible.

Valk Welding is happy to think along with you about warehouse racks that are seamlessly linked to your welding robots. These racks can efficiently store welding jigs, prepared workpieces and finished workpieces, minimising the time needed to gather materials and increasing robot productivity. Integration can be achieved through a traditional conveyor or AGV (Automated Guided Vehicle), with AGVs providing extra flexibility and also being deployable for other production steps. You can find a successful example project on page 4.

Vertical space utilisation

By integrating welding robot(s) into a storage system, you maximise available space without losing flexibility. And if floor space is an issue for a specific project, this also allows you to work at height, further increasing efficiency. Using software, conveyors or AGVs can easily store your products up high in the desired product sequence. Valk Welding has already realised several successful projects using this method.

A social buffer

As well as increasing efficiency, transitioning to a 24/7 solution (without additional welding robots) offers another important advantage: social stability. This automated solution acts as a 'social buffer', meaning that fluctuations in workload do not affect peace of mind within the company.

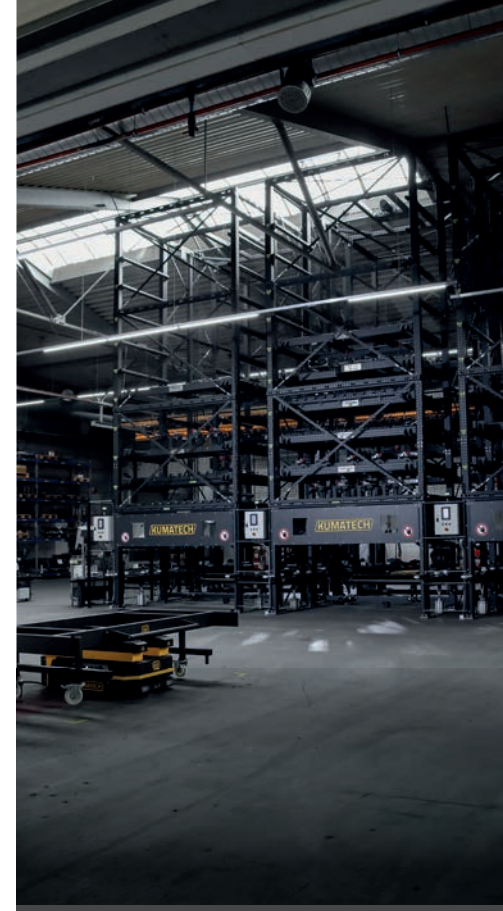
In this way, unmanned machines can easily run fewer hours when there is less work, without the complexity of staff scheduling. This is a strategic choice in times of labour shortages, where smart automation not only increases production efficiency but also minimises social impact.

Techman cobots with AI-driven vision

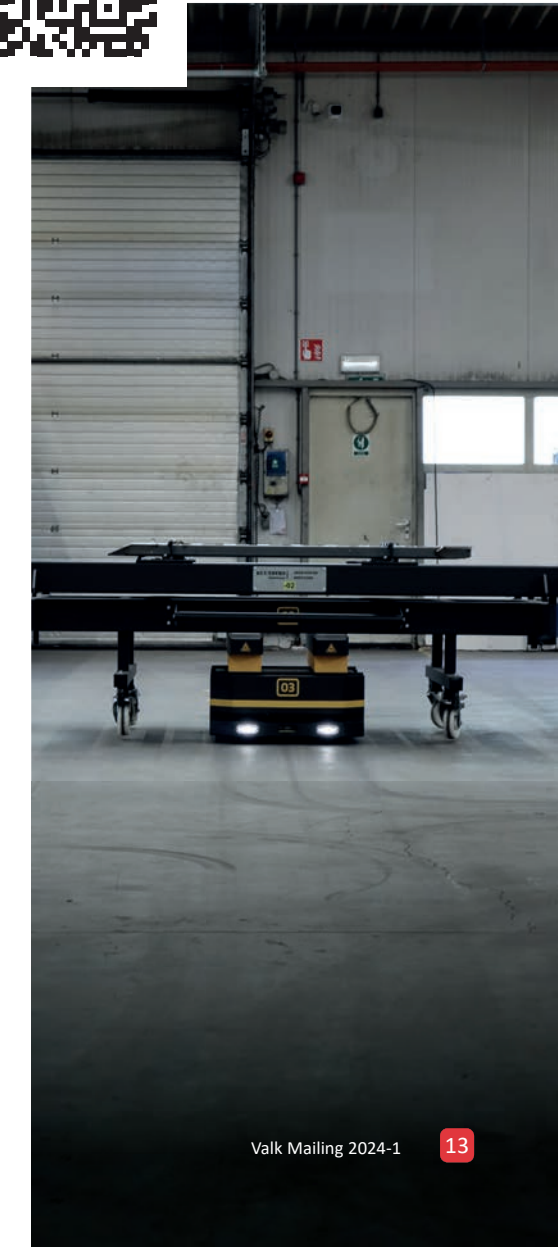
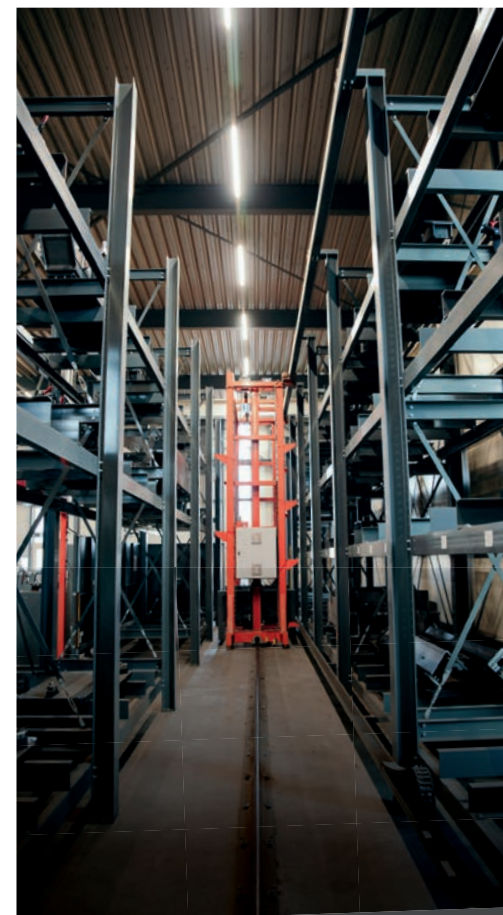
In addition to our solutions with industrial welding robots, we must not forget the compact Techman cobots supplied by Valk Welding from Alblasterdam. These collaborative robots use AI-driven vision to take over many tasks from operators, such as accurately positioning workpieces, detecting welding defects and performing quality controls. This reduces dependence on human intervention and increases consistency.

Customer-specific advice

Curious about how your company can benefit from these technical and logistical optimisations? Valk Welding offers personalised advice on the efficiency of your storage, product supply and production steps. On page 4 you can read about a practical example at Lacom Machinefabriek B.V., where a large-scale project was implemented with 72 pallet spaces and an unmanned welding process running day and night.



Watch videos of our logistics solutions here

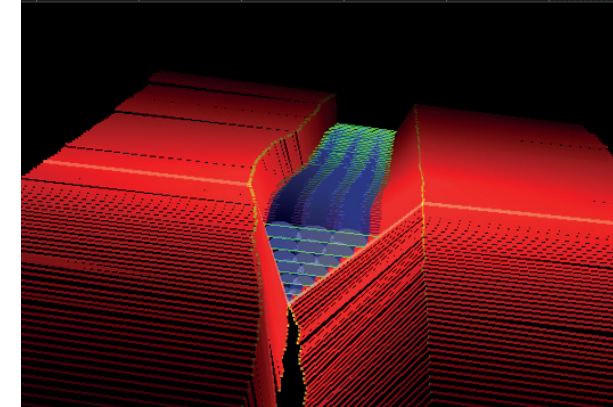




Fully automatic multipass welding of excavator arms: our largest system ever

Belgium

Belgian construction specialist Luyckx is implementing one of its two new Valk Welding installations this year. This is the largest active welding robot system in Belgium, with a track of 82 metres and movable positioners with a total load capacity of 40 tonnes. Both systems will automate the welding process of excavator arms and heavy excavator buckets. "The demand for these products is huge, which means that our workload is increasing", says programmer and robot manager Laurens Willemen. "This project is an opportunity to reduce the workload and deliver faster."



ARC-EYE CSS Adaptive and Adaptive Multipass

Luyckx's current project uses Valk Welding's ARC-EYE CSS laser sensor, of which more than 200 have been delivered worldwide. It provides accurate weld seam tracking for reflective surfaces, complex welds, and position deviations thanks to a circular sensor with 3D measurements and real-time corrections. The Adaptive and Adaptive Multipass applications for varying geometries extend the capabilities even further.

Together with Valk Welding, Luyckx is working on the extensive project: "A completely new production hall has been built", explains Laurens Willemen. In 2022, he volunteered for Luyckx's first welding robot project with Valk Welding, a compact TRACK-FRAME-E concept with two drop centre positioners: "I already had experience with Valk Welding and knew it would work. It became an ideal introduction to the robotic process for our employees, preparing them for a more complex system."

Adaptive and multipass welding

With its new excavator arm installation, Luyckx has two world-firsts: the use of both the flexible Valk Welding 'rotating' ARC-EYE and the Adaptive Multipass software application for fully automatic multipass welding. This allows the ARC-EYE CSS to autonomously determine the volume of weld seams and the required number of weld layers. Laurens Willemen: "Excavator arms have a lot of variation and programming them manually takes a lot of time. With Adaptive Multipass we can now program our arms based on existing programs with minimal addition of new information."

Flexible with movable zones

The installation for excavator arms will be placed in a preparation zone that can be continuously extended from 42 to 65 metres. It can also be divided into three separate zones by means of movable zone dividers. "This allows us to produce different items throughout the zone and, if necessary, call in the robot for welding. At the same time, employees can work safely in separate zones or load and unload parts."

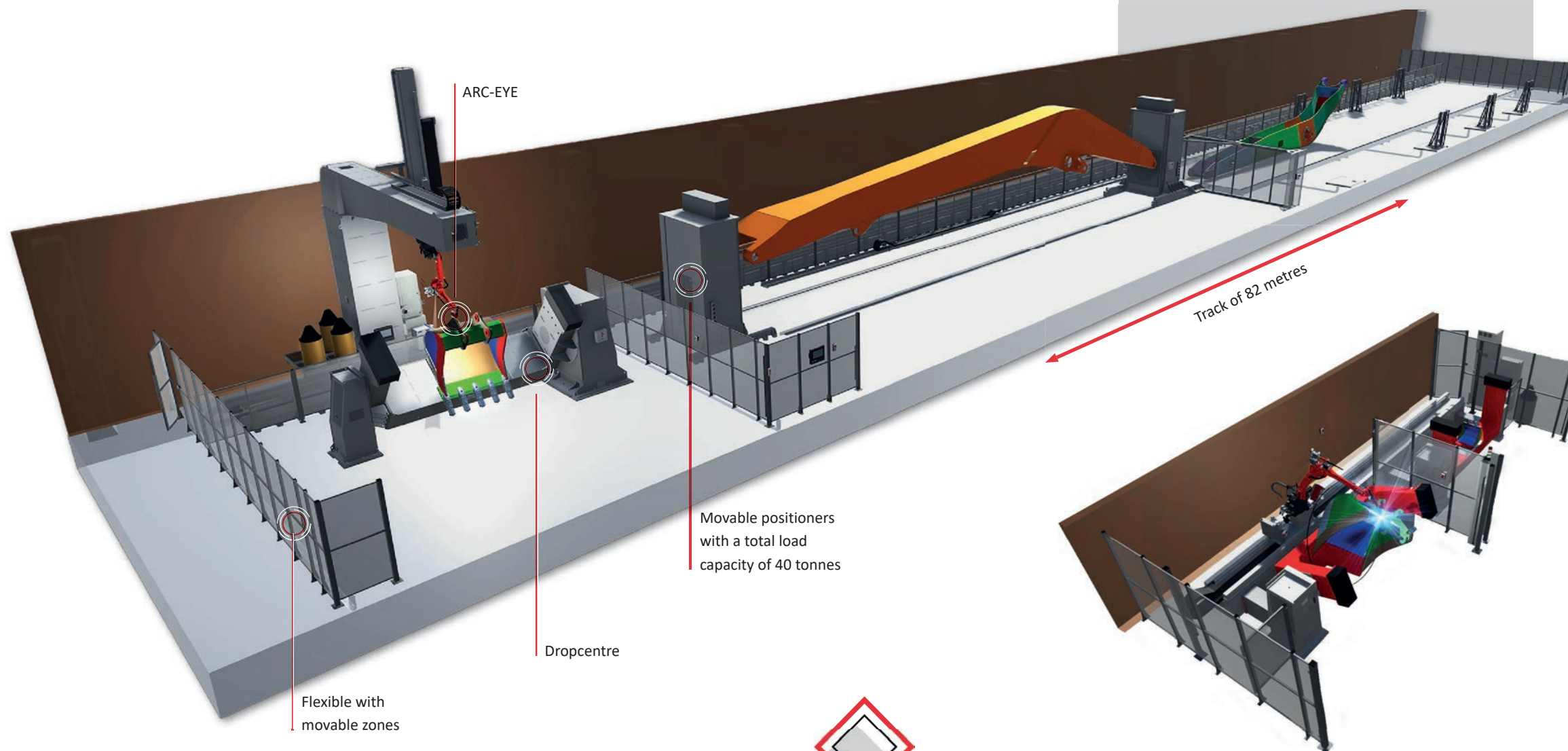
Positioners and setup

Both of Luyckx's new systems include a drop centre (double) positioner, which allows Luyckx to optimally position excavator buckets of up to 5 tonnes for the robot system. The largest system also has two 20-tonne positioners with built-in height adjustment, so that an excavator arm or boom of up to 25 metres can be welded in all positions. The robotic arm will also be fitted with a custom-built gripper to automatically place parts on the excavator arm, such as brackets for hydraulic mounting.

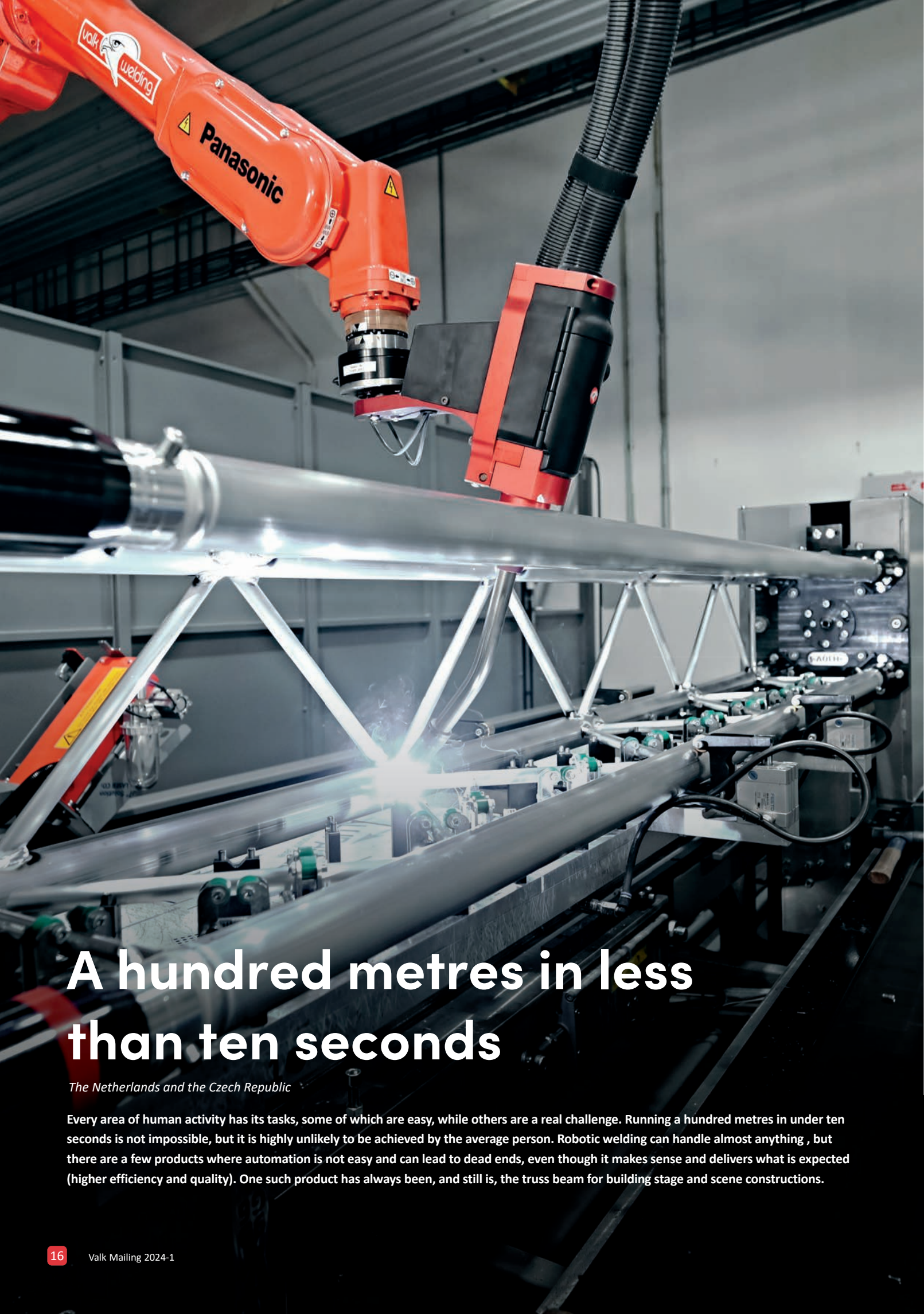
A single point of contact

In addition to the flexible possibilities, Luyckx sees other advantages in the cooperation: "At Valk Welding, almost everything is in-house, including the software, the power source and the welding torch. This means that we have a single point of contact for questions or issues, which is of great value to us. We also have our own attitude that we always provide a good service, so naturally we expect the same as a customer. Fortunately, the service at Valk Welding is always top-notch."

www.luyckx.be



ARC-EYE



A hundred metres in less than ten seconds

The Netherlands and the Czech Republic

Every area of human activity has its tasks, some of which are easy, while others are a real challenge. Running a hundred metres in under ten seconds is not impossible, but it is highly unlikely to be achieved by the average person. Robotic welding can handle almost anything, but there are a few products where automation is not easy and can lead to dead ends, even though it makes sense and delivers what is expected (higher efficiency and quality). One such product has always been, and still is, the truss beam for building stage and scene constructions.

These construction systems for both small and gigantic stages, on which we have seen many rock stars perform, are manufactured by AreaFour Industries in Roudnice nad Labem. František Zykan, the founder and owner of the company, says: "Usually people set a main goal and then gradually work towards it. I did not do it that way; I set sub-goals, which I gradually fulfilled. That way, I keep moving forward and the opportunities come by themselves. I see more and more of what is possible." One of the sub-goals he set for himself was the robotic welding of the beams AreaFour produces in Roudnice, putting him one step ahead of everyone else.

Blood, sweat and tears

At the beginning of the project, none of those involved could have predicted how much work would be put into the robotically welded beams. The result of the combined efforts of AreaFour Industries and Valk Welding in this project is 7 welding robots that are currently capable of producing hundreds of metres of beams per day. Adriaan Broere, CTO of the Valk Welding Group, says: "During the course of this project, there were many moments when it seemed that despite the latest technologies we have with Panasonic welding robots, despite decades of experience in hardware, software and welding, we would not be able to deliver what AreaFour expected from the project."

Solving the unsolvable

"However," Adriaan Broere continues, "thanks to the highly above-standard cooperation with both the clamping solution supplier, Edco Techniek, and the entire AreaFour Industries team led by Mr. Zykan and Mr. Žúbor, we always managed to find a solution. This project was not about delivering a robotic system, it was about finding a solution to a seemingly unsolvable problem. And I am convinced that together we all managed to run 'a hundred under ten'."

Making it look easy

What does this 'hundred under ten' actually mean in the field of robotic welding? It means taking a product that is not easily prepared for repeated welding, finding a way to fix this product properly so that it can be assembled well, finding a configuration of the welding robot so that it reliably welds the aluminium product not just once, but a hundred or a thousand times. All this so that those who ultimately certify and test this product, which hangs over the heads of a crowd, can say: This process is reliable, we can hang this product over people's heads without worry. When put like this, it seems quite simple, just like watching an athlete run a hundred metres in under ten seconds.

areafourindustries.com





Will manual welding become redundant for subcontractors?

Welding robot integrators benefit greatly from offline programming, but single piece and small series production still lags behind in this respect. In order to make the robotic welding of this high mix, low volume production profitable, Valk Welding introduces an ARP software with which subcontractors in the metal industry can achieve new flexibility and efficiency.

For more than 35 years, Valk Welding has supported various subcontractors in the metal industry with reliable Panasonic cutting and welding robots, and since 1994 with expertise in offline robot programming. Because creating a new robot program requires a trained programmer, this has so far only been possible with experienced and well-trained employees. As a result, a large percentage of subcontracted products are still being welded by hand, which is something we are keen to address given the ongoing shortage of welders and programmers. ARP is a collection of user-friendly tools to develop robot programs faster and easier without intensive training.

The benefits of ARP

ARP greatly simplifies the programming process, opening up more opportunities for robot welding accuracy, speed, and

durability. The software automatically detects weld seams and provides various best practice suggestions, which you can manually approve or overwrite with personalised requirements, after which the program is developed independently.

Application and results

The software has been successfully applied by several manufacturers in the metal industry and continues to be developed to support the programming of increasingly complex products. This means that we are constantly testing, improving, and implementing new features. One of our customers already reduced their programming time by a factor of six and achieved an Overall Equipment Effectiveness (OEE) of over 80% with their robotic system.

Do I need flexible welding jigs?

Integrators accustomed to traditional methods may be reluctant to invest in flexible welding jigs. Fortunately, there are many opportunities for 'design for manufacturing' (DFM), which allows us to redesign or adapt many products to eliminate the need for a jig. Many of our customers use this technique and Valk Welding is happy to advise on this.



ARP



A complete trailer body welded in less than 24 hours

Northern Ireland

Over five years ago, the Northern Irish trailer manufacturer BMI Trailers implemented its first welding robot for welding subassemblies, also the first Valk Welding welding robot in Northern Ireland. Following the success of this move, they decided last year to invest in a second, impressive installation. With the new robot, the company now welds the complete body structure of its waste ejector trailers, both the inside and outside, within 24 hours. As a result, BMI Trailers has expanded its capacity and is less dependent on the difficult availability of manual welders. However, this has not been without its difficulties, as managing director Brendan McIlvanna points out: “Automating welding production at this level is definitely a challenge.”

BMI’s first welding robot was set up specifically for the aluminium sidewalls, floors, partitions, and backdoors of walking floor trailers. “This proved to be a success and a

good investment for us,” begins Mr McIlvanna. “After only six months we had achieved full control of the welding process, significant improvements in weld quality and increased capacity. We owe this in part to the high-quality service and software support from Valk Welding. That is why we dared to accept the challenge of a second welding robot installation with them.”

Two separate production lines

BMI Trailers is the largest manufacturer of waste transfer trailers, also known as ejectors, in Europe. The growing demand for this type of trailer and the shortage of qualified welders were the driving forces for further automation of their welding production. “With a second welding robot installation, we wanted to be able to completely weld the monocoque body structure of the waste ejector trailers with a high degree of flexibility”, says the managing director.

“And because of the large dimensions, we also had to build a new dedicated workshop facility. This allowed us to immediately adapt the workflow so that the aluminium parts could be welded in parallel with the steel parts.”

Impressive in size

Valk Welding presented a concept where the entire monocoque body structure is built and assembled on one side, and then rotated to the other side to weld both the inside and outside as a complete unit. This concept was eventually realised in a YR-YXZ-RL-FH Track, equipped with a suspended TL-2000WGH3 welding robot at a 16m track and a reach of 4.1m in width. A sunken floor was also required to allow the body structure to rotate over 360°. “All in all, a mega-sized installation and a major investment”, says Mr McIlvanna.

A complex task

According to BMI Trailers, welding the entire body structure in a non-stop process is certainly not a simple task: “The complexity lies mainly in the programming, the number of welding points and compensating for deviations in the weld seam position. We can now automate the programming work as much as possible with the QPT (Quik Programming Tool)

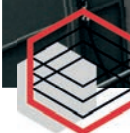
software, developed by Valk Welding. This software makes it possible to copy parts of programs within the CAD/CAM DTPS system using macros. In addition, Valk Welding uses its ARC-EYE CSS seam tracking system to ensure that the robot follows the weld seam exactly in case of position deviations. This corrects any deviation in real time with a laser sensor next to the welding torch.”

Worth the wait?

The return on investment (ROI) for this project was longer than expected. Brendan McIlvanna explains: “A year after we had the system up and running, we asked Valk Welding for additional support to refine everything we had programmed ourselves.” Did this detract from the results? Definitely not. “After 18 months, everything worked perfectly,” he reveals, “which means that we can now weld the entire body structure in 24 hours non-stop.” Thanks to the collaboration between Valk Welding’s Irish and Dutch employees and BMI’s programmers, a solid knowledge base has been built up. This enables BMI to now carry out the programming of the complex products and to program subsequent products independently.

www.bmitrailers.com

Watch the video



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ARC-EYE

Torch fume extraction for robotic welding

In an environment where hazardous fumes are used, the protection of welders has always been of great importance and many countries tighten their legislation every year. This is not without good reason, as the health effects associated with welding fumes can range from intoxications to chronic illness and more. Engmar, a French company specialising in the extraction of welding fumes, got ahead of this and collaborated with Valk Welding to develop a method of extracting and filtering even the smallest particles through the torch itself.

Why fume extraction at the torch?

“The first reason is always the protection of the people, even when they are not welding”, says Juliane Osmont, Export Manager at Engmar. Their compact ATMOWFLOW vacuum unit offers impressive precision, filtering up to 98% of harmful particles during welding. “Torch extraction is the most effective way of extracting welding fumes because it extracts directly at the welding zone”, states Osmont. This means that the fumes do not have time to mix with the surrounding clean air, so only a small volume of air is needed for extraction. In the cold winter months, this has another advantage: “Because the volume of extracted air is so small, companies do not lose much heated air when extracting outside.”

What kind of solution do Engmar and Valk Welding offer?

Valk Welding had developed its own fume extraction torch in-house, which immediately caught Engmar’s attention: “When you deal with extraction of welding fumes, you know



what a torch has to look like for the whole thing to work. And it was exactly that.” Osmont explains why: “Robotic welding is faster than manual welding, which means that it needs a bigger sphere for fume extraction. To achieve this, we need a greater distance between the welding point and the extraction point. And it is precisely this distance that makes the Valk Welding torch a good solution for robotic welding.” The two companies decided to join forces and introduced the most powerful and efficient extraction device on the market to date: the VWPR Fume Extraction Atmoflow.

What makes the VWPR Fume Extraction Atmoflow unique?

Normally, torch fume extraction would require the use of extra shielding gas, resulting in higher costs. “This is not the case with the VWPR torch”, explains Sander Verhoef, R&D Manager at Valk Welding and developer of the torch. “Because of the greater distance between the suction point and the welding point, we can still use the same amount of shielding gas.” Osmont adds an important point about safety: “Welding fumes are made of very small particles and even more nanoparticles. These can penetrate deeper into the body, making them the most harmful. Most companies only offer a filter for the larger particles, but we also have a special filter for the smallest harmful particles.” With a reusable filter and a bag-in/bag-out system, Engmar also ensures that robot operators do not have to touch these particles from the unit’s dust bin during maintenance.

www.engmar.eu



Watch our video

“Torch extraction is the most effective way of extracting welding fumes because it extracts directly at the welding zone”

- Juliane Osmont, Export Manager at Engmar

A turn-key welding robot system for Kubota tractor cabins

France

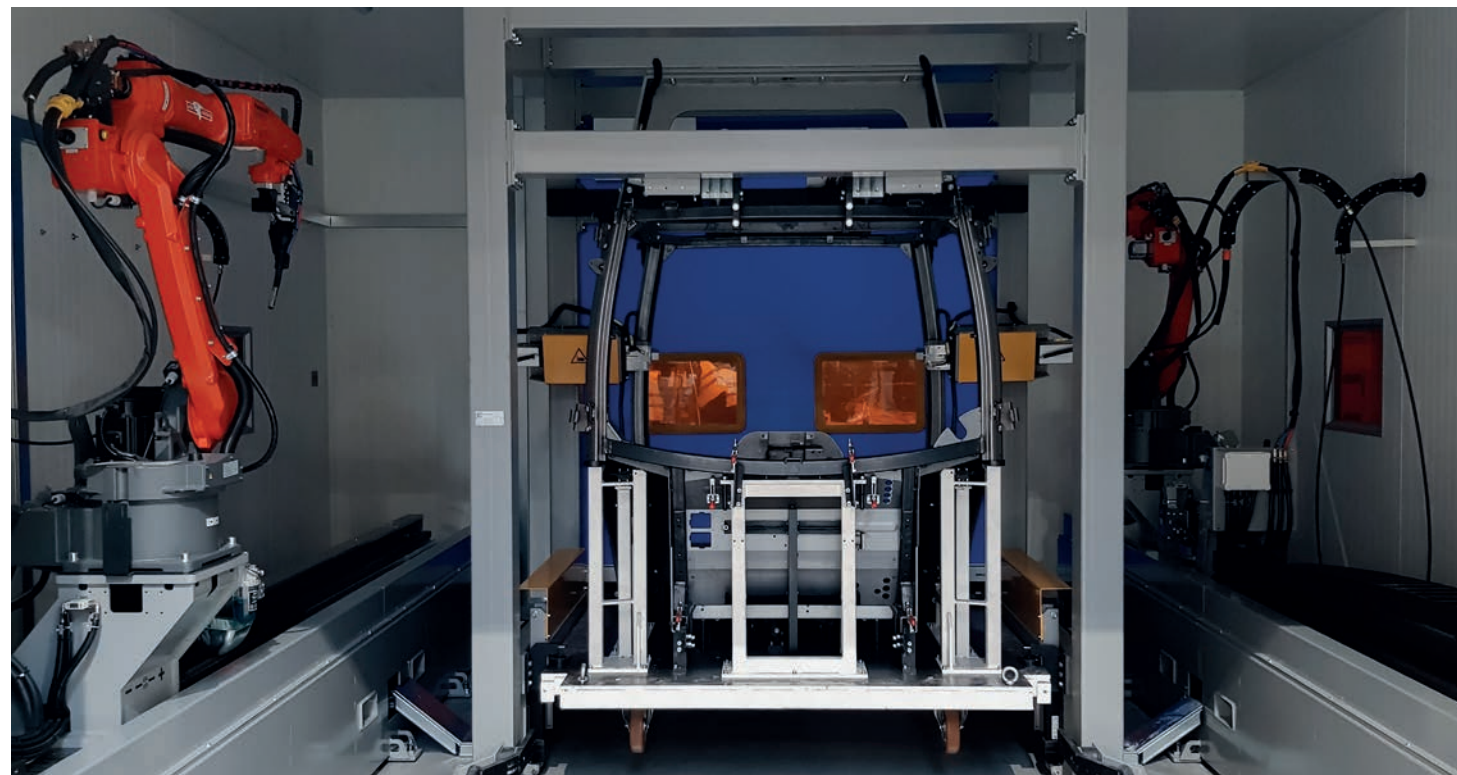
Founded in Japan in 1890 and based in France since 1974, Kubota sells mini-excavators, tractors and industrial engines throughout Europe via as many as 650 distributors. In 2022, the factory delivered 2,000 tractors for the European, American, Australian and Japanese markets. To ensure the quality of its M7 tractor cabins, Kubota relies on Valk Welding for both design and robotic welding services as well as optimal after-sales service.

In 2015, Kubota Farm Machinery Europe (KFME) invested 57 million euros in a new factory in Bierne (59), located near the port of Dunkirk. This investment has made it easier to import parts from Japan and export fully assembled machines. The Kubota M7 is produced at this new 120,000 m² site (including 40,000 m² of

workshops) in models ranging from 130 to 170 hp. “Originally, our finished tractor cabins were imported from Japan and we only had to assemble and paint them”, recalls Benoît Frezel, Assistant Manager. “But because of the high logistical costs and the storage required for months of work in progress, we decided in 2018 to integrate the welding of these at KFME.”

800 welds per cabin

This type of welding is very demanding because it requires a ROPS (Roll Over Protection System) certification, a safety standard for structures designed to protect drivers if a machine tips over”, continues Benoît Frezel.



From accessory supports to posts, each cabin requires approximately 90 steel parts with thicknesses ranging from 1.2 to 9 mm. Thus, each cabin requires 23 metres of welding, divided into 800 welds, of which about thirty are critical. At the heart of a 1,100 m² workshop is a Valk Welding welding cell with two TM-2000WG robots working almost symmetrically on a track to perform 60% of the total welding work.

Eight individual welding stations

The automation is highly optimised: during a work cycle, the robots spend between 60% and 70% of their time welding, with the remaining time spent on air movements. Upstream, the robot cell is supplied by eight individual welding stations required for subassemblies. To eliminate manual handling while minimising risks, all assembled cabins are placed on jigs moved by ‘MasterMover’ electric trolleys.

From robot to jig

In addition to designing the robotic system and developing the programs, Valk Welding also handled the design and development of the welding jigs, which are essential for positioning the parts before they are robotically welded. “Valk Welding has not only proven to be competitive in installing the turn-key robot cell, but also in supporting and optimising the entire production line, from the individual stations to the special mobile jigs, whose precision has been checked in 3D”, explains Benoît Frezel.

Training and quality assurance

Kubota then qualified all its welders through an approved body. This ensures the continuity of production while maintaining a high level of quality in the event of a problem with the robots. The welds are inspected through two quality portals. During the grinding process, the cabin

is checked for any leftover weld spatter. After sealing, each cabin is degreased before being phosphated and painted. “Since the installation of robotic welding in 2020, we have assembled more than 4,000 cabins without any major failures. We only had one technical problem with a robot, which was fixed within 24 hours. Even back then, we appreciated Valk Welding’s excellent response time”, says Benoît Frezel. Ten years ago, the factory employed 100 people, but today 250 employees produce between five and fifteen tractors a day, depending on the season.

Well-being as a priority

Like the rest of the factory, the welding line stands out for its ergonomics and cleanliness. Kubota places great emphasis on well-being in the workplace, and as part of this commitment, the Japanese company has introduced four-day workweeks per month, followed by a fourth five-day workweek. KFME is also considering the automation of subassembly stations in the future, and another project is the development of a second cabin model. To be continued!

ke.kubota-eu.com



Automation leads the way to efficient welding of excavator buckets

Denmark

Sjørring Maskinfabrik used to be reluctant to touch the production of its excavator buckets. Now the company has completely switched to robotic automation and has recently been able to prove that it is profitable.

A product that used to be manufactured in countries with much lower wages than Denmark is now part of Sjørring Maskinfabrik A/S's portfolio. Last year, the welding specialist from Thy in Northwest Jutland was taken over by the Swedish company Steelwrist. This also meant the complete takeover of Steelwrist's bucket production, including their range of smaller and more price-sensitive excavator buckets up to 1,500mm in length. Calculations had been made beforehand that the use of robotic welding would make it possible to compete with manufacturers in low-wage countries.

Results in practice

Calculations are one thing, but the results in practice can be quite different. "Now we have real production data showing that it has indeed turned out as we had envisioned," says production manager Jens Holm, "with a cost reduction of 23 percent compared to manual welding." The great results were achieved



Extensive development work has been done on the fixture systems to achieve the most automated welding process possible.

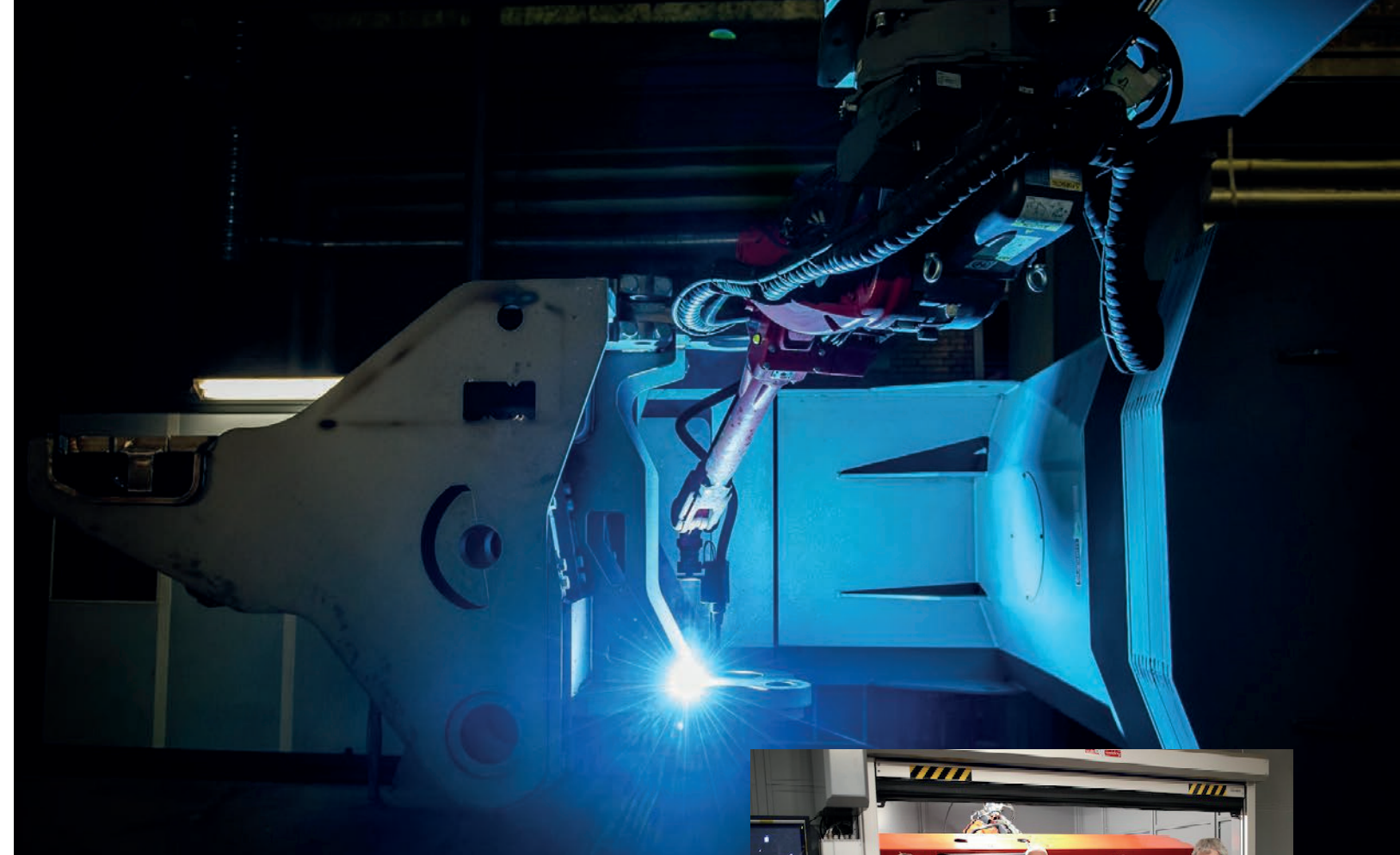
based on a project led by welder and project manager John Yde Hove, during which the company installed two robotic welding cells in June in cooperation with Valk Welding Denmark.

More flexibility with compact welding robots

The project involves two compact TRACK-FRAME-C drop centre solutions with Panasonic welding robots and ARC-EYE adaptive technology. "The cells are shielded to optimise the comfort of our operators," says John Yde Hove, "and it is possible to move offline programs from cell to cell at operator level [following the principle of Valk Welding's Shop Floor Control, ed. This offers great flexibility, as the operators can make their own decisions and do not have to plan the work two weeks in advance to get it done on time, as was previously the case."

A third investment

The new investment also stems from the company's experience with two larger Valk Welding installations, which have been used for the production of loader buckets since 2012. Jens Holm adds: "We have had good experiences with Valk Welding systems in the past, and this project is a new approach for us, so we are constantly learning."



From left to right: Sjørring production manager Jens Holm, robot programmer and operator Michael Mose, technical consultant Alan Nielsen and sales engineer John Thura from Valk Welding, Sjørring project manager John Yde Hove. They are standing in front of an installed Valk Welding TRACK-FRAME-C Drop Centre cell.

Innovation needed

Achieving a sustainable setup has been a challenge for the company, say the two employees at Sjørring Maskinfabrik. Jens Holm: "Because we are dealing with a product where the margins are smaller than what we are used to, it has taken a lot of innovation to find processes that allow us to remain profitable. On the construction side, we have worked a lot on the fixturing of the part, which is based on the same coupling point, and now operators can use a simple but efficient lifting trolley to position the items, instead of having to use a slower crane process."

A new way of thinking

According to John Yde Hove, by far the biggest change has been the way of thinking. He says: "We now have to work with multiple welding levels, where, for example, visual defects are not a problem as long as it remains correct. Whereas we did not accept downwards welding on our loader buckets, this is now a possibility to lay the final welds that are difficult to reach. Downtime is extremely costly." He says the next step is to fully implement the ARC-EYE adaptive welding process so that any corrections can be made by the welding cell rather than the operator: "This product simply needs to be automated from start to finish."

www.sjorring.com



DTPS



ARC-EYE



SFC



The strong connection

Let's connect

Welding Week
14.05 - 16.05 (BE)

Elmia Automation
14.05 - 17.05 (SE)

Mix Noordoost
15.05 - 16.05 (NL)

Dira Business og Robotbrug
30.05 - 31.05 (DK)

Automatik Expo
10.09 - 12.09 (DK)

Welding Week Powered by NIL
01.10 - 03.10 (NL)

MSV Brno
08.10 - 11.10 (CZ)

Expowelding
15.10 - 17.10 (PL)

Euroblech
22.10 - 25.10 (DE)