September 2017
NEWS

MAUS
ITALIA

MaTIG 501

Automatic positioning tube-to-tube sheet TIG orbital welding system

CE

MADE IN ITALY

ENG REV 0

Automatic TIG orbital welding

MAUS ITALIA

From **extraordinary** to **revolutionary** in 4 key points


Fully Automatic

Fully automatic

The only machine in this sector which is completely autonomous and automatic.


High Savings

High savings

Rapid positioning, ease of programming and optimisation of the welding cycle lower production costs.


High speed

High speed

The complete torch rotation control allows more than 10 rpm.


High accuracy

High precision

Weld geometries with an unprecedented level of precision.

Innovations and features of the MaTIG 501


New TIG torch

Unique TIG welding torch

The new TIG orbital torch has been designed and manufactured in its entirety by Maus Italia.

Arc Voltage

Management of the welding arc

Continuous monitoring of the welding current ensures constant penetration across the whole weld.


Filler wire

Filler wire automation

Control of the flow, the end of reel and rotation of the reel on the orbital axis increase the repeatability of the weld.


Radial off-set

Variable radius - AVC-3D

In multi-pass welding, the radius is also CNC-controlled and interpolated, further reducing production times.

Fixed angle

Electrode angle of incidence

Thanks to a setup with preset angles, repeatability of the weld is guaranteed over time.


Weld purge

Protection of the tube

The integrated rotating purging system guarantees protection of the tube interior during welding.


Laser feeler

Laser centring feeler

Unique centring system guaranteeing the highest precision of the geometries of the welded joints.


3rd gas line

Additional gas

Introduction of a third gas line and separate flow management for each line.


High tech

Hi tech hardware

Electronic management in compact hi-tech SIEMENS CNC unit.

Cooling

24/7 use

Water cooling system inside the head for significant improvement of the weld and guaranteed repeatability.

CAD/CAM

Dedicated CAD/CAM software

Intuitive DXF programming for building the coordinate matrix of the tube sheet holes.


High tech

Components of the highest class

Each component used is sourced from world-leading companies such as FESTO, SIEMENS and BOSCH.

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Automatic TIG orbital welding

MaTIG 501 4.0 INDUSTRY

Automatic positioning tube-to-tube sheet TIG orbital welding system

Maus Italia presents the revolutionary ***MaTIG 501*** CNC work station.

Decades of experience with hundreds of clients across five continents have guaranteed the consolidation of the R&D division *(automation and new technologies)*, allowing us to offer today, to an ever more demanding market, an outstanding range of machines for the completely automated construction of tube bundle heat exchangers, of which the brand new ***MaTIG 501*** is proudly a part.

For tubes from 1/8” to 2”
(from 3,2 to 50,8 mm)

Tube range

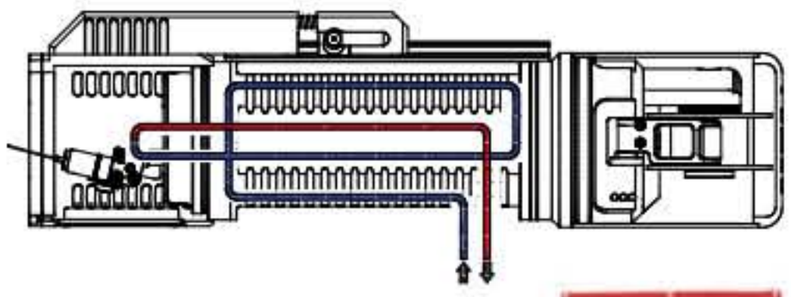
XY working area
59”x71” (1500 x 1800 mm)

Working area

Cooling system inside the torch

The efficient cooling system for the orbital welding head of the **MaTIG 501** guarantees:

- control of the internal temperature of the rotating joint even at high welding amperages;
- continuous use in 24/7 shifts;
- the high quality of the weld pool (lower average temperature of the electrode and protection gas that crosses it);
- significant improvement in welding performance



Centring feeler

Self-learning **FOCS2** laser centring system which can work in sync with the CNC as well as independently of it

Vertical column

Compactly shaped in extremely robust aluminium with integrated ball guides and protection for the internal components

Base

Lightweight electrowelded structure with 4 pivoting wheels and 4 adjustable parking feet for guaranteed flexibility and positioning stability

MaTIG 501

Y axis carriage

Vertical stroke carriage and Z axis support carrying the welding head

Z axis carriage

Transverse stroke carriage for managing the distance between the electrode and the tube sheet

BlockOut multi-screen

Innovative sliding screen on ball guides for operator anti-dazzle protection

Electrical cabinet

Installed on the machine and complete with air conditioner for automatic internal temperature control

Machine status signalling

A complete range of signals and alarms inform the operator about the status of the machine and facilitates its use during both the set up and operating phases

Controls console

Positioned so as to ensure maximum visibility of the work zone

Welding gas controls

3 separate GAS lines with controls for pressure and flow of the protection gas

X axis carriage

Column supporting carriage for horizontal positioning

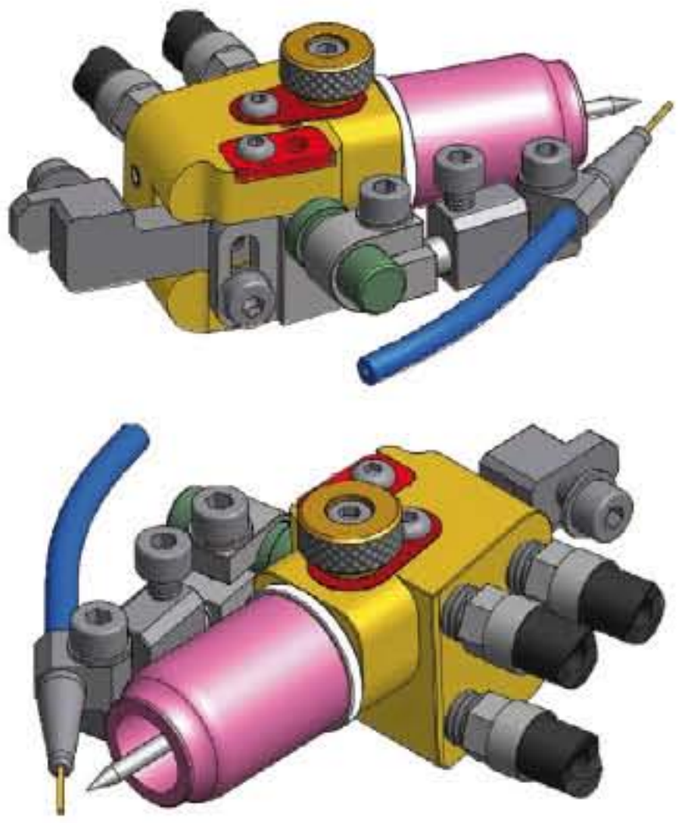
New TIG torch

Unique TIG welding torch

The only product of its kind. The new TIG orbital torch has been designed and manufactured in its entirety by Maus Italia.

The new **system for tightening the electrode** with tangent screws removes the need for service wrenches and speeds up replacing the worn electrode *(it is no longer necessary to remove the ceramic nozzle, the relevant gas diffusor and the filler wire guide).*

The wire feed assembly is fully adjustable in all directions. All manoeuvres are performed with a single supplied key.



Filler wire

Automation of the filler wire

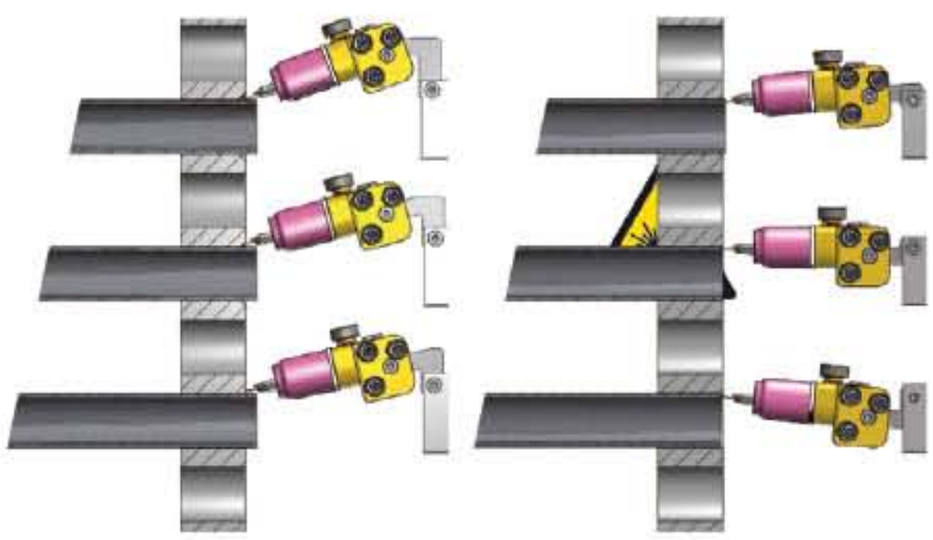
- Control of the effective flow of the filler material
- End of reel control and signalling
- Wire feed system (indefinitely) rotates on orbital axis which allows a regular flow of filler wire to the weld pool during welding

Fixed angle

Electrode angle of incidence

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

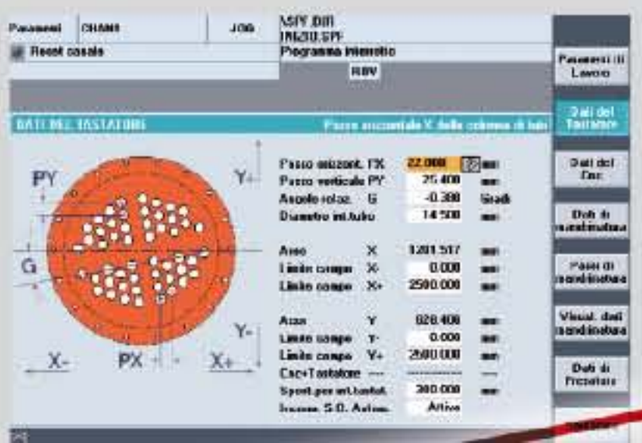
Facilitates geometric setup operations as well as being extremely stable and robust.

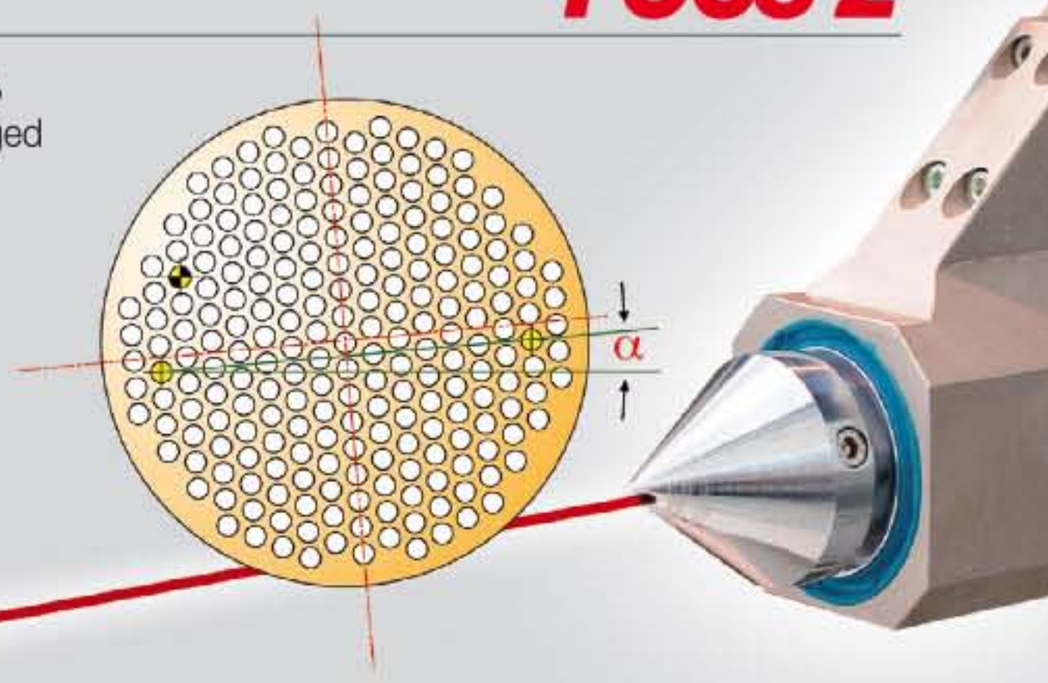


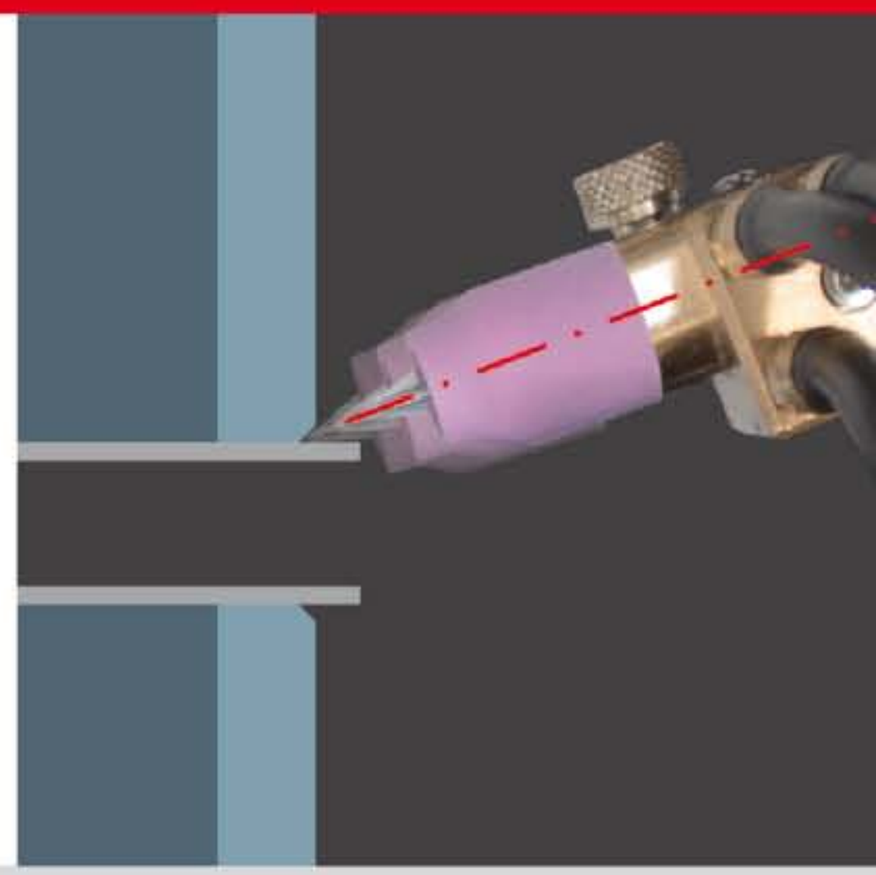
Laser feeler

Laser centring feeler

Unique self-learning electropneumatic centring system, guaranteeing precision of the welded joints and managed by dedicated Maus Italia software.







Arc Voltage

Management of the welding arc

AVC

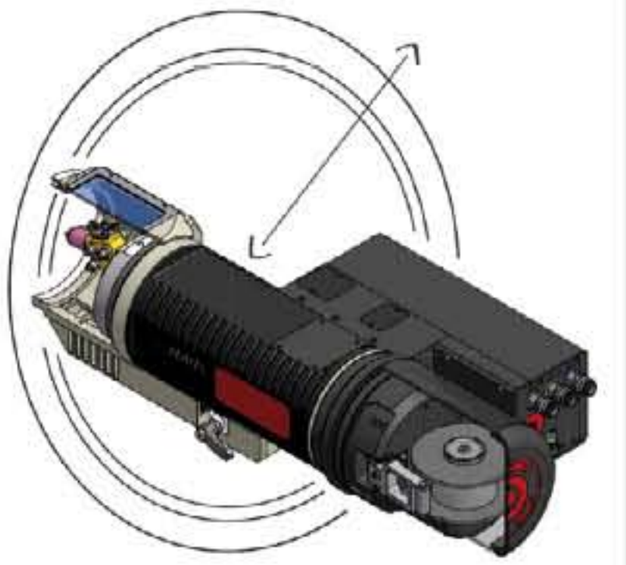
Continuous monitoring of the welding current in conjunction with the numerical control digital system, ensures constant penetration across the whole weld.

Radial off-set

Variable digital radius

INTERPOL 3

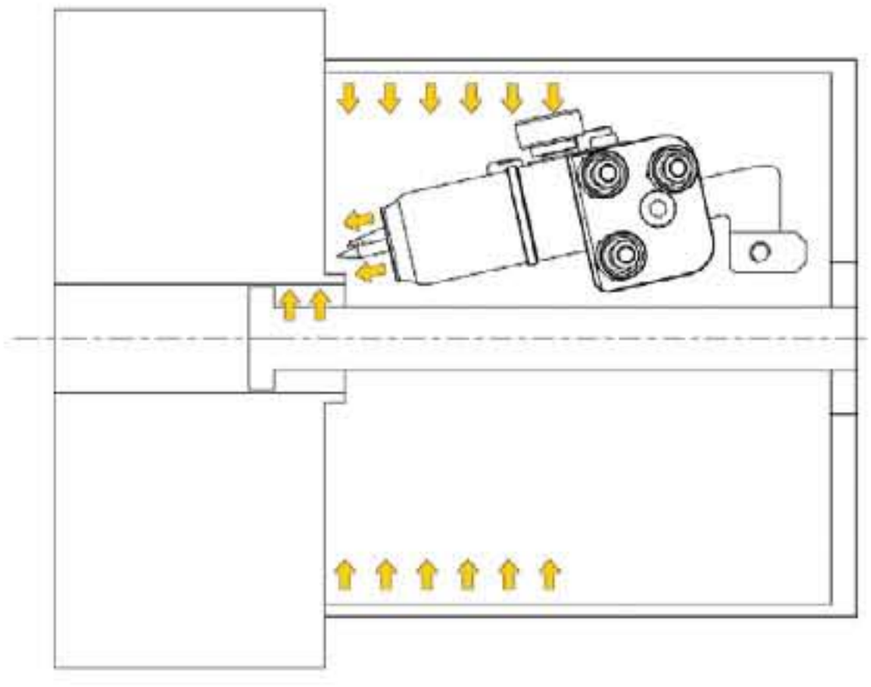
In multi-pass welding, the rotation radius of the electrode can also be controlled and interpolated by CNC.



Weld purge

Protection of the tube

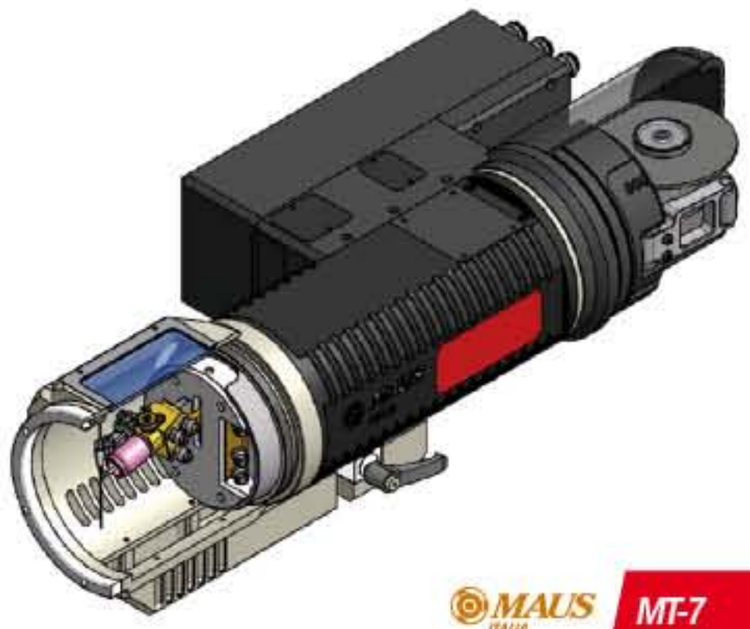
The integrated rotating purging system guarantees negative head protection of the tube during welding.



New design

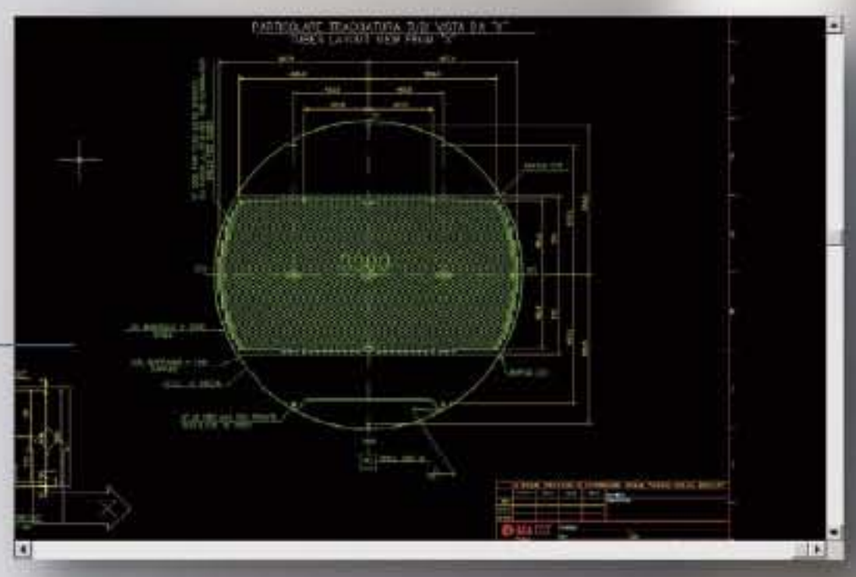
Unique design of the welding head

After thousands of hours of R&D, testing and prototyping, the result is an outstanding and unprecedented orbital welding head. A masterpiece which has been developed and manufactured in Italy, with the extreme precision and quality that you would expect from Maus Italia.



MausCAM

Interface software for **X-Y** programming from CAD design of the tube sheet holes

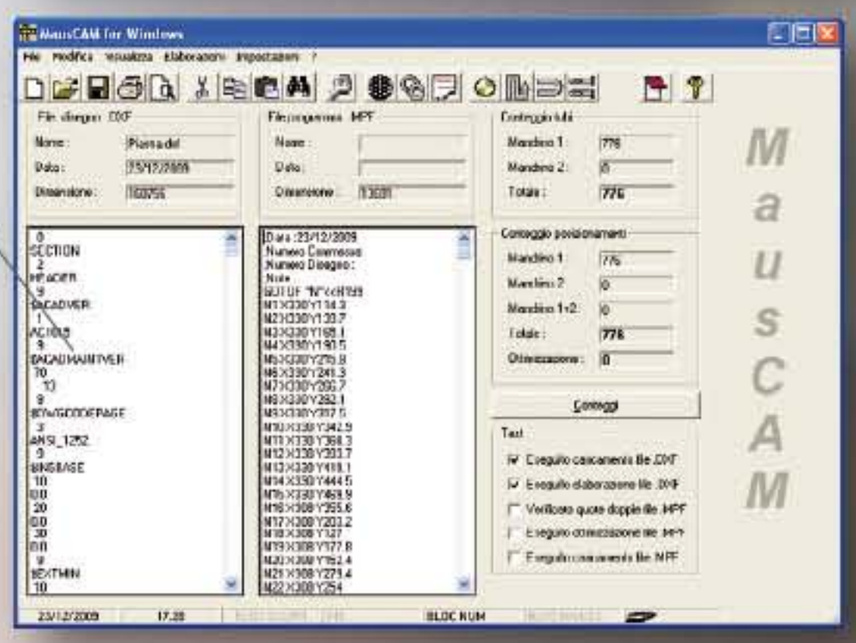


DXF from standard CAD

The system is based upon reading the interchange format DXF drawing and can, in a few steps, process the CAD file of the tube sheet and automatically extract the coordinate matrix for the tube sheet holes.

Interactive processing

During processing, you can control and optimise progress according to position or geometry.
Where the tube sheet is larger than the useable stroke, you can divide the program into successive steps.



Transfer of programs to the CNC

The Program files can be easily saved or uploaded onto the machine's numerical control using a common USB pen drive.

USB communication port

For a rapid and secure exchange of information between machine and office.

Network connection

An ethernet connection (a RS232 serial port is also available) is installed as standard to allow connection to the network. An (optional) diagnostic program is available online.

Automatic TIG orbital welding

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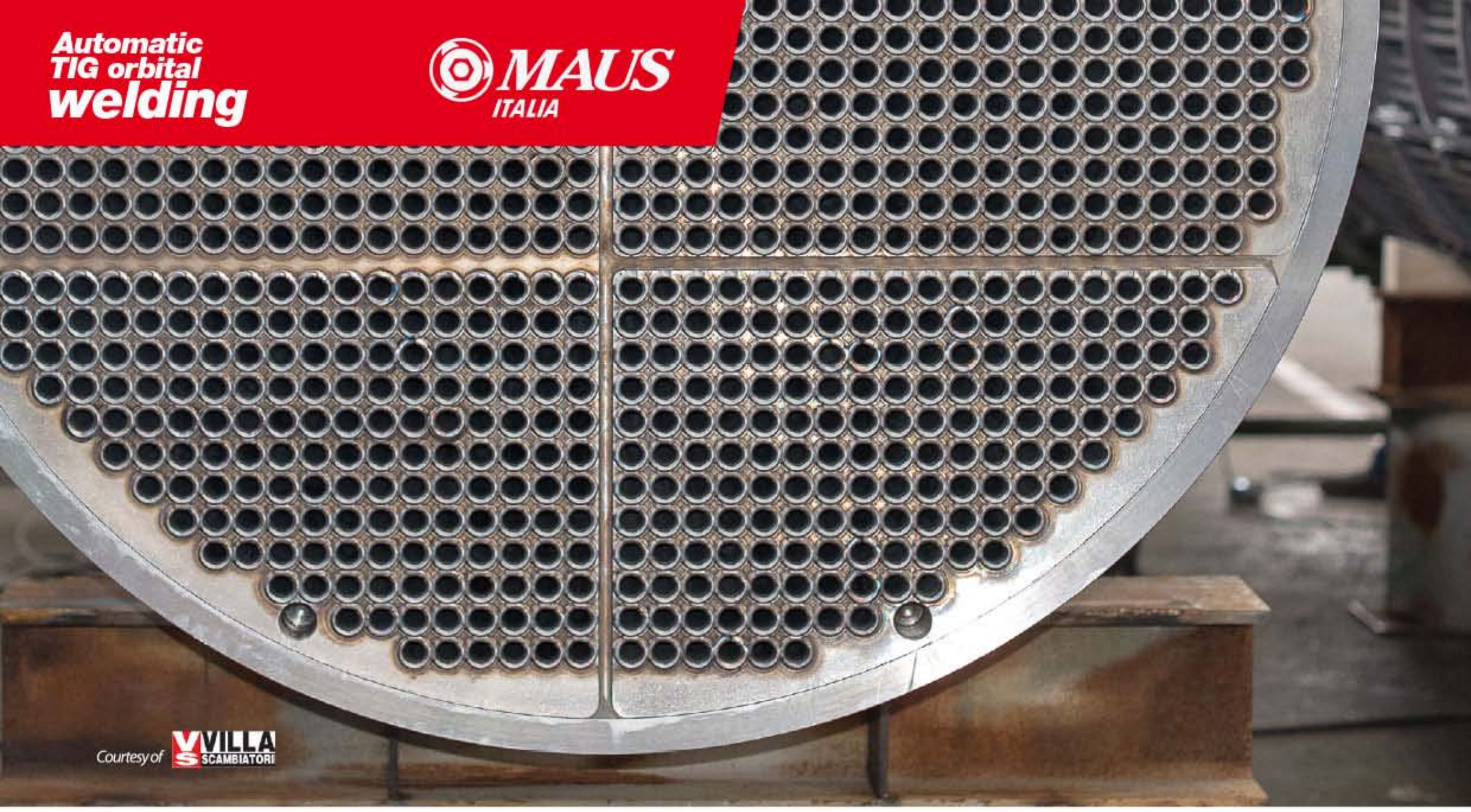
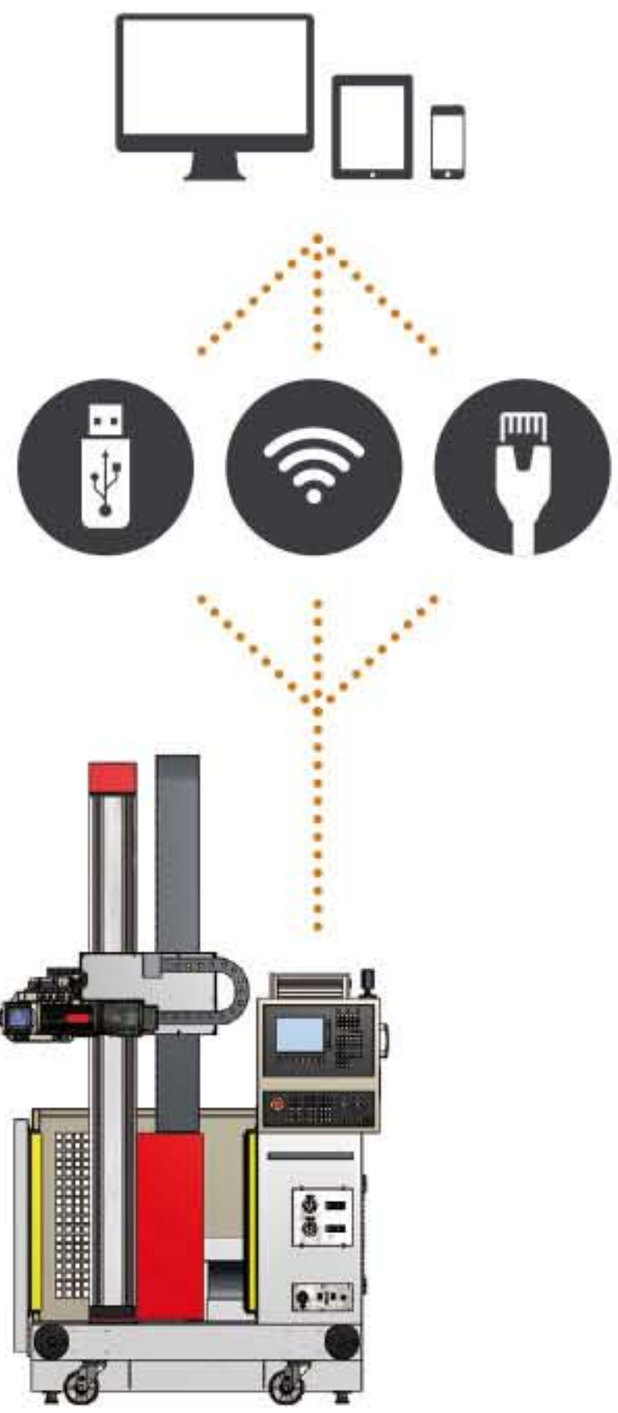


4.0 INDUSTRY

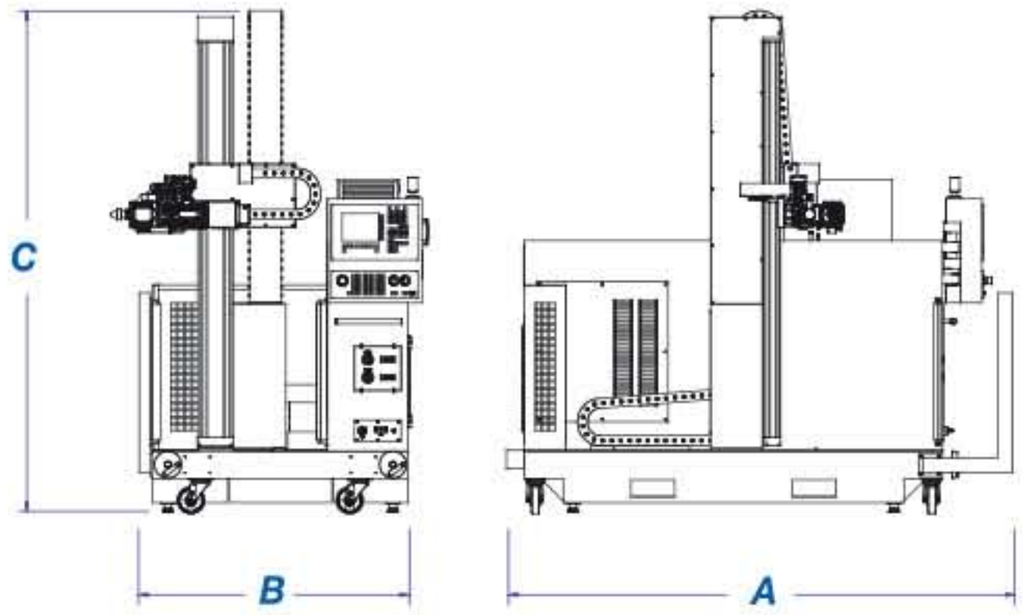
Maus Italia machines turn you into a Smart Factory!

Compliance of the ***MaTIG 501*** with the requirements of the "INDUSTRIA 4.0" system has been reviewed by an accredited body and deemed suitable to allow interconnection between the machine and company systems.



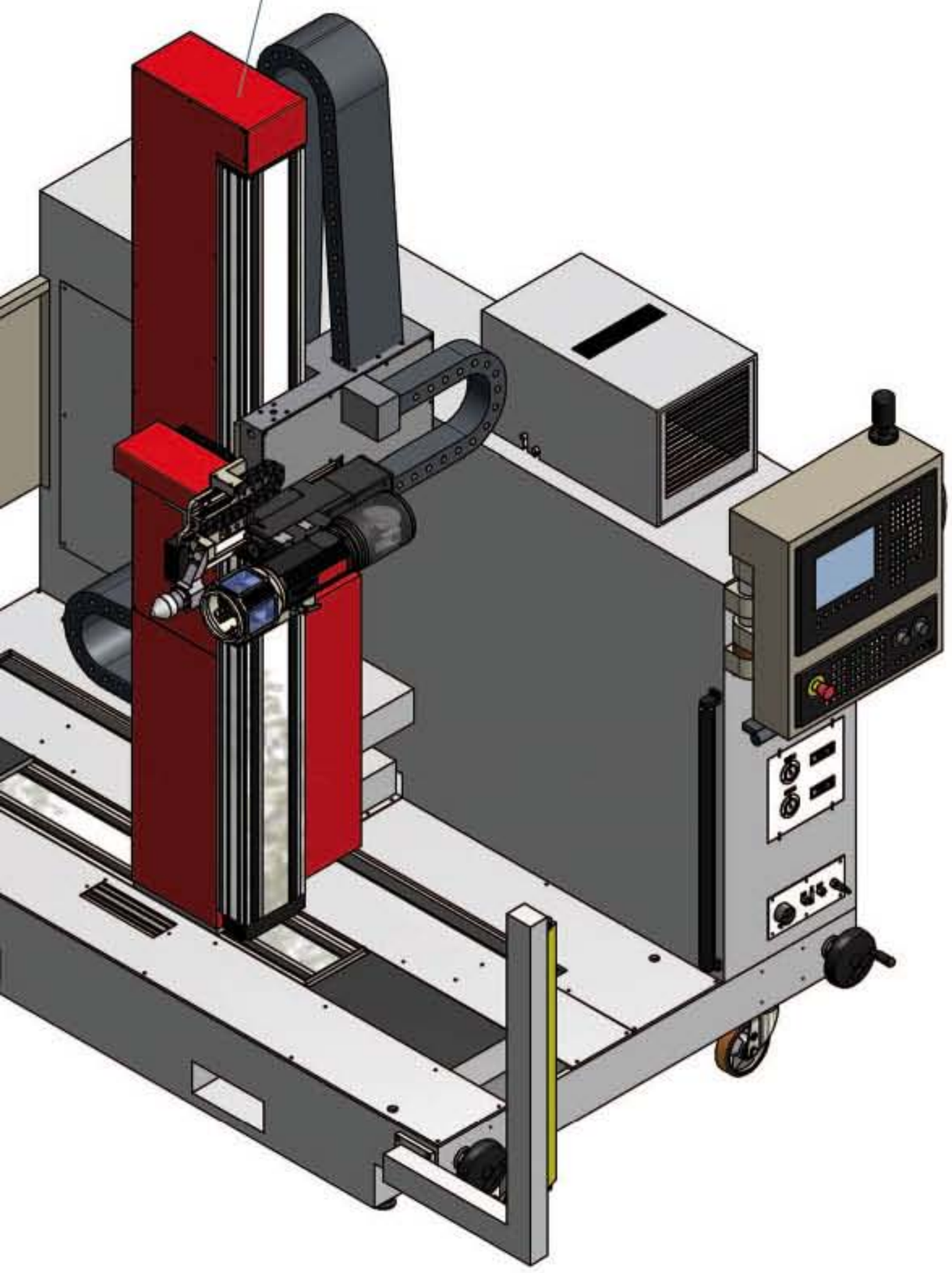
MaTIG 501

Technical features



3D design

Each component is completely designed by Maus Italia technical staff and checked in a virtual environment before production



Power supply			
Voltage		V - ph	400 - 3
Frequency		Hz	50
Installed power		kW	16
Dimensions			
Length	A	mm *(Ft)*	2700 *(8.86)*
Width	B	mm *(Ft)*	1425 *(4.67)*
Height	C	mm *(Ft)*	3050 *(10.01)*
Weight		kg *(Lb)*	850 *(1880)*
Colours		RAL	7030-7035-3020
Dimensional capacity			
Stroke	X	mm *(inches)*	1500 *(59.055)*
Stroke	X	mm *(inches)*	1800 *(70.866)*
Stroke	X	mm *(inches)*	300 *(11.811)*
Min. height	T	mm *(inches)*	500 *(19.685)*
Work capacity			
Tube sheet diameter		mm *(inches)*	1500 *(3/8"÷5/8")*
Workable tube diameter	(max.)	mm *(inches)*	4÷51 *(5/32"÷2")*
Welding current (max.)		A	6÷200
No-load voltage		V	81
Orbital speed		giri/min *(R.P.M)*	0÷10
Filler wire speed		giri/min *(R.P.M)*	0÷150
Filler wire reel		kg/Ømm *(Lb/Øinches)*	1-100 *(2.2/3,937)*
Cooling unit		L *(GalUS)*	6 *(1,585)*
Cooling capacity		kW	2
Electrode diameter		mm *(inches)*	1÷3,2 *(0,039÷0,126)*
Filler wire diameter		mm *(inches)*	0,8÷1,2 *(0,031÷0,047)*

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