



Giotto Basic

*Tube to tubesheet
TIG orbital welding system*



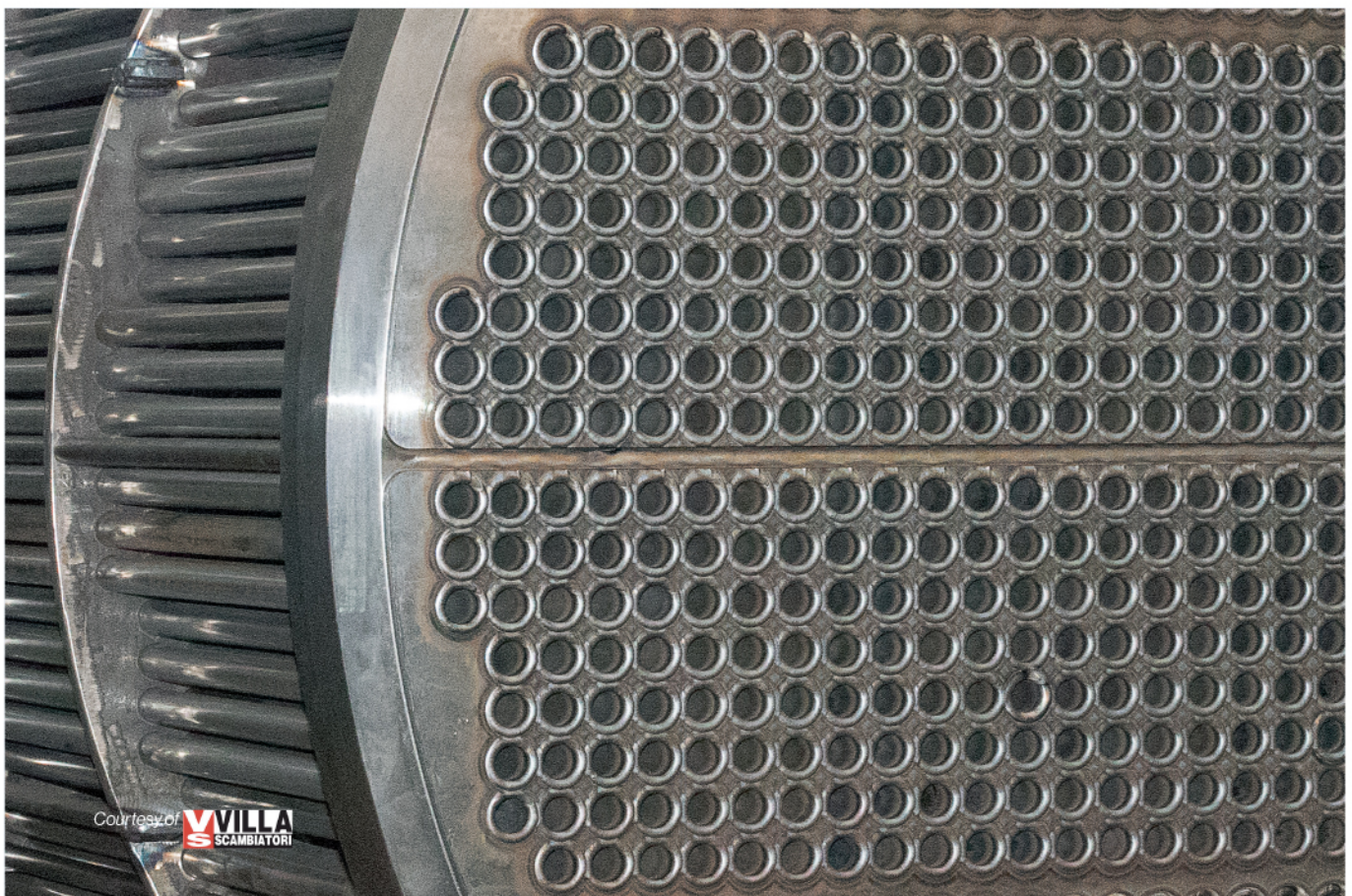
Giotto Basic

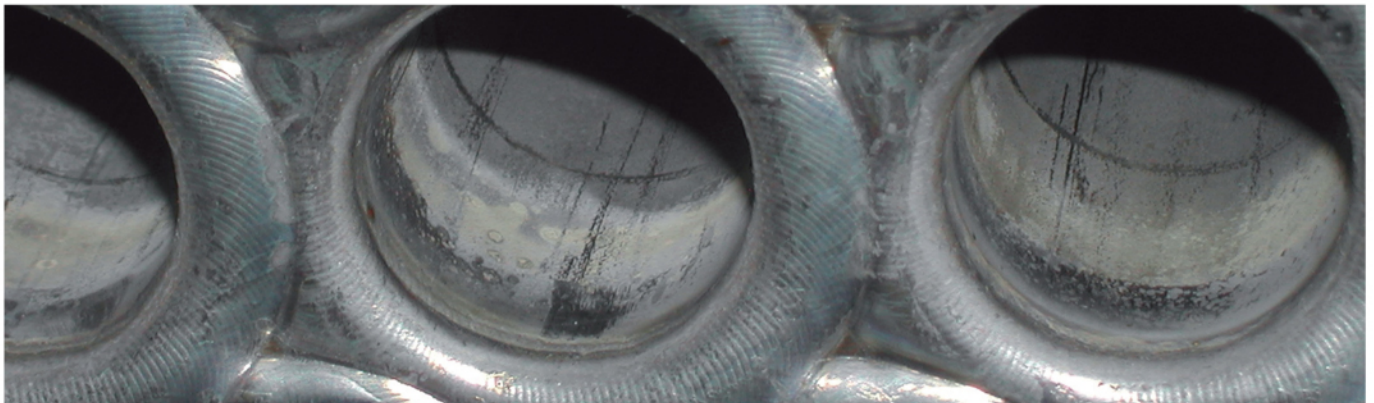
High-quality tube-tubesheet TIG orbital welding system

MAUS ITALIA presents the **Giotto Basic** orbital welding system for tube-tubesheet welding in heat exchangers.

Its **in-house design and manufacture** has enabled us to optimise the design in order to offer a high-quality system, comprising:

- a **Giotto250B** orbital head for tube-tubesheet TIG welding;
- microprocessor inverter generator **GiottoPower200** complete with cooling unit.





Digital interface

Digital programming panel which facilitates the setting of welding parameters

User-friendly.



Standard application range

For tubes with **ID** 8.0 to 51.0 mm (from 0.315" to 2.008").

Possibility of extension to increase the max. Ø.

Tube range



Precise position

Optical control of angular position without mechanical contact with resolution of 120 pulses per revolution (3°)

Encoding



Sectors

The division of the welding cycle into 4 sectors makes it possible to compensate for the negative effects of gravity on the welding pool.

Sector



Speed adjustment in mm/min

Programming of the head rotation speed in mm/min, as generally indicated in the WPS

Real speed



24/7 use

The enhanced cooling system, inside the head, allows intensive use of the system.

Cooling



Electrode incidence setting

The use of the electrode holder system with preset angles allow any welding geometry and makes the "setup" easy and repeatable.

Fixed angle



Test gas

The operator is able to check and adjust the flow of the gas using the flow meter before the weld cycle begins

Test Gas



Filler wire drive unit



The constant flow and rotation of the reel on the orbital axis increases the precision and quality of the weld

Filler wire

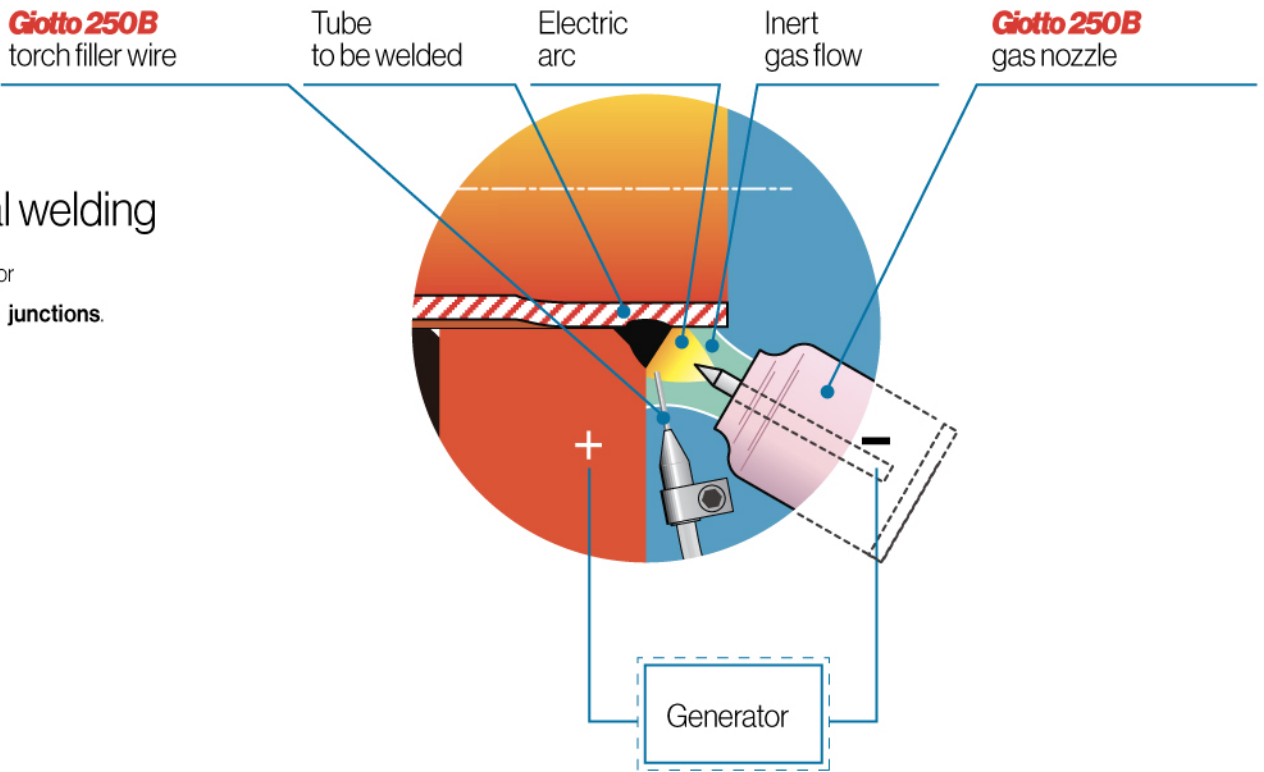


Adjustments with a single key

All adjustments available for the different welding geometries only require the single supplied key

Single key

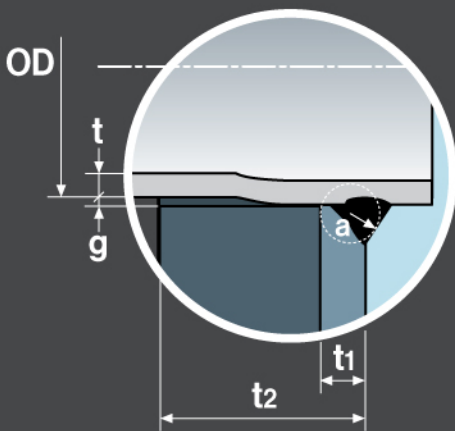
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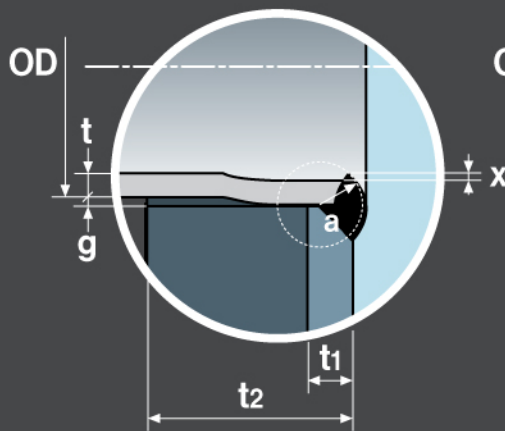
TIG orbital welding

Prime technology for
tube to tubesheet junctions.

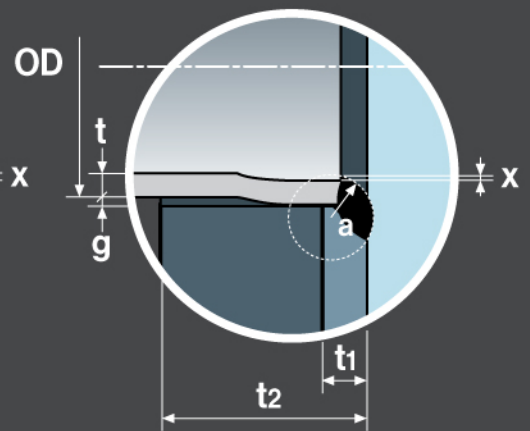
Protruding tube



Flush tube



Recessed tube



- a** welding thickness
- OD** external diameter of tube
- g** play between the external tube diameter and the tubesheet hole
- t** tube thickness
- t1** plating thickness
- t2** tubesheet thickness
- x** weld overflow

Value for money

Robust

Giotto Basic

Tube-tubesheet TIG orbital welding system

Portable "entry level" product, suitable for simple applications. It stands out for its value for money, ease of use and robustness



X-ray Test

Tube 3/4" 14 BWG
Material 316L
Tube protrusion 5 mm (0.197")
Tubesheet thickness 125 mm (4.92")



X-ray Test

Tube 1" 18 BWG
Material 304L
Tube flush to the tubesheet
Tubesheet thickness 72 mm (2.83")

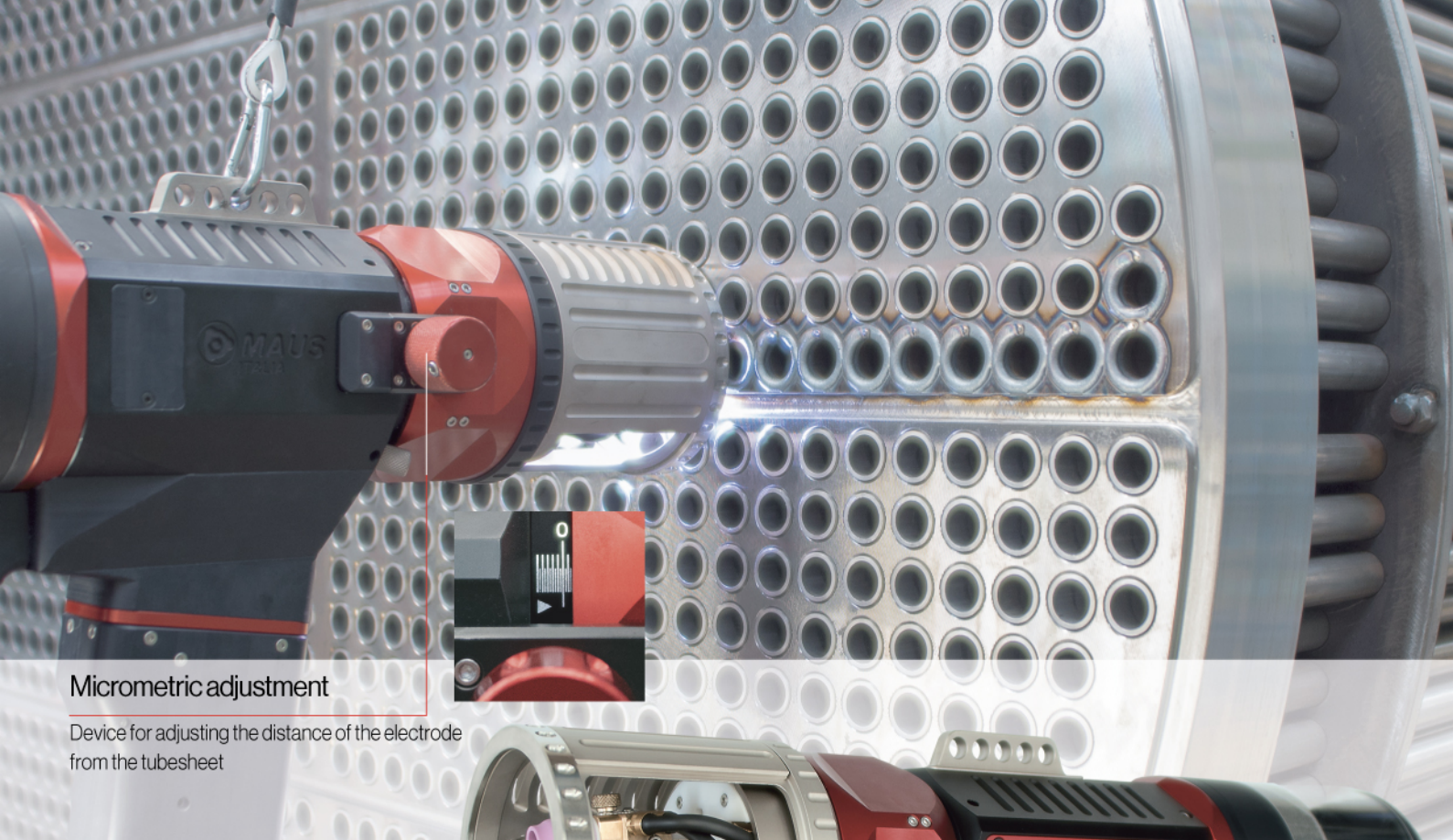
Standard supply

- **Giotto250B** orbital head with connection cables (power supply / torch cooling)
- Digital programmer **GiottoPower200** inverter generator on wheels
- Remote control with metal keys
- Ground cable
- Digital calibration
- Electrode holder brackets kit with different angles of incidence
- Adjustment and maintenance kit for **Giotto250B**
- Instruction manual
- Carry case

Optional

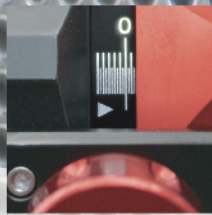
- + Filler wire unit
- + Anti-dazzle protection





Micrometric adjustment

Device for adjusting the distance of the electrode from the tubesheet



Complete range of devices for centring in the tube comprising **HS** cartridge holders spindles, and self-centring **HC** cartridges



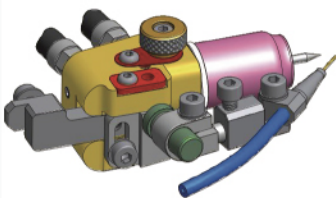
Different **WTC** thrust collar systems to be selected on the based of tube geometry and material, with MAUS ITALIA **BlockOut** screens for anti-dazzle protection



Single key

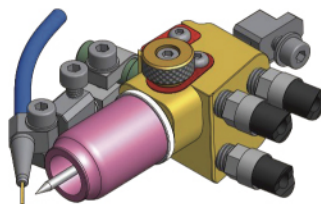
Adjustable wire feed unit

All adjustments are carried out with the single supplied key



New electrode tightening system

The tangential screw does not need service wrenches and speeds up the replacement of the worn electrode without touching other parts that could change the geometric setting.

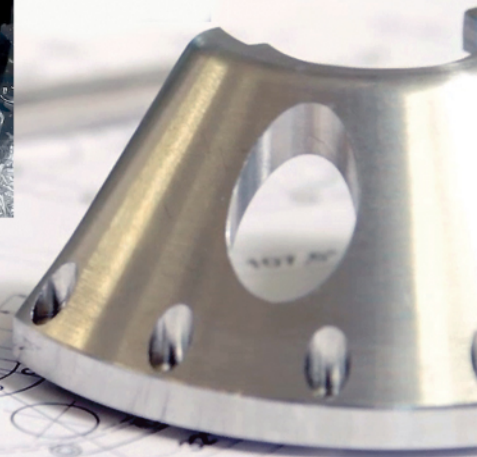
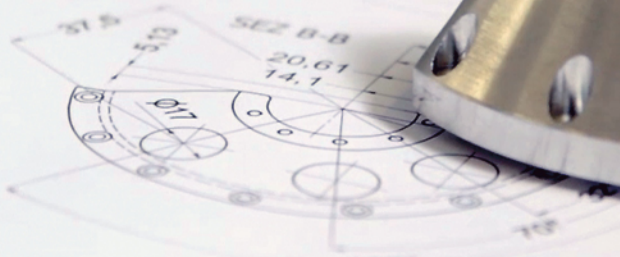
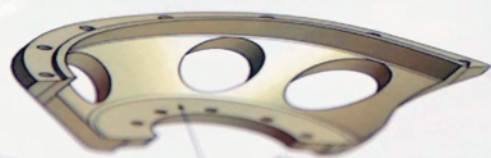
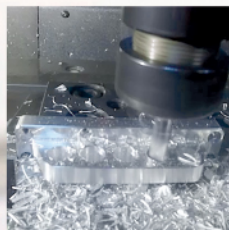
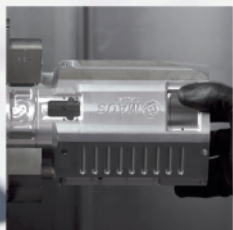


Giotto 250 B

Orbital head for tube-tubesheet
TIG orbital welding

"in-house"

The **Giotto 250 B** welding head is the result of a lengthy design and prototyping process. Each component has been designed and manufactured entirely by MAUS ITALIA



**"Protruding tube"
geometry**

**"Flush tube"
geometry**

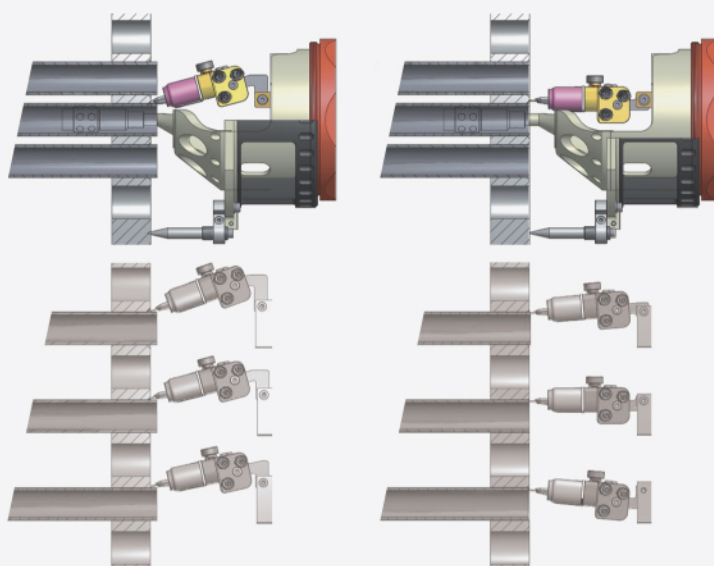


Fixed angle

Alignment of electrode
angle of incidence guaranteed

Thanks to the components with preset angles, the system for each welding geometry is absolute and repeatable.

Facilitates geometric "setup" operations as well as being extremely stable and robust.



Micrometric adjustment

Fast electrode tightening

WTC-PT - thrust collar

HS - cartridge holder spindle



Real speed

Speed adjustment in mm/min

Programming of the head rotation speed in mm/min as generally indicated in the WPS



Encoding

Precise position

Optical control of angular position without mechanical contact with resolution of 120 pulses per revolution (3°)

HC - self-centring cartridge

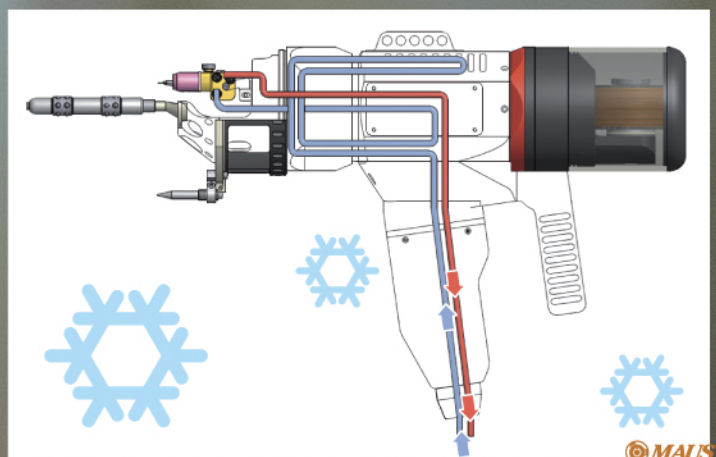


Cooling

Welding at the ideal temperature

The efficient cooling system inside the **Giotto250B** orbital welding head ensures:

- control over the internal temperature of the rotating joint even at high welding amps;
- continuous use in 24/7 shifts;
- high quality of the weld pool with lower average temperature of the electrode and of the gas passing over it;
- significant improvement in weld performance.





Test Gas

Control of pre-weld gas

The operator, via a button on the back of the controller, can check and adjust the flow of the gas on the flow meter before the weld cycle begins.



User-friendly.

Operator panel with display

The interface where setting and work parameters for the orbital head are programmed and displayed.

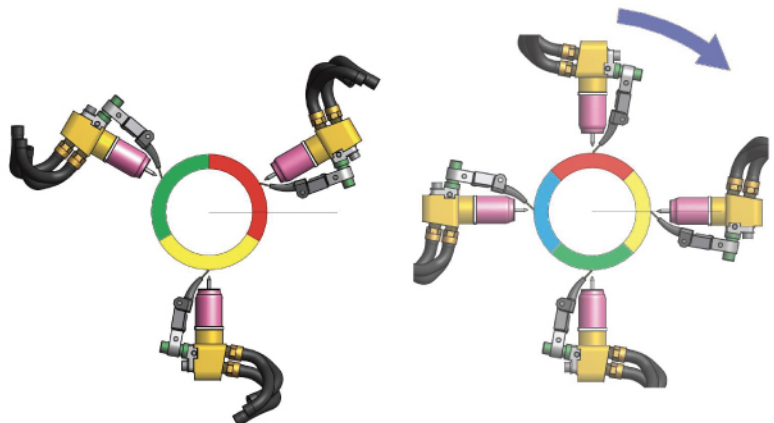
Thanks to the SIEMENS LOGO! TDE integrated panel with LED backlighting, the programming of parameters is quick and easy.



Sector

Weld sectors

You can programme, using the integrated software, the subdivision of the weld cycle into up to 4 sectors to compensate for the negative effects of the weight of the weld pool.



For each sector, you can set:

- breadth in degrees
- linear velocity of weld
- quantity of filler wire

Giotto Power 200

Digital inverter generator with integrated control microprocessor and digital display interface

Lightweight and compact, the **Giotto Power 200** generator is proposed by MAUS ITALIA for controlling the **Giotto 250B** TIG orbital welding head.

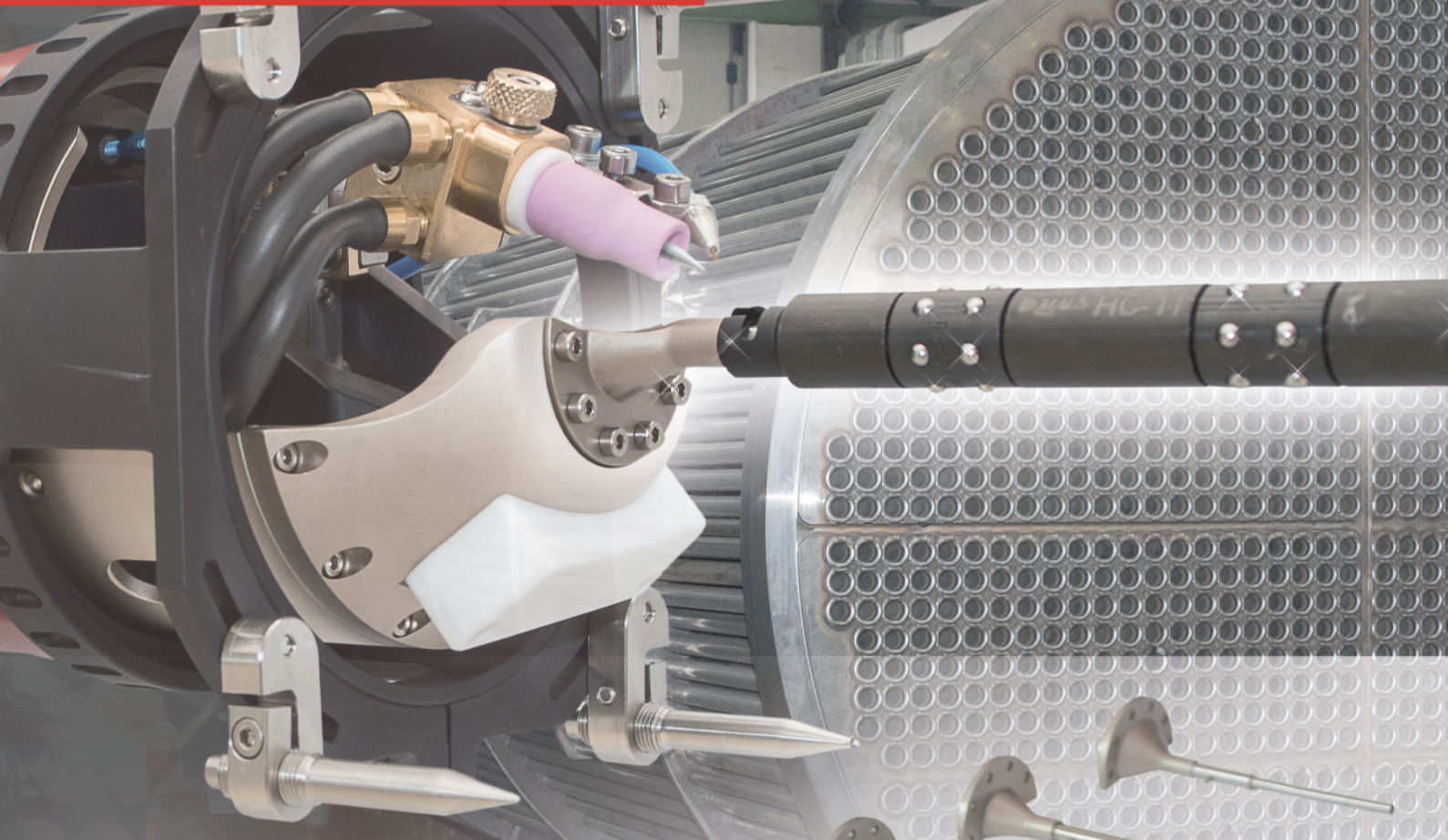
Mounted on a "carriage pickUp" with a gas bottle holder, the **Giotto Power 200** generator is also ideal for onsite service operations.

Work parameters

- Pre-gas time
- Initial current
- Upslope time
- Weld pool formation time
- Weld current
- Base current
- Pulse frequency
- Pulse balancing
- Downslope time
- Final current
- Post gas time
- Weld speed
- Filler wire quantity
- Programmable sectors: from 1 to 4
- Programmable upslope and downslope ramps
- Program diagnosis simulation cycle

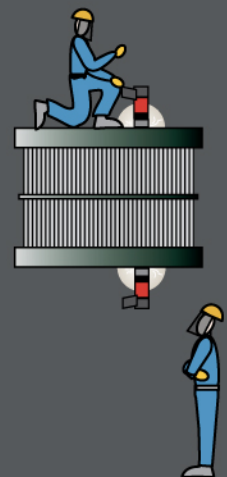


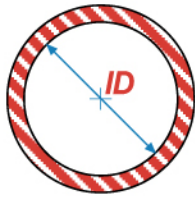
Lightweight
Compact



Cartridge with expandable sectors mod. **HSE**

Self-centring system particularly indicated in tube-tubesheet welding in heaters for internal diameters greater than 57 mm (2.1/4") and in vertical "negative head" applications (heat exchangers in sugar refineries) where the support of the orbital welding head is guaranteed by the expansion of the sectors





The centring of the torch is ensured by the spindle + cartridge system.

Select the correct combination of **HS** series spindle and **HC** series cartridge according to the internal diameter of the tube by referring to the table.



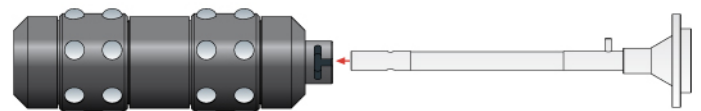
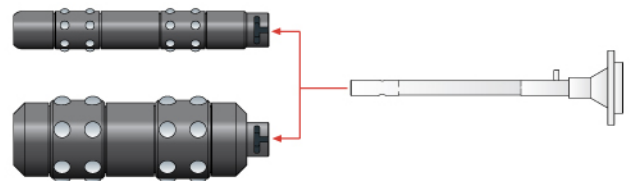
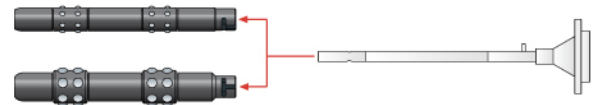
Tube range

Centring

HS cartridge holder spindles and **HC** self-centring cartridges for the tube-tubesheet **Giotto250B** TIG orbital welding head

Tube dimensions		Cartridge	Spindle
mm	ID	HC Cod.	HS Cod.
	inches		
7,7 ÷ 8,3	0.303 ÷ 0.327	HC-80	HS-MINI
8,2 ÷ 8,9	0.323 ÷ 0.350	HC-87	
8,5 ÷ 9,3	0.335 ÷ 0.366	HC-90	
8,8 ÷ 9,7	0.346 ÷ 0.381	HC-95	
9,5 ÷ 10,0	0.374 ÷ 0.394	HC-0	HS-A
10,0 ÷ 10,5	0.394 ÷ 0.413	HC-1	
10,5 ÷ 11,0	0.413 ÷ 0.433	HC-2	
11,0 ÷ 11,5	0.433 ÷ 0.453	HC-3	
11,5 ÷ 12,0	0.453 ÷ 0.472	HC-4	
12,0 ÷ 12,5	0.472 ÷ 0.492	HC-5	
12,5 ÷ 13,0	0.492 ÷ 0.512	HC-6	
12,8 ÷ 14,0	0.504 ÷ 0.551	HC-7	
13,8 ÷ 15,0	0.543 ÷ 0.590	HC-8	HS-B
14,8 ÷ 16,0	0.583 ÷ 0.630	HC-9	
15,8 ÷ 17,0	0.622 ÷ 0.669	HC-10	
16,8 ÷ 18,0	0.661 ÷ 0.709	HC-11	
17,8 ÷ 19,0	0.701 ÷ 0.748	HC-12	
18,8 ÷ 20,5	0.740 ÷ 0.807	HC-13	
19,8 ÷ 22,5	0.779 ÷ 0.886	HC-14	
22,3 ÷ 25,0	0.878 ÷ 0.984	HC-15	HS-C
24,5 ÷ 27,0	0.965 ÷ 1.06	HC-16	
26,5 ÷ 29,0	1.043 ÷ 1.141	HC-17	
28,5 ÷ 31,0	1.122 ÷ 1.220	HC-18	
30,5 ÷ 33,0	1.201 ÷ 1.299	HC-19	
32,5 ÷ 36,0	1.279 ÷ 1.417	HC-20	
35,5 ÷ 39,0	1.398 ÷ 1.535	HC-21	
38,5 ÷ 42,0	1.516 ÷ 1.653	HC-22	
41,5 ÷ 45,0	1.634 ÷ 1.772	HC-23	
44,5 ÷ 48,0	1.752 ÷ 1.890	HC-24	
47,5 ÷ 51,0	1.870 ÷ 2.008	HC-25	
50,5 ÷ 54,0	1.988 ÷ 2.126	HC-26	HS-D
53,5 ÷ 58,0	2.106 ÷ 2.283	HC-27	
57,5 ÷ 62,0	2.264 ÷ 2.441	HC-28	
61,5 ÷ 68,0	2.421 ÷ 2.677	HC-29	
65,5 ÷ 70,0	2.579 ÷ 2.756	HC-30	
69,5 ÷ 74,0	2.736 ÷ 2.913	HC-31	
73,5 ÷ 78,0	2.894 ÷ 3.071	HC-32	
77,5 ÷ 82,0	3.051 ÷ 3.228	HC-33	

STANDARD - in stock

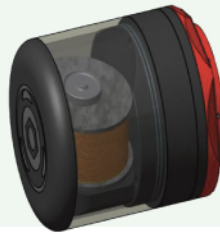




Filler wire



Rotating **power supply unit** for **filler wire** from $\varnothing 0,8$ to 1 mm (0.0315" a 0.0394") in 1 kg reels (2.2 lb)



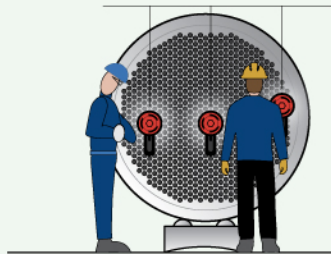
+ Optional



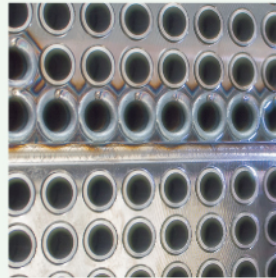
Ensures regular supply of wire to weld pool. Wire consumption is always in full view of the operator thanks to the transparent protective cloche.



Thrust collar for welding of **tubes flush to the tubesheet** with **BlockOut** anti-dazzle screen



+ Optional



Multiple welders can work simultaneously on the same tubesheet thus increasing productivity.



Driving head for the welding of **protruding tubes** with 4 points of contact

+ Optional



With manual control levers to rapidly adapt to geometric passage of the tubes.

Giotto 250 B

General features		
Duty Cycle	A (65%)	250
Max weld speed	rpm	6
ID Tube (min.)	mm inches	8 0.315
OD Tube standard (max.)	mm inches	51 2.008
Cooling of welding head		Liquid closed circuit
Welding geometry		
Flush tube		✓
Recessed (max.)	mm inches	3,0 0.118
Protruding (max.)	mm inches	12,0 0.472
Tungsten		
Ø 1.6		optional
Ø 2.4		standard
Ø 3.2		optional
Electrode distance adjustment	mm inches	manual 12 (±6) 0.472(±0.236)
Wire		
Wire reel (weight/Ø)	kg/mm lbs/inches	1/100 2.21/3.937
Recommended wire diameter	mm inches	0,8 0.0315
• Wire diameter (optional)	mm inches	0,6 0.0236
• Wire diameter (optional)	mm inches	1,0 0.0394
• Wire diameter (optional)	mm inches	1,2 0.0472
Wire speed (max.)	mm/min inches/min	2000 78.5
Dimensions		
Dimensions (LxBxH)	mm inches	510x150x400 20x6x16
Weight excluding cables and reel	kg lb	12 26.45
Cable length	m ft	6 19.7

Giotto Power 200

Power supply		
Power supply voltage (±15%)	Volt - Ph	400 - 3
Absorbed power	kW	10
Fuses	A	16
Cos phi		0,99
Open circuit voltage	Vdc	70
Utilisation factor (40°C/104°F. - X=60%)	A	270
(40°C/104°F. - X=100%)	A	250
Capacity		
Cooling power (25°C./77°F.)	W	650
Liquid coolant tank	l US gal	2,0 0.53
Liquid coolant capacity (max.)	l/min US gpm	3,3 0.87
Dimensions		
Length	mm inches	650 25.6
Width	mm inches	420 16.5
Height	mm inches	1250 27.0
Weight (without remote control)	kg lb	53 117
Level of protection	IP	23

TPB-3A + Optional

Spring balancer for **welding head support** with capacity from 10 to 14 kg (from 22.0 to 30.8 lb)



Work cycle

270 A (40°C./104°F.)
60%

250 A (40°C./104°F.)
100%





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