



Welding torches



STEEL MEC TORCHES FOR NARROW GAP AND CLADDING

SAW - NARROW GAP - CLADDING - SPECIAL UNIT

The STEEL MEC sold activities include also the manufacture of welding torches to be used in non-standard applications.

This means that, when the equipment on the market are a limit for the realization of a project, the STEEL MEC uses its know-how to design and realize all the solution required to comply with the requirements of the special application of the Customer.

The torch for immerse NARROW GAP torch able to work up to a depth of 350 mm in a groove with an opening of only 18 mm is our key product. However. We manufactured and patented also the vision and saving laser system of the welding joint, the sole items on the market to be provided with this technology.

In particular, for this application we designed and realized a machine for removing the non-compliance of the welded section up to the groove bottom (350 mm max depth). All this with a "hole" of only 18 mm.

We have realized welding torches for internal welding up to 12 m in length with a minimum passing diameter of only 50 mm!

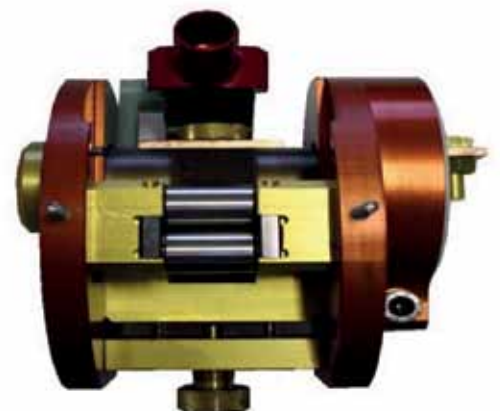


STRIP CLADDING HEADS

It's process method been used for more than 30 years and has been more and more replacing the manual welding processes used for surfacing. It's a economical solution for high alloyed materials, it can guarantee additional strength and corrosion re- sistance where is required.

This welding process can guarantee low dilution with base material and good slag detachability.

The cladding head are available for 30, 60, 90, 120 mm strips.





CLAD TECHNOLOGY AND APPLICATIONS

SAW (Sub-Arc welding)

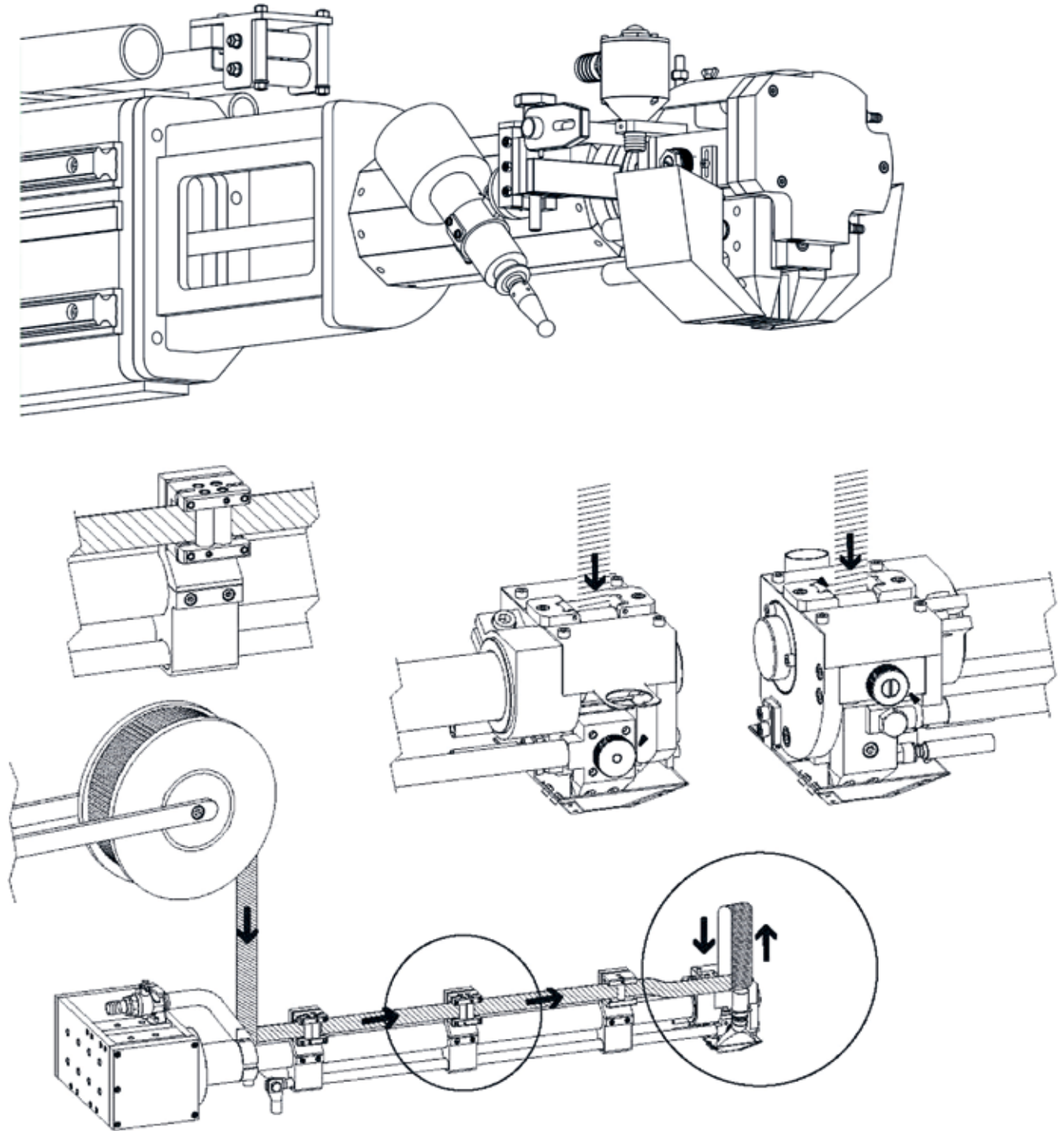
ESW (Electro-Slag welding)

- Low dilution with base material - Good slag detachability
- Chemical and Petrochemical Industry (Hydrocrackers, scrubbers and various pressure vessels)
- Off-shore Industry (Sea and waste water processing)
- Nuclear & Energy Industry (Tube plates, heat exchanger plates and reactor tanks)
- Pulp & Paper Industry (Fiber flow drums)
- Steel Industry (Continuous casting rolls)
- Ship yard (Piston -valve)





FROM THE MULTI-LANGUAGE INSTRUCTIONS BOOK



Drawings taken from the User manual of a cladding belt head.

If the system is complete with a welding head, the Manual for use and maintenance always encloses the document related to the accessories.

All our machines are provided with complete manuals and CE certification.



NARROW GAP TORCHES

Steel mec sald produces state of the art welding solutions for tandem Narrow Gap Submerged Arc Welding (NGSAW). STEEL MEC SALD been devoted to welding automation since 1952, and Submerged Arc Welding (SAW) is our core activity. In this context, tandem NGSAW technology is our flagship system with important awards in the nuclear field and other heavy industry applications. We offer turnkey solutions starting from automation of the process and developing all parts of the system, included a custom narrow gap tandem SAW head and complete monitoring of the welding zone using an advanced laser scanning system for tracking and scanning of the groove.

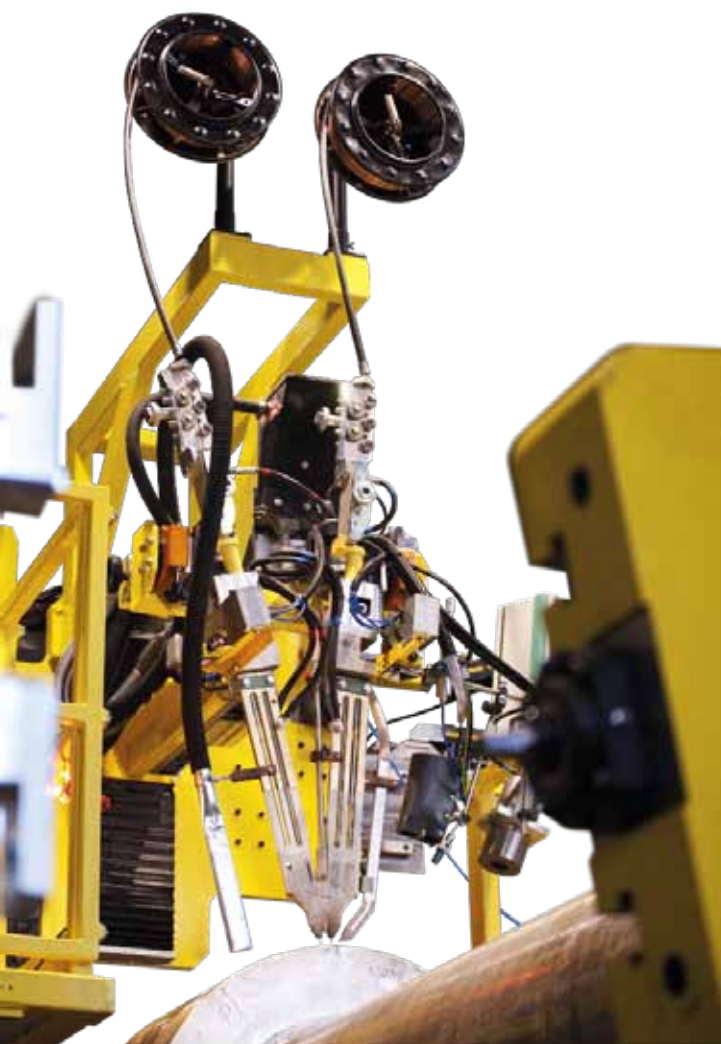
By using an automated five axis system, it is possible to achieve the desired welding shape controlling the welding zone in real time. The Steel Mec Narrow Gap torch includes a feature to tilt the nozzle in order to respect the sidewall offset programmed in the welding shape, weld pass by weld pass.

Two different torch designs are available to set the sidewall offset. The simplest one is implemented with two pneumatic actuators to tilt the nozzle and setting the stroke is by two adjustable limits.

More precise control is achieved with a pair of digital servomotors with encoder feedback indexed to the main electronic console that manages all the parameters of the plant.

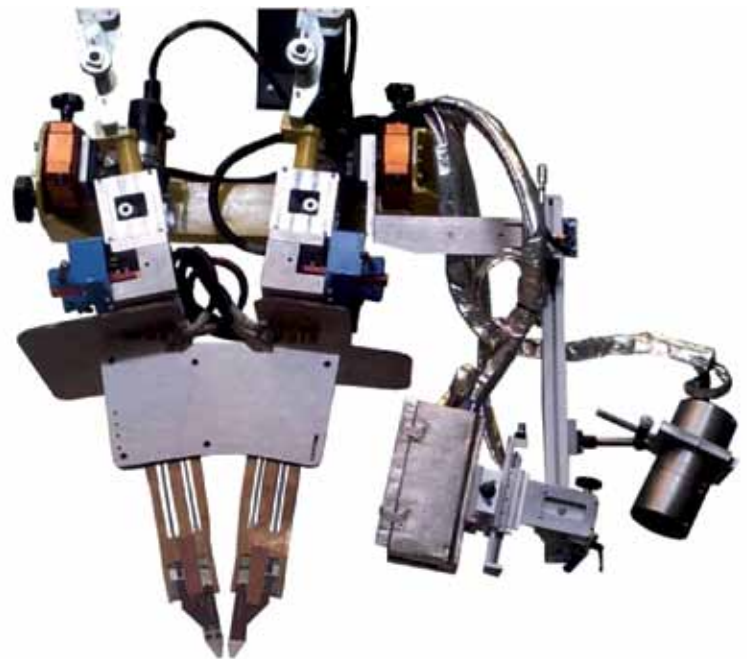
Rotation of the workpiece is also monitored by encoder to manage the number of passes, the welding speed, the positions of the transitions and the overlap spread. These parameters are all programmable in the job page and always visible on the display of the control console. Full job data is logged in a report that allows verification and certification of the status of the workpiece and plant.

Our experience in NGSAW covers all aspects. In fact, we can propose complete turnkey solutions starting from the first layout of the plant, providing the 3D CAD overview, and in particular, including a preheating system (if needed), the welding torches, the motorized axes, the electronic instruments (compatible with high temperature), safety devices, custom wirings, etc. etc. Keeping close to the customer, Steel Mec executes commissioning and testing confirming expectations in accordance with the project design and contract specifications.





Our commissioning services support the startup of the plant alongside the customer which results in quality service during the entire life of the activity. Narrow Groove section SAW welding is desirable for certain vessel manufacturing processes in petrochemical, shipbuilding and other heavy industries. STEEL MEC SALD has designed an automated Narrow Groove Tandem Welding Head for a maximum welding capacity on groove depths up to 350mm. The application temperature of STEEL MEC SALD welding torches is up to 340 °C. Integral to the process is a precision tilting drive unit for both lead and trail wire that allows for the programmable, or joystick positioning, of each wire to either side. This Sub - Arc Tandem Narrow Gap Welding equipment is supplied with a newly developed fully automatic control system with responsibility for the complete weld fill operation, inbuilt quality assurance system with detailed record of all welding parameters. The deposition rate with tandem welding technique will almost be double that of single wire - up to 14 kg/h - and can guarantee better control of the deposit material. Tilting systems are pneumatic or motorized (on demand).





NARROW GAP FEATURES

Maximum Groove Depth – 350mm (groove bevel from 1°)

Head Width 10mm

Pre heating up to 340 °C

Individual Precision Tandem Torch Tilting

- Servo Motor Control with Precision gearbox
- Adjustable range up to 3° inclusive

Precision X-Z weld head motion controls

- Horizontal stroke – 200 mm
- Vertical stroke – 450mm
- Precision Servo Controls for automated standoff, and seam tracking controls

2-axis Wire Straighteners

Flux delivery nozzle, hopper, and mounting

Flux recovery nozzle assembly

Angle setting device for adjustable cross-seam tilt of entire weld head. Adjustable range 3° inclusive

Wire Distance setting – adjusting range 30mm

Tandem 25Kg Wire Spool Mounting and Conduit

Tandem Wire Feeders and adjustable mounting

Adjustable Camera

Laser Sensor adjustable mounting arm for standoff control and cross seam tracking (cooled + special cover to guarantee working cycle up to 340 °C)