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Valk Welding robot solutions

Valk Welding robot solutions

Technology partner for arc welding robot systems for small to medium sized series

Valk Welding develops and builds turnkey welding robot systems for small to medium production requirements. The sales and installed base of over 3.500 industrial robots as well as the monthly delivery of over 650 tons of solid welding wire puts Valk Welding amongst Europe's largest independent suppliers. From its head office in the Netherlands and its own facilities in France, Czech Republic and Denmark, Valk Welding serves the entire European metal industry with local demonstrations, sales, distribution, trainings and service facilities. With its efficient and flexible organisation, Valk Welding will respond quickly to your demands.

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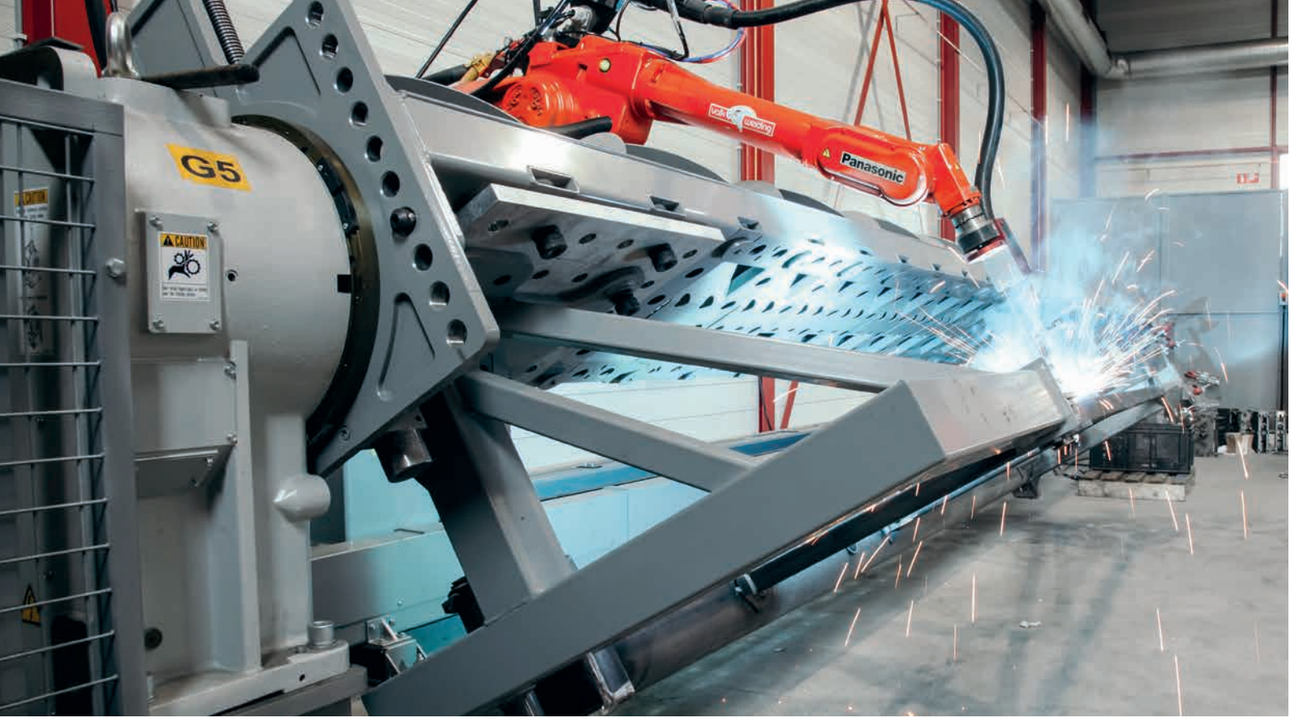


Valk Welding robot solutions

Why Valk Welding

Valk Welding makes as technology partner the difference with the supply of total solutions, custom build systems, user-friendly offline programming systems, robots specifically designed for the arc welding process, tooling, wire feed systems, high quality welding wire and welding and robot technology know-how.

- Standard and custom build welding robot systems.
- Complete turnkey solutions, including programming and tooling.
- Unique, Arc-Eye Laser Tracking System with Adaptive Welding (patented).
- Comprehensive support in start-up phase.
- In-house software development.
- High-end welding knowledge and experience at your service.
- Operator and programming training courses.

Strong organisation

- Around 170+ employees throughout Europe.
- Subsidaries in the Netherlands, Belgium, France, Germany, Czech Republic, Denmark and Poland.
- Strong service organisation.
- Over 1000 man-years of knowledge and experience.
- Focus on welding automation.
- Robot user group meetings.

Standard and custom-build

As well as complex and customer-specific solutions Valk Welding offers a comprehensive range of ‘standard’ robot concepts. With competitive pricing, modular designs and short delivery times, Valk Welding offers high performing flexible production solutions with these concepts.

Valk Welding’s engineering team develops concepts based on your requirements aimed at achieving the highest possible production performance.

Valk Welding has engineers specialised in welding automation and software development for custom build welding and cutting robot systems. The assembly of all robot systems is concentrated in own facilities, where training courses will be provided for your operators and programmers.

Robots designed for welding

Panasonic robots are specifically developed for the arc welding process in which all components and software are produced in-house. The welding robot, welding machine, controller, wire feeder, positioners and software are therefore optimally tuned to each other. And last but not least: we take all responsibility together with **Panasonic** for the whole of your project.

See our video "The people behind"

Programming solutions

To make the use of welding robots possible in small series and single-piece production, Valk Welding is investing heavily in the development of software modules. The programming and simulation software DTPS, developed in close collaboration with **Panasonic** specifically for welding robotisation, also forms the base for further automation of the programming process. We also have solutions for fully automatic programming of your parts. With the development of Shop Floor Control systems and Management Information tools, including full traceability, Valk Welding responds to the further demand for Industry 4.0 solutions.

Valk Welding robot torch

Valk Welding uses its own internally developed VWPR welding equipment. This equipment covers all the needs from wire feeder to the arc: longlife quick exchangeable cable assemblies, unique pneumatical shock sensors, torch bodies with patented wire clamping and water-cooled robotic torch with quick exchange standard and custom made goose necks. This integral solution is vital to increase the overall equipment efficiency of your investment drastically.

Arc-Eye seam tracking

To check and adjust the position or the volume of the programmed path in the work piece, in addition to gas nozzle searching and wire searching (Quick Touch), Valk Welding has developed the Arc-Eye welding seam tracking systems, which monitors the weld seams real-time and adjusts automatically the programmed path of the robot. Adaptive welding in which the robot adjusts the welding parameters according to the seam geometry, is as plug and play upgrade compatible with the Arc-Eye CSS solution. The Arc-Eye system is developed for both reflective as non-reflective surfaces.

Reliable wire feeding

In order to ensure the quality welding wire reaches the wire feeder without interference, Valk Welding supplies a complete range of wire feed systems. This program of Wire Wizard offers solutions to connect all types of drums of welding wire with all brands of robots. The patented wire cables, the Pneumatic Feed Assist and the Wire Guide Modules, which ensure a friction free transport of the welding wire, are a crucial part of the low-maintenance system.

Panasonic

Welding robot **TM-series**

- State-of-the-art welding robot
- Same high performace as the TL-series
- Suitable for Super Active Wire Process
- Compatible with external, internal and hybrid VWPR cable assemblies

TM-series with internal or external cable assembly

The basic model of the TM-series is available with the longlife quick exchangeable Valk Welding VWPR cable assembly through the robot arm (internal, with focus on reducing cable interference) and outside the robot arm (external with focus on wire feedability).

TM-series with hybrid cable assembly

Moreover, the welding robots program turns to the hybrid solution, in which only the welding wire cable runs outside the robot arm, and the welding current cable, shielding gas, compressed air and water cooling go through the robot arm. The hybrid cable assembly is the perfect answer to the high-speed Panasonic robots because of less weight and more flexibility for optimal reachability of your parts, leading to longer lifetime of the cable assembly and assuring you the highest wire feedability.

Internal cable assembly

External cable assembly

Hybrid cable assembly

Panasonic **TAWERS** series

All-in One Arc Welding Robot Solution

The performance of the welding robots from the Panasonic TAWERS™ series enables you to influence important factors of your business management, such as quality, accuracy, flexibility and cycle times, so an optimal efficiency from your welding automation can be achieved.

	Max. payload	Max. reach	Max. speed	Repeatability	Robotweight
TM-1100	6 kg	1.163 mm	180 m/min.	+/- 0,08 mm	+/- 156 kg
TM-1400	6 kg	1.437 mm	180 m/min.	+/- 0,08 mm	+/- 170 kg
TM-1600	4 kg	1.639 mm	180 m/min.	+/- 0,08 mm	+/- 180 kg
TM-1800	6 kg	1.809 mm	180 m/min.	+/- 0,08 mm	+/- 215 kg
TM-2000	6 kg	2.011 mm	180 m/min.	+/- 0,1 mm	+/- 217 kg
TL-1800	8 kg	1.801 mm	180 m/min.	+/- 0,08 mm	+/- 215 kg
TL-2000	8 kg	1.999 mm	180 m/min.	+/- 0,15 mm	+/- 216 kg
TS-800	8 kg	841 mm	180 m/min	+/- 0,05 mm	+/- 55 kg
TS-950	8 kg	971 mm	180 m/min	+/- 0,05 mm	+/- 56 kg
LA-1800	26 kg	1.801 mm	180 m/min	+/- 0,07 mm	+/- 320 kg
HH-020L	20 kg	3.281 mm	180 m/min.	+/- 0,15 mm	+/- 535 kg
YS-080G3	80 kg	2.240 mm	180 m/min	+/- 0,15 mm	+/- 620 kg
HS-220G3	220 kg	2.666 mm	180 m/min	+/- 0,15 mm	+/- 955 kg

Welding robot **TL-series**

- Higher payloads.
- Symmetrical design for optimal. mirroring of robot programs.
- External cable assemblies only.

Welding robot **TS-series**

- Floor, celling and wall mount.
- High speed.
- 48% smaller footprint.
- Suitable for Super Active, TAWERS-TIG/TAWERS.

Welding robot **LA-series**

- Worldwide best-in-class for load, speed and reach.
- High accuracy welding and handling.
- Synchronous with welding robot for jigless welding.

Welding robot **HH-020L**

- Max. payload 20 kg.
- Max. reach 3.281 mm.
- Realize almost same welding ability as the TM/TL series.

Handling robot **YS-080G3**

- Max. payload 80 kg.
- Max. reach 2.240 mm.
- Synchronous with welding robot for jigless welding.

Handling robot **HS-220G3**

- Max. payload 220 kg.
- Max. reach 2.666 mm.
- Synchronous with welding robot for jigless welding.

Leading in Welding Technology

Panasonic is constantly working on the development of welding processes, with which **Panasonic** can offer the best fitting welding process for every application.

Fusion of robots, robot controller, power source and servo wire feed in one unit.

- Faster, better and worldwide unique.
- Everything from one manufacturer.
- “Fusion technology” of TAWERS: the robot controller is fused with the welding power source controller.
- All control parameters are combined on a 64-bit CPU PCB.
- 250 times faster communication, eliminating any delay in information flow between the individual components.
- The result is unique and allows many special functions to increase the quality and productivity.

A small summary of the standard functions

- Automatic restart function in case of a refusal of the start.
- Torch angle display for uniform welding .
- Flying start function to decrease cycle times.
- Automatic wire retract function to assure a perfect start at the next seam.
- Weld Navigation, your guideline to the perfect weld parameters to get the best results.
- Stitch Welding and LowPulse Welding.

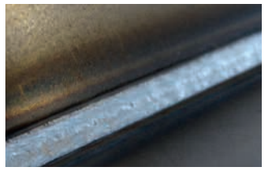
What’s in for you

- No interface problems.
- Different welding processes with only one power source, even TIG with cold and hot wire.
- Reduction of production costs.
- High processing speed.
- Extreme user-friendly interface.
- Weld data monitoring and recording.
- Weld parameter selection through Weld Navigator function.
- Spatter and heat input reduced thanks to 100 kHz inverter technology .
- Thin and thick plate welding with one power source.
- First time right welding.

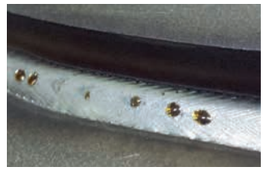
Some interesting controller software options

- TAWERS Synchronous weaving low-pulse and spiral weaving software.
- **Panasonic**Tawers Arc Braze Welding Software.
- **Panasonic** HD Mag process for Stainless Steel.
- **Panasonic** Ferretic Stainless Steel software.
- **Panasonic** Zi-Tech software (Zi-Pulse / Zi-Active).
- **Panasonic** TAWERS Stitch Pulse Welding Function
- **Panasonic** TAWERS Pulse Mix Welding Function.
- **Panasonic** Hot Active software for Active Wire Process.
- AEC (Automatic Extension Control)for **Panasonic**.
- Through the arc seam tracking system for WG and WGH series.
- **Panasonic** Thick Plate Software with Middle plate touch sensor software , Thick plate touch sensor software, Thick plate welding software and Welding Condition Editor (WCE).
- Parallel Sequence PLC functie voor G3 controller.
- Teaching Update Logging function (G3/WG/WGH).

SP-MAG process



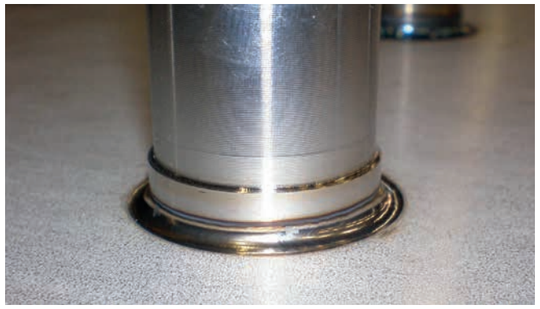
Hyper Dip Pulse process



Zi-Tech process

HD-MAG welding process

TAWERS TIG



Standard unique welding processes on WG (350A) and WGH (450A) controller

Super imposition control SP-MAG process

- For steel and SUS for 1-2 mm sheet applications.
- Drastic reduction of the weld spatter (up to 90% reduction).
- Highest seam quality with low heat input.

Hyper Dip HD Pulse process

- As of 3 mm sheet metal.
- Improved penetration.
- Higher quality.
- Drastic reduction of the weld spatter.
- Higher deposition by using the mix of short circuit and pulse welding.
- Strong reduced risk of undercut.

TAWERS ALU MIG process

- For high quality of alumnium. For this process we advice the Valk Welding Servo Pull solution.
- Optimal heat control with synchronised Low Pulse and Spiral Weaving.

TAWERS DC TIG process

- With or without cold wire thanks to the standard servo controlled wire feeder and 100 kHz inverter.
- Lift Arc and HF start.

HD-MAG welding process

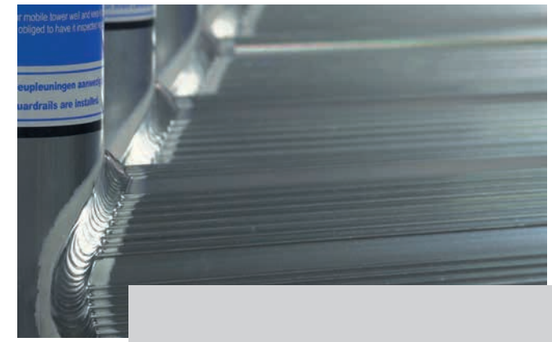
- For improved gap filling without more heat input.

Zi-Tech process

- For improved welding quality on zink coated steel plates.

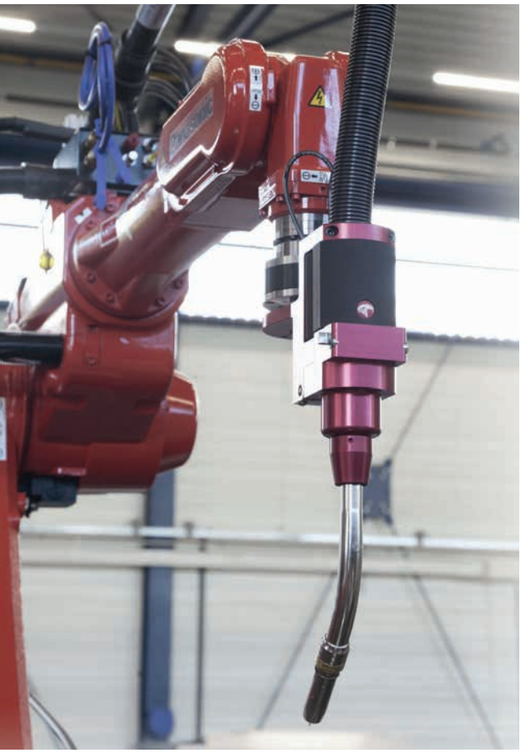
Brazing process

- For MIG brazing with special welding wires.



Panasonic Super Active Wire Process: The cold welding process for best quality

- For thin sheet applications (less than 2 mm).
- Almost spatter free welding in general and strong reduction of projections in unfavorable torch settings.
- Adhesion reduction of projections due to very small spatter volume and finer grain size.
- Higher welding speeds by increased drop transfer in the arc and very low pool vibrations.



VWPR QE MIG torches

Valk Welding produces its own robotic torch for its own welding robot systems, complete with pneumatic shock sensor, longlife cable assembly, patented wire clamp mechanism and quick change gooseneck. This makes it unnecessary to reprogram or correct existing programs again.

- Calibrated to assure a correct tool center point.
- Quick Exchange (QE) goose neck.
- All VWPR standard and non-standard goose necks compatible with standard VWPR body to increase your flexibility.
- 3D torch protection in case of a collision.
- Adjustable protection according to your needs.

VWPR QE External
with VWPR 300

VWPR QE Servo Pull I
Hybrid with VWPR 500

VWPR QE Internal
with VWPR 400

VWPR QE External
with VWPR 500 Special

VWPR QE External
with VWPR TIG I

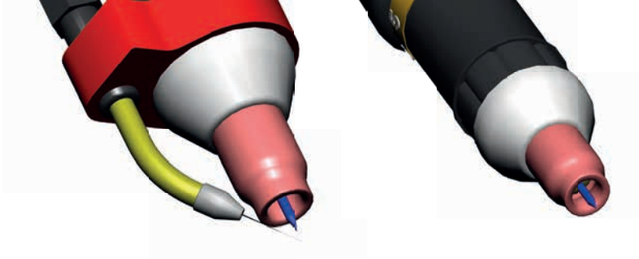
VWPR QE External with
VWPR 500 FE
(Fume Extraction)

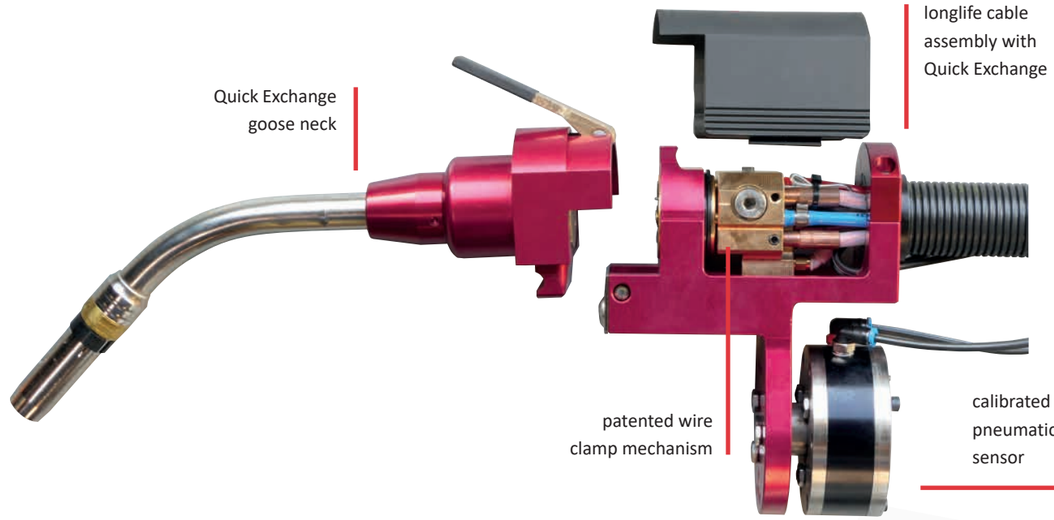
Goose neck
VWPR 300-400-500

Goose neck
VWPR QE 22,5 degrees and
longer gas cup / contact tip

NEW:
VWPR TIG II torch

VWPR QE TIG torches





The highest achievable in welding: the Valk Welding VWPR Servo Pull solution

Thanks to the servo-controlled wire feeding at a very short distance from the welding process, we take as well as the MIG as the TIG welding process with cold or hot wire to the highest level for you by eliminating the moving of the wire in the cable assembly." This latest development takes, in combination with the TAWERS platform where the robot, power source and wire motor are controlled with one CPU, your welding application to an unkown higher level.

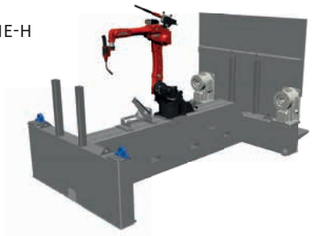
NEW:
Servo pull II torch

Frame solutions

Valk Welding was the first with mobile fully machined rigid frames as the basis of their systems. This not only reduces your set-up time (lower costs and less disruption to your production), but the entire system can be programmed in advance at Valk Welding and the start-up time in your facility is negligible for you. Moreover, optimising your production internally is very easy, as you can move the entire system yourself. Thanks to this development and our unique calibration system for robots, exchanging production between different systems or production plants is very easy and without reprogramming to start the production immediately.

Frames

FRAME-H

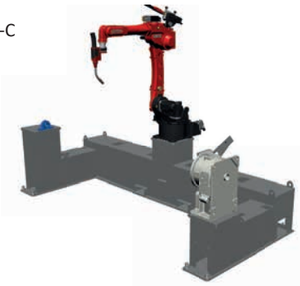


FRAME-IT
with indexing table

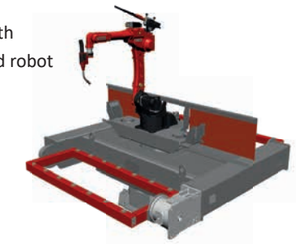
FRAME-E

FRAME-IT+L
with L-positioners

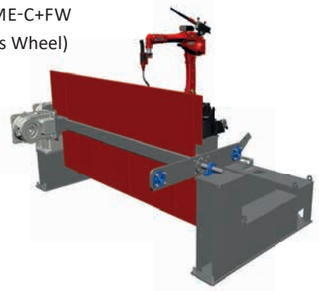
FRAME-C



FRAME-IT+H with
turning table and robot
in the middle



FRAME-C+FW
(Ferris Wheel)



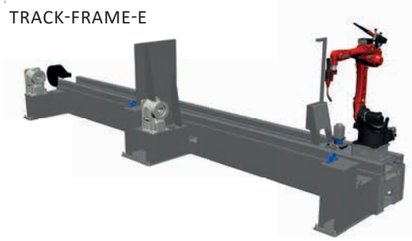
FRAME-IT+H with
turning table and
robot at the back side

Track-frame solutions

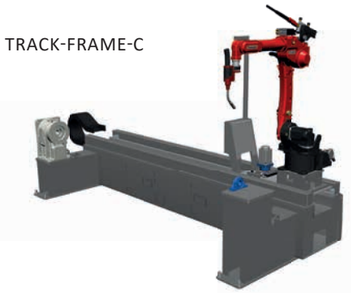
- Frames with a longitudinal track for the robot.
- Offers the perfect combination of the advantages of a longitudinal track (optimal accessibility and larger workpieces) and a frame concept (movable just like the frame solutions).
- Track frames can be machined up to 12 meters in one go.
- Larger frames are possible in a modular way.

TRACK-FRAMES

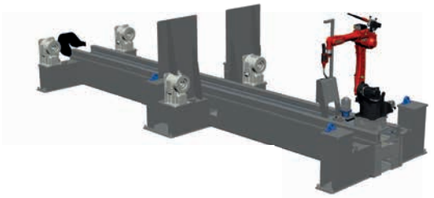
TRACK-FRAME-E



TRACK-FRAME-C



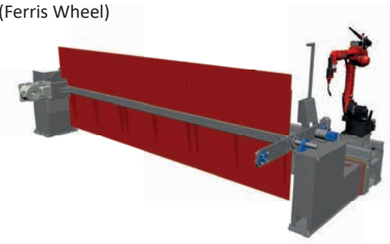
TRACK-FRAME-EE



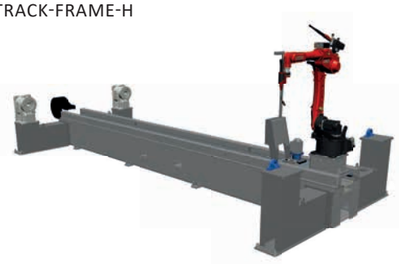
TRACK-FRAME-C-MCB
(Movable Counter Bearing)

TRACK-FRAME-E SPECIAL

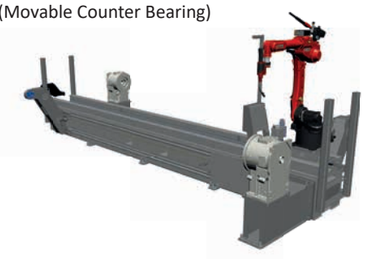
TRACK-FRAME-C+FW
(Ferris Wheel)



TRACK-FRAME-H



TRACK-FRAME-Z-MCB
(Movable Counter Bearing)

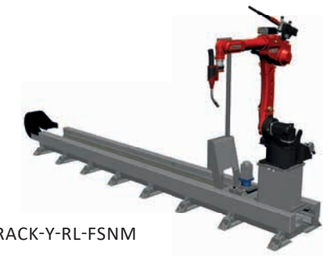


Track solutions

With the focus on 100% offline programming, our longitudinal tracks meet the highest quality requirements in terms of accuracy and long lifespan. With more than 40,000 metres of shifter functionality already delivered, our custom-made standard concepts have proven themselves and we keep on working on higher quality and additional options. At the right you will find a selection of our FS, FH and PH series.

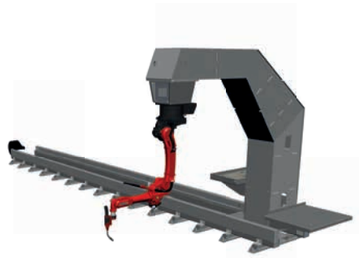
SINGLE AXIS TRACK

TRACK FS SERIES



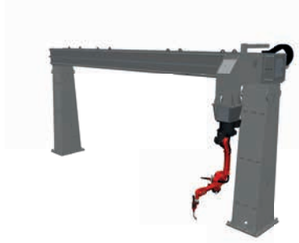
TRACK-Y-RL-FSNM

TRACK FH SERIES



TRACK-Y-RL-FHNM

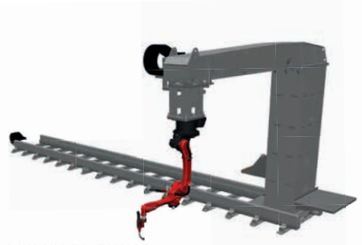
TRACK PH SERIES



TRACK-Y-RL-PHM

DOUBLE AXIS TRACK

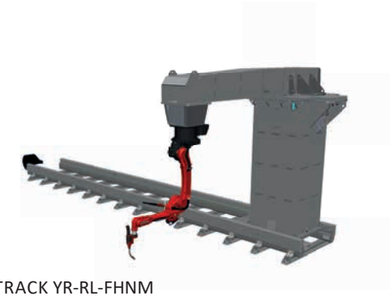
TRACK FH SERIES



TRACK-YX-RL-FHNM

TRACK-YZ-RL-FHNM-BACK

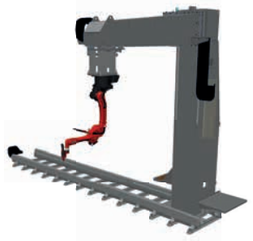
TRACK-YZ-RL-FHNM-FRONT



TRACK YR-RL-FHNM

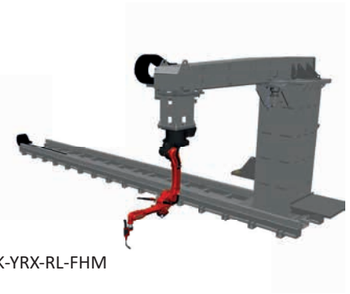
TRIPLE AXIS TRACK

TRACK FH SERIES

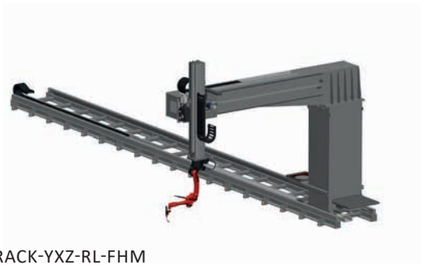


TRACK-YZX-RL-FHNM-BACK

TRACK-YRZ-RL-FHM

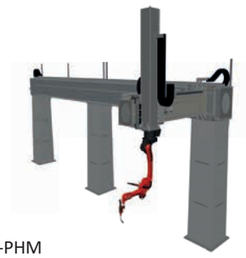


TRACK-YRX-RL-FHM



TRACK-YXZ-RL-FHM

TRACK PH SERIES

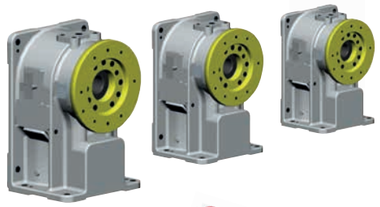


TRACK-YXZ-RL-PHM

Positioners, positioner frames and beams

Positioner frame and beam for exact positioning of the welding jigs or parts. Frames and beams fix mounted in the positioner or easy to exchange with the optional quick exchange solution.

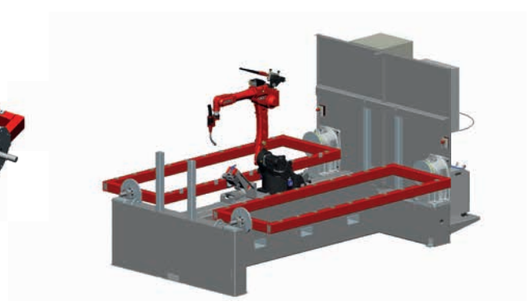
From 250 KG TO 10.000 kg

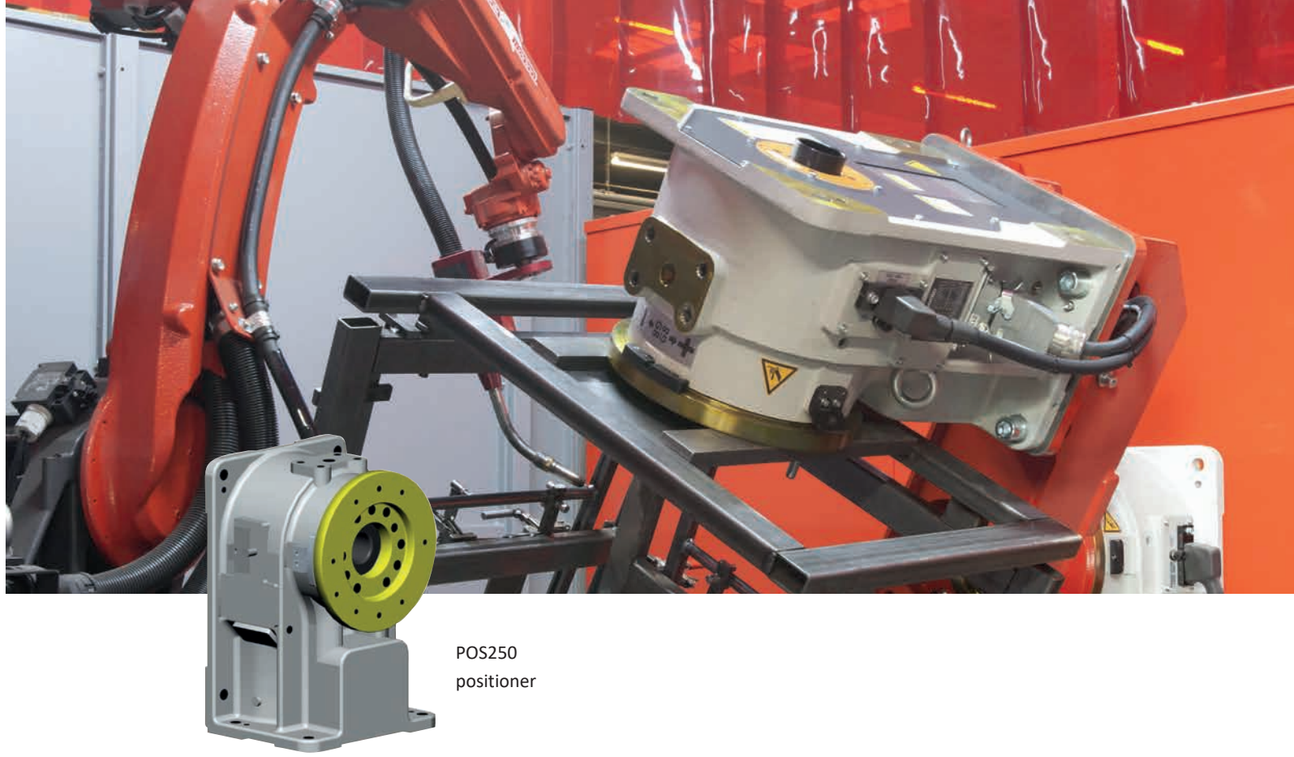


POSITIONERS
> 10 TONS PAYLOAD
available on request

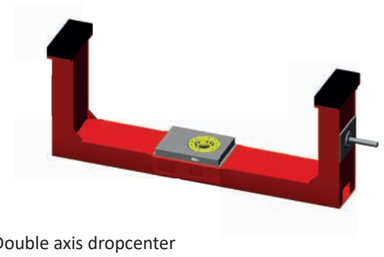
Name	POS250 to	POS10.000
Max. payload (kg)	250	10.000
Max. payload with tail stock or in gantry (kg)	500	20.000
Max. rotation speed (r/min)	30	1,11
Allowable rotational torque (Nm)	196	25.000
Allowable tilting torque (Nm)	1.470	35.000
Repeatability at R=250mm (mm)	+/- 0,05	+/- 0,1
Diameter of hollow shaft (mm)	55	140
Allowable welding current (A)	500	500

Positioner frames

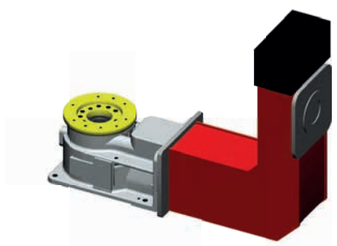




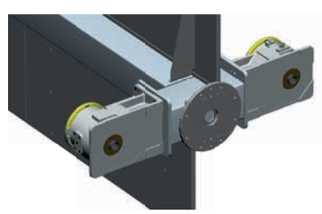
POS250
positioner



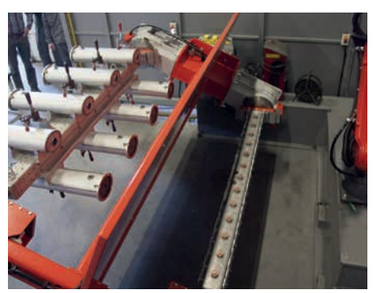
Double axis dropcenter



Double axis L-shape



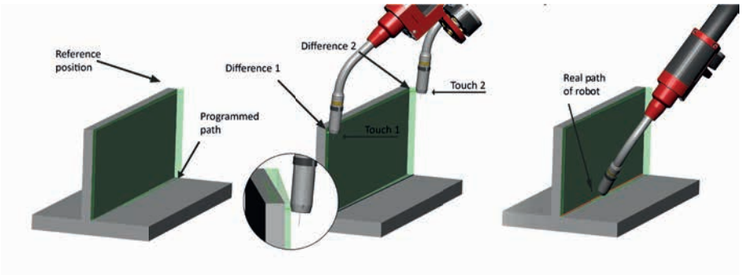
Triple axes Ferris Wheel



Seam searching

Sensors are needed if:

- The tolerances of the parts are not correct.
- The positioning of the parts is not correct.
- During the welding process distortion of the parts happens.
- Different versions of parts in one jig.



TOUCH SENSING

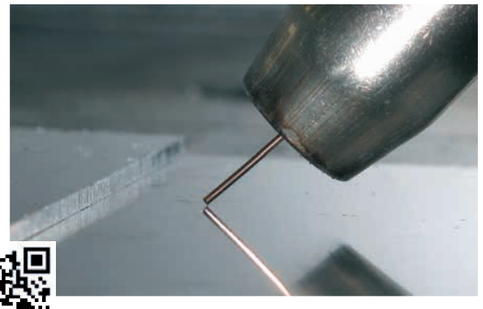
- The system will perform a number of searching movements, before starting with welding.
- Standard searching with 120 V DC, safe upgrade to 300 V DC possible if needed.
- The robot calculates the shift and/or rotation in regards the original reference point within the program.
- Registration, limitation and monitoring of detected offset possible with optional software.

ARC-EYE DSS (Distance Spot Sensor)

- Find locations before welding with a laser spot.
- Same principle as touch sensing and Quick Touch.
- Developped and build by Valk Welding.
- Plug and play interface with **Panasonic** G3 controller.
- Measuring of position.

QUICK TOUCH SENSING (Wire searching)

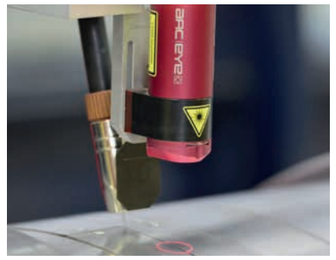
- Same technology as touch sensing
- Welding wire is the sensor
- Much easier than using the gas nozzle
- Precise measuring because of:
  - Clamping of the wire in the torch.
  - Cutting of the wire.
  - Opening of the feed rollers to avoid overcharge of the wire clamp.
  - The use of Transbase software from Panasonic.



More information of Quick Touch sensing

Seam tracking

In addition to gas nozzle searching, wire searching (Quick Touch) and through the arc seam tracking, Valk Welding has developed the Arc-Eye welding seam tracking systems, which monitors the weld seams real-time and adjusts automatically the programmed path of the robot. Adaptive welding in which the robot adjusts the welding parameters according to the seam geometry, is as plug and play upgrade compatible with the Arc-Eye CSS solution. The Arc-Eye system is developed for both reflective as non-reflective surfaces.



ARC-EYE CSS

- Real-time seam tracking and spot sensing.
- 3D tracking with one scan thanks to patented circular scanning.
- Developed and build by Valk Welding.
- Plug and play interface as of **Panasonic** G3 controller.
- Measuring: position, orientation, geometry.
- No problem with reflections.
- Compatible with Valk Welding VWPR torch range and shock sensor.
- Perfect relation to the TCP of the robot.
- Resistant to dirt, heat and radiation.
- Important: safety class of the laser is 3R which means that there is no need for a laser controlled area and no further safety precautions for the laser are needed.

Arc-Eye Adaptive Welding

- NEW: The ARC-Eye CSS is upgradeable with the Arc-Eye Adaptive Welding function.

With the Arc-Eye Adaptive laser the welding robot is not only able to follow the weld, but now also to recognize the seam shape and automatically adjust the robot program accordingly. This creates an intelligent machine that detects and solves problems on its own.

More information of the Arc-Eye CSS solution

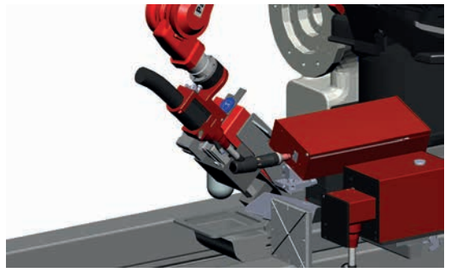
See most of these features in action

Automation accessoires

As a technology partner, we continue to innovate and can increase the return on your investment with both standard extensions and unique solutions developed by Valk Welding.

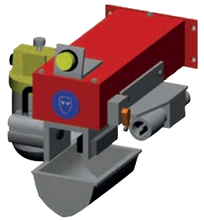
Higher production-output by:

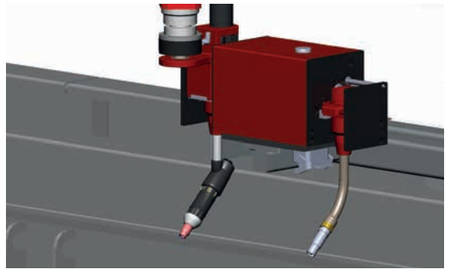
- Automatic Tungsten Exchange System **(TEES)**.
- Automatic Torch Exchange System **(TES)**.
- Automatic Arc-Eye Exchange System.
- Automatic Wire Exchange System **(WES)**.
- Mechanical torch cleaner.



TEES - Tungsten Exchange System

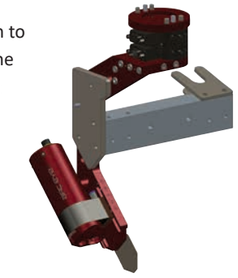
Mechanical cleaner of the torch with reamer, anti-spatter nozzle and outside cleaner of the gas cup





TES - Torch Exchange System

Arc-Eye Exchange System to increase automatically the accessibility of the robot where needed



WES - Wire Exchange System

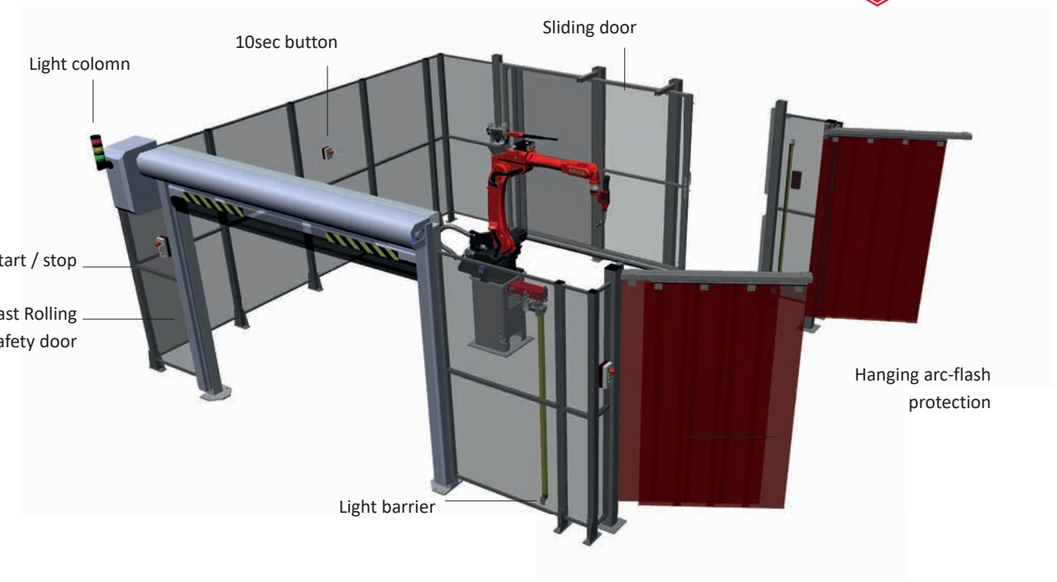
To increase your productivity you can automatically swap between two different welding wires like steel and stainless steel, or two identical wires to automatically change from one drum to another when empty. And all of this with only one and the same cable assembly and welding torch. Just keep it simple.

Safety

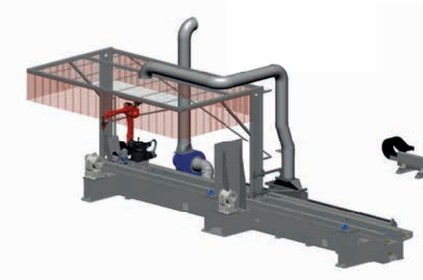
The safety of your employees is also of paramount importance to us. Each project is subjected in detail to a risk analysis which is part of the technical construction file. In short, the safety of your installation consists of:

- Zone protection if there is more than one workstation.
- One walk-in guard per station with start/stop/emergency stop control box and the mandatory 10 second release box.
- All necessary emergency stop buttons.
- Secure service doors if required.
- Fencing closed or in transparent version if possible.
- Welding fume extraction.

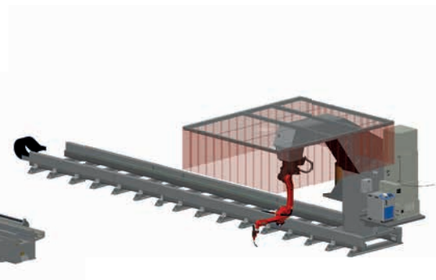
People protection



Welding fume extraction



Movable fume hood



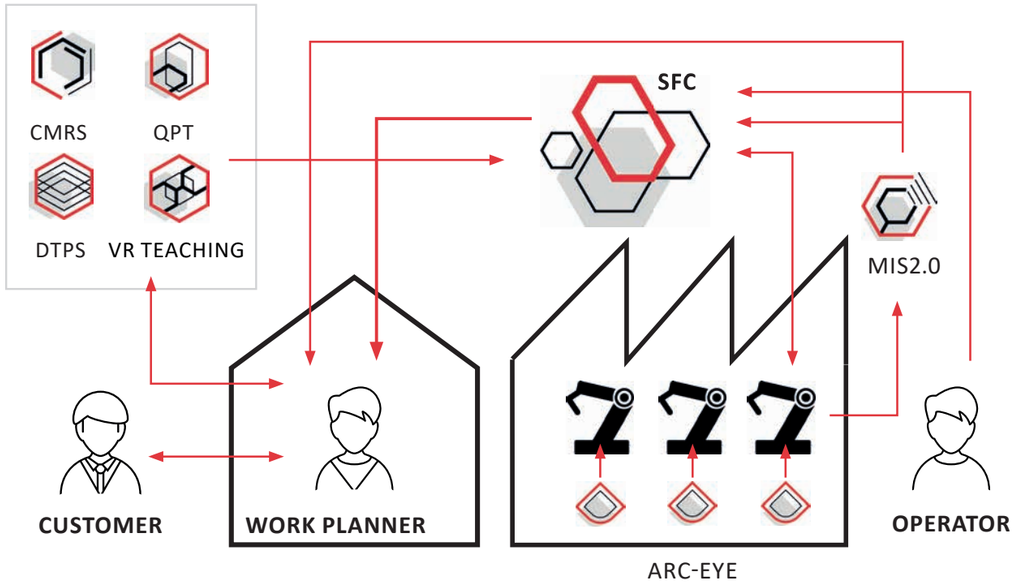
Movable fume hood

Fixed fumehood

Supporting software

Software is crucial for succesful robot automatization. As your technical partner, Valk Welding is constantly developing the software to increase your productivity up to 10-30%.

Robot + Software: 1 + 1 = 3



DTPS: Starting from your 3D CAD file of the work piece, you can program the robot(s) 100% offline without production downtime.

QPT: With simple manual entering the product related information (for example dimensions) you can automate the programming to make singel piece production possible.

CMRS: Full automation of the programming by connection to your own database, QR-code scanning. Our custom made solution for your needs.

VR TEACHING: Do you prefer manual programming but no production downtime? Then the virtual world offers a solution with our VR (Virtual Reality) Teaching development in combination with VR glasses.

SFC: Automatic organizing and controlling the robot(s) with the programs that have been created. Included chat functionality from the operators to the programmers.

ARC-EYE: Where needed welding seam tracking cameras to adjust the programs in real time to compensate for the deviations.

MIS2.0: Recording and storing the relevant production data plus reporting via dashboards. Also full traceability is a feature of this solution.

Technical training

Operating and programming a robot is becoming increasingly simple, but both the beginner and the advanced robot user cannot do without (additional) training. In its Technical & Training Centers throughout Europe, Valk Welding therefore offers a very extensive number of robot and software training courses. All training is provided by skilled trainers on up-to-date robots.

For companies that start with welding robot automation, Valk Welding offers the following basic training modules:

Online training

- Basic training
- Maintenance and calibration
- Operator training
- Specials

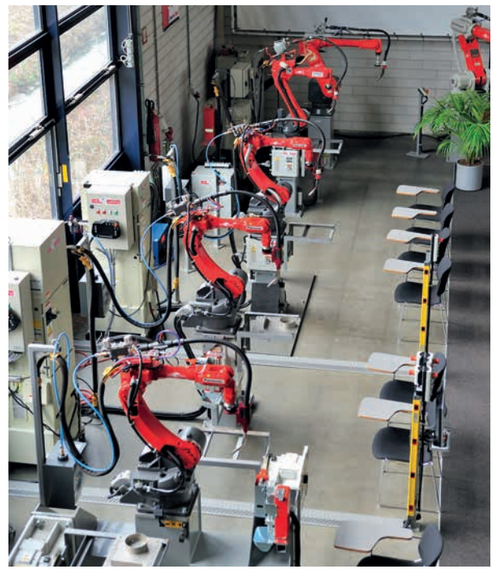
Learn the basics of the robot, default settings, standard movements of the robot arm, service programs like cleaning and wire cutting. Welding parameters, principles of linear and circular oscillating welding. Learn the basics of the teach pendant and how to create and customize a welding program. After completing the basic training, employees are able to operate the welding robot independently.

For customers who have a license of DTPS, Valk Welding offers:

Offline training

- Basic DTPS training

Learn the capabilities of DTPS, the simulation function of DTPS, design a simple product.
Basic programming instructions and how to create and customize a welding program and load it into the robot.



For companies with experience in welding robot automation, Valk Welding offers the following advanced training modules:

Advanced training

- Thick plate training
- Macro / QPT training
- Arc-Eye training
- Welding training (best practice)
- MIS training
- SFC training

Valk Welding also offers training for older generation Panasonic robots. All generations Panasonic robots are available for training purposes at the Dutch Technical Training Centre.

The strong connection

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