

Arc Welding

Boosting manufacturing efficiency
with automated welding



MIG/MAG welding is used when high productivity and efficiency are required.

WHY SHOULD YOU USE AUTOMATED ARC WELDING INSTEAD OF MANUAL WELDING?

High-quality welding operations boost production rates, and reduce defects, while minimizing exposure to hazardous environments.

- Higher production frequency: **process efficiency**
- Reduce mistakes and **increase weld quality**
- Improve **safety**
- Improve **schedule** adherence
- **Lower per-piece consumption** of consumables like gas and wire

WHY SHOULD YOU CHOOSE COMAU ARC WELDING SOLUTIONS?

Comau is able to provide expert guidance and the most effective robotic systems to meet the precise needs of your industrial processes.

- Extensive welding process **know-how**
- Complete **range of robots** available, both hollow and non-hollow-wrist
- Concrete **references** across multiple industries and countries
- Comau offers **customers support** with their projects by giving them the opportunity to carry out **welding tests** with the assistance of qualified experts.



One supplier: Multiple Configurations

Comau offers a complete arc welding set for any kind of industry

Software

Login	Date	Time	Seam	Adita	Prog	Power	LA	SpdR	SpdW	I	V
COMAU	15-JUN-12	17:19:13	W01	1	7	100	30	2000	10	180	10
COMAU	15-JUN-12	17:19:34	W02	1	7	100	30	2000	10	180	10
COMAU	15-JUN-12	17:20:09	W03	1	7	100	30	2000	10	180	10
COMAU	15-JUN-12	17:20:19	W04	1	7	100	30	2000	10	180	10
COMAU	15-JUN-12	17:20:28	W05	1	7	100	30	2000	10	180	10
COMAU	15-JUN-12	17:20:34	W06	1	7	100	30	2000	10	180	10

Single or Multi Arm Controller

Marathon or Reel



Crash box



Welding Torch: Push, Push-Pull, CMT



Robot Dress



Mechanical Torch Cleaning & Lubricating Device



Power Source *



Positioners and RT



Strategic partnerships for power source, torch cleaning and lubricating

Our Robot Portfolio for Arc Welding



Robots

Model	RACER-7-1.4	S-13	S-18	NJ-16-3.1
Number of axes	6	6	6	6
Maximum wrist payload	7 kg	13 kg	18 kg	16 kg
Additional load on forearm	10 kg	10 kg	10 kg	12 kg
Maximum horizontal reach	1436 mm	1960 mm	1730 mm	3108 mm
Torque on axis 4	13 Nm	35 Nm	50 Nm	43 Nm
Torque on axis 5	13 Nm	35 Nm	50 Nm	43 Nm
Torque on axis 6	7.5 Nm	22 Nm	30 Nm	23 Nm
Motion range (Max Speed)				
Axis 1	+/- 165° (220 °/s)	+/- 180° (205°/s)	+/- 180° (205°/s)	+/- 180° (170 °/s)
Axis 2	-85° / +155° (250 °/s)	- 90° / +160° (180°/s)	- 90° / +160° (180°/s)	-60° / +125° (150 °/s)
Axis 3	0° / -168° (300 °/s)	- 175° / +90° (260°/s)	- 175° / +90° (260°/s)	0° / -170° (165 °/s)
Axis 4	+/- 210° (600 °/s)	+/- 200° (400°/s)	+/- 200° (400°/s)	+/- 2700° (265 °/s)
Axis 5	+/- 135° (600 °/s)	+/- 125° (400°/s)	+/- 125° (400°/s)	+/- 120° (250 °/s)
Axis 6	+/- 2700° (650 °/s)	+/- 2700° (635°/s)	+/- 2700° (635°/s)	+/- 2700° (340 °/s)
Repeatability	0.03 mm	+/- 0.03 mm	+/- 0.03 mm	0.10 mm
Tool coupling flange ISO	9409 -1- A 40	ISO 9409-1-A50	ISO 9409-1-A50	9409 - 1 - A63
Robot weight	180 kg	270 kg	265 kg	680 kg
Protection class	IP54	IP65 (wrist IP68)	IP65 (wrist IP68)	IP65 (wrist IP67)
Mounting position	Floor Ceiling - Sloped (45° max) -	Floor Ceiling Wall Inclined Plane -	Floor Ceiling Wall Inclined Plane -	Floor Ceiling - Sloped (45° max) -

Auxiliary Equipment

Double action vertical positioners

Model	PTDV-500	PTDV-750	PTDV-850
	1.2 - 2.0	1.2 - 2.0	1.2 - 2.5
Payload	2x500 kg	2x750 kg	2x850 kg
Static torque on main axis	1000 Nm	1000 Nm	1000 Nm
Approx. time for 180° changeover	4.9 s	4.7 s	4.8 s



Double action horizontal positioners

Model	PTDO-750-1.2		
	2.0	4.0	4.5
Payload	2x750 kg		
Static torque on main axis	1000 Nm		
Approx. time for 180° changeover	3.7 s		



Orbital single lathe positioner

Model	PTS-ORB-1000
Payload	1000 kg
Max inertia	400 kgm²
Static torque on main axis	1000 Nm



Positioner modules

Model	MP-500	MP-1000	MP-1250	MP-2500
Payload	500 kg	1000 kg	1250 kg	2500 kg
Max inertia	250 kgm²	400 kgm²	400 kgm²	1100 kgm²
Static torque on main axis	600 Nm	1000 Nm	1500 Nm	5000 Nm



Rotary tables

Model	New!		
	TR-4500	RT-1500	RT-3000
Payload	4500 kg	1500 kg	3000 kg
Max inertia	7000 kgm²	780 kgm²	4300 kgm²
Static torque on main axis	4250 Nm	1100 Nm	4500 Nm



Slides

Robot model	From NJ-16 - 3.1 TO NJ - 650 - 2,7
Rail type	TMF4B
Robot mounting position*	0° - 90° - 180° - 270°
Robot spacer	200 - 300 - 400 - 500 mm
Dressing type Spot (S) / Hand (H)	S / H
Min. net stroke / Step - Single carriage	1510 / 1000
Min. net stroke / Step - Double carriage	760 / 1000

(*) for Robot mounting positioning 0° a Robot spacer is mandatory



HARDWARE for Arc Welding Applications

The robot can also be interfaced with other brands in alternative to Fronius

Fronius Power Source

TPS320i Standard Synergic

TPS320i Pulse Synergic

TPS400i Standard Synergic

TPS400i Pulse Synergic

TPS500i Standard Synergic

TPS500i Pulse Synergic



Fronius Wire Feeder

PUSH CONFIGURATION



CMT (PUSH-PULL) CONFIGURATION



Integrated Dress

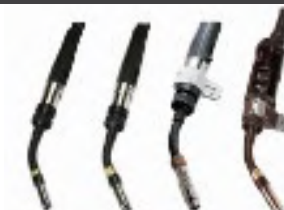
Wire by Marathon



Crash Box Device



Welding Torch Standard,
Push-Pull, CMT



Software Features for Arc Welding Applications

- **Smart Arc User Device**

Application in the case of an alternative power source to Fronius

- **Multipass**

Multiple welding seams with automatic shifts

- **Weaving**

Allows for filling a wide, flat joint or welding thick metals by adding a weave pattern to cover a larger surface area

- **Adaptive Welding**

Coming soon

Self-setting weaving amplitude and weld speed proportionally to the gap/ volume of the joint

- **Smart Arc Overlap**

In case of welding interruption the robot will re-start several millimeters back (value configurable)

- **Smart Arc Spot (Intermittent welding)**

Welding with alternate Arc on and Arc off with the robot always in motion

- **Smart Arc Scratch start effect**

Scratch the arc by scratching the wire, useful for oxidised parts

- **Automatic TPC – Check**

Automatic control of torch tool value

- **Override**

Changes welding parameters in real time

- **Multi- Arm cooperative**

Two arms welding simultaneously on a rotating axis

- **Smart Search - Wire seam finder**

Search joint using welding wire

- **Smart Arc Servo Robot Seam finder**

Coming soon

Joint search using the laser Servo Robot sensor

- **Automatic stick-out calibration**

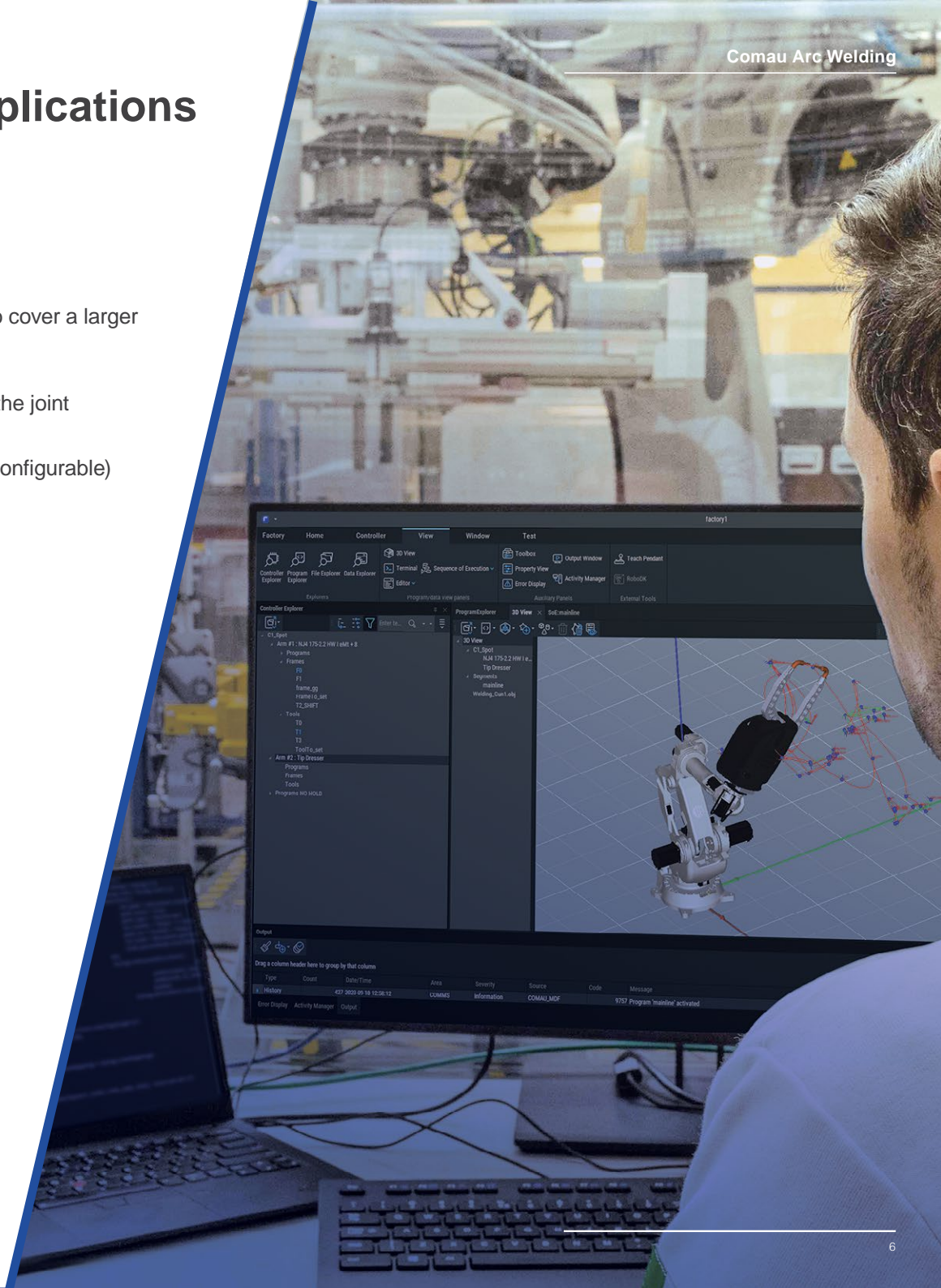
Sets the wire stick-out in automatic mode

- **Wire seam tracker**

Real-time tracking just ahead of where the weld is being deposited

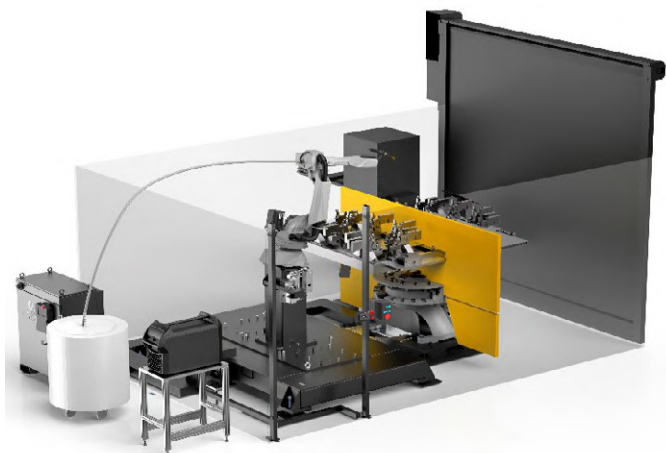
- **SmartArcMoni (process monitoring)**

Control of welding seam parameters with visual checks on terminal and on the generated file



Arc Welding Standard Cells

The Modular Standard Cell with an arc welding configuration, can also be equipped in different configurations:



Arc Cell- Single Robot and Turntable process



RACER-7-1.4

Payload up to: 7 kg
Max H reach of: 1436 mm
Repeatability: 0.05 mm



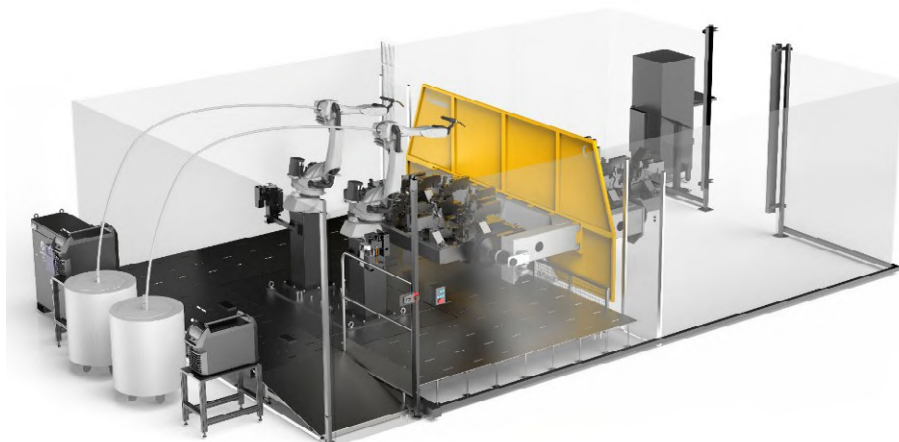
S- FAMILY

Payload up to: 18 kg
Max H reach of: 1960 mm
Repeatability: 0.03 mm



FRONIUS TPS 400I

Push Water cooled
Interface included Profinet
PMC and Pulse welding



Arc Cell- Double Robot and PTDV



RT 3000 kg



PTS-ORB 1000 kg



PTDV 500 kg 1.2-2.0
PTDV 750 kg 1.2-2.0
PTDV 850 kg 1.2-2.5

(*) for Robot mounting positioning 0° a Robot spacer is mandatory



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