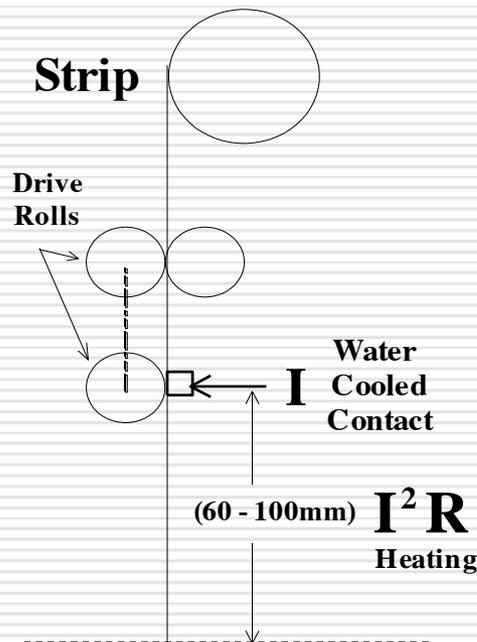


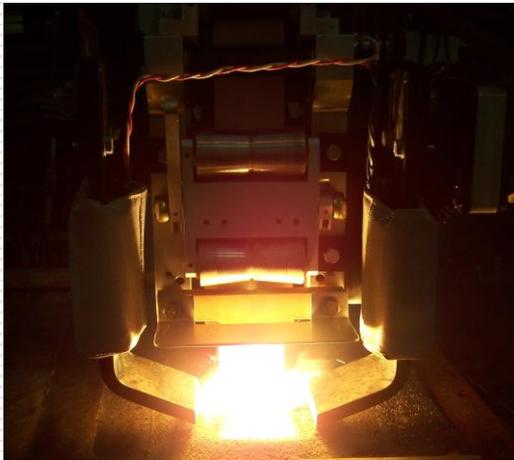
ESO[®] Strip Cladding



A novel strip cladding welding head was designed and has been continuously improved to meet specific industry needs. This special head mechanically forms the strip and introduces a level of rigidity to the strip which enables its use in the extended stick-out (ESO[®]) mode for both SAW and ESW applications. Parameters for the ESO[®] strip cladding technique have been established for many of the traditional cladding alloys as well as specialty needs. By using the extended stick-out electrode extension cladding method, SAW cladding techniques are now capable of surpassing the traditional ESW methods in actual deposition for many applications. This is important for at least two major reasons: SAW is user friendly and many fabricators already possess equipment that can be modified to implement ESO[®] strip cladding. The contact shoe is water cooled to increase life and reduce the overall size of the component. Electrode extensions of 60 to 100mm are common. The benefits of higher deposition when strip cladding can only be realized with an integrated system approach. System requirements include: proper power sources, strip feed controls, a special strip head or feeding mechanism, magnetic steering controls, complementary strip and flux.

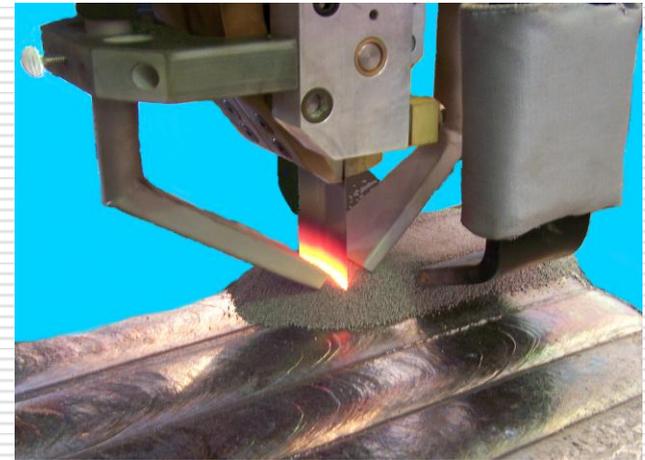
The main difference between standard practice strip weld cladding and the extended stick-out approach is the distance between where welding current is applied and the work piece. This technique has been used for decades with GMAW, FCAW and SAW weld wire applications to take advantage of I²R preheating effects. The double roll feed introduces a slight crease in the strip to enhance column strength and allow greater electrode extensions.

ESO® Strip Cladding Head



Electroslag Cladding

- **Electroslag or Submerged Arc**
- **Up to 30% MORE Deposition with Lower Dilution with ESO®**
- **30, 60, 90 & 120mm**
- **Magnetic Steering**
- **Power Sources, Controls, Pressurized Flux Feed, Vacuum Pick-up & Complete Systems Available**



Submerged Arc Cladding

EUROWELD System Example



ESO®

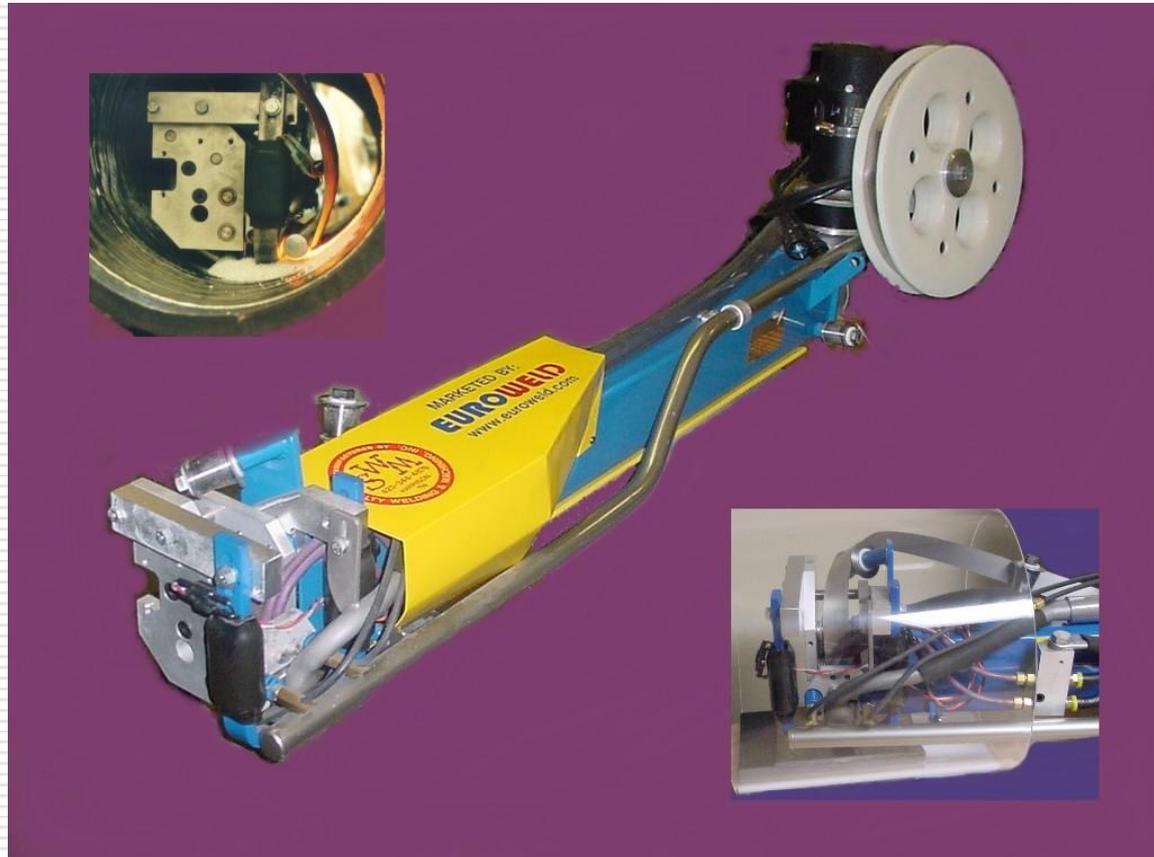
Strip Cladding & SAW Wire Welding System

- ESO® 60/30mm Strip Cladding Head
- SAW Wire System
- Magnetic Steering
- Power Sources & Controls
- Column & Boom Manipulator
- Turning Rolls
- Pressurized Flux Feed & Vacuum

Designed
and Built
for:

energysteel

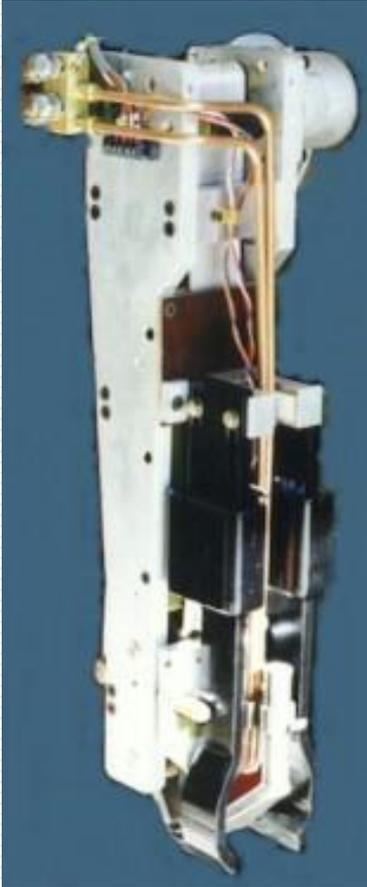
EUROWELD System Example



ESO® Micro Strip Cladding System

- **Micro ESO® Strip Cladding System**
- **Magnetic Steering**
- **Power Sources & Controls**
- **30mm Strip**
- **48" (1200mm) Reach Standard**
- **Clad ID**
 - **12" (300mm) Circumferential**
 - **8" (203mm) Longitudinal**
- **Pressurized Flux Feed & Vacuum**
- **Optional Configurations Available**

EUROWELD System Example



ESO® Special Long Reach Strip Cladding System

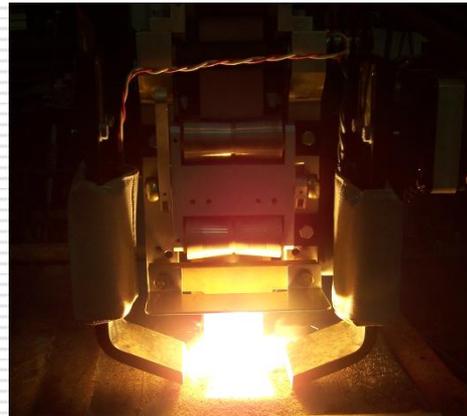
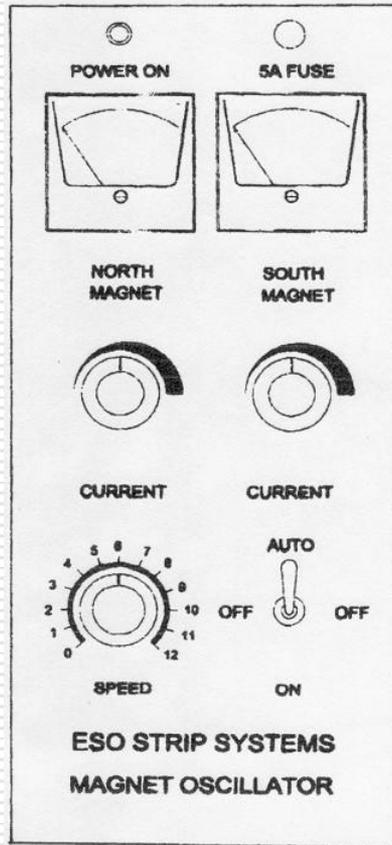
- Turbine Rotor Repair -

- **ESO® Special Long Reach Strip Cladding Head**
 - **24" (600mm) Standard Length, other sizes available**
 - **Magnetic Steering**
 - **Power Sources & Controls**
 - **Pressurized Flux Feed**
-

ESO® Strip Head	Minimum Material Thickness, mm(in)		ID Minimum, mm (in)		OD Minimum, mm (in)	
	Without Special Cooling	Water or Alternate Cooling	Longitudinal Cladding	Circumferential Cladding	Longitudinal Cladding	Circumferential Cladding
15mm Mini Micro	30(1.18)	13(0.5)	150 (6)	200 (8)	150 (6)	130 (5)
30mm Micro	40(1.6)	16(0.63)	200 (8)	300 (12)	400 (16)	250 (10)
60mm	60(2.4)	20(0.75)	458 (18)	710 (28)	500 (20)	500 (20)
90mm	75(3)	30(1.18)	660 (26)	1070 (42)	1000 (40)	1300 (50)
120mm	100(4)	75(3)	965 (38)	1930 (76)	1500 (60)	2400 (96)

EUROWELD

Magnetic Oscillator



The molten weld puddle is not magnetic, but the molten flux is electroconductive. Bead shape, tie-in and undercut can all be influenced by magnetic steering of the molten flux.

