



**SPEEDCLAD TWIN: SETTING A NEW
STANDARD IN CLADDING PERFORMANCE.
THREE TIMES FASTER.
HIGH RELIABILITY. HIGH QUALITY.**



FRONIUS HIGH SPEED CLADDING SOLUTION OFFERS MAXIMUM PRODUCTIVITY.

/ Cladding is a process in which mechanized overlay welding is used to coat components with corrosion-resistant and hard-wearing alloys to extend their service life many times over. SpeedClad Twin combines user-optimized high performance architecture – cladding systems and components – with the fastest cladding process ever. Offering excellent cladding results in a remarkably short time, this equipment will set Fronius users apart from their competition and save substantially on labor and shielding gas costs.

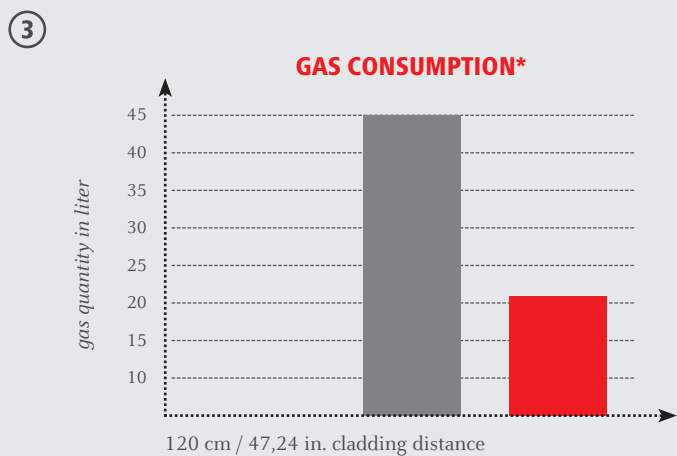
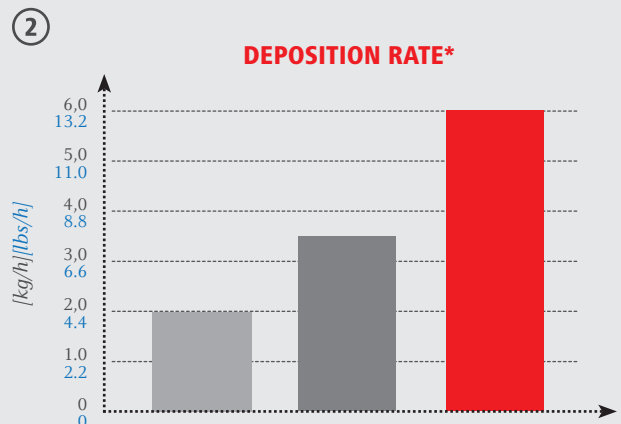
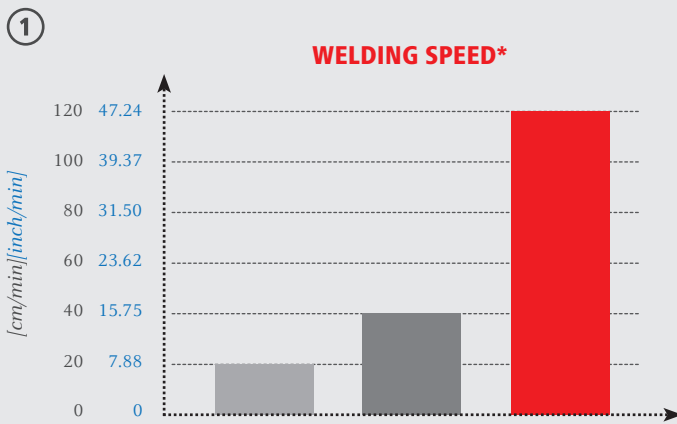
THE MOST SUITABLE PROCESS.

/ One of the processes with the best results in this area regarding quality and repeatability is the TIG hot wire process. Until now this process was associated with one major disadvantage:

Only very low welding speeds could be achieved, which often caused bottlenecks in the production process. SpeedClad Twin established a new standard in productivity.

SIGNIFICANT COMPETITIVE ADVANTAGES.

/ SpeedClad Twin multiplies the efficiency of TIG hotwire welding while maintaining an exceptional quality standard. Using two tungsten cathodes combined with two preheated welding wires, all independently controlled, to create one molten pool allows less penetration while enabling faster welding speeds and a much higher deposition rate. Maximum productivity is guaranteed, especially when welding larger components.



Charts 1+ 2:

- TIG coldwire
- TIG hotwire
- SpeedClad Twin

Chart 3:

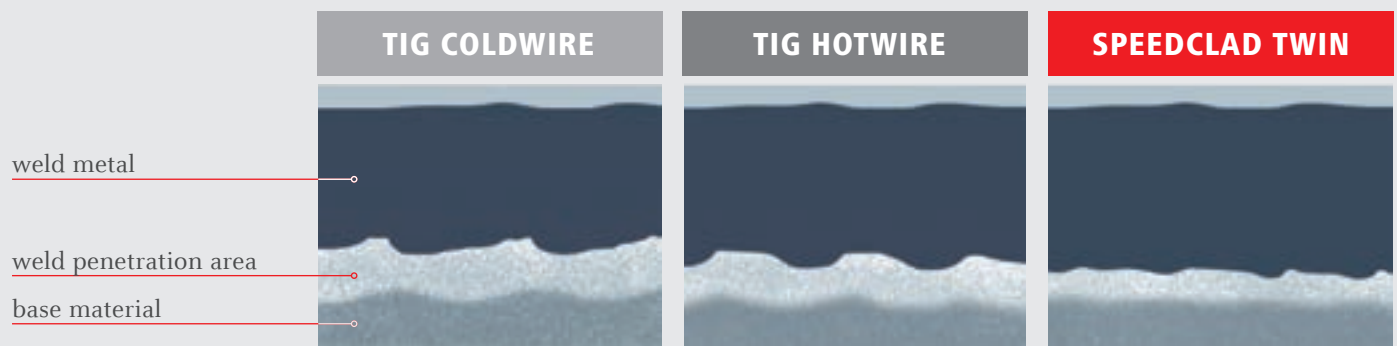
- Conventional Cladding
- SpeedClad Twin

(*) Depending on application

LESS PENETRATION PROVIDES LOWER FE DILUTION.

/ The lower the dilution rate, the higher the quality of the applied alloys. SpeedClad Twin meets the highest quality standards and produces excellent cladding results.

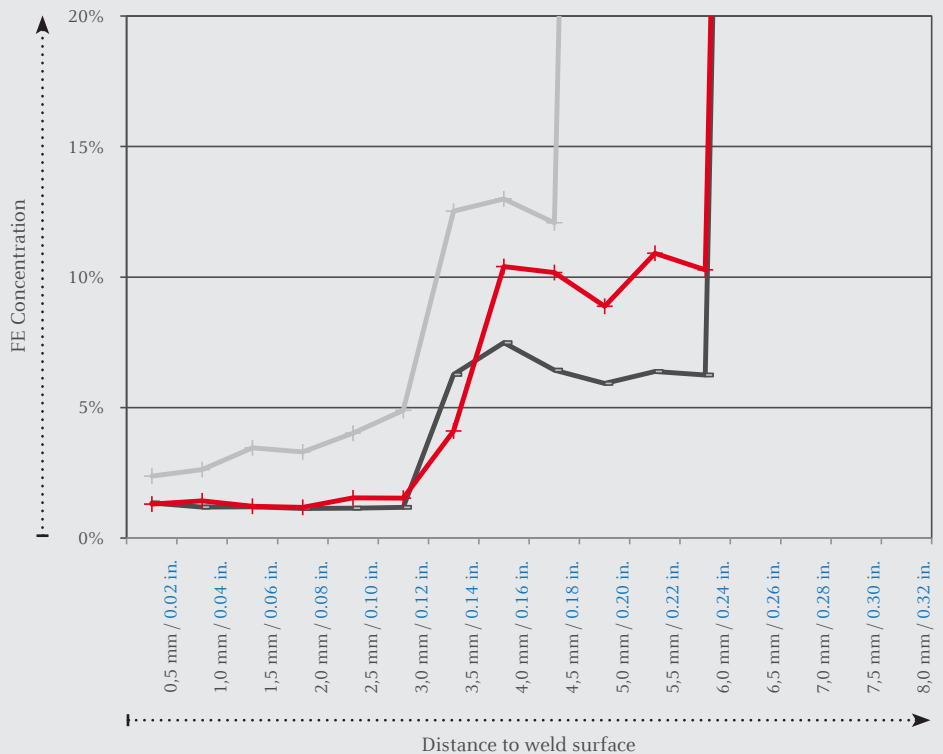
MICROGRAPHS



SPEEDCLAD TWIN DILUTION RATE

PREREQUISITES

- / PA (1G-Flat) welding position
- / Approximately 3 mm (1/8 in.) layer thickness for each layer
- / ERNiCRMo3 (Alloy 625) filler metal
- / Wire diameter 1,2 mm (0.045 in.)
- / 100% Argon shielding gas



- TIG coldwire
- TIG hotwire
- SpeedClad Twin

SPEEDCLAD TWIN PROCESS: INTELLIGENT HIGH SPEED INTERACTION OF ALL SYSTEM COMPONENTS.

① / HMI-T10CC

② / 2 x power source
TransTig 5000 Job combined with cooling unit
FK 4000 Rob

③ / 2 x hotwire power source
TransTig 2200 Job

④ / SpeedClad Twin torch system

⑤ / SpeedClad Twin Double Wire Feed

⑥ / LHSB

⑦ / LHSB

⑧ / SpeedClad Twin Double Wire Feed

⑨ / Compact Cladding Cell SpeedClad Twin

⑩ / Endless Torch Rotation System (ETR-S) SpeedClad Twin

System components – dual cathode TIG hotwire SpeedClad Twin process

RETROFITABLE ON ANY FRONIUS CLADDING SYSTEM

/ Existing systems such as Endless Torch Rotation System (ETR-S), Compact Cladding Cell (CCC) and conventional cladding systems with the required components can be upgraded to SpeedClad Twin.

① **SYSTEM CONTROLLER FPA 9000 / HMI-T10CC**

- / Depending on the application two fully digital operating and SpeedClad optimized high-end system controllers are available.
- / Both SpeedClad Twin system controllers deliver innovative software features, maximum process productivity and highest reliability in continuous operation.

② **2 X FRONIUS POWER SOURCE TRANSTIG 5000 JOB / FK 4000 ROB**

- / The fully digital and bus controlled welding system guarantees 100% repeatable welds.
- / Integrated communication system to peripheral devices.
- / Synchronization of multiple power sources via high-speed communication (LHSB*).
- / Multivoltage and country-specific (e.g. UL / CSA) variants are available.
- / The power sources can be updated with the latest software.
- / Wire feed control via power source.
- / Cooling circuit control and monitoring in interaction with cooling unit FK 4000 Rob which ensures a long-term and safe multi-shift operation.

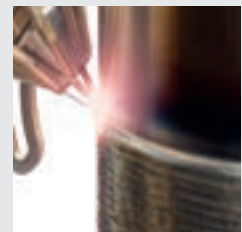
* LHSB (LocalNet High Speed Bus): The LHSB connection is a 10 Mbp high-frequency data connection. The timed LHSB protocol is designed to meet the requirements of Fronius products and optimized for synchronized high speed processes.

③ **2 X FRONIUS HOTWIRE POWER SOURCE TRANSTIG 2200 JOB (HD)**

- / These additional power sources perfectly support the SpeedClad Twin process for greater productivity.
- / Improved heat balance caused by dedicated power sources for each wire (Twin Wire process).

④ **FRONIUS SPEEDCLAD TWIN HIGH SPEED TORCH**

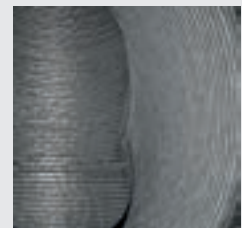
- / Powerful 2 x 300 Ampere.
- / Twin Wire application.
- / Water cooled hotwire feedings (2x).
- / Wear optimized wire feedings.
- / Adjustable torch head angle.
- / Robust and modular design.
- / 100% duty cycle.



/ SpeedClad Twin cladding application

⑤ **FRONIUS SPEEDCLAD TWIN DOUBLE WIRE FEED**

- / A significantly higher wire speed provides a higher deposition rate up to 6 kg (13.23 lbs) per hour.
- / Four wheel drive system and encoder monitoring ensure precise wire feed.



/ SpeedClad Twin cladding sample

SYSTEM-TECHNOLOGY

/ SPEEDCLAD TWIN

/ FULLY DIGITAL

/ REAL-TIME DATA COMMUNICATION

/ FULL PROCESS CONTROL

/ ONE SUPPLY LINE FOR ENTIRE SYSTEM

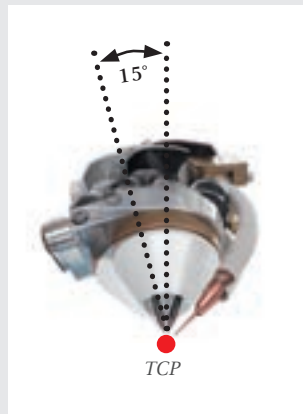
INNOVATIVE TORCH ENGINEERING ACCELERATES AND PERFECTS THE WELDING.

/ Matching the same quality as TIG hotwire welding, the SpeedClad Twin cladding solution is three times faster and more efficient. Two tungsten electrodes and two preheated welding wires make it possible.

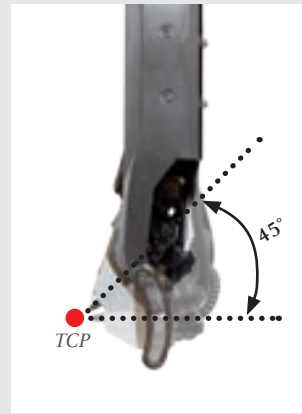
VERSATILE ADJUSTABLE



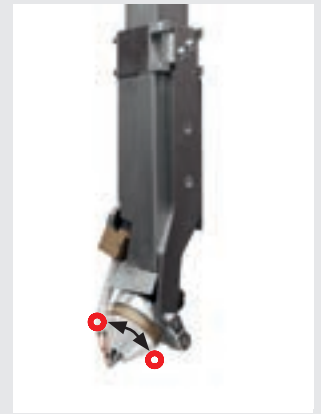
/ Fronius torch system SpeedClad Twin.



/ Side adjustment, the TCP (Tool Center Point) stays unchanged.



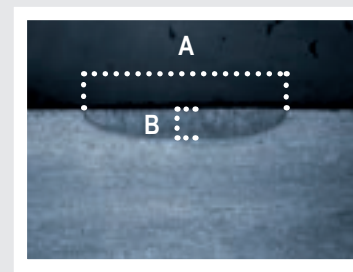
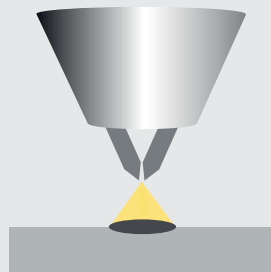
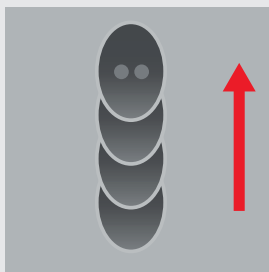
/ Tilt adjustment. The TCP (Tool Center Point) stays unchanged.



/ Rotatable double electrode.

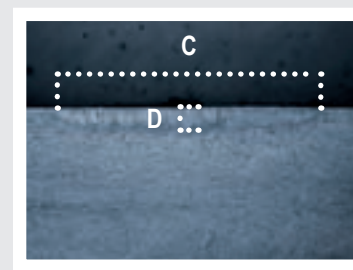
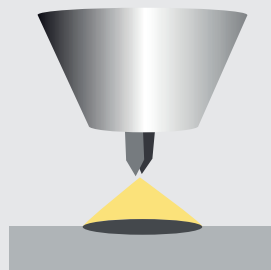
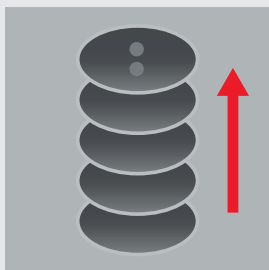
INFLUENCE OF ELECTRODE POSITION ON WELD POOL.

/ By aligning the electrodes the welding result can be changed. Depending on whether the position of electrodes is perpendicular or parallel to the weld pool the result changes as shown below:



WELDING RESULTS

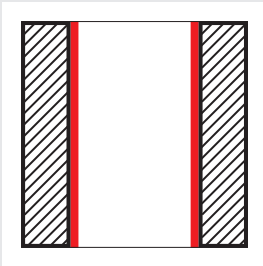
A = 8,48 mm (0.334 in.)
B = 1,21 mm (0.038 in.)



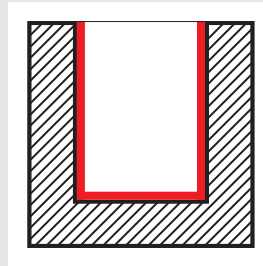
C = 11,14 mm (0.439 in.)
D = 0,98 mm (0.038 in.)

TAILORED TO THE NEEDS OF CUSTOMERS.

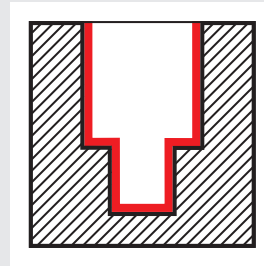
APPLICATION EXAMPLES



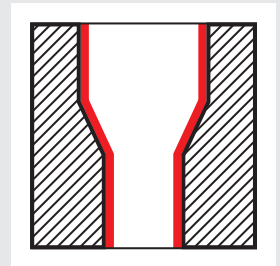
/ Straight bore (cylindrical)



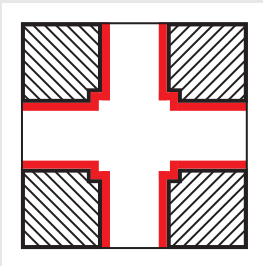
/ Straight bore with bottom face



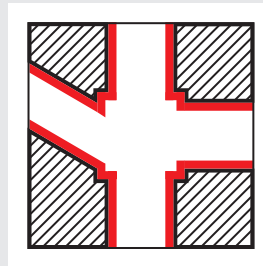
/ Straight bore with diameter variation



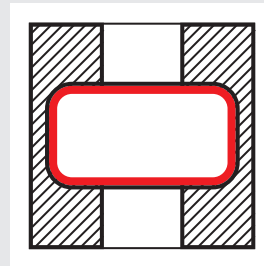
/ Straight and conical bore



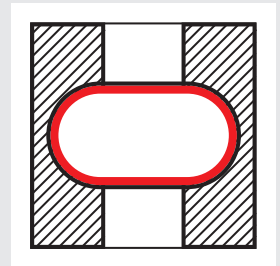
/ Bore-to-bore



/ Advanced Bore-to-bore



/ Rectangle



/ "Race-track"

FRONIUS SPEEDCLAD TWIN OVERLAY WELDING SYSTEMS

/ All our innovative and cost-effective cladding solutions can be equipped innately with the revolutionary SpeedClad Twin welding process or retrofitted at any time.



/ SpeedClad Twin conventional cladding system with system controller FPA 9000.



/ SpeedClad Twin Compact Cladding Cell (CCC) with system controller HMI-T10CC.



/ SpeedClad Twin Endless Torch Rotation System (ETR-S) with system controller FPA 9000.

SPEEDCLAD TWIN – THE CROSS-INDUSTRY HIGH END SOLUTION



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TYPICAL APPLICATIONS

- / Subsea components
- / Valve components
- / Bearing seal surfaces
- / Pump components
- / Turbine blades
- / CRA pipes, elbows
- / Extruders
- / Mining bits
- / Forging dies
- / Rolls

CUSTOMER SEGMENTS

- / Gas and oil industry
- / Coal and nuclear energy
- / Aerospace
- / Steel manufacturing
- / Heavy equipment - mining construction, agriculture
- / Pulp and paper
- / Food and chemical processing
- / Remanufacturing

/ Perfect Welding / Solar Energy / Perfect Charging

THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 5,440 employees worldwide and 1,264 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

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