Valk Welding Group

Tel +31 78 69 170 11
info@valkwelding.com
www.valkwelding.com

Take control of your welding process





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The industry is undergoing a transition. Innovations follow one another quickly, and companies have more opportunities than ever to organise their production in a smarter, safer and more sustainable way. Welding, too, offers plenty of opportunities.

Robotic welding offers those opportunities: you raise your quality, optimise your processes and respond better to a changing market. But a welding robot is only as productive as the process around it. The software that controls your robot, streamlines your work preparation and maps your production data ultimately determines how much you get out of your investment.

Many companies see the programming and structuring of the welding process as complicated, a barrier that holds them back from further automation. That barrier no longer needs to be there. With the right software, you control and optimise your entire production process. You automate work preparation and execution, reduce errors and save valuable time. Real-time insight into performance and production data enables you to adjust processes in a targeted way, monitor quality and improve continuously.

Do you have multiple installations? Then you get a scalable, streamlined and transparent working environment in which standardisation, control and efficiency are central.

Getting the maximum return from your robot installation requires smooth interaction between people and machines.

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01

DTPS ARP

Generating and programming welding programs

Programming does not have to bring your production to a standstill. You choose the approach and the software that suits your situation. With Valk Welding software, you program offline behind your screen while the installation keeps producing. With DTPS, you create and simulate your welding programs in a virtual environment. With ARP, the software goes one step further: it recognises the welds in your product and then creates the welding program automatically. As the software generates more programs, your role shifts from programming to checking and fine-tuning. On the following pages you can read more about ARP and DTPS.

Good calibration is the foundation for this. That is why Valk Welding calibrates every robot with extra precision on delivery, so that from day one you work on a stable and reliable base. In this way we create a perfect digital twin of every robot we supply. As a result, you no longer need to adjust the program on the robot afterwards.

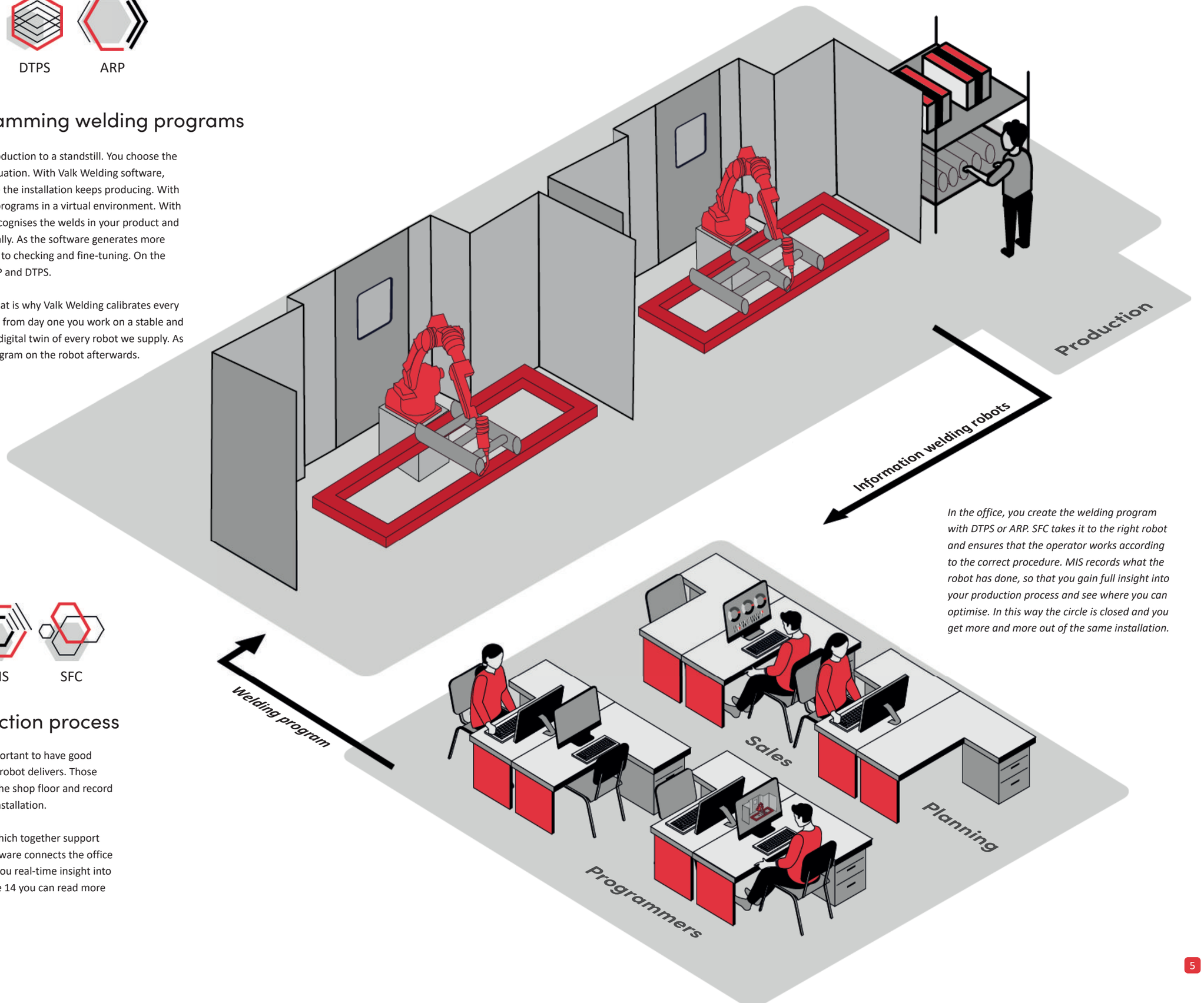
02

MIS SFC

Managing your production process

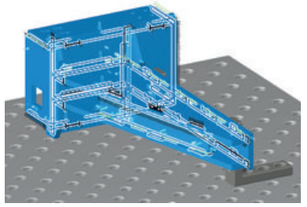
To get a grip on your entire process, it is important to have good insight into that process and into what your robot delivers. Those who manage the right programs, structure the shop floor and record production data get more out of the same installation.

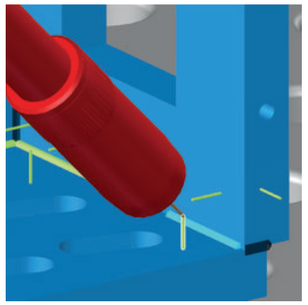
Valk Welding offers two solutions for this, which together support your entire production process: the SFC software connects the office and shop floor, and the MIS software gives you real-time insight into the results of your welding robot. From page 14 you can read more about SFC and MIS.

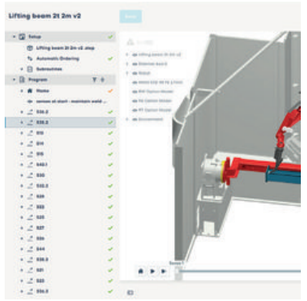


In the office, you create the welding program with DTPS or ARP. SFC takes it to the right robot and ensures that the operator works according to the correct procedure. MIS records what the robot has done, so that you gain full insight into your production process and see where you can optimise. In this way the circle is closed and you get more and more out of the same installation.

ARP









Effortlessly from CAD file to welding process

ARP (Automatic Robot Programming) is your virtual programmer: it automatically converts your 3D CAD file into a welding program for the robot, offline from your screen.

Automatic Robot Programming (ARP) is a solution with which we simplify the offline programming process and speed it up by as much as ten times. In this way we not only dramatically increase the efficiency of this process, but also make welding automation attractive for one-off production. ARP software generates and simulates welding programs automatically from 3D CAD files or other sources of information, so you do not need extensive programming knowledge and also save a great deal of valuable time.

With ARP, you go through the entire route from product import to executable welding program in a few steps. After importing the STEP file, the software automatically detects all potential weld lines, both on the inside and outside of the product. You position the product in the cell, add clamps and jigs, and confirm or change the welds found. Extending, shortening, merging, splitting or programming multi-layer welds: everything is possible. You select the desired weld position, the job number and the welding speed, or specify your welding parameters entirely as you wish.

The similarity detection recognises repeated welds not only in the same part, but also in other parts that have already been programmed before. You apply changes to all identical welds at once with a single action. Wire search movements are generated and optimised automatically to compensate for product deviations automatically. The software then automatically determines the program structure and the sequence of operations. Where necessary, you adjust the sequence manually and add wire cutting, cleaning of the gas cup or other routines. Robot movements are calculated automatically, with the software preventing collisions, singularities and excessive load on the hose package. You then send the program directly to the robot, or to your existing offline programming software.

The software therefore takes over more and more programming work, so that you can focus on checking, fine-tuning and improving.

Optimal use of the welding robot by Wolf System GmbH

Wolf System GmbH, an internationally operating company specialising in building and hall systems, took an important step towards production automation. One of the biggest barriers was programming the welding robot. Many companies recognise this: the process takes time, requires specialist knowledge and delays commissioning. With ARP, that barrier disappears. The software detects weld seams automatically, proposes best-practice strategies and then generates an accurate robot program that is immediately ready for use. Where necessary, the operator adapts the suggestions to his own requirements. In this way you retain control, without having to carry out the programming work manually.

The result speaks for itself. Wolf System processes orders faster, makes fewer errors and makes optimal use of its installation. Weld quality consistently meets the highest standards. Fabio Fortunato, robot programmer and welder at Wolf System GmbH, describes his experience aptly: operating the welding robot with ARP feels so intuitive that you almost forget how to control the robot manually. Edgar Schenknecht, responsible for steel structures at Wolf System GmbH, confirms this: without ARP, these advances would not have been possible.



DTPS

Full control with maximum uptime

DTPS (Desktop Programming and Simulation Software) is a program with which you program your welding robot offline from behind your computer, without interrupting production. A perfectly accurate digital twin of your robot is created, so that you can program a new welding program while your installation keeps working.

Every minute your welding robot stands idle for programming is a minute in which you are not producing. DTPS solves that. With this 3D CAD/CAM software, you program your robots entirely offline, from your screen, without interrupting production. Your installation keeps running while your work planner already prepares the next program. In this way you achieve maximum uptime of your robot installation.

DTPS gives you full control over the programming process. You import your workpiece from an existing CAD system in virtually any common format and indicate the weld positions and desired parameters. The unique Weld Navigation function helps you determine welding parameters quickly and easily, without extensive manual input. You then check the program via a powerful 3D simulation with collision detection. In this way you know for sure that everything is correct before the program is sent to the robot. In addition, the programs generated by ARP are also compatible with DTPS and can be optimised manually if desired.

Like ARP, DTPS calculates cycle times, so that you have insight in advance into the expected productivity. You design and test jigs and fixtures within the same environment. This saves time in the engineering phase and shortens the lead time to first production. The installation editor with standard components makes setting up new systems faster and easier.

The software can be deployed directly on your existing installation. DTPS is fully compatible with all generations of Panasonic controllers, and programs are interchangeable between different Valk Welding robot systems. Are you moving to a new installation or a different workstation? You can easily take your existing programs with you. In this way you protect your investment and build on what you already have.

Kögel: no more standstill due to programming

When welding chassis frames for trailers, it is all about constant, efficient production. That is why Kögel chose offline programming of Valk Welding's robot stations. With earlier robot workstations, the program for a new product had to be created directly on the robot, which brought production at Kögel to a standstill. Now the programmer prepares the welding program for a new type of chassis frame on his computer and transfers it to the robots. In this way the line keeps running and the efficiency of the entire production process remains high.

A decisive factor for the success was the automatic programming software ARP (Automatic Robot Programming), powered by ArcNC. The technology analyses 3D CAD or STEP data, recognises weld joints independently and creates optimised welding programs in a very short time. "What used to require time-consuming programming is now largely automated," adds programmer Robin Czernuschka and welder Daniel Neubert. Especially for parts with many variants or small series, ARP opens up new efficiency opportunities. Only four hours after delivery of the robot cell, the first weld was made.

- Robin Czernuschka and welder Daniel Neubert, Vogt Metallverarbeitungs-GmbH

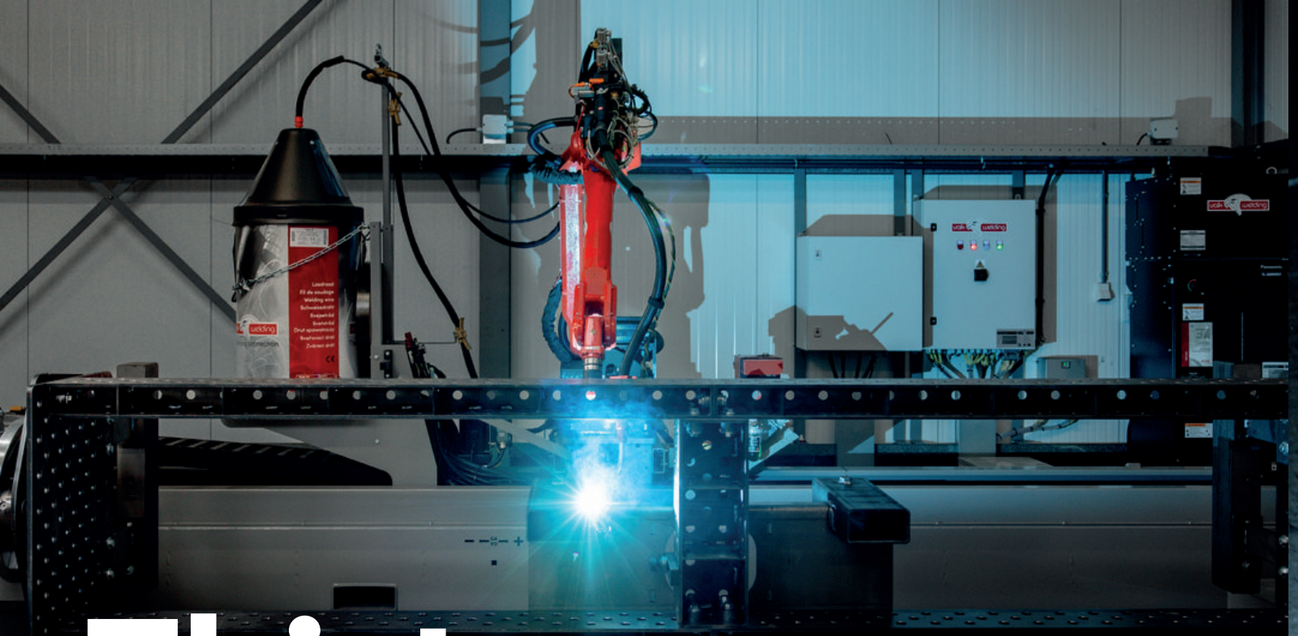
Another important aspect was the implementation of DTPS software for virtual robot programming. This solution makes it possible to prepare welding programs outside the production workstation, which significantly increases labour efficiency and eliminates downtime.

- Unia Group

Tyllis is a Finnish manufacturer of custom-made premium transport solutions. The complexity and size of their undercarriages make this milestone all the more significant. ARP has now proven that it can handle large workpieces with a large number of welds and program them fully automatically.

This investment will make growth in our company possible. It will also increase our efficiency and capacity in our production. Not to forget the high-quality performance in welding.

- Tommy Wikman, Tyllis Oy Ab



Thirty years of software development

Where many companies still mainly program robots online, on the robot itself, Valk Welding left this behind more than 30 years ago. Valk Welding programs the majority of its systems offline and still builds today on that many years of experience.

In 1995, Panasonic presented the first version of DTPS. Valk Welding co-developed it straight away and made the software suitable for small-series production in Europe. To make the digital and physical worlds connect seamlessly, we developed our own calibration system. We calibrate every robot with extra precision and thus determine the Tool Centre Point exactly. In this way reality connects perfectly with the digital world. Moreover, we make a digital twin of every robot that corresponds exactly to the installation on the shop floor. Together, this process forms a solid foundation on which all software subsequently builds.

Thanks to this sturdy foundation, we can focus entirely on developing new software solutions. In addition, we still work closely with our partners, such as Panasonic and ArcNC. A large team works every day on further developing our software. In this way you build on more than 30 years of experience.

1995

The first version of DTPS is presented by Panasonic. Valk Welding decides to co-develop it to make the software suitable for small-series production in Europe.

1996

The DTPS offline programming system is successfully installed at a customer for the first time.

2019

1,000 DTPS licences are in daily use.

2023

Valk Welding launches ARP software.

2025

There are approximately 1,800 offline programming licences in use, including ARP licences. More than 90% of all new installations make optimal use of DTPS and ARP.

SFC

Seamless communication between office and shop floor

SFC (Shop Floor Control) is a software platform that connects your office and shop floor. The program offers a structured system through which everyone in your company has the right, up-to-date information.

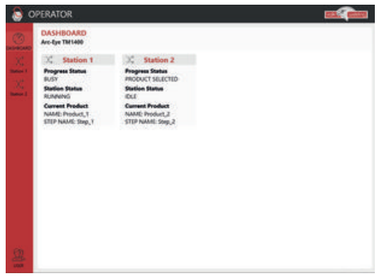
The more welding robot installations or programs you manage, the greater the risk of miscommunication, outdated programs and production errors. SFC eliminates those risks. The platform connects your office environment and workshop in one structured system, from planning to execution, so that your operators always work with the correct and most recent programs.

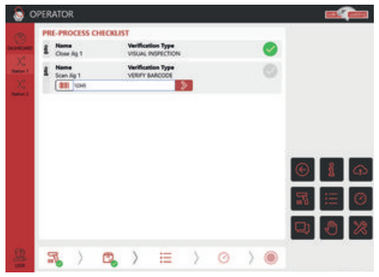
Your operator selects a product via barcode or scheduled production batch. SFC automatically sends the correct programs to the robot installation. Verification steps, checklists and work instructions are directly linked to each production phase. In this way, your operator always works in a controlled manner and in accordance with the correct procedure, without a programmer having to be present on site.

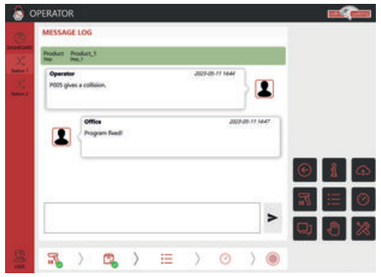
The operator sends comments and improvement points from the workshop directly via the internal chat box. These are automatically linked to the relevant product and the associated phase. Nothing gets lost, everything is traceable.

For companies with multiple workstations, SFC offers an additional advantage. You easily group similar robot installations, after which you program generically and test and schedule programs for multiple robots at once in a single action. Automatic program conversion and verification ensure that the right version is always on the right machine. Version control of programs and installations is fully assured.

SFC gives you control of your production process. Fewer errors, less downtime and full transparency between office and shop floor.





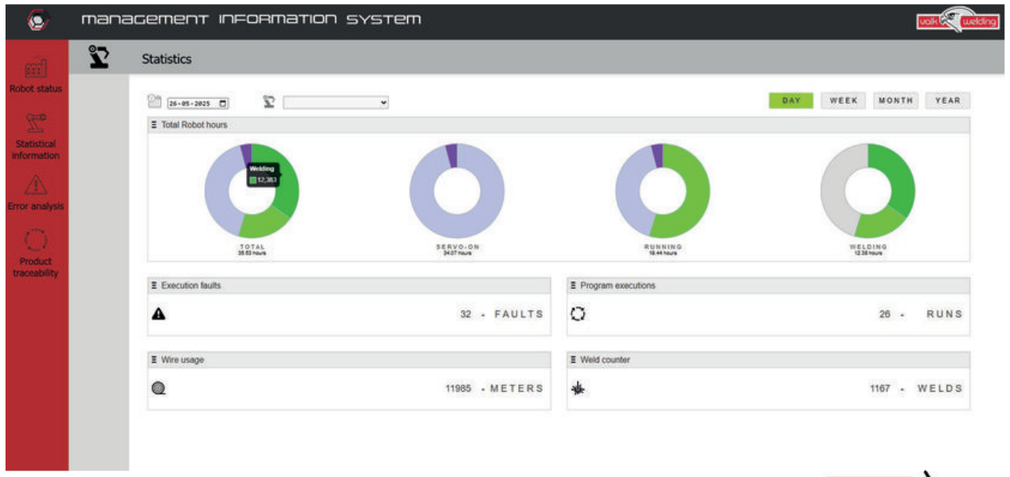




SFC as the engine behind unmanned production

When employees at Meijer Metal start their working day in the morning, the welding robots have been producing all night. Four welding robot cells are loaded and unloaded unmanned, 24/7, by AGVs. SFC ensures that the right welding program is automatically available at the moment the AGV delivers a product to the robot. No operator needed, no manual program selection, no risk of errors.

Reinder Hoekstra, COO of Meijer Metal, describes the result directly: lead time has been shortened and the company has been able to say goodbye to shift work at the robots. With the same people, Meijer Metal processes more work. SFC makes that possible by fully connecting the workshop and office environment. Programs are automatically selected, verified and sent to the robot based on what needs to be produced. The intelligence is in the system, not in the availability of people.



MIS

Managing by data, not by gut feeling

MIS (Management Information System) is a software platform that gives you insight into the performance of your robot installations, from a PC, mobile or tablet.

You invest in welding robots to produce more efficiently. But do you know at any moment how well your installations are performing? How long does a robot stand idle, what is the reason, and do your cycle times match the time study? And do you have the welding data you need to demonstrate your product quality? Without that information, you manage by gut feeling. With MIS, you manage by data.

The Management Information System (MIS) from Valk Welding gives you real-time insight into everything that happens with your robot installations, from a PC, mobile or tablet, in production or on the move. You compile your own dashboard based on the information that is relevant to you. Downtime, uptime, welding hours, welding wire consumption and processed programs: everything is visible, per installation and over any desired period. In this way you know exactly where there are gains to be made and you intervene in good time before a problem affects production.

In addition, MIS monitors a large number of control parameters that indicate wear or an impending fault. By intervening in time, you prevent unplanned downtime and extend the life of your installation.

But MIS goes further than monitoring alone. Via product traceability, you record all welding data at product level. A chronological data log is kept for each product. That gives you not only insight into quality, but also offers a solution in the area of product liability.

MIS is fully developed by Valk Welding and is supported directly by us. One point of contact, from development to service.

How JOOP makes weld quality demonstrable

JOOP, an OEM supplier from Veenendaal specialising in steel components, sets high standards for weld quality and delivery reliability. MIS software automatically records all data for each welded product, down to every welding parameter.

Elbert van Zanten, technical sales consultant at JOOP, is clear about the value of this: MIS gives the same real-time insight into welding production as their self-developed software does for work preparation. Both dashboards together give JOOP full control of their production process, from STEP file to delivered product. For a company that positions itself as an Industry 4.0 supplier, that is no minor matter. It is the foundation on which they build their growth.

Images: Power Packer

The biggest advantage of MIS, I find, is the way we log faults and stops. With MIS, I can see from behind my desk what went wrong and when, what the exact error message is and how often the fault recurs. The solution is therefore quickly found.

In addition, we have a database in which we can find every individually made product. When there is a quality problem, within a few mouse clicks we can find the exact time of production and the set and actual welding parameters for that specific product. This helps us enormously in assessing the impact, scope and risks of a quality problem.

- Peter Meijering, Power Packer

We use the MIS data every Monday during the meeting with our management team. We see clear improvements regarding the availability of the robots and fewer faults. In the past, it was often a matter of keeping track of all sorts of notes that were then lost.

- Roelof Dunnink, Dulasta

The greatest added value of Valk Welding MIS for us lies in the fact that we get live insight into the status of all robots. In addition, the weekly and shift analysis helps us optimise our production in the long term, and the structured fault overview speeds up our troubleshooting considerably.

The greatest added value of Valk Welding SFC for us lies in the fact that production is provided with clear information, unambiguous instructions and directly available programs. In addition, this means we can also start welding programs when experienced key people are not on site.

- Lukas Krüger, Faymonville

The strong connection



Valk Welding NL
Staalindustrieweg 15
2952 AT Alblasserdam
Tel. +31 78 69 170 11

Valk Welding BE
Tel. +32 3 685 14 77

Valk Welding FR
Tél. +33 3 44 09 08 52

Valk Welding DK
Tel. +45 64 42 12 01

Valk Welding CZ
Tel. +420 556 73 0954

Valk Welding DE
Tel. +49 152 29 109 708

Valk Welding PL
Tel. +48 696 100 686

Valk Welding SE
Tel. +46 510 48 88 80

Valk Welding IE
Tel. +44 28 3886 8139

Valk Welding FI
Tel. +358 3 4109 0466

info@valkwelding.com
www.valkwelding.com

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