



SAFETY FIRST WITH ROBOT SYSTEMS

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VALK WELDING ROBOT SYSTEMS WITH ROBOTICS SAFETY MARK

The awarding of the Robot Safety Mark puts Valk Welding in a select group of robot integrators who supply their robot systems in conformity with the latest CE-machine directives and standards. Robot systems with this hallmark meet the highest safety requirements set for robotics. Valk Welding, which has already for years been supplying its robot systems in conformity with the set safety requirements, regards obtaining this hallmark as affirmation of its strategy in this area.

To obtain this hallmark the building and delivery of robot systems at Valk Welding were subjected to inspection by an independent auditor. A special hallmark committee has formulated audit requirements in close cooperation with an independent technical consultancy. The audit is intended to maintain the latest machinery directives and standards (NEN-EN-ISO-CD/TR-SIL-PL, etc.). The hallmark remains valid for two years, after which robot integrators are subjected to another independent audit.

The Robot Safety Mark is an initiative of the Robotics Association Benelux (RAB), a trade association that works to improve the image and application of industrial robots. One of the RAB's spearhead policies is to work towards an absolutely safe working environment.

www.robotics-benelux.info



All old replaced welding robots find their final resting place at a grave yard at Valk Welding in Alblasterdam (NL)

DEPRECIATION BENEFIT OF OLD ROBOTS DOES NOT WEIGH UP AGAINST THE BENEFITS OF NEW TECHNOLOGY

REPLACEMENT PROGRAM EXTENDED

Valk Welding launched the Replacement Program in partnership with Panasonic Welding Systems Japan in the spring of 2009. This made it possible for companies with the oldest generation of Panasonic welding robots to obtain a welding robot of the latest Panasonic Tawers generation under favourable conditions in exchange for the old robot. In response to market demand, Valk Welding has extended the Replacement Program to other robot makes.

Since that time more than forty West European companies have replaced their old welding robots with a new one through the Replacement Program. All users, virtually without exception, have thus achieved substantial performance and quality improvements.

Some have even reported a doubling of productivity after just a few weeks. Replacing the old welding robot not only secures the production process, but also enables companies to take advantage of the latest technology under favourable conditions. As well as reducing the cycle time, one of the most striking benefits of the digital Panasonic Tawers welding robots is the higher weld quality. The SP-MAG welding process puts spatters virtually completely into the past, which has entirely eliminated the need for cleaning afterwards.

The digital process and integration of the welding power source and robot control enable the Tawers welding robots to provide welding data registration and monitoring. That means that users can supply their clients with welding seams with a tracking certificate as a quality guarantee.

Best in class welding robots

The Panasonic TAWERS welding robots are

the only systems in which the welding unit and the welding robot are integrated in a single control system. That places these robots in the 'best of class welding robots' for arc welding applications:

- High welding quality
- Higher production output
- Lower operation costs
- High acceleration and transfer speeds (up to 180 m/min)
- Easy programming language
- Performing controller/power source
- Integrated weld data registration and control
- Large scope of standard welding softwares and functionalities
- MIG, MAG, TIG with a single power source
- Collision detection
- Unique wire feeding system
- Offline programming
- Working envelopes from 1400-1800 mm ø
- Flexibly extendible with standard components

NEW MIG-TORCH FOR ALL ROBOT BRANDS

Following a two-year development period, Valk Welding has introduced a new robot torch on the market. The new robot torches are supplied as a complete system, including pneumatic shock sensor and a cable assembly. That gives the welding robot users an extremely robust and universal torch package, which can further improve the efficiency and flexibility of the welding process. The completely new Valk Welding robot torch, which was developed and produced in partnership with Translas, can be used on all robot types, including ABB, Motoman, Fanuc, Cloos, etc.

The most striking features of the VWP robot torch:

- complete system
- integrated pneumatic shock sensor
- quick-change goose neck
- large cooling surface
- optimum protected cable assembly
- patented wire clamping system
- quick connector on both sides
- universally usable on all robot types

Valk Welding is the only manufacturer to have fitted its MIG/MAG robot torch with an integrated pneumatic shock sensor. The

advantage of this system is that equal pressure is needed in all directions (axial and lateral) in order to activate the pneumatic shock sensors. The pneumatic shock sensors immediately shut down the robot in the event of a collision, which virtually rules out the chance of the robot torch being damaged or warped.

As well as the advantage of this system providing the robot torch with very effective protection against damage and deformation as a result of collisions, the need to make corrections in the programming has been

eliminated too.

The new Valk Welding MIG/MAG robot torch minimises downtime in the robotised welding process and damage caused by collisions and extends the limits of the duty cycle.

The first version for the MIG welding process in a 500 Amp model is intended for specific applications in heavy-duty welding and where wire sensing is used as the positioning method. A smaller MIG version for thin plate and tube/tube connections is undergoing further development.



robot torch



shock sensor



cable assy.



euro connector

REPLACEMENT PROGRAM CREATES GAINS FOR FRENCH FURNITURE MANUFACTURER **MMO**

Furniture manufacturer MMO of Bretagne has replaced a 17-year-old Motoman robot with a Panasonic Tawers welding robot. For that purpose MMO took advantage of the favourable conditions under which welding robot integrator Valk Welding is currently offering its Replacement Program. Valk Welding is giving companies the opportunity to replace an outdated welding robot with a Panasonic Tawers welding robot under favourable conditions. This latest generation of welding robots provides companies with the most up-to-date and advanced welding robot technology of the day.



REPLACEMENT OF OLD WELDING ROBOT WITH PANASONIC TAWERS WELDING ROBOTS HAS HALVED MMO'S CYCLE TIME AND IMPROVED ITS WELD QUALITY

As a manufacturer of steel furniture for hospitals, rest homes, schools and offices, MMO has owned two welding robots since as far back as the beginning of the nineties. The company has since gained so much experience that it was able to draw up a comprehensive package of requirements for the selection of a replacement robot system. One of the most important requirements was the ability to program the welding robot offline. As well as improved welding quality and shorter cycle times, MMO wanted to rid itself of the time-consuming program corrections resulting from series changes or collisions. The solution that Valk Welding France Atlantique demonstrated in Saint-Nazaire with the Panasonic Tawers welding robot and DTPS-G2 offline programming scored highest

at MMO on those points.

Valk Welding supplied the Panasonic Tawers TA-1600WG welding robot on a torsion-free E-frame, with the welding robot serving two working stations using a track. Valk Welding thus offered a better alternative than the current solution based on an indexing manipulator. As well as fewer programming and calibration activities, the welding robot on the E-frame creates large savings in the logistics around the work station and more space for the products and sub-components. A welding robot also made it possible to operate a smaller work range owing to the integrated longitudinal movement. The advantage of the torsion-free frame is that it can be moved completely with the welding

robot and jigs, and can be put back into use straight away without the need for program modifications.

The new welding robot cell has helped MMO to achieve an improved, spatter-free welding quality, which has drastically reduced the subsequent processing activities. The fact that the cycle times have been reduced by 50% has also contributed to the substantial productivity improvement at the welding department.

See also the video at www.valkwelding.cz/videos/video4_en.html

www.lesmobiliersmmo.fr
www.valkwelding.com



The cycle time for the work piece on the new robot is 4 hours and 41 minutes, on the old robot it was 9 hours and 28 minutes. The new

Panasonic Tawers arc welding robot has therefore yielded a time gain of 50% and improved the weld quality.

The torsion-free E-frame can be moved completely and operated directly without any significant program modifications.



VALK WELDING AND VOORTMAN WORK ON AUTOMATED WELDING SYSTEM FOR THE STEEL BUILDING SECTOR

Valk Welding and Voortman have combined forces to develop an automated system for the flexible production of steel structures. The plan is to complete the first system as early as in the third quarter of 2010. The fully automatic system will be able to pick up loose components and place them in a preconfigured position on a steel frame and weld them. Both handling robots and welding robots will be used for that purpose. The key aspect of the development will involve using a program to convert the CAD data into a general CAM file in which not only the position, but the tolerances and quality of the weld are configured too. Vision systems will be used to pick up the loose components.

Software as the focal point

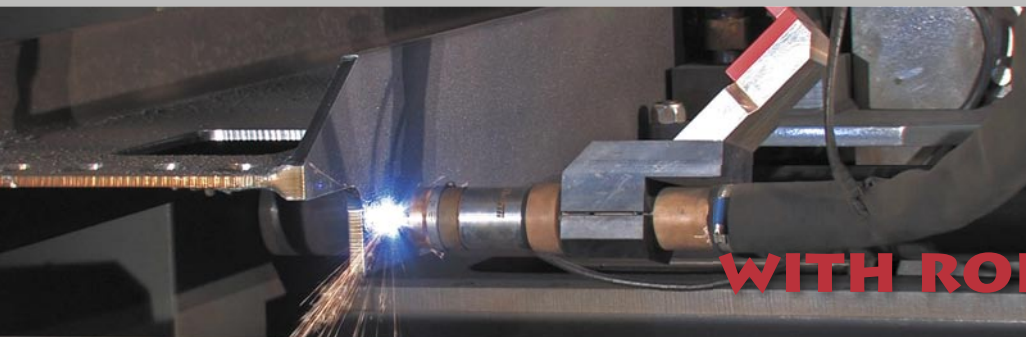
There have already been other initiatives in this area, but none of them has led to a functional result. According to directors Mark Voortman and Remco Valk, an ambitious project such as this only has a chance of success if knowledge of handling and processing steel structures and assembly are brought together. They share the view that software design forms the focal point of new developments, and for that reason they each have a software department of their own. The emphasis will therefore be on intensive cooperation between the two software departments in the time to come.

Complex steel structures

Mark Voortman and Remco Valk believe that the time is ripe for this project. First because steel structures are becoming more and more complex owing to advancing developments in the area of 3D CAD, which calls for greater freedom of form and more composites. Secondly, the shortage of welders plays a major role here. Up until now it has been possible to make up the deficit with welders from Eastern Europe, but they have returned home. In the meantime, the ageing population has led to natural wastage among professional

welders, as a result of which there could be a very serious capacity problem when the market picks up again. Also, emerging markets present huge growth potential for systems such as these.

Voortman and Valk Welding have already been working together for some time on the integration of the cutting robots that are used in Voortman's frame processing lines. The development of a system for automated assembly matches up seamlessly with this.



Voortman

www.voortman.net

BEAM COPING WITH ROBOTIC PLASMA

With integration of a 6-axis robot with autogenous cutting unit, in a Voortman drilling and sawing system, all shapes both in flanges as in the main beam can be cut. This offers enormous freedom to efficiently produce constructions with complex shapes. Voortman has been a number of these profiles V806M beam coping systems supplied worldwide, including the cutting robots of Valk Welding. The youngest development is the possibility to equip this system with a plasma cutting unit, integrated in the robot. With the nowadays modern plasma cutting units, all cutting applications in steel

profiles can be realized with higher cutting speeds, shorter cycle times, shorter exchange times and a higher process stability. Also other plasma cutting units from suppliers such as Kjellberg or others can be integrated in the system. To see the functionality of the system, see :

www.voortman.net/steel-machinery/products/beams/beam-coping/v806m/v806mphoto.html



RAPID RESPONSE TO MARKET DEMAND WITH WELDING ROBOT TECHNOLOGY

LEENSTRA MAKES SMART USE OF WELDING AUTOMATION

Leenstra Machine- en Staalbouw B.V. in Drachten is a solid company based on a number of strong pillars, including products for the building industry and mechanical engineering industries with long-term orders ranging from components to complete systems for OEMs. These products are manufactured according to lean principles wherever possible.

New orders arrive every year. The common factor running through the entire process is the combination of know-how and an efficient production method. For that purpose Leenstra makes smart use of welding robots and software automation. The company's mindset is focused entirely on robot welding: more and more products are being welded on the welding robots. The company now owns five Valk Welding Panasonic welding robot systems and is so enthusiastic about them that it plans to replace as much of its old technology as possible in order to respond quickly and flexibly to market demand.



The company's machinery and steel construction operations mainly comprise the building and overhauling of machinery and the production of lintel beams for parent company VBI (Verenigde Bouwproducten Industrie). At 1700 tons a year, the production of lintel beams occupies a dominant position. Leenstra also makes components for armature systems and construction components for amusement parks. The company employs about 70 people.

On the welding robot from series 1

Having used welding robots since 1980, Leenstra is among the early adopters in welding robotics. At the beginning of 2000 the company took the first big steps towards flexible welding automation by investing in Panasonic welding robots and offline programming. That made it possible to improve efficiency in the production of all sorts of frames, components and lintel

beams without being dependent on the series size. For that purpose Valk Welding has developed a CMRS plug-in for the Panasonic DTPS programming system which Leenstra uses to weld its lintel beams both in series and in single items without any manual programming of the robot.

A step further in logistics

A significant gain in the robot welding of lintel beams in varied sizes and series is that Leenstra is able to weld all of its lintel beams with short changeover times. But Leenstra wanted to take this a step further: "The need to manually weld separate brackets afterwards was still a serious delaying factor. We really wanted to integrate that in the production cell as well." For that purpose Valk Welding developed a solution in which the robot takes the brackets out of a cartridge and incorporates them in the welding process. That resulted in a new

system with a Panasonic Tawers welding robot on a track, which was put into operation in mid-2007. The new cell also includes programming for the automatic adjustment of the jigs in CMRS. As well as the logistical gains, that has enabled Leenstra to achieve significant manpower savings. The new installation (2007) is used to process some 1700 tons of edgings a year.

New order secured with the supplier's help

For 7 years Leenstra has been making hook armature systems for a well-known OEM in the transport industry. After starting with 6 types, the company is now producing about 200 variants of 18 types. CMRS is used in this case, too. "That saves us a lot of programming and we are able to produce the different variants both individually and in series. We are looking for ways of using our experience to help more companies. We recently secured an order for a project involving chassis for heavy-duty agricultural dumper trucks, and asked Valk Welding to find a way of carrying out the work on the welding robot as soon as possible. Together with Valk Welding our robot programmer programmed the complex sub-frame in DTPS and made it possible to produce the chassis very quickly on the robot," says Leenstra.

Valk Welding Total Supplier

As well as welding robot systems, Leenstra also buys welding accessories and manual welding machines from Valk Welding. Valk Welding is our Total Supplier for our welding needs. That also results in good contact with the various specialists at Valk Welding. On the advice of Henk Visser (consumables manager), for example, we switched from filled wire to solid SG-3 welding wire, which has enabled us to achieve substantial cost savings. Another 2 Panasonic manual power sources were recently purchased.

www.leenstra.nl

VISION SYSTEM KEEPS ROBOT ON COURSE



Aa-Dee Machinefabriek
Staalbouw Nederland b.v.

Valk Welding has integrated a vision system to monitor welds in steel constructions in real time for a welding robot project for AaDee Staalbouw in Schijndel. For that purpose an OST Circular Scanning Sensor Camera fitted to the welding torch scans the welding route a few centimetres in front of the welding torch so that the welding robot precisely follows the weld. This is a perfect solution for construction steel in larger lengths in which the welding process can lead to unpredictable non-conformities. AaDee Staalbouw has now been using the system successfully for over 2 years and has achieved a huge improvement in efficiency. Similar laser systems are also being used by Stork PMT, Thermo-King and trailer builder Wielton.



A laser scanning system ensures that the welding robot precisely follows the weld at AaDee Staalbouw.

Steel structures with robot welding

Robot welding for steel structures in particular can lead to welds deviating, sometimes up to a number of centimetres, from the programmed positions due to the material being deformed by the one-sided application of heat. For that reason construction steel is often welded by hand, but that is hard work and cannot be carried out without interruption for larger lengths. A welding robot can consistently weld longer lengths without difficulty, but must be able to monitor minor deviations as it proceeds.

AaDee Staalbouw used to check the position of the weld using the touch sensing method. AaDee experienced the extra preparation time and the fact that this method is unable to check all weld forms as a serious limitation. For that reason, AaDee has opted for laser scanning with the OST camera. The camera is highly resistant to the heat exposed during the welding process.

Communication with the robot control

Valk Welding has developed a software protocol converter that makes it possible for all camera systems to communicate with the Panasonic robot control. A unique aspect of this development is that a smart algorithm

is used to follow the weld regardless of weaving is being programmed.

Experiences of AaDee Staalbouw

According to Anton van Aarle, who purchased the laser scanning system at AaDee Staalbouw, the main benefit is found in the broad scanning spectrum of the OST camera since that makes it possible to apply longer welds without difficulty with perfect fit up: "Since we started using the OST laser scanning system the size deviations in the products and the extent to which a product deformation during welding have no longer been important issues. The sensor corrects all of this provided that the deviation remains within the sensor's scanning range. That means that we no longer have to make templates and stops or measure the size deviations beforehand. The robot is now able to weld a tubular structure of almost 20m in one go, leaving us free to get on with other work while the manual welders can concentrate on welding small parts." The company has used this method to weld all of the uprights for the noise barriers along the ring road of Den Bosch (A2) with the welding robot.

www.aa-dee.nl

AaDee used the welding robot to weld the construction sections for the noise barriers along the A2 in Den Bosch.



WIFO-ANEMA SAVES TIME WITH SMALL TOLERANCES

The Friesian agricultural machinery manufacturer Wifo-Anema has been using Panasonic welding robots since the beginning of the nineties. Since that time, welding production has kept pace with the state of technology. The company has now gained many years of experience, which makes it possible to accurately judge when a product can be welded with the robot. Wifo-Anema makes sure in all cases that the products are presented as accurate possible to the welding robot. That makes it possible to use most of the welding programmes, one to one, without the need for corrections.

Wifo-Anema now owns three Panasonic welding robot systems of consecutive generations and with different designs. That provides a large measure of diversity and flexibility. While the welding robots are used on an H-frame for smaller, heavy products, the welding robot is used on a track to weld complete loading buckets.

Weld seams have to be a perfect fit

The challenge faced by father and son Anema is to achieve the longest possible duty cycle. That means critically considering the series size, the welding time per product and the tolerances in the Weld seams. Wytze Anema: "The products can be put on the welding robot from a series as low as five, but the preliminary process has to be right. That means that both the cutting and the fit up to be perfect. Despite the alternatives offered by weld location systems in the area of automatic correction, our preference is for closely fitting work pieces. That way there is no need to carry out any further corrections in the welding programmes, and that saves time and money."



Smarter production

Father Fokke Anema had always been on the lookout for new technology for smarter production. He was one of the first to switch to CO2 welding, while his competitors continued to weld with electrodes. "That makes it possible to produce more economically at the same price as the competition." It was that approach that gave the company a head start with robotised welding at an early stage.

High returns on welding robot

Increasing the number of welding robot systems has made it possible to have more and more products welded on the robot. A fast-running product, the Wifo loading bucket, was previously welded by hand over about 2 days. Now that the welding robot is being used, that number has risen to five a day. Wifo-Anema has however radically optimised the production process for that purpose. There is now a separate template for each product so that all of the separate components can be clamped separately and welded without the need for prior tacking. All products are programmed using the teach in method. www.wifo.nl

WELDING WIRE SENSING METHOD DETECTS ALL WELD DEVIATIONS AND SHAPES

If a work piece has tolerances, the actual dimension and shape does not correspond to the programmed welding process and the robot program has to be modified. The tolerance results in the welding robot failing to put the weld in the right position, which calls for subsequent processing and manual correction of the welding programme. But the welding robot can make that correction itself. Touch sensing, where the robot will use the gas nozzle detects the weld position and shape beforehand and automatically enters deviations into the program, is one of the cheapest and most commonly used methods. A more recent development is touch sensing using the welding wire as a 'sensor'. The principle of the wire sensing system is that the wire is clamped in the torch and then cut off by an automatic wire cutting unit. That precisely defines the position of the welding wire and the position of the work piece can be detected with the accuracy of the robot (within 1/10 mm). The

main advantage of this wire search method is that it is not only possible to detect all weld forms, access is improved to areas that are difficult to reach and the detection works with both thin and thick work pieces. Since re-orientation of the welding torch in the welding programme is no longer necessary, Valk Welding regards the simpler programming as the biggest gain.

Advantage over gas nozzle touch sensing:

- Virtually all weld forms can be detected
- For thick materials searching with the wire is faster than with gas nozzle searching. Since it is not necessary to turn/re-orientate the torch each time, this is much faster and extends the life cycle of the cable assy.
- For thin materials, overlap seams from 1 mm can be located
- Access to places that are difficult to reach is optimised
- The effect on the overall cycle time is mini-

mal (approx. 5 sec. per search)

- The programming is less time-consuming

WELD WIRE MONITORING REGISTERS WELD QUALITY



The Wire Wizard wire conveyance systems have since recently featured the option to measure the quality of the weld on the basis of the amount of transported wire. For that purpose a Weld Wire Monitoring setup has been developed to precisely measure the speed of the welding wire and, accordingly, the deposition rate. The quality of the weld is determined by a constant value. Information is also given about how much welding wire



remains in the drum, which makes it easy to establish how much wire is used for each product. The system is supplied with a software package for reading and saving the values. The system is applicable to all existing welding robot (systems).

Information: Valk Welding, Peter Haspels
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VALK WELDING DISTRIBUTES GEDIK WELDING WIRE IN EUROPE

Gedik, one of Turkey's largest welding material manufacturers, has entered into a close partnership with Valk Welding for sales on the European market.

Gedik manufactures solid welding wires, welding electrodes, stick electrodes, flux cored wires and consumables for submerged arc-welding. To meet the demand of European industry, Valk Welding executing the distribution of welding materials and technical support for Gedik Europe BV from Alblasterdam throughout Europe since September of this year. Both compa-



nies are convinced that this approach – in which Gedik's top quality products are distributed by Valk Welding in the European market - will contribute to a big turnaround in the areas of pricing, delivery times and - above all - after-sales service.

See also: www.gedikeurope.com

IMPRESS WITH THE NEW SPEEDGLAS 100 WELDING MASKS



3M™ has introduced the Speedglas™ 100 welding mask especially for those who occasionally do some welding but would rather not be seen in a boring welding helmet. The new welding masks are available in 6 robust designs and are fitted with automatically darkening welding filters. That makes it possible for occasional welders to benefit from the key features of the professional 3M™ Speedglas welding masks.

The Speedglas 100 welding mask offers a welding filter with outstanding optical quality, a reliable switch from light to dark, and is suitable for most welding processes, such as electrode welding (MMA welding), MIG/MAG and many TIG applications (> 20 amp).

Valk Welding supplies these welding masks from stock at a highly competitive price: from as little as 125 euros, list price. A highly attractive price for Speedglas quality!

EXHIBITIONS AND EVENTS

TECHNI-SHOW
Utrecht, Netherlands
9-12 March 2010

INDUSTRIE PARIS/SOUDAGE
Paris-Nord, Frankrijk
22-26 March 2010

VISION & ROBOTICS 2010
Veldhoven, Netherlands
26-27 May 2010

METAVAK 2010
Gorinchem, Netherlands
9 - 11 November 2010

VIDEO ARCHIVE
At www.valkwelding.cz/videos/
you will find video clips of
current robot projects

COLOPHON

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