

## VALK WELDING USERS CLUB

for Valk Welding/Handling  
robotclients

**25 November 2010**

Including workshops,  
innovations, tips & tricks.

Contact:  
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## TAWERS EXCEEDS THE LIMITS OF ALUMINIUM ROBOT WELDING

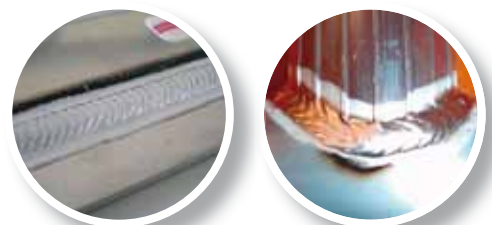
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The introduction of the **Panasonic** TAWERS welding robot, featuring high level integration of the welding power source and its controlcircuit, has facilitated new welding technologies that have resulted in speeding up the welding process and enhancing the weld quality for steel, stainless steel and aluminium alike. During the past 12 months various renowned aluminium processing companies have proven the **Panasonic** TAWERS welding robot as the most competent and advanced welding robot for aluminium products after subjecting it to comprehensive tests and comparing it with other products.

Aluminium is known as a material that is difficult to weld, making it the exclusive domain of a limited number of professional welders. The high heat concentration weakens and distorts the material, which greatly increases the risks of deformation if too much heat is generated during the welding process. This has been changed by the arrival of digital welding sources and a broad training programme. Software-based functionalities limit the heat input and facilitate a much higher weld quality than non-digital processes. The **Panasonic** TAWERS welding robot, which was specifically designed for the welding process, is the only robot in

which the robot and the welding machine are controlled by a single CPU (Central Processing Unit). That increases data transfer by 200% and results in fast calculation speeds, which has made it possible to develop software controlled welding processes, also for materials such as aluminium.



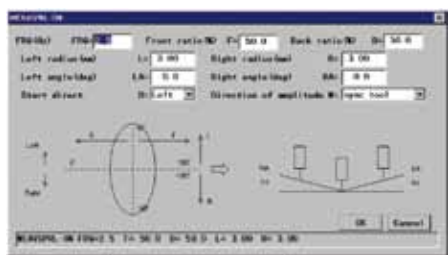
# UNIQUE FUNCTIONS FOR ALUMINIUM WELDING

Panasonic has developed special functions for the welding of aluminium for the TAWERS, such as 'Spiral weaving', 'Synchro pulse' and AC Mig. These functionalities in the TAWERS technology facilitate welding in aluminium, individually or in combination, which until recently was regarded as virtually impossible.

## Spiral Weaving for thin walled aluminium

'Spiral Weaving' involves building up the weld step by step in order to avoid excessively annealing and deforming the material, without the welding pool sagging through the material.

The extremely fast data processing in the control makes it possible to change the parameter settings at high frequency. That way the weld is built up in a circular motion with alternating parameters.



## Connecting different thicknesses

The 'Synchro pulse' function is another extremely useful application, especially for connecting materials with different thicknesses. The 'Synchro pulse' function makes it possible to configure a different welding parameter for both strokes of a pendulum movement to obtain optimum annealing and welding parameter appearance when welding different material thicknesses.

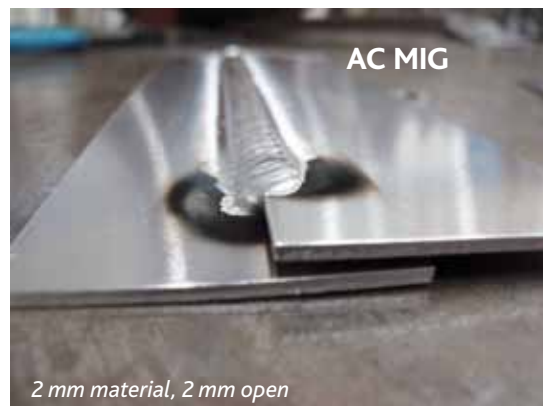
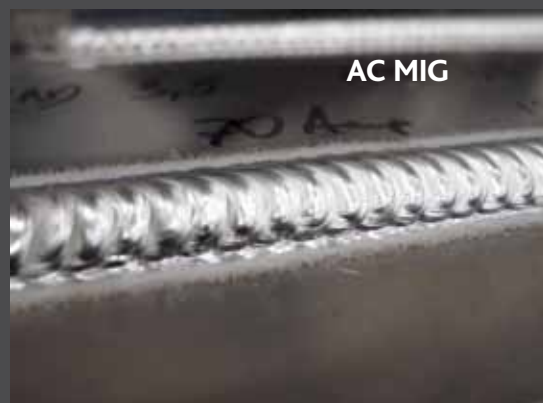
## AC Mig welding, a unique application

Panasonic's latest development is the AC Mig welding system. This application is based on alternating current technology during the Mig welding process. This combines the advantages of Tig and Mig welding in a single welding process, which results in a unique welding arc in which the alternating current technology has a cleaning effect on the weld appearance as is usually the case with AC Tig welding. However the welding speed of Mig welding is applied at the same time, which results in a unique combination.

The application of these two welding technologies also makes it possible to bridge gaps and/or tolerances without difficulty. This common problem has thus been consigned to the past.

Combining all of the aluminium welding technologies makes it possible to carry out welding activities that were virtually impossible in the past using Panasonic welding robots. A number of companies are now using this technology in robotised aluminium welds, including Metaal 2000 (see page 3). For a video of the use of AC Mig welding combined with spiral weaving, see:

[www.valkwelding.cz/videos/](http://www.valkwelding.cz/videos/)



2 mm material, 2 mm open



Uneven thicknesses

## FINAL RESULT DETERMINED BY CONSISTENTLY HIGH QUALITY OF WELDING WIRE



Fluctuations in the composition of welding wire lead to differences in the final result of the welding work. That is why the high and - above all - consistent quality of the welding wire contributes to determining the final result. Valk Welding welding wire is generally acknowledged as one of the most consistent and reliable welding wires, which is because the material is provided by one and the same supplier/factory.

Valk Welding is one of the largest independent welding wire suppliers in Europe. The large volumes that the manufacturers produce for Valk Welding make it possible for

Valk Welding to stipulate its own formula, in which the requirements for the chemical composition (within the current standards) and the production method are different from those of other suppliers on the market. The bandwidths in which the various constituents can vary at Valk Welding are among the narrowest in the market, which makes them ideally suitable for automated welding.

Valk Welding supplies the following types of aluminium welding wire:  
AL 99.5 \ ALMg-3 \ ALMg-4,5 \ ALMg-5  
ALSi-5 and ALSi-12 in diameters from 0.8 to 2.0 mm ø.



## **AC MIG ENHANCES WELD QUALITY OF ALUMINUM BARRIERS**

The products of the Dutch company Mojo Barriers are used all over the world to guarantee the safety of visitors to pop concerts and other major public events. The company name is derived from the most successful product, the Mojo barrier, a modular aluminum segment that can be used to build hundreds of metres of fencing. The Mojo barriers are made by the Dutch supplier Metaal 2000. Metaal 2000 uses a **Panasonic** welding robot system with the AC Mig welding process for the production of the barriers.

The Mojo barrier has become a household name in the live entertainment industry. The system is used at more than 2000 events a year, all over the world. The first steel version was developed at the end of the eighties, a collapsible element. The barrier has evolved into the current aluminum version over the years. Mojo Barriers is planning to replace all of the steel versions with the new aluminum barriers in the near future.

### **New aluminum version**

Metaal 2000 has been involved since the beginning of the development and product of the barriers. The need for a lighter version soon came about for transport and positioning reasons. The material chosen for this purpose was aluminum 50 st/51 st, an alloy with good impact-resistance and high tensile strength. Since this alloy is difficult to place in an edge press, the barriers are assembled by welding together extruded sections, perforated plates and tubular frames.

### **Large amount of welding**

The first 800 aluminum barriers were welded manually. Metaal 2000 employs 14 certified manual welders for this work, all of them able to deliver a high level of quality. The welding of the front sides particular involves a lot of welding. With a large repeat order in the offing, director Jan Kok of Metaal 2000 therefore quickly looked into the possibilities of robot welding for aluminium. He was already using a welding robot cell for steel products. Together with Valk Welding Jan Kok developed a water-cooled jig to minimise the distortion of the material during welding. The jig is a simple design with a clamping system with male-female connectors. Since the clamp and the work piece have a fixed position inserting and removing the products does not call for much professional knowledge. Rather than using the TIG process, Valk Welding recommended the use of AC-Mig welding. That yielded improved annealing and higher quality.

Welding robot cell must speed up production Valk Welding supplied a welding robot cell with two 3m working stations, which is ample for welding larger parts in the future as well. Metaal 2000 will be using this cell exclusively for welding aluminum products. With the largest order ever on the horizon, both to replace the older steel barriers and to build up the stock, the cell is fully utilised for the time being. Jan Kok expects to be producing the series in a shorter time period in order to leave space for other aluminum welding work.

### **Water-cooled jig**

Unlike the weld quality of the manually welded barriers, Jan Kok regards the consistently high quality provided by the welding robot as a vital factor for the strict quality requirements set for the barriers. A crucial factor here is the use of a water-cooled jig, which makes it possible to keep the application of heat fully under control, which ultimately improves the homogeneity of the weld and keeps the dimensions constant.

### **AC Mig welding process**

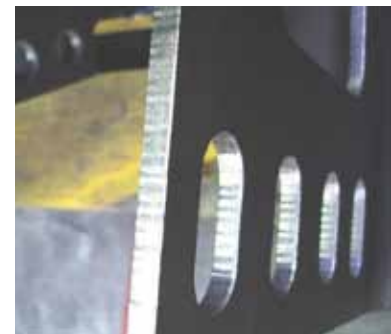
Using a welding robot in the fully automatic AC Mig welding process makes it possible to use add much less heat to the end-product in a substantially shorter time period, which reduces the tension in the material and the weld. Once the jig and the welding products have been correctly configured and set (by the Valk Welding product specialists), a product with consistent quality is achieved. Using the fully automatic Mig welding process keeps the amount of melted welding wire the same for each product. This is not the case for the Tig welding process, where the manual feed of the additive depends on the manual welder. The welding quality of the Mig welding process with the welding robot has also contributed substantially to improving the quality of the barriers.

[www.mojobarriers.com](http://www.mojobarriers.com)  
[www.metaal2000.nl](http://www.metaal2000.nl)



# SMALL WELDING COMPANY ACHIEVES GAINS WITH PLASMA CUTTING/WELDING ROBOT

Patrick Boers started five years ago with Boers Weldingconstructions. With a few orders from his previous employer, Patrick's company was fully up and running from the word go. But owing to a shortage of suitable skilled workers Patrick did not manage to make the step to increasing the manpower level. Shortly before the crisis he therefore decided to switch to automation with a welding robot. A **Panasonic** TAWERS welding robot is now his one and only faithful employee. Together they put together some eight hundred construction parts for agricultural machine manufacturer Lely Industries. Patrick also makes welding jigs and does welding and assembly work for several other companies.



Patrick Boers (27) invested in a Panasonic welding robot two years ago. Patrick: "Rather than starting with a used system, I opted straight away for the latest technology, a **Panasonic** TAWERS TA1900 welding robot with two clamping bays. That made it possible for me to weld products quickly and virtually spat-free. Valk Welding gave me some useful tips, was able to supply me with a complete system and took a flexible approach. Also, the user training in Alblasterdam was close to home. It's striking how well Valk Welding was willing to support even a small company such as mine."

## Plasma cutting torch extension

BLM welds assembly plates onto tubular frames for Lely Industries. Lely delivered the tubular frames put together and cut to size. To make the feed holes the tubular frames

were first placed under a processing station at Lely. Patrick discussed the matter with the client and identified ways of greatly simplifying the process by carrying out the cutting and milling work with a plasma cutter. For that reason Patrick had the welding robot extended with a plasma cutter head and a Kjellberg plasma cutting source. Patrick: "That makes it possible for me to cut the holes and shorten the tubes in a single operation. That yields a substantial cost saving and shortens the delivery time."

## Extra long reach

Patrick opted for a robot with a long arm (1900 mm) in order to make use of the longest reach possible. "Next on my wish list is to install a manipulator in the working stations to provide an extra controllable axis in order to extend the reach even further."

## Cutting tubular parts

Patrick Boers has identified many more applications for the plasma cutting robot. "Cutting a tubular frame at an angle delivers a virtually smooth cut - try to achieve that with any saw, you will not be successful."

The robot is now spending half of its time on both cutting and welding work, but that is certain to increase. Patrick: "We've managed to reduce the production time for most of the parts we're now making. Not only by making smart jigs, but by carrying out as many operations as possible in a single operation so that we save a lot of handling work and tool changing times. These days Patrick regularly hires self-employed welders to get the work done and continue to achieve short delivery times."

[www.blm-groep.nl](http://www.blm-groep.nl)



## CUTTING WITH THE ROBOT SAVES TIME

In day-to-day practice, steel structures and it cuts, such as slots, bevels etc. are mainly cut by hand. Leaving aside the question of whether this is sufficient accurate, it is very time-consuming, not least owing to the touch up work afterwards. An autogenic or plasma cutting torch on a robot gets the job done in just a few minutes, exactly at the desired position. The more complex the job, the bigger the time saving. Cutting with a robot is many times faster than drilling and sawing.

It is even possible to cut directly with a diagonal welding edge. Plasma cutting is faster and more accurate than autogenic cutting. The process also calls for less experience than autogenic cutting. A plasma cutting system can easily be connected to a welding robot arm. For more applications of robotised autogenic and plasma cutting, go to [www.voortman.net](http://www.voortman.net) under beam coping systems.

# BROAD RANGE OF GEDIK WELDING ELECTRODES

As an addition to its range of welding wire, Valk Welding has recently started to supply a broad range of Gedik Welding electrodes under the GEKA label. The electrodes have all current certifications, are mainly available from stock and are very competitively priced.



The GEKA range includes rutile, basic, cellulose, high-temp, stainless steel, cast iron and surface welding electrodes. A pocket-sized catalogue for the entire range of electrodes and their details is available on request free of charge. ([peter.haspels@valkwelding.com](mailto:peter.haspels@valkwelding.com))

The current electrodes feature virtually all international certifications, including:

- TÜV (Technische Überwachungs-Verein)
- DB (Deutsche Bahn)
- CE (Conformité Européenne)
- LR (Lloyds Register)

Also, a 3.1B certificate can be supplied on request with each delivery.

Curious? If so, apply for a trial shipment and compare the GEKA electrodes with your current ones. You will be amazed by the quality, and the price, too. Since the start of the alliance with Gedik Welding the turnover in electrodes has risen steadily, and more and more types are becoming available from stock. For more info see:

[www.gedik-europe.com](http://www.gedik-europe.com)



## INDICATOR SHOWS WELDING WIRE LEVEL IN THE DRUM

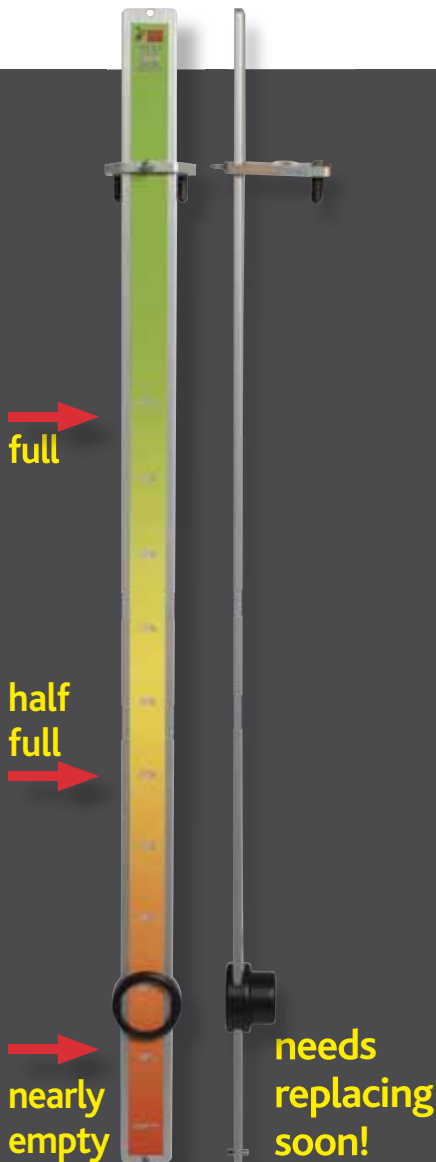
An indicator on the outside of a welding wire drum that shows the level of the welding wire inside. This is the basic idea that led to the development of the wire level indicator (WLI) by Wire Wizard, manufacturer of wire feed systems. This means that from now on you can see quickly and clearly from a distance how much wire is left in a drum so that you know when the drum needs changing.

It often turns out in practice that people are taken by surprise when the drum is suddenly empty. Since a new drum is not always at hand, this can result in unnecessary robot downtime or even situations where the robots get jammed in a product. With the WLI you can see this at a glance and intervene at an early stage. It is an especially big advantage to be able to see this at a distance for drums on a track or a gantry.

The WLI, which is mounted on the outside of a welding wire drum works with a magnet that moves along the drum, with the level of the wire inside. The more

welding wire is used from the drum, the lower the magnet descends. The level is shown by the graduation on the wire level indicator.

The fact that the system works without a power supply makes it inexpensive to purchase and use. The WLI is suitable for all brands of steel welding wire in drums, both in 250 kg and 450/500 kg packagings.



# SUPPLIER BROMEDO SWITCHES TO WELDING ROBOT

Is a welding robot cost-effective for our supply company? That is a question of the Dutch supplier Bromedo wrestled with for a year or two. Last year the company decided to go for it and invested in the pick of the bunch: a **Panasonic** Tawers TA 1800 with two 3m working stations and a number of options. As well as efficiency gains and higher, consistent welding quality, Bromedo was also immediately able to gain substantial savings on subsequent processing. Company manager Menno Brok: "The products were so neatly welded that we could deliver them straight to our customers without any further processing."



Bromedo mainly delivered plate metal sections to third-parties, including a number of well-known OEMs. For Holmatro Bromedo made items such as plating sections and handles, for Boon-Edam contact mats, which are not included in the standard range. Bromedo also develops, produces and sells its own products, like sound booths under the name Esmono Sound bv. This approach makes the company less dependent on the outsourcing market, which has less to outsource in times of crisis. Last year Bromedo sold even more sound insulation cabins to private buyers than in previous years. That meant that the company no longer had to postpone its investment plans.

Bromedo has many systems for making all those varied products, such ranging from CNC-punching, CNC-bending to a machining centre. Menno Brok: "We process pipe, rod, tube and plate materials. The idea is to avoid risks and

damage by carrying out as many treatments in-house as possible. Until recently we did the welding manually. These days we use the robot for returning series."

Menno Brok: "For the welding robot system we immediately opted for a comprehensive system and a long reach in order to be ready for what the future holds. The 3m working stations are also a perfect fit for the maximum plate measurement that we can place on the punching machine and edging presses. The Panasonic TAWERS welding robot is suitable as standard for MIG, pulsed aluminium welding and TIG welding, which means that we can use the same system to weld steel, stainless steel and aluminum. For that purpose we switch between a VWP 316 and VWP 351 robot torch, with the robot torch system optimally protected by a pneumatic shock sensor. We also additionally bought the Auto Tool Check

(ATC) as an option. The zero point is rechecked after every fifth welded product. That rules out all risks of non-conformities and rejection. We received details advice on this subject from Valk Welding. We had a good feeling about the amount of support we were receiving from the very beginning."

The welding robot system is currently being programmed with the teach pendant. External work preparation with DTPS does of course offer more benefits, but we want to start by learning to use the welding robot system properly before making the switch, explains Menno Brok.

[www.bromedo.nl](http://www.bromedo.nl)

BROMEDO metaal b.v.  
productie-bewerking-installatie-handel



## SMART PLCs REGULATE SAFETY FOR EACH ZONE



During the delivery of robot cells it is important to avoid unsafe situations for operators at all times. To Valk Welding that has always been a matter of course.

Even before the CE machinery directive was introduced, Valk Welding delivered its systems with components that shut down the robot if someone gets too close to it during operation. It was therefore no more than a formality for Valk Welding to be awarded the RAB Robotics Safety Mark.

During the course of time Valk Welding has continued to tighten up the procedures and the system safety components. These days Valk Welding supplies an interim control that regulates the activation of the various zones if several clamping positions are used. The position of a robot that operates over a track with a turntable is registered with proximity

switches. Those signals are processed in the interim control by Pilz safety PLCs with 3 self-monitoring processors. The PLCs ensure that the light screen safeguard is activated only in the zone in which the robot is operating. As soon as someone enters that zone, the robot immediately shuts down or goes into emergency stop mode. The signal is set to safe mode only if the employee in the cell presses a button and then a second button outside of the cell within 10 seconds. Extra safeguards such as these are intended to prevent an employee getting closed in while the robot is in operation..



# HOVUMA GUARANTEES SAFETY AND DURABILITY WITH ROBOT WELDING

**HOVUMA**  
MAGAZIJNSTELLINGEN

Hovuma Magazijnstellingen B.V., a Dutch production company of warehouse racks, put a new Valk Welding robot welding system into use last year. "The purchase of a new cell with two **Panasonic TAWERS** welding robots is perfectly in keeping with our efforts to achieve maximum safety in the warehouse systems that we produce", explains general manager Piet Sanders. The investment was preceded by an in-depth study, talks with several robot suppliers and feasibility studies. The principal conditions for investment were flexibility, a doubling of production, consistent welding quality and cost-price reduction.



## The robot welding system

The 28 metre robot welding installation comprises 2 **Panasonic TAWERS TA1900WG** welding robots on a track, which serve 6 welding stations independently of each other.

Piet Sanders: "To be able to use the welding cell as flexibly as possible, it has been placed on the dividing line of 2 production halls. Girders with a maximum length of 4 metres can be welded at four welding stations on one side, while two uprights or crossbeams with a maximum length of 11 metres can be welded on the other. "Because we supply on a customised, order-driven basis, flexibility is

equipment and offers a complete system that covers the robot, welding equipment, wire feed and programming. Everything is integrated in a one system, which avoids communication problems."

## Safety and durability

Hovuma stands out for its safety and durability in the market for warehouse racks. Piet Sanders: "We are one of the few companies supplying welded racks, which stand out from the competition for their safety. Whereas the consequential damage to the competitors' warehouse racks caused by forklift truck collisions is over 10%, with

no investment for 13 years. In mid-2005 Sanders started a catch-up effort with the purchase of a super-modern powder coating line. The next big investment was to robotise the production process. "We really didn't have a choice", says production manager Ger Zetsen. "It's impossible to find qualified welders these days, and the peaks in the order flow mean that its very difficult to hire qualified people at short notice. We were also forced to opt for further robotising by the more frequent recurring work, such as when around 20,000 girders have to be welded, combined with the need to produce more cheaply. Everything is running



"Consistent weld quality, flexibility, production capacity, double cost-price reduction"

of paramount importance to our production process. Our programme of requirements was therefore clear: Consistent weld quality had to be guaranteed for the safety of our racks, which we take extremely seriously. The flexibility that manual welding gave us, also had to be guaranteed with robots. Another condition was that the production capacity had to be at least doubled, and there had to be a cost-price reduction too".

## Clear choice for Panasonic

Hovuma has already been using **Panasonic** welding robots for the welding of individual components since 1988. "There are various reasons why we have now opted for Valk Welding's **Panasonic** welding robots to weld the girders and crossbeams", says Piet Sanders. "Panasonic specialises in welding

Hovuma warehouse racks that is less than 1% of the purchase price. Damage caused by forklift truck collections is often seriously underestimated. Warehouse racks can be seriously damaged by these collections, and that can be critical in the case of a fully loaded rack. Welded warehouse racks minimise the chance of collapse."

"The high level of durability also ensures that these racks can easily last for 30 years. There is also a good market for used Hovuma warehouse racks. The additional costs of our warehouse racks easily pay for themselves", says Piet Sanders.

## Catch-up effort

Before Sanders took over the company in a management buyout, there had been

to our complete satisfaction at the moment. Our expectations have been met, flexibility is guaranteed, the cycle times are being achieved and production is 100% faster. Were we used to have 4 welders at work, the entire robot welding line can be operated by two people. The only weak link in the chain is the handling for the girders. But everything is much faster now than manual welding. There is no doubt that there will be further automation in the future."

[www.hovuma.com](http://www.hovuma.com)

View the video at:  
[www.valkwelding.cz/videos/](http://www.valkwelding.cz/videos/)

## HANDLING ROBOTS HELPS WITH MECHANICAL ROAD BUILDING



To limit the physical burden placed on road builders, a new system has been developed in which the bricks are placed in line by a handling robot and then picked up by a vacuum lifting system. All the road builder has to do is make sure that the package is placed in the right position in the sand bed. Valk Handling (the handling robot division of Valk Welding) provided the robot part of this innovative Multistrater.

The robot, a Fanuc handling robot, type M-16iB, was programmed by Valk Handling to form the commonest brick types and formats in line on an adjacent band. All an

employee has to do is programme the brick type, shape and spacing. A generator delivers the current for the robot, vacuum and hydraulic pumps. That makes the Multistrater completely self-supporting and can be moved 'under its own steam'.

[www.igms.nl](http://www.igms.nl)



## BROADER SERVICE FOR LOCAL CUSTOMER VIA DEALER NETWORK

To provide the local market with an optimum service Valk Welding has continued to expand its dealer network in the past year.

At the beginning of this year a big step was taken towards an alliance with the Dutch Lasaulec group. This group of technical wholesale companies which targets small to medium-sized companies and which has several establishments strongly concentrated in the region above the rivers is currently carrying a fully-fledged range of welding additives, manual welding equipment and accessories. The alliance with Valk Welding makes it possible for Lasaulec also to meet

the demand for automation components and welding robots.

Valk Welding has also entered into an alliance with Palmaers Vakhandel in the Belgian region Limburg. Palmaers is now supplying welding wires, welding torches and other Valk Welding consumables from stock. That makes it possible for Palmaers Vakhandel to provide companies in the medium-sized and small enterprises sector in its region with a direct and fast service.

[www.lasaulec.nl](http://www.lasaulec.nl)

[www.palmaers-vakhandel.be](http://www.palmaers-vakhandel.be)



## VALK WELDING EXTENDS OPERATIONS IN GERMANY

Following expansions during the past 10 years in countries including Denmark, France, the Czech Republic, Slovakia and part of Poland, Valk Welding is now also operating in the German market with the sale of welding and cutting robot systems.

### Robot system for Butzkies Stahlbau

Of a total of forty installed systems, five were delivered to German companies during the first six months of this year. A case in point is a robot welding system for Butzkies Stahlbau for the welding of steel structures for the industrial and utilities building sector. The software for this system was prepared in Alblasterdam by Valk Welding with people



from Butzkies, which made it possible to start a 24/7 production cycle within 2 days of the welding robot system being delivered. [www.butzkies.de](http://www.butzkies.de)



### Robot welding system for Grimme agricultural machinery

The company Grimme in Damme has also decided to work with Valk Welding as its welding robot system supplier in the future. Intensive trials with offline programming have convinced Grimme of the capacity and functionality of Panasonic welding robot systems in combination with the offline programming system DTPS. See also the demo at:

[www.valkwelding.cz/videos/](http://www.valkwelding.cz/videos/)



## EXHIBITIONS AND EVENTS

**METAVAK 2010**  
Gorinchem, Netherlands  
9 - 11 November 2010

**VALK WELDING USERS CLUB**  
Alblasterdam, Netherlands  
25 November 2010

## VIDEO ARCHIVE

Video clips of current robot project are available at [www.valkwelding.cz/videos/](http://www.valkwelding.cz/videos/)

## COLOPHON

'Valk Mailing' is a twice-yearly publication of Valk Welding B.V. and is sent free to all business relations. If you want to receive this publication in the future, please send an email to [info@valkwelding.com](mailto:info@valkwelding.com)

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