Basis for your success
With more than 85 years of experience in the welding industry, KSV has a high level of expertise in delivering customised automation solutions.

Beginning with the mechanisation of stick welding processes in 1934, Kjellberg Finsterwalde played a major part in the development of submerged arc welding (SAW). Since that time Kjellberg welding systems have formed the basis for successful solutions in the metal industry and in trade.

For more than 70 years, KSV welding machines have laid the optimum foundation for a wide variety of rationalisation solutions in metal-working worldwide.

As the basis for customised machines, the innovative Kjellberg KA series follows the tradition of a modern and flexible modular concept for customised industrial solutions. The breadth of technical and technological application and the modular system guarantee the user maximum performance and top quality automation technology geared to customer specifications.
Customised Kjellberg system solutions

The outstanding features of KSV automation solutions include their optimised mechanical assemblies and the use of modern electronics for simple control and presetting. Automatic and preset parameters for start/stop, crater filler and burn-back as well as speedometer-controlled drives for tractor and wire feeder are par for the course, as are the robustness and user-friendliness of the control unit and the mechanical system.

The range is enhanced by other available modifications, such as flux recovery unit, documentation of welding parameters, sensor systems and wire to seam controller.

The modern Kjellberg concept reduces demands on operating personnel and ensures consistently high standards of production quality for the following:

- Variations: SAW and GMAW
- Range of operations: butt welds, fillet welds, cladding
- Single, double or multiple wire technology (parallel or tandem)
- Welding with one or two welding heads

Combined with approved Kjellberg DC power sources (400 to 1,200 A with a duty cycle of 100% CV / CC characteristic), the result is a wealth of options in terms of made-to-measure solutions with maximum economic benefit for a faster return on capital employed.

Our catalogue contains various ideas as to how you might mechanise or automate your welding jobs, with examples of Kjellberg applications for frequently recurring production processes customised as system solutions for the following:

- Fillet welds from page 4
- Butt welds from page 14
- Longitudinal and round seam welds (inside and outside) from page 24
- Surfacing (cladding, buttering, hard-surfacing, regeneration) from page 30
Profile and beam welding system

Automatic SAW welding gantry – type KU

**Application**

Box beam welding with max. 300 mm component preload

SAW welding

Fillet welds

Thicknesses from 10 to 20 mm

Maximum component dimensions 60,000 x 1,500 x 2,500 mm

Materials: S235, S355
Features

Production of box beams up to 2,500 mm in height

On-board operation platform with all control elements for each working section and camera system

Target

50% reduction in secondary time gained through single turn-over of workpiece. The gantry enables the welding of all seams in horizontal position

Set-up times minimised by automatic balancing of location deviations up to 750 mm

High flexibility as regards profile component due to custom portal construction, leading to high potential savings through versatility of application

System components

2 DC welding power sources – type GTH 1002

2 motorised flux recovery units

Inductive seam tracking system

Performance range

100A/19V up to 1,000A/44V at 100% duty cycle

Welding speeds of up to 80 cm/min

Diameter of welding wire of up to 5 mm

Fillet welds in PB position (horizontal vertical)

Applied benefits

High productivity due to fully automatic beam welding – approx. 70% reduction in working time

Simultaneous welding of both fillet welds including automatic balancing of the direction deviations

Set-up time minimised by closed flux recovery

Entire welding process overseen and controlled from an operating platform
Beam welding system

Fully automated SAW welding gantry – type VWS

Application

Joint welding of steel plates into carrier sections with boundary fillet welds

SAW welding

Fillet welds

Thicknesses from 8 – 16 mm

Maximum dimensions: 22,000 x 1,400 mm (base height)

Materials: S235, S355, shipbuilding steel
| **Features** | SAW gantry for welding of components in longitudinal direction  
Internal heavy-duty tractor for complete welding assembly support |
|----------------|------------------------------------------------------------------|
| **Target** | Productivity boosted to approx. 130% through automatic carrier section welding  
Enhanced process reliability through elimination of human error in manual welding  
High production efficiency and considerable reduction in workload through appropriate workpiece handling  
High-grade and robust process technology for optimum welding results combined with longevity of systems engineering |
| **System components** | 2 power sources – type GTH 802  
2 SAW single wire welding heads  
Mechanical seam tracking system using hinged arm technology  
Motorised flux recovery system  
Main control console for welding and on-board peripherals in the welding area |
| **Performance range** | 80A/18V up to 720A/44V at 100% duty cycle  
Welding speeds of up to 70 cm / min  
Diameter of welding wire max. 2.5 mm  
Fillet welds in PB position (horizontal vertical) |
| **Applied benefits** | Component warpage minimised by simultaneous fillet welding  
Secondary processing time reduced thanks to two side by side workpiece supports  
Hinged arm technology for perfect seam tracking even with nonlinear welding seams |
Beam welding system

Fully mechanised GMAW welding gantry – type HUE

Application

Joint welding of plates to longitudinal beams with required angle deviations of up to 13°

GMAW welding

Fillet welds

Material thicknesses of 8 to 16 mm

Maximum workpiece dimensions 9,500 x 500 x 200 mm

Materials: S235, S355
Features

Automation of beam welding for increased productivity compared to semi-mechanised welding process used hitherto

Target

Productivity boosted by around 70% through automatic welding of the beams including torch control in angular range

Time saved on stitch process by using separate fixture elements

Reduced set-up time through simultaneous feeding of two parallel workpiece tables

System components

2 GTH 522W power sources with separate wire feeder

2 water-cooled GMAW machine torches with double cooling system and angularity of 45°

Tactile seam tracking straight in front of the welding arc

Performance range

70A/18V to 400A/34V at 100% duty cycle

Welding speeds of 70 cm/min

Diameter of welding wire 1.2 mm

Fillet welds in PB position (horizontal vertical)

Applied benefits

Time saved by automated beam welding with cut-off system component-oriented welding limit stop

Simultaneous welding of both fillet welds, including tracking of existing angle deviations

Considerable reduction in secondary process time through automation, elimination of stitch process and positioning of both beams in a narrow gap

Workpiece warpage minimised by simultaneous welding of both fillet welds
Beam welding system

Fully mechanised heavy-duty GMAW welding tractor

**Application**

- Construction welding of plates to carrier sections
- GMAW welding
- Fillet welds
- Thicknesses from 8 – 25 mm
- Maximum dimensions 25,000 x 500 x 1,200 mm
- Materials: S235, S355
### Features
Mechanised longitudinal carrier section welding deploying heavy-duty tractor on roadway

### Target
- Significant cost reduction through the use of heavy-duty machine technology compared to the originally planned construction portal
- High flexibility through applicability for different carrier sections due to the long boom and by using hinged arm technology
- Secondary process time minimised by bilateral workpiece feeding along roadway – positioning on a swivel joint on the rail carriers

### System components
- 2 power sources – type GTH 522W
- 2 water-cooled GMAW machine torches capable of withstanding 500A
- 2 DV 4W-1 wire feeders
- Four-wheel heavy-duty tractor, track width 540 mm, with swivel joint for welding equipment
- Mechanical seam tracking through guided rolls on GMAW hinged brackets
- Plant-floor control panel with all display and functional elements

### Performance range
- 70A/18V to 400A/34V at 100% duty cycle
- Welding speeds of up to 100 cm/min
- Diameter of welding wire max. 1.6 mm
- Fillet welds in PB position (horizontal vertical)

### Applied benefits
- Productivity increased by about 40% and process reliability enhanced by mechanised welding process
- Workpiece warpage minimised by simultaneous welding of both fillet welds
- Approx. 30% reduction in secondary process time thanks to second workpiece table at opposite side of roadway
Beam welding system

Fully mechanised double hinged joint arm automat – type KA 4-UPDG

Application

Joint welding of sheet metal, plates and rolled sections to box sections

SAW welding

Fillet welds and butt welds

 Thicknesses of up to 30 mm

Max. dimensions 30,000 x 1,500 x 800 mm

Material: S355
Features

Modified welding machine for simultaneous welding of opposite fillet welds
Seam tracking through guided rolls and hinged arm
Welding of components preheated to 200°C

Target

Installation costs reduced to approx. 35% by using machine technology as opposed to portal construction
Major reduction in set-up time through flexibility and easy tractor handling
Cost reduction through added versatility of optional equipment with plasma cutting torches for gouging the sealing run
Integrated hinged arm technology for versatility of application with regard to workpiece geometry and seam type and position
Option of fitting oxyfuel torches on hinged brackets for preheating

System components

Modified double joint arm automat
2 power sources – type GTH 802
2 pneumatic flux recovery units

Performance range

80A/18V to 720A/44V at 100% duty cycle
Welding speeds up to 60 cm/min
Diameter of welding wire up to 2.5 mm
Fillet welds and butt welds in PA position (flat) and PB position (horizontal vertical)

Applied benefits

Significant increase in productivity and reduction in workload through high degree of mechanisation
Significant improvement in quality – error rate for ultrasound and X-ray examinations down to 0.5%
Maximum processing route dependent only on media supply
Beam welding system

Fully mechanised SAW tandem welding gantry – type TE

Application

Joint welding of plates to various types of heavy-duty beams
SAW tandem welding
Fillet welds and butt welds
Plate thicknesses from 50 to 180 mm
Max. workpiece dimensions 15,000 x 1,600 x 1,400 mm
Material: S355
Features
Existing portal with double-wire equipment has been converted to Kjellberg tandem technology

Target
Considerable boost in productivity to 150% through automation of beam manufacturing
Major increase in welding productivity thanks to the use of tandem technology
Quality guaranteed by high level of automation plus powerful and reliable welding processes

System components
1 DC power source – type GTH 1002
1 AC power source – type TTH 1000
1 SAW tandem welding head, tilt adjustable left/right
Motorised flux recovery unit with pressure conveyor

Performance range
100A/19V to 1,000A/44V at 100% duty cycle – DC
200 A to 1,000A at 100% duty cycle – AC
Welding speeds of up to 80 cm/min
Diameter of welding wire 3 – 4 mm
Single-bevel butt weld

Applied benefits
50% increase in performance through very high welding speed and excellent welding performance
High-quality workmanship thanks to effective weld seam geometry with improved mechanical characteristics
Workpiece warpage minimised by reduced energy input
**Beam welding system**

**Fully mechanised SAW welding gantry – type DE**

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<td>Set-up time reduced by automatic tracking with existing angle and plate thickness deviation</td>
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Beam welding system

Fully mechanised SAW gantry – type WI

Application

Joint welding of plates to profiles and panels
SAW parallel welding
Main specialisation in fillet welds, optional butt welds
Thicknesses of 8 – 30 mm
Max. workpiece dimensions 8,500 x 1,500 mm
Materials: S235, S355
Features

Fully mechanised gantry with double wire technology for increased productivity in comparison to a semi-mechanised welding process with single wire technology

Target

High productivity thanks to time saved by automated welding of profiles, beams and panels

Extreme flexibility regarding workpiece dimensions due to large span and potential action radius of portal

Staff workload reduced by preset process parameters and ease of operation while maintaining excellent product quality

System components

2 DC power sources – type GTH 1002

2 modified parallel wire welding heads with continuous adjustable wire positioning, capable of withstanding 600 A

Mechanical seam tracking system aided by role guides on hinged arms

Motorised flux recovery unit, exhaust air filtering and visual level indicator

Performance range

200A/28V to 1,000A/44V at 100% duty cycle

Welding speed 20 – 200 cm/min

Wire diameter per welding head 2 x 2.5 mm

Fillet welds from a = 6 mm in PB position (horizontal vertical), butt welds in PA position (flat)

Applied benefits

High production time savings, minimisation of workpiece warpage and reduction in amount of post-processing required by simultaneous welding of both fillet welds

Set-up time reduced by automatic tracking with existing angle and plate thickness deviation

Significant reduction of secondary process time thanks to ample working width and large workpiece support for multiple charging
Profile welding system

Fully mechanised GMAW welding gantry – type AK

Application

Joint welding of plates for assembly of ship sections
GMAW welding
Fillet welds and butt welds
Thicknesses from 8 – 20 mm
Max. range of operation 70,000 x 10,000 x 500 mm
Materials: S235, S355, shipyard steel
Features

Mechanisation of section production for increased productivity compared to the typical semi-mechanised welding process

Gantry dimensions: 11,800 x 4,200 x 3,200 mm

270° swivel pillar for welding in four directions

Target

Production time shortened to 50% by vast work area and removal of portal return

High weld quality and process reliability thanks to selectable program sequences

Staff workload eased by simple operation while increasing product quality

System components

2 DC power sources – type GTH 802 – with external cooling units

2 water-cooled GMAW push-pull machine torches

Inductive seam tracking system

Performance range

80A/18V to 720A/44V at 100% duty cycle

Welding speeds of up to 100 cm/min

Flux cored wire with a diameter of 1.4 mm

Solid wire with a diameter of 1.2 mm

Butt welds in PA position (flat)

Fillet welds in PB position (horizontal vertical)

Applied benefits

High savings in production time and minimal component warpage thanks to simultaneous welding of both fillet welds

Secondary process time reduced by simultaneous charging of work area with several workpieces

Four possible welding directions thanks to rotating holder pillar
Butt welding system

Fully mechanised SAW welding automat with a linear compensation axis

Application

Joint welding of plates to large panels

SAW welding

Butt welds

Thicknesses from 8 – 20 mm

Materials: S235, S355
**Features**

Modified standard SAW automat featuring a drive shift system for the machine drive in linear axis

**Target**

Significant saving in production time (approx. 40%) by welding full plates without interruption until the end of process

Minimum investment costs through use of machines modified to customer specifications

Huge increase in seam quality through elimination of discontinuities at the end of seams

**System components**

1 DC power source – type GTH 1002

SAW welding head for single wire

Linear axis with mechanised switching

**Performance range**

100A/19V to 1,000A/44V at 100% duty cycle

Welding speeds of up to 60 cm/min

Diameter of welding wire 3 – 5 mm

Butt welds in PA position (flat)

**Applied benefits**

No post-processing required on seam ends thanks to use of fully mechanised welding system with run-out plates

Increased productivity and process reliability due to customised machine modification

Reduction in working time due to minimised set-up time through elimination of start and stop plates
Tank welding automat

Fully mechanised SAW welding automat – type SOL

Application

Joint welding of rolled steel sheets
SAW welding
Circular and longitudinal seams (2 separate installations)
Thickness 3 mm
Tank diameter max. 800 mm
Tank length 1,800 – 2,300 mm
Material: Structural steel and pressure vessel steel
Features

Solid machinery base with two support combinations and tank rotary device for simultaneous circular welding

Solid machinery base with fixing bolt, roller slideway and support combination for longitudinal welding

Target

Very high increase in productivity by more than 150% due to fully mechanised tank production

Significant increase in quality through the elimination of human error in manual welding processes

Flexible range of application thanks to suitability for production of tanks with various dimensions

System components

3 DC welding power sources – type GTH 522 G

3 SAW single wire welding heads, each with optical seam tracking system

3 operating consoles for welding process control

3 pneumatic flux recovery units

Performance range

70A/18V to 400A/34V at 100% duty cycle

Welding speeds of up to 75 cm/min

Diameter of welding wire up to 2 mm

Circular and longitudinal seams in PA position (flat)

Applied benefits

High production time saving and low-warpage welding due to high welding speeds with very good seam quality

High process reliability thanks to centralised control of both circular welding systems

Simultaneous welding of tank top and end to minimise workpiece deformation

2 separate units for all welding tasks for complete tank production
Tank welding automat

Automatic SAW column and boom manipulator – type DV

Application

Joint welding of rolled stainless steel plates

SAW welding

Circular and longitudinal seams

Thicknesses of 10 – 25 mm

Max. pipe diameter 3,500 m

Material: unalloyed, low-alloyed and high-alloyed steels
### Features
A rotating column and boom manipulator with longitudinal and height axis (X and Z) was equipped with Kjellberg SAW technology. The positioning occurs by the roller bock turning device.

### Motivation
4 degrees of freedom for the production of different tank sizes.

### System components
- 1 DC power source – type GTH 802
- SAW single wire welding heads, separate for mild steel and stainless steel
- Manual positioning for X and Z axis
- Central operating console with joystick control of the axes
- Pneumatic flux recovery with pressure conveyor

### Performance range
- 80A/19V to 800A/44V at 80% duty cycle
- Welding speed of up to 80 cm/min
- Diameter of welding wire up to 3.0 mm for stainless steel
- Diameter of welding wire up to 5.0 mm for mild steel
- Circular, longitudinal and fillet welds in PA position (flat) and PB position (horizontal vertical)

### Applied benefits
- Less welding deformation thanks to fast welding speeds and accurate weld quality
- Process reliability through high-class technology and direct process monitoring by the user
- Multiple applications by high number of degrees of freedom
Pipe welding machine

Fully mechanised steerable automat – type KA1-UPP

**Application**

- Joint welding of rolled plates to pipe sections
- SAW parallel wire welding
- Butt welds and fillet welds
- Thicknesses of up to 40 mm
- Minimum pipe diameter approx. 1,400 mm
- Materials: S235, S355
Features

- Modified steerable SAW automat for cylinders and conical parts with parallel-wire technology
- High degree of stability thanks to serial axis prolongation
- Modified power sources for sufficient process reliability at long distances from the welding area

Target

- Major reduction in production time thanks to huge increase in deposition rate assisted by the use of double-wire technology
- High productivity achieved through fully mechanised welding process for interior seams
- Savings in operating materials thanks to universal use of steerable automat for cylindrical and conical components (e.g. as wind turbine towers)

System components

- Modified steerable automat for double-wire technology
- 1 DC power source – type GTH 1402
- Pneumatic flux recovery unit in a closed circuit design

Performance range

- 100A/19V to 1,200A/44V at 100% duty cycle
- Welding speeds of up to 60 cm/min
- Diameter of welding wire 2 x 2 to 2 x 3 mm
- Butt welds in PA position (flat)
- Fillet welds in PB position (horizontal vertical)
- Hoses and cables up to 50,000 mm in length

Applied benefits

- Optimised engineering systems for welding complete towers, resulting in approx. 30% less labour time
- Automat base frame retains high degree of stability despite highly conical geometry of tube sections
- Maximum processing roadway dependent only on the media supply
Surfacing automat

Fully mechanised GMAW welding gantry – type VT

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<td>Material: Independent of application</td>
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Features

An existing portal has been equipped with special GMAW welding technology

Local exhaustion for occupational safety and environmental protection

Target

Significant increase in productivity in the range of 130% through automation of the surfacing process

High process reliability through elimination of negative influence of incorrect torch management and distance

Time saving and cost efficiency through use of full scope of system with several torches

System components

2 DC power sources – type GTH 802

2 water-cooled flux cored torches with a power rating of 500 A

Central operating console for peripheral equipment and welding technology

Performance range

100A/19V to 1,000A/44V at 100% duty cycle

Welding speed depends on process

Diameter of flux cored wire max. 3.2 mm

Cladding in PA position (flat)

Applied benefits

High savings in production time as well as huge reductions in workload and improved quality

Low workpiece warpage thanks to simultaneous surfacing with several welding torches
Surfacing automat

Automatic GMAW welding gantry – type TAK

Application

Surfacing on mining components, conveyor parts and heavy industry workpieces

GMAW welding with flux cored wires

Cladding and regeneration

Max. component dimensions 3,000 x 600 x 500 mm

Material: Depends on alloy of flux cored wire
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<td>High process reliability, reduced heat input and low crack origin due to fixed program sequences geared to the respective welding task</td>
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Surfacing automat

Automatic SAW Surfacing Unit – type SMS

**Application**

- Surfacing on running wheels and guide wheels
- SAW single wire welding
- Regeneration
- Diameter of work-piece between 300 and 1000 mm
- Weight of work-piece between 150 and 450 kg
- Material: unalloyed and low-alloyed mild steel
Features
Automated surfacing for regeneration purposes
Surfacing of running surfaces and edges is made possible by integrating a pivoting work-piece support
Very high flexibility and easy transport due to compact structure of the unit with optimum arrangement of the individual components within the overall system

Target
Regeneration of components which are prone to wear and tear in order to save regular investments
Very high process liability due to automated process with monitoring of parameters
Compact version for transport in sea freight containers

System components
1 welding power source of the type GTH 1002
1 pressure powder conveyor with a capacity of 50l, heated and with minimum level indicator
1 KA 2-UP welding head
1 rotating-tilting table with a maximum load of 750kg on the face plate
1 machine frame with main column and motor supporting cross

Performance range
Max. 1.000A/ 44V at 100% duty cycle, optimum working range starts at 450A
Welding speed up to 90 cm/min depending on diameter of work-piece and weld pool movement
Wire diameter 3.0 mm
Surfacing in positions PA and PB

Applied benefits
Huge cost savings by regeneration of consumables
High productivity and process reliability
Flexible positioning of the unit because it can be transported with forklift
Surfacing automat

Automatic SAW surfacing column and boom manipulator – type RAD

**Application**

- Surfacing on wheelsets
- SAW and GMAW welding
- Regeneration
- Workpiece diameter up to 1,300 mm
- Infeed depth up to 450 mm
- Material: Filling material depending on welding job
Features
Automated surfacing of Deutsche Bahn wheelsets for regeneration
SAW and GMAW welding technology

Target
Huge increase in productivity by approx. 45% thanks to coating process automation
Significant degree of reliability achieved through preset programming and fixed processes
High savings in equipment thanks to job-oriented technology applying selective use of SAW surfacing at the seat of the wheels and GMAW edge technology at the hub flank
Staff workload reduced by mechanised workpiece handling on turntable

System components
1 power source – type GTH 1002
1 GMAW machine torch, water-cooled
1 SAW single wire welding head
Combined gas and water cooling system with flow control
Motorised flux recovery unit, exhaust air filtering and visual level indicator

Performance range
100A/19V to 1,000A/44V at 100% duty cycle
Welding speeds of up to 60 cm/min
Diameters of welding wire: Max. 3 mm (SAW process) Max. 1.2 mm (GMAW process)
SAW surfacing in PA position (flat)
GMAW surfacing in PB position (horizontal vertical) and PC position (horizontal)

Applied benefits
Major production time saving, high process reliability, reduced heat input and low tendency to crack due to automated regeneration with adapted welding procedures
Surfacing automat

Mobile GMAW welding system – type KAB

Application
- Surfacing on worn cylindrical components
- GMAW welding with Innershield wires
- Cladding and regeneration
- Max. workpiece diameter approx. 3,000 mm
- Workpiece height approx. 300 mm
- Materials: Depends on availability of filling materials
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<tr>
<td></td>
<td>1 water-cooled flux cored machine torch with four-roller drive</td>
</tr>
<tr>
<td></td>
<td>Central operating console for welding technologies and peripheral components</td>
</tr>
<tr>
<td></td>
<td>Water-cooling unit with flow control</td>
</tr>
<tr>
<td>Performance range</td>
<td>80A/18V to 720A/44V at 100% duty cycle</td>
</tr>
<tr>
<td></td>
<td>Welding speeds of up to 80 cm/min</td>
</tr>
<tr>
<td></td>
<td>Diameter of welding wire max. 2.8 mm</td>
</tr>
<tr>
<td></td>
<td>Cladding in PA position (flat) and PB position (horizontal vertical)</td>
</tr>
<tr>
<td>Applied benefits</td>
<td>Significant increase in productivity and alleviation of workload compared to “manual welding” in the range of 200%</td>
</tr>
<tr>
<td></td>
<td>Occupational safety thanks to external process and program control</td>
</tr>
<tr>
<td></td>
<td>High degree of flexibility and mobility due to segmental construction</td>
</tr>
</tbody>
</table>
Surfacing system for railways

Fully mechanised machine for surfacing onto rails

Application

Regeneration of grooved rails
SAW welding
Layer structure of vertical groove flanks
Material: Railroad steel
<table>
<thead>
<tr>
<th>Features</th>
<th>Optional use of solid wire or flux cored wire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Facility for adjustment to a maximum track width of 1,500 mm according to the type of rail</td>
</tr>
<tr>
<td></td>
<td>Waterproofed wire feeder housing</td>
</tr>
<tr>
<td>Target</td>
<td>Significant reduction in working time thanks to regeneration of grooved rails in mobile on-site applications using fully mechanised welding technology</td>
</tr>
<tr>
<td></td>
<td>High seam quality thanks to uniform layers in the area of straight tracks, curves and switches</td>
</tr>
<tr>
<td>System components</td>
<td>1 DC power source – type GTH 802 – modified for operating in generator mode</td>
</tr>
<tr>
<td></td>
<td>SAW single wire welding head with flexible hollow cables for wire diameters of up to 2.5 mm</td>
</tr>
<tr>
<td></td>
<td>Pneumatic flux recovery unit</td>
</tr>
<tr>
<td></td>
<td>Hoses and cable 35,000 mm in length</td>
</tr>
<tr>
<td>Performance range</td>
<td>80A/18V to 720A/44V at 100% duty cycle</td>
</tr>
<tr>
<td></td>
<td>Welding speeds of up to 70 cm/min</td>
</tr>
<tr>
<td></td>
<td>Diameter of welding wire up to 2.5 mm</td>
</tr>
<tr>
<td></td>
<td>Layer structure in PC position (horizontal)</td>
</tr>
<tr>
<td>Applied benefits</td>
<td>Decrease in operative time, secondary processing time and downtime</td>
</tr>
<tr>
<td></td>
<td>Mechanised welding on left or right groove flank, no re-positioning of the welding system necessary</td>
</tr>
<tr>
<td></td>
<td>Stable welding construction in six-wheel version</td>
</tr>
<tr>
<td></td>
<td>Minimum flux loss and long distances achievable with pneumatic flux recovery unit</td>
</tr>
<tr>
<td></td>
<td>Flexibility regarding work location thanks to rubber wheels for ease of positioning and their infeed by electrical lifting cylinders</td>
</tr>
</tbody>
</table>
Kjellberg – KA series welding machines

Good value standard technology for a range of engineering applications

Based on a **flexible modular system**, the KA machine series offers **cost-effective solutions** for a range of technological applications with a view to streamlining operations and realising potential savings.

In the stiff competition between metalworking enterprises, you can secure benefits for yourself by deploying this standard technology, achieving:

- **Major reductions in labour time** through mechanisation and reaching high welding speeds and high welding output.

- **Reliable welding quality** in SAW process thanks to optimum welding performance, high pore reliability, excellent seam quality, and tachometer-controlled wire feeder and tractor drives.

- **Strong decrease in secondary process times** thanks to mechanised operations, various flux recovery units, optimum slag retracking quality, fast support positioning.

- **Cost reductions** due to high durability of wear parts (nozzle, feed rollers), low-wear and dustproof support newels, retrofit options for additional technology (sensors) and variable guide roll application, elimination of glare shield and welding fume exhaust.

- **Savings on labour costs through the use of semi-skilled, rotating personnel** made possible by user-friendly, ergonomic controls and high degree of process reliability due to parameter pre-selection for current, voltage and welding speed (preset) allows automatic process for start options and crater filling at the end of welding or choice of separate welding programs at a second operating level.

- **High degree of occupational safety** due to avoidance of glare thanks to covered arc (by flux) at the workplace and in the whole workshop environment, very low weld fumes (no exhaustion), increased stability through axis prolongations, etc.

**Basic version KA 1-UP**
## Standard designs

<table>
<thead>
<tr>
<th>Type</th>
<th>Specification</th>
<th>Max. welding power</th>
<th>Wire diameter (mm)</th>
<th>Recommended welding power sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>KA 1-UP</td>
<td>SAW single wire tractor</td>
<td>800 A</td>
<td>1.6 – 3</td>
<td>GTH 522 GTH 802</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,400 A</td>
<td>2.5 – 5</td>
<td>GTH 1002 GTH 1402</td>
</tr>
<tr>
<td>KA 1-UP steered machine</td>
<td>SAW single wire tractor, designed for tank and pipe inner welding (e.g. wind turbine towers)</td>
<td>1,400 A</td>
<td>2.5 – 5</td>
<td>GTH 1002 GTH 1402</td>
</tr>
<tr>
<td>KA 2-UP/UPP</td>
<td>Single wire welding head</td>
<td>800 A</td>
<td>1.6 – 3</td>
<td>GTH 802</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,400 A</td>
<td>2.5 – 5</td>
<td>GTH 1002 GTH 1402</td>
</tr>
<tr>
<td></td>
<td>Also available as SAW parallel welding head (with control to fit to boom and column manipulators, gantries, etc. in this or in other designs, without rail carriers)</td>
<td>1,400 A</td>
<td>2 x 1.6 to 2 x 3</td>
<td>GTH 1002 GTH 1402</td>
</tr>
<tr>
<td>KA 4-UPDG</td>
<td>SAW double-hinged arm tractors (welding of two fillet or butt welds simultaneously)</td>
<td>600 A (per welding head)</td>
<td>1.6 to 2.5 (per welding head)</td>
<td>2 x GTH 522 2 x GTH 802</td>
</tr>
<tr>
<td>KA 7-UPP</td>
<td>SAW parallel tractor also available as steered machine</td>
<td>1,400 A</td>
<td>2 x 1.6 to 2 x 3</td>
<td>GTH 1002 GTH 1402</td>
</tr>
</tbody>
</table>
### Specifications of power sources for Kjellberg KA series machines

<table>
<thead>
<tr>
<th>DC power source</th>
<th>GTH 522 1)</th>
<th>GTH 802</th>
<th>TTH 1000 (welding transformer)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order number</strong></td>
<td>.11.907.702</td>
<td>.11.705.902A</td>
<td>.11.690.902</td>
</tr>
<tr>
<td><strong>Procedure</strong></td>
<td>SAW, GMAW</td>
<td>SAW, GMAW</td>
<td>SAW</td>
</tr>
<tr>
<td><strong>Characteristic</strong></td>
<td>constant voltage (cv)</td>
<td>constant voltage (cv)</td>
<td>constant voltage (cv)</td>
</tr>
<tr>
<td><strong>Supply voltage</strong></td>
<td>3x 400 V, –10%/+10%, 50 Hz</td>
<td>3x 400 V, –10%/+10%, 50 Hz</td>
<td>2x 400 V, –10%/+10%, 50 Hz</td>
</tr>
<tr>
<td><strong>Power input acc. to EN 60974-1</strong></td>
<td>23.6 kVA</td>
<td>31.7 kVA</td>
<td>77.2 kVA</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>CEE 63 A</td>
<td>CEE 63 A</td>
<td>terminal connection, fuse 200 A</td>
</tr>
<tr>
<td><strong>Welding current</strong></td>
<td>70 A / 18 V – 500 A / 45 V</td>
<td>80 A / 18 V – 800 A / 44 V</td>
<td>200 A / 25 V – 1,000 A / 44 V</td>
</tr>
<tr>
<td>X = 60 %</td>
<td>500 A</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>X = 80 %</td>
<td>–</td>
<td>800 A</td>
<td>–</td>
</tr>
<tr>
<td>X = 100 %</td>
<td>400 A</td>
<td>720 A</td>
<td>1,000 A</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>IP 23</td>
<td>IP 22</td>
<td>IP 23</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>260 kg</td>
<td>319 kg</td>
<td>650 kg</td>
</tr>
<tr>
<td><strong>Dimensions L x W x H (mm)</strong></td>
<td>1,130 x 665 x 865 (with building site chassis)</td>
<td>980 x 720 x 1,000 (with building site chassis)</td>
<td>1,350 x 770 x 870 (stationary)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC power source</th>
<th>GTH 1002</th>
<th>GTH 1402</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order number</strong></td>
<td>.11.903.102A</td>
<td>.11.903.802A</td>
</tr>
<tr>
<td><strong>Procedure</strong></td>
<td>SAW, GMAW</td>
<td>SAW, GMAW</td>
</tr>
<tr>
<td><strong>Characteristic</strong></td>
<td>constant voltage (cv)</td>
<td>constant voltage (cv)</td>
</tr>
<tr>
<td><strong>Supply voltage</strong></td>
<td>3 x 400 V, –10%/+10%, 50 Hz</td>
<td>78 kVA</td>
</tr>
<tr>
<td><strong>Power input acc. to EN 60974-1</strong></td>
<td>23.6 kVA</td>
<td>83.8 kVA</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>terminal connection, fuse 125 A</td>
<td>terminal connection, fuse 125 A</td>
</tr>
<tr>
<td><strong>Welding current</strong></td>
<td>100 A / 19 V – 1,000 A / 44 V</td>
<td>100 A / 19 V – 1,400 A / 44 V</td>
</tr>
<tr>
<td>X = 100 %</td>
<td>1,000 A</td>
<td>1,200 A</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>IP 21</td>
<td>IP 21</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>440 kg</td>
<td>440 kg</td>
</tr>
<tr>
<td><strong>Dimensions L x W x H (mm)</strong></td>
<td>1,110 x 820 x 1,000 (stationary)</td>
<td>1,110 x 820 x 1,000 (stationary)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC power source</th>
<th>GTF 752</th>
<th>GTF 1002</th>
<th>GTF 1402</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order number</strong></td>
<td>.11.705.702</td>
<td>.11.903.202</td>
<td>.11.903.702</td>
</tr>
<tr>
<td><strong>Procedure</strong></td>
<td>SAW (gouging)</td>
<td>SAW (MMAW, gouging)</td>
<td>SAW (MMAW, gouging)</td>
</tr>
<tr>
<td><strong>Characteristic</strong></td>
<td>constant current (cc)</td>
<td>constant current (cc)</td>
<td>constant current (cc)</td>
</tr>
<tr>
<td><strong>Supply voltage</strong></td>
<td>3 x 400 V, –10%/+10%, 50 Hz</td>
<td>51.5 kVA</td>
<td>78 kVA</td>
</tr>
<tr>
<td><strong>Power input acc. to EN 60974-1</strong></td>
<td>23.6 kVA</td>
<td>83.8 kVA</td>
<td></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>CEE 125 A (option 63 A)</td>
<td>terminal connection, fuse 125 A</td>
<td>terminal connection, fuse 125 A</td>
</tr>
<tr>
<td><strong>Welding current</strong></td>
<td>60 A / 22.4 V – 750 A / 44 V</td>
<td>200 A / 28 V – 1,000 A / 44 V</td>
<td>200 A / 28 V – 1,400 A / 44 V</td>
</tr>
<tr>
<td>X = 80 %</td>
<td>750 A</td>
<td>1,000 A</td>
<td>1,400 A</td>
</tr>
<tr>
<td>X = 100 %</td>
<td>630 A</td>
<td>1,000 A</td>
<td>1,200 A</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>IP 22</td>
<td>IP 21</td>
<td>IP 21</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>304 kg</td>
<td>438 kg</td>
<td>438 kg</td>
</tr>
<tr>
<td><strong>Dimensions L x W x H (mm)</strong></td>
<td>980 x 720 x 1,000 (with building site chassis)</td>
<td>1,110 x 820 x 1,000 (stationary)</td>
<td>1,110 x 820 x 1,000 (stationary)</td>
</tr>
</tbody>
</table>

1) with integrated cooling water circulation, can also be supplied without on request

Our products are characterised by high quality and reliability. We reserve the right to make changes to volume production for technical reasons. No claims of any kind can therefore be made on the basis of the information contained in this brochure.

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