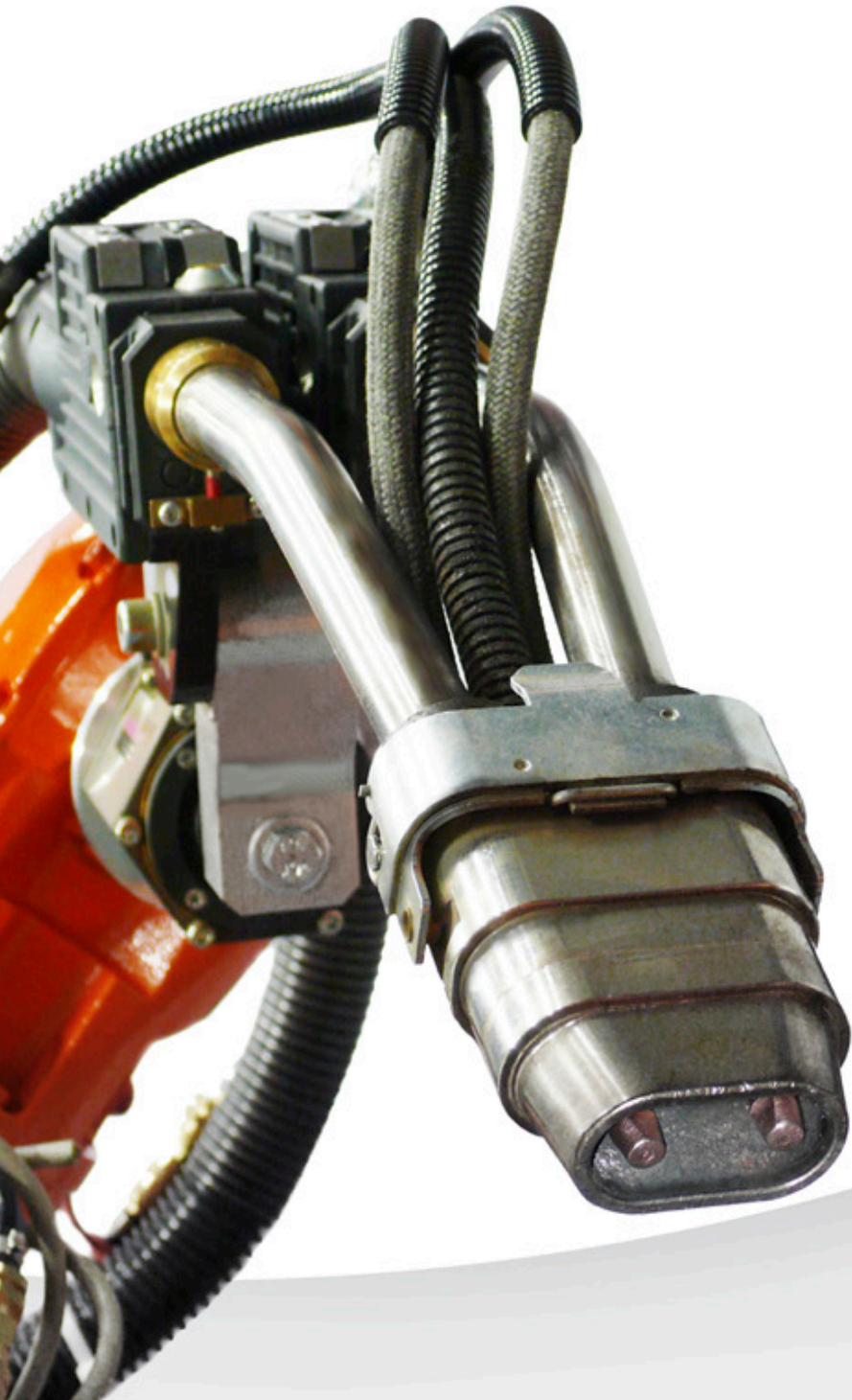


KempArc Pulse TCS

Welding mechanisation to the power of two

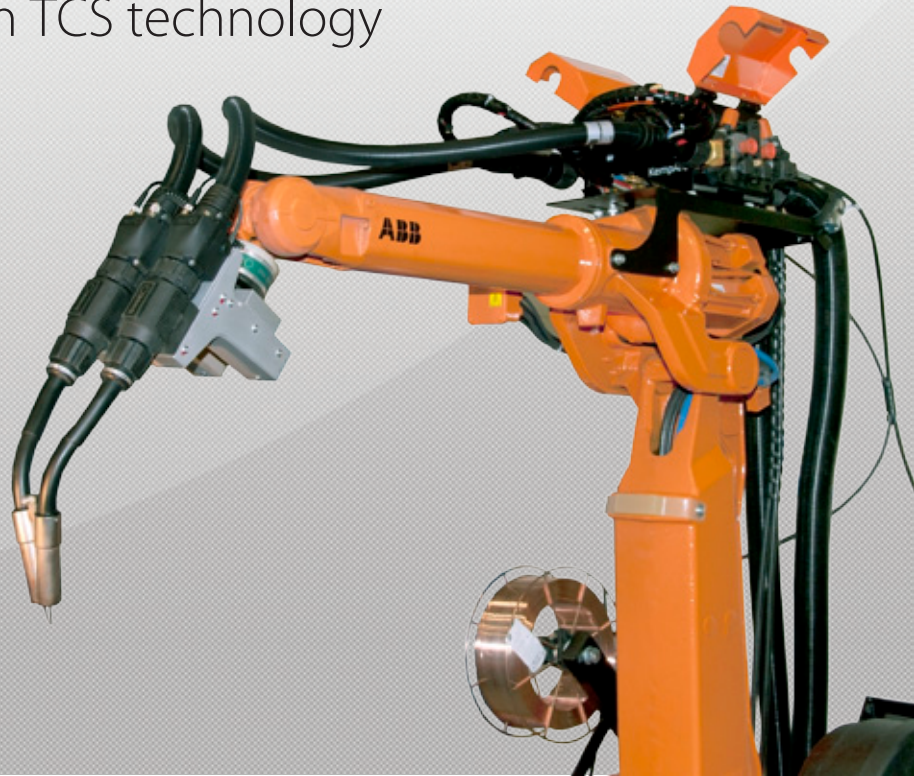


KempArc Pulse TCS

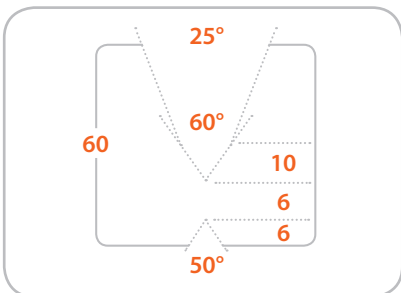
Increase productivity with TCS technology

KempArc Pulse TCS is a unique solution for heavy deposition, high speed welding in mechanised applications.

More than just another dual wire welding system, TCS establishes significant productivity increase for mechanised MIG/MAG welding.



Up to
50%
faster setup
time



Groove geometry for tandem welding case 2.

Higher levels of productivity and quality

Replacing single-wire welding with dual wire tandem welding is an efficient way to increase welding speed, productivity and reduce costs. However, early market models prevented users from taking full advantage of the tandem process benefit. Parameter selection and adjustment was complicated, time consuming and unreliable, due to the complex synchronising of both leading and trailing arcs.

Today, KempArc Pulse TCS (Tandem Control System) delivers on its promise, opening the door to reliable dual arc welding. TCS smart software solutions provide easy system setup and automatic arc regulation, achieving significant increase in welding speed and reliable welding quality.

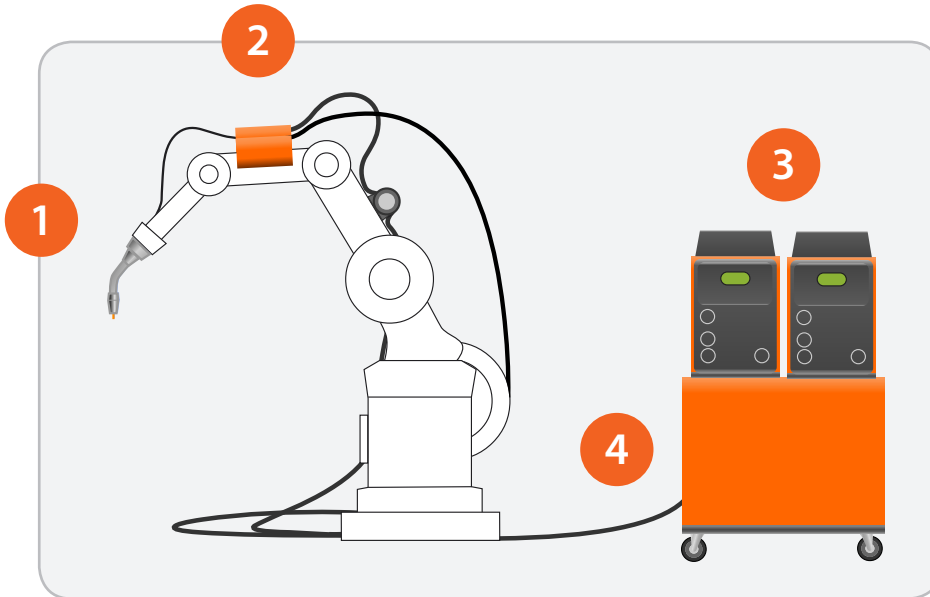
Intelligent TCS smart software actively monitors and controls the arcs separately, making it possible to precisely adjust them independently from each other. The slave arc continuously monitors the master arc and adjusts itself accordingly, giving several performance benefits including:

- no arc interference
- optimised, independent and real time arc length adjustment
- fast, flexible and easy parameter adjustment.

Fast and easy setup saves time and money

One of the great benefits of the TCS technology is that it makes the KempArc Pulse TCS more tolerant of welding parameter variations compared to traditional tandem welding processes.

This means significantly shorter setup times of the equipment, both in the initial setup phase and when the welding application changes. With KempArc Pulse TCS, the change from one mechanisation application to another is fast and flexible.



1: Several tandem torch options

KempArc Pulse TCS can be delivered with a welding torch option of your choice, either normal or push-pull model. All torches are specially designed for tandem MIG/MAG welding.

2: Two DT 400 wire feeders

Designed especially for mechanised welding applications, the DT 400 wire feeders are equipped with the reliable 4-roll DuraTorque wire feeding mechanism and full metal feed rolls with excellent wear resistance.

3: Two KempArc Pulse power sources

The welding power is delivered from two 450-ampere KempArc Pulse power sources. Their settings can be controlled completely independently from each other, allowing the use of different welding processes in each wire.

4: KempCool 40 water cooling unit

KempCool 40 is an efficient water cooling device designed for use with KempArc Pulse TCS. It is equipped with three water flow circuits, one for both contact tips and an optional circuit for cooling the gas nozzle. Each water flow circuit has its own flow control, and the low-pressure alarm can be adjusted to the desired level.

Why buy

- Increases productivity 40 – 80 % over single wire process
- Easy process setting and parameter control
- Optional ON/OFF switching of either electrode during the weld cycle
- Suitable for steels and aluminium applications
- Reduced heat input on thin sheet materials
- Tack welding selection with either electrode
- TCS process can be direction independent
- Connects to all robot brands





Challenge 1: Welding primer coated steel with solid wire

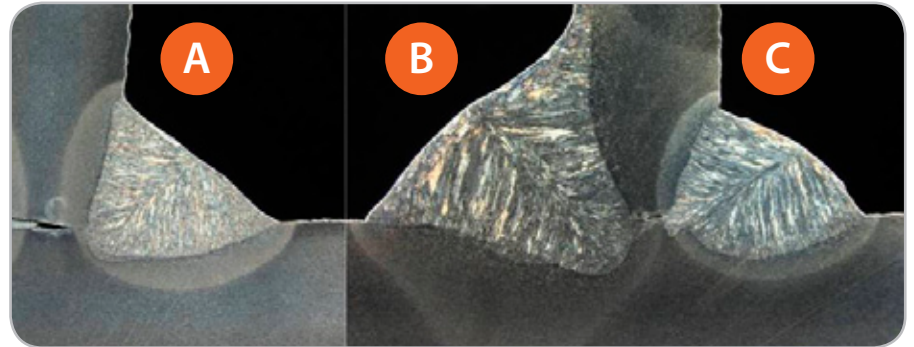
KempArc Pulse TCS was put to the test for fillet welding primed steel, using the pulse-pulse TCS process variant.

The base material was 6 mm steel, the filler material was 1.2 mm G3Si1 solid wire and the shielding gas was Ar + 18 % CO₂.

The test demonstrated TCS performance for primed steel with solid wire.

Base material: 6 mm + 6 mm primer coated steel

Filler material: G3Si1 1.2 mm solid wire



	A	B	C
Throat thickness	4.0 mm	6.0 mm	3.0 mm
Wire feed speed	14 + 12 m/min	14 + 12 m/min	14 + 14 m/min
Welding speed	1.6 m/min	0.65 m/min	1.9 m/min
Deposition rate	13.84 kg/h	13.84 kg/h	13.84 kg/h



Challenge 2: Welding 60 mm aluminium material in vertical up position without pre-heating

KempArc Pulse TCS faced another challenge when Kempki tested its ability to weld extra thick aluminium material. The test was especially difficult, as it was carried out vertically, without pre-heating.

Kempki's modified arc welding process **WiseFusion™** was also engaged, making it possible to control the high volume deposition rate required. The wire feed speeds in the first weld pass were 9 m/min for the 1st wire and 6 m/min for the 2nd wire with a 1.6 mm filler wire.

Oscillation was used in all five weld passes and would not have been possible without the use of TCS control technology. Oscillation demanded small distances between the filler wires, as small as 6 – 8 mm. Usually, these tight parameters between parallel arcs cause interference, but the TCS smart software technology makes it possible to adjust the welding arcs totally independently from each other.

Base material: 60 mm aluminium (Al 5083)

Filler material: AlMg 4.5 Mn, Ø 1.6 mm

Shielding gas: Ar + 66 % He

Process: Pulse+Pulse (WiseFusion™)

Easy parameter control from a distance

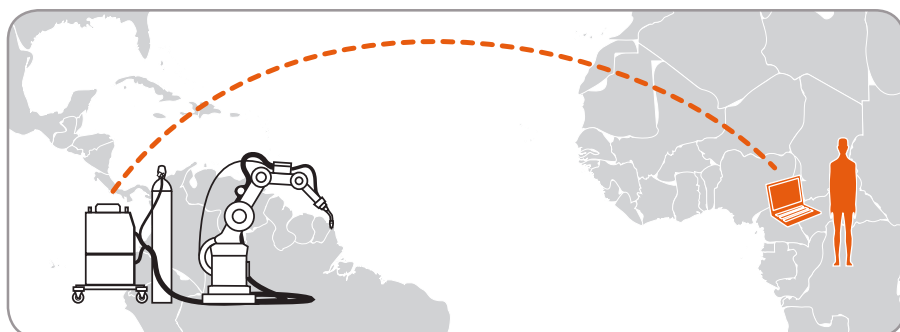
KF 62 remote control panel offers a convenient way of controlling your KempArc from a distance. It allows you to adjust welding parameter values with an easy-to-use handheld device, and you are free to position the power sources in a space-efficient way.

Access your KempArc system through the web

KempArc Browser is an optional software application that offers a web interface to any KempArc welding equipment. It is an easy way to make changes to the welding parameter values from a distance, without moving between the welding power source and the mechanisation application.

Using KempArc Browser is easy. You can just take the Fanuc teach pendant device and open the KempArc Pulse TCS control panel with the KempArc Browser web interface.

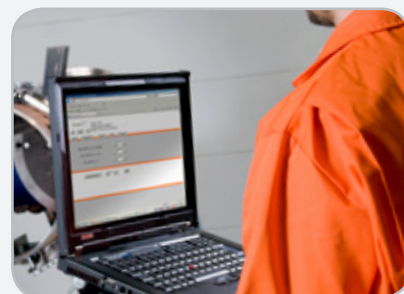
When used with a computer, KempArc Browser allows you to establish a connection through to the mechanisation application located at a more remote distance – whether it be downstairs or other side of the globe.



KF 62 control panel offers remote welding control for KempArc Pulse TCS power source.



Integrated in the robot's teach pendant, the KempArc Browser allows you to set welding values without leaving the mechanisation application.



Using KempArc Browser interface on your laptop computer you can maintain and service your KempArc Pulse TCS equipment through the company's intranet or the public web.

Kemparc Pulse TCS

Ordering information

KempArc Pulse TCS package		P161		
KempArc Pulse TCS 450 digital power source		6200455	2 pcs	
KempArc DT 400 wire feeder	right hand side	6203400	1 pc	
KempArc DT 400L wire feeder	left hand side	6203400L	1 pc	
Wise Fusion		9991015	2 pcs	
MatchCurve		9990401	2 pcs	
Tandem control cable		W005451	1 pc	
Interconnection cable, ROBOT 95-10-WH water cooled (with extra water hose for cooling gas nozzle)		10 m	6260466	2 pcs
KempCool 40 Cooling unit		6208400	1 pc	
Tandem welding torch		Project dependent	1 pc	
Bracket for the robot		Project dependent	1 pc	

Accessories and options				
KF 62 remote panel			6200800	
Remote panel cable	10 m		4308370	
KempArc Browser			6202200	
Earth return cable	5 m, 70 mm ²		6184711	
Earth return cable	10 m, 70 mm ²		6184712	
Interconnection cable, water cooled (with extra water hose for cooling gas nozzle)			25 m	6260467
Interconnection cable, water cooled *			10 m	6260465
Interconnection cable ROBOT 95-5-WH *			5 m	6260461
Software installation device DataGun			6265023	
WiseRoot welding process – A			9991011	
WiseThin welding process – A			9991013	
WisePenetration welding function – A			9991010	
WiseFusion welding function – A			9991015	
Welding program			9990401	

* Other cable lengths available on request.

Selection of full metal feed rolls			Drive roll No bearing (1)	Compressing roll With bearing (2)
V-Groove	0.8/0.9		W006074	W006075
			W006076	W006077
			W004754	W004753
			W006078	W006079
			W006080	W006081
Knurled	1.0		W006082	W006083
			W006084	W006085
			W006086	W006087
			W006088	W006089
			W006090	W006091
U-Groove	1.2		W006092	W006093

Fieldbus card options

Devicenet	9774120DEV
Can Open	9774120CAN
Ethernet	9774120ETH
Interbus Copper	9774120IBC
Interbus Optical	9774120IBO
Profibus	9774120PRF
Profinet	9774120PRN

Technical specifications

KempArc Pulse TCS

Connection voltage	3~50/60 Hz	400 V -15...+20 %
Rated power	60 % ED	22.1 kVA
	100 % ED	17.8 kVA
Connection cable	HO7RN-F	4G6 (5 m)
Fuse (delayed)		35 A
Load capacity 40° C	60 % ED	450 A
	100 % ED	380 A
Welding current and voltage range		10...50 V
Open circuit voltage		50 V
Open circuit power		100 W
Power factor at max. current		0.9
Efficiency at max. current		88 %
Operating temperature range		-20...+40 °C
Storage temperature range		-40...+60 °C
EMC class		A
Minimum short circuit power S_{SC} of supply network		5.5 MVA
Degree of protection		IP23S
External dimensions	L x W x H	590 x 230 x 430 mm
Weight		36 kg
Voltage supply for auxiliary devices		50 V DC / 100 W
Fuse (delayed)		6.3 A
Voltage supply for cooling unit		24 V DC / 50 VA

DT 400

Operating voltage		50 V DC
Rated power		100 W
Load capacity 40 °C	80 % ED	600 A
	100 % ED	500 A
Operating principle		4-wheel feed
Wire feed speed		0...25 m/min
Filler wires	Fe, Ss	0.6...1.6 mm
	FCW	0.8...1.6 mm
	Al	1.0...1.6 mm
Welding gun connector		Euro
Operating temperature range		-20...+40 °C
Storage temperature range		-40...+60 °C
EMC class		A
Degree of protection		IP23S
External dimensions	L x W x H	269 x 175 x 169 mm
Weight		4.5 kg

Tandem or 1-wire

KempArc Pulse TCS can be used for dual-wire Tandem TCS welding, but it can also be used for single-wire welding with either the 1st or the 2nd wire.

Process options

There are four process options available in KempArc Pulse TCS:

- Pulse + Pulse
- Spray arc + Pulse
- Pulse + Spray arc
- Spray arc + Spray arc

Wise™ TCS software

Wise software products are available to further enhance KempArc Pulse TCS performance. They increase welding productivity and quality by automating welding power and arc length control. Further Wise products are available for root pass welding and thin sheet applications.





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