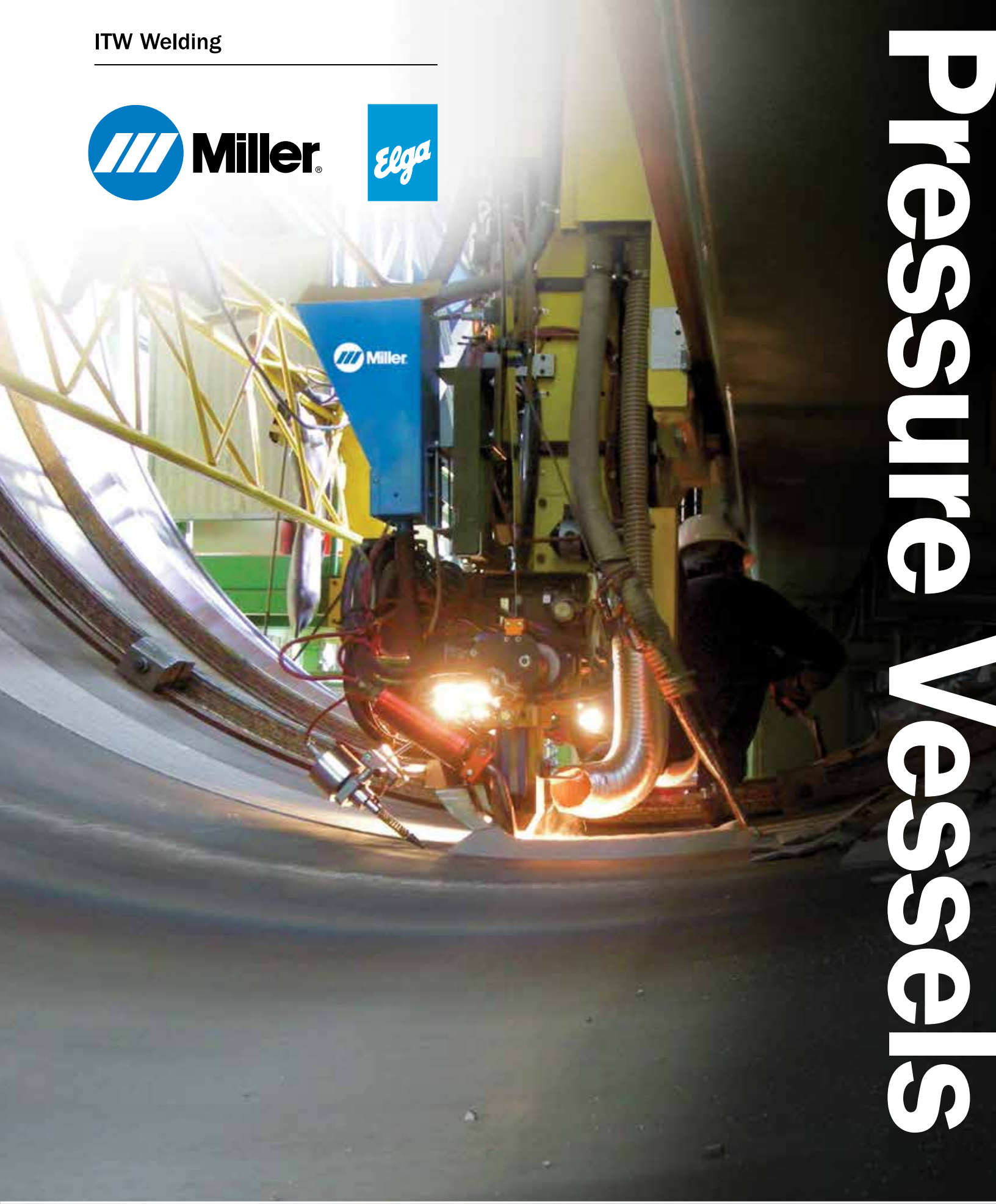
ITW Welding

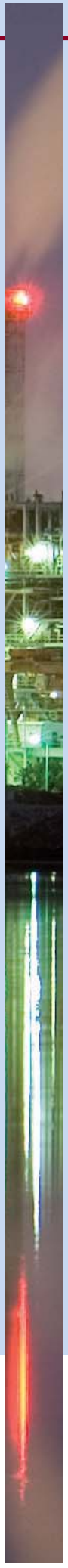
Miller

Elga



Pressure Vessels

WELDING, CLADDING AND HEATING SOLUTIONS



WELDING EQUIPMENT

CONSUMABLES

JOINING

CLADDING

Miller

The Power of Blue®

Taking innovatively sound steps since 1929, Miller has grown from a one-man operation selling products in Northeast Wisconsin, to what is today the world's largest manufacturer of arc welding SMAW, GMAW, GTAW, SAW, ESW and cutting equipment. Miller keeps the tradition alive by delivering ruggedly reliable equipment of the highest quality.

The Power of Blue®

www.millerwelds.com

Quality & Know-how in Welding

Founded in 1938, in Sweden, Elga offers an extensive range of consumables for all welding processes and applications . Choose from coated electrodes, cored wires, Mig/Tig wires and submerged arc wires and fluxes, all available for carbon-manganese, low alloy and stainless steels. In addition, the range includes a full program of strips and fluxes for electroslag and submerged arc strip cladding with stainless and Ni-base alloys. Elga aims to develop and market welding consumables, offering peak performance in operability, mechanical properties and productivity.

www.elga.se

Competence, Innovation and Solutions

ITW Welding Products is part of **Illinois Tool Works Inc. (ITW)**, a Fortune 200 diversified manufacturing company with more than 800 decentralized business units all over the world.

With the highest quality of Miller and Elga products, our focus on ***innovation***, our ***technical know-how*** and our ***personalized service***, we have gained a reputation as a serious and reliable partner at the forefront of welding technology.

Quality & Know-how in Welding

Our aim to be the best choice for customers embraces more than just offering a range of high quality welding products. Working in close partnership with our customers provides the benefits of an extensive welding technology knowledge, backed by full service and support, enabling them to reduce welding costs by improved productivity and quality.

Customer competence combined with our Miller and Elga products, together with continuous technical support, enables them to be highly competititive in the welding manufacturing industries.

Miller and Elga have pioneered welding process innovations, developing and patenting solutions designed to solve user problems.

www.itw-welding.com

The Bernard® Difference

www.bernardwelds.com

Bernard is a strong, growing company located in Beecher, IL (USA), with over 60 years experience as a MIG welding innovator. As part of ITW, Bernard shares access to unique resources that we leverage to improve welding productivity. Count on us for the long term.
Currently we enjoy the strength and growth opportunities that come from being part of ITW Welding, while maintaining the personal warmth that is frequently found in a small organization.

A Total TORCHES offering

The TIG Welder's Choice

www.weldcraft.com

Weldcraft is dedicated to providing the **highest quality TIG welding products**, accessories and service in the industry. From do-it-yourself projects to critical applications, we have the product for your TIG welding application.
Our TIG torches and accessories are engineered using high-quality materials, durable components and innovative designs to optimize your TIG welding performance, **providing uncompromising quality, value and service**.

Orbitalum Tools GmbH, formerly known as George Fischer Rohrverbindungstechnik GmbH, was an independent subsidiary within the Georg Fischer Piping Systems group of companies since its foundation in the year 1960 until 2005, with its head office in Schaffhausen (CH). Since January 1st 2006, Orbitalum Tools GmbH belongs to the US American industrial company **Illinois Tool Works Inc. (ITW).**

Orbimatic GmbH was founded in 1990 and very quickly established itself as an innovative and leading manufacturer for orbital welding systems. Orbimatic was acquired by ITW in 2008.

In 2009 both companies – Orbitalum Tools GmbH and Orbimatic Welding Systems – have no been merged to the new **"Orbitalum Tools GmbH".** The well-known brandname "Orbimatic" continues as a brandname within the Orbitalum Tools GmbH for orbital welding equipment.

Complete solutions for highest requirements in tube and pipe welding preparation up to orbital welding – all from one source.
Orbitalum Tools GmbH is your competent partner for orbital tube and pipe preparation (cutting, beveling and facing) and orbital welding technology for industrial piping systems, prefabrication and maintenance.

ITW

orbitalum
tools for piping systems

Complete Solutions. ONE SOURCE

ORBIMATIC

www.orbitalum.com

INNOVATION

For many decades ITW Welding, together with Miller and Elga know-how, has developed high-performance equipment, power sources, accessories and welding consumables.
Our Team of highly competent Welding Engineer Experts support our customers all over the world.

Miller has a sound track record over many years of highly innovative inventions that have positioned the brand at the cutting edge of welding technology.

- **Summit Arc 1000/1250** was the pioneer in revolutionizing the submerged arc welding process with the introduction of **Variable Balance AC**.
- The first patent issued for **SAW Square Wave AC** was issued in 1982.
- The first patent issued for **AC/DC Square Wave** with variable balance was in 1994.
- Miller was the first to introduce the Summit Arc power source with this new technology at the AWS welding show in 1999.

During the past few years ITW Welding has focused strongly on the Pressure Vessel and associated components fabrication sector, and today we can offer a full range of welding solutions for:

- **Heavy Wall Reactors**
- **Pressure Vessels**
- **Storage Tanks**
- **Plant Columns & Towers**
- **Heat Exchangers**
- **Turbines**

WELDING EQUIPMENT

Welding Equipment Selection Guide

Products	STICK	MIG	MIG-P	MIG-RMD	Pro-Pulse	Accu-Pulse	Accu-Curve	MCAW	FCAW	SAW	ESW	AC-TIG	DC-TIG	DC-TIG HF	CAC-A	WP-SR	Page
Sub Arc DC 1250	●	●						●	●	●	●				●		7
Sub Arc AC/DC 1250	●	●						●		●					●		7
PipeWorx™	●	●	●	●	●			●	●				●		●		9
Axcess® E 450		●	●			●	●	●	●						●		9
Gold Star 602®	●								●				●		●		10
Maxstar® 350	●												●	●	●		10
Maxstar® 700	●												●	●	●		10
XMT® CC/CV 456	●	●	●					●	●				●		●		10
Dimension™ 562	●	●						●	●	●			●		●		10
ProHeat™ 35																●	11
Big Blue® 500 CC/CV	●	●						●	●	●			●		●		11

Welding Process Advantages Icons

Stick (SMAW)
Better suited for windy, outdoor conditions
More forgiving when welding on dirty or rusty metal

MIG (GMAW)
Easiest process to learn
High welding speeds possible
Provides better control on thinner metals
Cleaner welds possible with no slag to remove
Same equipment can be used for Flux Cored welding

Pulsed MIG (GMAW-P)
Flexibility and productivity – nearly all metals can be welded in all positions
Larger diameter wires can be used
Virtually no spatter
Suitable for both thin and thick metals

Submerged Arc (SAW)
High deposition rates can enhance productivity
Excellent mechanical properties for high-quality code and X-ray requirements
Improves welding operator comfort and appeal – arc is below a bed of flux, no visible arch, no fume

TIG (GTAW)
Provides highest quality and most precision welding
Excellent cosmetic finish weld beads
Allows adjustment of heat input while welding by use of a remote control

Pulsed TIG (GTAW-P)
More control on thin metals
Less heat distortion on thin metals

Multiprocess
All process advantages included where applicable

Induction Heating
Easiest process whenever heating is required
Fast Heating compare to flame and resistance method
Much safer heating method compare to flame

Engine Driven
Portability, multi-process
Outdoor application
Provides backup power
High welding performance

Wire Feeder
Customize industrial MIG welding system

Technical Icons

- 1 Phase — Unit requires single-phase input power
- 3 Phase — Unit requires three-phase input power
- AC — Unit supplies alternating current weld output
- DC — Unit supplies direct current weld output
- AC/DC — Unit supplies alternating current and direct current weld output
- CC — Unit supplies constant current weld output
- CV — Unit supplies constant voltage weld output
- CC/CV — Unit supplies constant current and constant voltage weld output

Submerged Arc System

HDC 1500 DX Control Unit Automatic Weld Control

Automatic digital weld controllers offer reliability, flexibility, and performance with their ability to interface with AC or DC, CC/CV power sources having remote contactor and output control capabilities.

CC/CV
CV
AC/DC

PROCESSES
- Submerged Arc Welding (SAW)
- Electroslag (ESW)
- GMAW Spray
  (with customer-supplied solenoid)

CHARACTERISTICS
- Supply Single phase 115 VAC - 10 A
- Welding power source CV, AC or DC
- Set up/Menu
  - Flux Valve Control
  - Burn-back/Crater Time
  - Wire Feeder Speed Control
  - Ampere/Voltage/WFS Range look
  - # 12 programs
  - ArcTime and Arc Cycles
  - Preflow/Postflow
  - Start time/Run-in

Sub Arc DC 1250 Submerged Arc Welding Power Source

Three-phased, CC/CV DC power sources are designed to provide a superior arc for the SAW/ESW welding process as well as air carbon arc gouging plus the endurance to handle demanding industrial applications.

CC/CV
DC
3 Phase

PROCESSES
- Submerged Arc Welding (SAW/ESW)
- Flux Cored (FCAW)
- Stick (SMAW)
- MIG (GMAW)
- Air Carbon Arc (CAC-A)
  Cutting and Gouging

CHARACTERISTICS
- CC/CV
- DC
- Three-Phase
- Amperage 100÷1250 A
- Voltage 10÷60V
- Rated Output 1000 A at 44 VDC (100% duty cycle)
- Voltage Supply 380 - 400 - 440 VAC
- Power Input @ Rated Output 73 KVA-53 KW

Sub Arc AC/DC 1250 Submerged Arc Welding Power Source

Three-phase squarewave AC/DC machine with phase-shifting capability with steps to refine arc. AC square wave provides excellent quality of penetration/bead profile and high performance in deposition rate with low heat input (improve mechanical properties and reduce distortion).

CC/CV
DC
3 Phase

PROCESSES
- Submerged Arc Welding (SAW/ESW)
- MIG (GMAW)
- Air Carbon Arc (CAC-A)
  Cutting and Gouging

New!

CHARACTERISTICS
- CC/CV
- DC/AC Variable Squarewave
- 81 balance ratios
- Three-Phase
- Frequencies 10 to 90HZ
- Amperage 250 - 1250 A
- Voltage 25 - 44 (71 OCV)
- Rated Output 1000 A at 44 VDC (100% duty cycle)
- Voltage Supply 380 - 400 - 415 VAC
- Power Input @ Rated Output 98 KVA-53 KW

Submerged Arc System

Sub Arc AC/DC 1250 Submerged Arc Welding Power Source

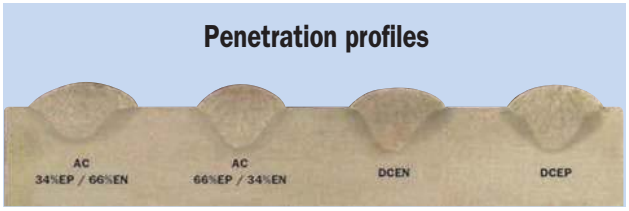
Technology Increases SAW Deposition Rates

Variable balance AC squarewave Submerged Arc Welding (SAW) technology from Miller overcomes the traditional problems or limitations of SAW with all other processes including DC electrode positive(DCEP), DC electrode negative (DCEN) and traditional AC.

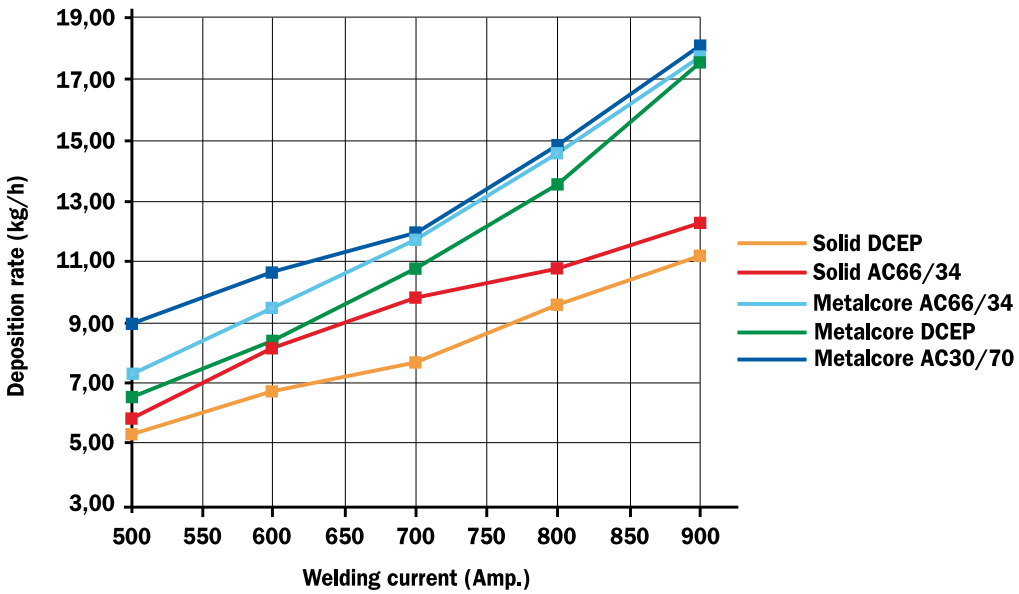
The new SUB ARC AC/DC 1250, that replaces the Summitarc series, gives full control of the wave shape in frequency balance, and off-set:

- **Increase deposition rate up to 59 % using the same welding parameters**
- **Smaller joint angles and lower filler metal volume**
- **Reduce heat input, minimize distortion and improve the mechanical properties**
- **Penetration control to minimize the risk of lack of fusion**
- **Minimize the magnetic arc blow**
- **Reduce arc interactions in multi-wire process**
- **Control of bead shape**
- **Excellent arc start**
- **Improved arc stability compared to traditional AC**
- **Substantially lower power consumption**

The new SUB ARC AC/DC 1250 has a 12 balance and frequency use friendly set up for the most common applications. A total of 81 balance ratios gives excellent performance in all application segments.



ø 4.0mm (0.156") Deposition rate



Advanced Multiprocess Equipment

PipeWorx™ Welding System

The one-package pipe welding solution for pipe fabrication shops.
Multiprocess capabilities include patented RMD Pro™ & Pro-Pulse™, optimized for steel and stainless pipe.
Pipe Worx provide:

- Simply and friendly process set up
- Quick process change over
- No need for manual switch polarity
- Multiprocess machine for root, fill and cap
- Streamlined system

New!

PROCESSES

- Stick (SMAW)
- DC TIG (GTAW) (HF and Lift-Arc™)
- MIG (GMAW)
- MIG RMD™ (GMAW SMC)
- Pro-Pulse™ (GMAW-P)
- Flux Cored (FCAW)

CHARACTERISTICS

- Current: DC (Stick) CC/DC (TIG) CV (MIG)
- Inverter Multiprocess
- Rated Output at 100% duty cycle 400 A at 44 VDC
- Voltage Supply 230/460 – 400 - 575 VAC
- Power Input @ Rated Output 230/460 VAC (14,8/18 KVA - 13,7 KW)
- Power Input @ Rated Output 400 VAC (16,9 KVA - 14,3 KW)
- Power Input @ Rated Output 575 VAC (19,0 KVA - 13,8 KW)

Axcess® E 450

Optimize your industrial MIG welding system with digital control capability and exceptional MultiMig performance.
A dedicated menu-driven wire feeder provides a true synergic solution with Insight Weld Data Monitoring System.
Axcess E 450® provides:

- Digital control technology combined with an inverter power source
- The configuration via convenient web pages
- Superior welding performance
- Simplified installation
- Comprehensive feedback on welding activities
- Comprehensive feedback on welding productivity

New!

PROCESSES

- Multi-MIG®
- Accu-Pulse® MIG (GMAW-P)
- Accu-Curve™ MIG (GMAW-P)
- Pulsed MIG (GMAW-P)
- MIG (GMAW)
- Metal Core
- Carbon Arc Gouging (CAC-C) can also be activated

CHARACTERISTICS

- Rated Output at 100% duty cycle 450 A at 36,5 VDC
- Amperage Range 5 - 600 A
- Voltage supply 208 - 575 V
- Power Input @ Rated Output 19,9 KVA - 19,2 KW

Stick, TIG & Multiprocess Equipment

Gold Star 602® Stick Welding Equipment

Rugged, reliable performance and superior arc characteristics.

CC DC 3 Phase

PROCESSES
- Stick (SMAW)
- TIG (GTAW)
- Flux Cored (FCAW)
- Air Carbon Arc (CAC-A) thru 3/8" carbons

CHARACTERISTICS
- Current DC (CC)
- Thrystor power source
- Rated output amperage 450A 60% 38 VDC
- Voltage Supply 380-400-440 VAC - 3 phase
- Power Input @ Rated Output 35,5 KVA - 23,3 KW

Maxstar® 350 and 700 Stick/TIG Welding Equipment

Exceptional performance - the finest DC TIG/Stick machines available, provide outstanding arc performance and product reliability.

CC DC 3 Phase 1 Phase

PROCESSES
- GTAW (HF - Lift-Arc™)
- GTAW P (pulsed)
- Stick (SMAW)
- Pulsed TIG (GTAW-P)
- Air Carbon Arc (CAC-AV)

CHARACTERISTICS
- Current DC (CC)
- Inverter power source
- Rated output amperage 300 A (600 A) 60% 32 (44) VDC
- Voltage supply 1 phase - 3 phase, 380/575 VAC
- Power Input @ Rated Output 3 phase, 12 (32) KVA - 11,5 (31 KW)

XMT® CC/CV 456 Inverter Multiprocess Welding Equipment

With ST44 series wire feeder combines the advantages of inverter-based power with the built-in feature and productivity of high-end MIG machines.

CC CV DC 3 Phase

PROCESSES
- MIG (GMAW)
- Stick (SMAW)
- TIG (GTAW)
- Flux Cored (FCAW)
- Air Carbon Arc (CAC-A) Cutting and Gouging (3/8 in carbons)

CHARACTERISTICS
- Current DC (CC/CV)
- Inverter multiprocess power source
- Rated output amperage 565 A 60% at 43 VDC
- Voltage supply 380-400 VAC 3 phase
- Power Input @ Rated Output 21,2 KVA - 19,2 KW

Dimension™ 562 Multiprocess Welding Equipment

Excellent multiprocess solution delivers dependable performance in demanding applications and combines with 70 Series wire feeder for a complete welding solution.

CC CV DC 3 Phase

PROCESSES
- MIG Spray transfer (GMAW)
- Stick (SMAW)
- TIG (GTAW)
- Flux Cored (FCAW)
- Air Carbon Arc (CAC-A) Cutting and Gouging (through 3/8 in carbons)
- Submerged Arc Welding (SAW)

CHARACTERISTICS
- Current DC (CC/CV)
- Multiprocess DC (CC/CV)
- Rated output amperage 450 A 100% at 36,5 VDC
- Voltage supply 380 - 400 - 440 VAC 3 phase
- Power Input @ Rated Output 35,3 KVA - 22,3 KW

SuitCase® 8RC and 12RC

Offer remote voltage control, light weight and small size, with superior durability needed to stay in service and meet production schedules.

CV DC

PROCESSES

- MIG (GMAW)
- Flux Cored (FCAW)

CHARACTERISTICS

- Totally enclosed, impact-resistant, flame-retardant case
- Ergonomically sound, lightweight, modular design
- Quick-change drive rolls
- Carrying handle
- Remote voltage control
- Gas solenoid valve

Model	Input Power	Wire Feed Speed	Wire Diameter Capacity	Maximum Spool Size Capacity	Dimensions	Net Weight
SuitCase 8RC	24 VAC 7 A 50/60 Hz	75-700 IPM (1.9-17.8 m/min)	**Solid Wire** .023-5/64 in (0.6-2.0 mm) **Flux Cored** .030-5/64 in (0.8-2.0 mm)	8 in (203 mm) 14 lb (6.4 kg)	H: 14½ in (368 mm) W: 6½ in (165 mm) D: 15⅝ in (397 mm)	22 lb (10 kg)
SuitCase 12RC	24 VAC 10 A 50/60 Hz	75-700 IPM (1.9-17.8 m/min)	**Solid Wire** .023-5/64 in (0.6-2.0 mm) **Flux Cored** .030-5/64 in (0.8-2.0 mm)	12 in (305 mm) 44 lb (20 kg)	H: 15½ in (394 mm) W: 9 in (229 mm) D: 21 in (533 mm)	25.5 lb (11.6 kg)

70 Series

Raising the bar for industrial-class wire feeders with all the traditional features, plus enhanced flexibility provided by features such as trigger hold, automatic run-in, and tool-less rotatable drive.

CV DC

PROCESSES

- MIG (GMAW)
- Flux Cored (FCAW)

CHARACTERISTICS

- Tool-less rotatable drive assembly
- Automatic run-in control
- Trigger hold
- Dual schedule control
- Sequence control
- Welding process range control
- Four weld programs

Model	Input Power	Wire Feed Speed	Wire Diameter Capacity	Maximum Spool Size Capacity	Dimensions	Net Weight
74S **74D** **74DX**	24 VAC 10 A 50/60 Hz	50-780 IPM (1.3-19.8 m/min) Optional Low Speed: 20-400 IPM (0.5-10.2 m/min) Optional High Speed: 92-1435 IPM (2.3-36.6 m/min)	.023-1/8 in (0.6-3.2 mm) Low-Speed motor option is recommended when using 1/8 in (3.2 mm) wire	60 lb (27 kg) coil with optional Wire Reel Assembly	**Single** H: 14 in (356 mm) W: 12 in (305 mm) D: 26½ in (673 mm) **Dual** H: 14 in (356 mm) W: 12½ in (318 mm) D: 35 in (889 mm)	**Single** 58 lb (26 kg) **Dual** 87 lb (39 kg)

MIG Guns

Bernard Guns

All guns are not created equal.
A MIG gun should be durable, easyto use and customized to your specific application.
Exeptional welding performance demands an exeptional gun. Our MIG guns help you achieve quality welds, increase productivity and lower costs. Customize your Gun using our online configurator at Bernardwelds.com.
Bernard Gun™ is able to weld up to 600 Amp.

PROCESSES

- MIG (GMAW)
- Flux Cored (FCAW)

CHARACTERISTICS

- Current: 150 A to 600 A
- Cable lenght: 2,44 to 7,63 meter
- Air cooled (Q™ and S™ series)
- Water cooled (W™ series)
- Contact tip: wire size ø 0,6 mm to 2,4 mm

Stay-Tite™ Technology

All Bernard guns feature long-lasting power cable compression fittings and necks with large tapered gun connections to ensure optimal electrical conductivity and product durability.

Jump Liner

- Minimizes inventory and downtime for changeover

Neck

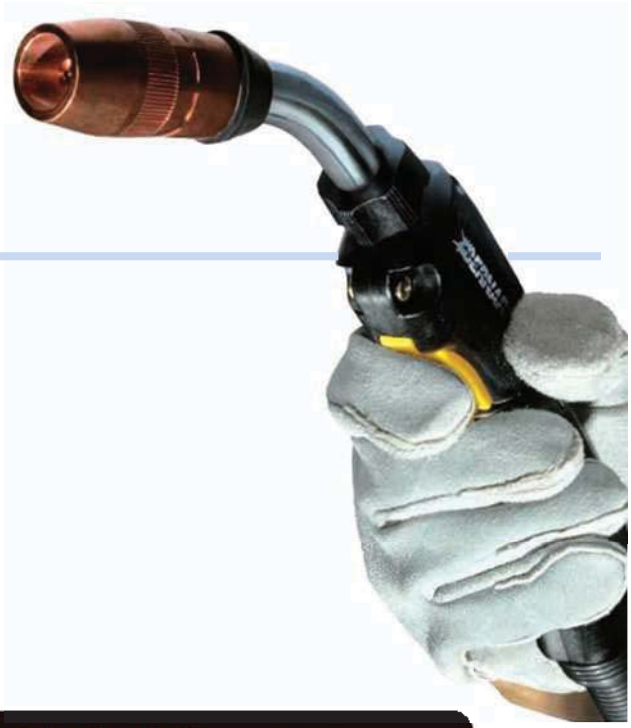
- Fixed, rotatable and multiple lenght options improve operator comfort

Handle

- Ventilated to reduce heat and increase operator comfort

Trigger

- Designed and built to last more than 1 million cycles



Centerfire™ Consumables

- Built-in spatter shields protects diffuser, improves gas flow
- Threadless contact tip mates securely with diffuser for better conductivity
- Fits all Q-Guns - from 150 to 600 A

Centerfire™ Sets the Standard

Bernard developed its Centerfire consumables to save you time and money. Our contact tips, nozzles and diffusers provide better arc starts, less spatter and more consistent welds. Centerfire consumables also last up to three times longer than competitive brands! Plus, our unique conversion parts allow you to convert most competitive guns to Centerfire consumables, quickly and easily.

CENTERFIRE™

Crafter™ Series CS300

Crafter™ Series air-cooled torches provide the professional welder with the highest standards of reliability and performance, even in the harshets of field applications.

PROCESSES

- GTAW

CHARACTERISTICS

- Hand-held Air-Cooled
- Current: 300 Amp DC, 250 Amp AC (60% duty cicle)
- Electrode range: .020"-5/32" (0.5-4.0 mm)
- Lightweight body
  minimizes operator fatigue and withstands continuous, heavy-duty welding applications
- Heavy copper components
  ensure maximum welding capacity on demanding fieldwork
- High air-cooling capacity
  eliminates the need and expense for complex water-cooling systems and increases portability for field applications
- Exclusive heat dam and thermal speed channel technology
  minimize handle temperature to reduce overheating and downtime

Crafter™ Series CS310A

Crafter™ Series water-cooled torches offer professional welders the consistency and flexibility needed for demanding applications by increasing amperage output, not torch size.

PROCESSES

- GTAW

CHARACTERISTICS

- Hand-held Water-Cooled
- Current: 310 Amp DC, 310 Amp AC (100% duty cicle)
- Electrode range: .020"-1/8" (0.5-3,2 mm)
- ColorSmart hose and cable sets
  differentiate input water, water/power cable and gas hoses to simplify torch package installation.
- D-Handle design
  features a self-indexing flat top that allows for torch orientation by feel.
- Tri-Flex hose and cable assembly
  remains flexible in cold weather to ease handling and extend cable life
- Weld-Ready torch package features
  cable cover and installed front-end parts to maximize performance and simplify ordering
- Patented double-lip back cap seal
  improves high-frequency shielding and reduces gas leakage
- Mechanical fittings
  provide a secure connection to prevent gas or water leakage and allow easy hose replacement

Beveling

BRB 2 I BRB 4 Boiler Pipe Preparation Machines

Lightweight and robust boiler pipe preparation machines. Prepare I/V/Y and U seam weld joint geometries in pipe ends made from high-alloy steel (stainless steel), low-alloy and carbon steel with the unique QTC® tool system. Pipe end and tube sheet joint preparations in boiler, tank and apparatus construction.

CHARACTERISTICS

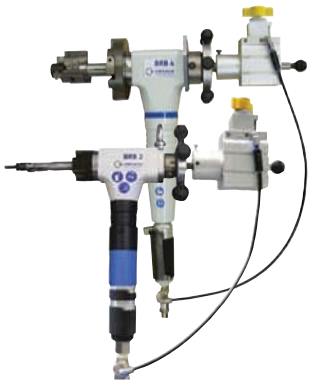
Pneumatic version

• Air consumption	0.7 - 1.2 at 6 bar [m³/min]
• Power	0.38 – 1 KW
• Speed	120 / 0-11 [rpm] (max. idling speed)

Auto Version : Double-quick machining using the BRB Auto with pneumatic clamping ideal for series processing, e.g. Heat Exchanger and Boiler applications.

Electric Version:

• Power supply	230 V/120 V (50/60 Hz)
• Power	0.5 - 0.67 / 1.0 - 1.34
• Speed	118 / 17 - 35 [rpm] (max. idling speed)



REB Series Pipe End Preparation Machines

Model	Power [kW]	Air consumption [m3/min at 6 bar/90 psi]	Main or Power supply [V-Hz]	Working range ID [mm]	Wall thickness [mm]
REB 6 P	1.8	2.0	230 - 50/60	49 - 159	3 - 22
REB 6 E	1.2	2.0	230 - 50/60	49 - 159	4 - 30
REB 14 P	1.8	2.0	230 - 50/60	92 - 320	4 - 30
REB 14 E	1.2	2.0	230 - 50/60	92 - 320	4 - 22

Orbimatic CAdvanced | CB Orbital Welding Power Supplies

The ORBIMAT CAdvanced series of orbital welding power supplies are equipped with a new and unique operating concept. In addition to the reliable ORBIMATIC automatic programming which generates welding parameters by entering the tube diameter, wall thickness, material, and welding gas. Available also with AVC / OSC control.

The ORBIMAT CB Orbital welding power supplies of the ORBIMAT CBasic series include the tried and tested ORBIMATIC automatic programming with programming help when entering the tube diameter, wall thickness, material and welding gas.

PROCESS
- Orbital welding

CHARACTERISTICS
- Imput Power 3 x 400 VAC
- Output Range 3 - 300 A
  100% at 200 A
  60% at 300 A

P16 | P20 Tube-to-Tube-Sheet Orbital Weld Heads

With these TIG welding heads, it is easy or simple to weld tubes to tube sheets with the highest of accuracy and consistent quality. Together with the ORBIMAT CA or CB range of orbital welding power supplies you will get a state-of-the-art welding system with multiple choices and erase easy operation.

PROCESSES
- Orbital welding with or without cold wire feeding

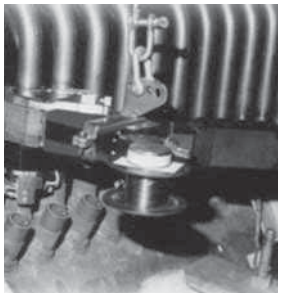
CHARACTERISTICS
- P16 Range ID 10 - 78 mm
- P20 Range ID 10 - 70 mm

OP 46 | 51 | 102 Tube-to-Tube Orbital Weld Heads

Ideal for applications with limited space availability thanks to their slim design.
Also available with arc voltage control and oscillation (AVC/OSC).

Model	Exterior tube ED [mm]	Weld head module Ø [mm]	Max arc Voltage [A]	Electrode dia. Ø [mm]	Wire dia. Ø [mm]	Space req. on tube [mm]	Hub AVC [mm]	Hub OSC [mm]
OP 46	12,7 - 46	85 - 120	200	1,6 - 2,4	0,6 - 0,8	80 - 135		
OP 51	12,7 - 51	104 - 120	200	1,6 - 2,4	0,6 - 0,8	135		
OP 102	50 - 102	190	200	1,6 - 2,4	0,6 - 0,8	135		
OP 51 AVC/OSC	31,8 - 51	138	200	1,6 - 2,4	0,6 - 0,8	170	16	12
OP 102 AVC/OSC	50 - 102	198	200	1,6 - 2,4	0,6 - 0,8	170	22	16

The range of application for each machine is given by different modules. As standard equipment includes only one module.



Heating Equipment

Low Tension Resistance Machines

Thermocontrol R/6 BT 81 dcm Weld Preheating and Stress Relieving

Low tension machines designed for stress relieving heat treatments. Manufactured in a strong stainless spray painted framework, these machines are equipped with wheels to facilitate small movements and eyebolts for their lifting; they are particularly suitable for the use in the factory or on site. The functioning is completely automatic. These machine are divided into two types: “BT series” with a tension completely variable between 0 - 90V according to heating elements tension;

PROCESSES

- Resistance Heating
  Preheat up to 350°C
  PWHT up to 1050°C

CHARACTERISTICS

- Power 81 KVA
- Input voltage three-phase 400 V
- Resistances voltage 0 - 90 V
- Nr. outputs 6
- Resistance number each output 3
- Max power for each output 13,5 KVA
- Programming and Control
  UMT with PC and GSM Modem or Multiprog.

Low Tension Resistance Machines

Heating elements Weld Preheating and Stress Relieving

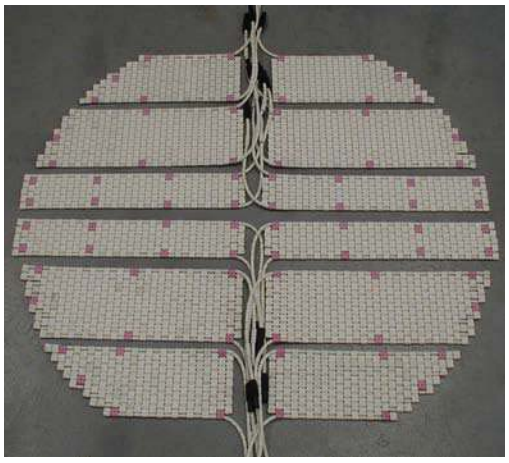
Our heating elements have been particularly designed to carry out pre-heat, post-heat and stress relieving treatment for joint welding operation. The assembly process of heat insulating ceramic beads allows the production of heating elements in a range of various dimensions which differs from those listed and considered standard (MAT - Strip - Snake - Unifilar - fingers).

PROCESSES

- Resistance Heating
  Preheat up to 350°C
  PWHT up to 1050°C

CHARACTERISTICS

- Heat insulation by ceramic beads made of sintered alumina 98%
- Heating wire made of Ni/Cr - 80/20 LITZE
- Max. temperature producible 1050°C
- Max. electric current flux 50A.



Infrared Radiant Panels

IR 2400 Weld Preheating and Stress Relieving

Special highly reflective paraboles concentrate the energy radiated by infrared radiant elements directly on the piece, increasing the system efficiency. Connecting n.7 IR 2400 elements together, you obtain a single radiant panel with a power of 16,8 KW, corresponding to a single machine output (R/6 BT 108 – R/12 BT 216). The special track composition allows to adapt the IR 2400 panels easily to the different profiles of the pieces to heat. The electrical connection among the elements is granted by the track links, reducing the panel connections to only two unipolar cables. The back assembly flasks allow to anchor panels to adjustable support structures, allowing the greatest applicative flexibility. IR 2400 infrared radiant elements allow to heat quickly, without contact, metallic masses in movement. The application fields are the preheat of circumferencial weldings, of shafts, of pipe unions, etc.., the drying of products in productive processes and in fettlings. The very high performance allows to minimize the energy dissipated in the environment in comparison with the alternative systems.

PROCESSES
- Infrared Radiant Heating
  Preheat up to 350°C

CHARACTERISTICS
- Power 2,4 KW
- Tension 90 V at 50 - 60 Hz
- Heating elements n.3 armored resistance for each single panel
- Recomended configuration with n.6 panels power of 14,4 KW
  n.7 panels power of 16,8 KW

Medium Frequency Induction Machines

Pegaso 85 Weld Preheating and Stress Relieving

Medium frequency induction machine for a fast heating of metallic masses. Realized in strong structures powder varnished, the machines are fitted with wheels for small move ments and lifing eyebolts. The interchangeability of the inductors allows to use inductors conformed to each single piece. The machines are provided with water cooling internal circuit.
The calibration is completely automated.

PROCESSES
- Induction Heating
  Preheat up to 350°C
  PWHT up to 800°C

CHARACTERISTICS
- Rated output 85KW at 100% (5-15,5 KHz)
- Max output voltage 750 V
- Max line current 125 A
- Nr. 2 single phase output
- Automatic reconition of AEC inductor
- Automatic power control during the heat cycle
- Automatic heat cycle programmer
- Temperature recorder
- Max performance functioning with automatic coupler of the load to resonance frequency.

Advanced Equipment

Induction Heating

ProHeat™ 35 Weld Preheating and Stress Relieving

The induction power source represents the innovative solutions. Multiple output provides to insulated connectors for air-cooled blankets or liquid cooled cables.
On-board temperature controls allows with both digital recorder and manual based programming, a total control process.
Time to temperature is faster than conventional method.
Benefits compared to flame or resistance heating are:

- Shorter time to temperature
- Shorter set up and removal time
- Safety
- Work environment
- Evenly distributed heating
- No hot parts
- One cable to coil
- Simple to use
- Durable hose, no fragile parts such as ceramic pads
- Portable equipment

PROCESSES

- Induction Heating
  Preheat up to 204°C
  PWHT up to 788°C

CHARACTERISTICS

- Rated output 35KW at 100% (5-30 KHz)
- Voltage supply 400/460 - 460/575 VAC 3 phase
- Power Input @ Rated Output 39 KVA - 37 KW

Engine Driven Generator

Big Blue® 500 CC/CV Multiprocess Welding Equipment

Designed for fleet owners, constructions, contractors and rental companies who want a powerful diesel welder/generator and place a premium on rugged reliability with proven performance.

PROCESSES

- Submerged Arc Welding (SAW)
- Stick (SMAW)
- DC TIG (GTAW)
- MIG (GMAW)
- Flux cored (FCAW)
- Stud welding
- Air Carbon Arc (CAC-A)

CHARACTERISTICS

- Deutz/Perkins engine
- 1 phase Generator Power Peak 5500 W, Continuos 4000 W
  Optional 3 phase 20000 W or 1 phase 12000 W (While not welding)
- Welding output range
  DC SMAW 40 - 600 A
  DC GTAW 20 - 425 A
  DC MIG/FCAW 14 - 40 VDC
  DC SAW 180 - 600 A

Saw Accessories

Miller Tractor MT 1500

A motorized, highly flexible welding tractor designed to produce precision, high-quality, Submerged Arc Welds.

PROCESSES

- Submerged Arc (SAW)
- Recommended Miller Power Supplies
  - Sub Arc DC 800
  - Sub Arc DC 1250
  - Sub Arc AC/DC 1250

PACKAGE INCLUDES

- Tractor
- HDC 1500 DX weld controller
- RAD-400 drive motor
- Flux hopper
- Wire reel
- Torch
- Remote start/stop control
- Tractor guide rolls
- Wire straightener

RAD Wire Drive Assemblies

Miller offers either standard or high-speed 115 V Heavy-duty wire assemblies.

CHARACTERISTICS

- RAD 100
  Low speed, right-angle wire drive assembly
- RAD 400
  Standard speed, right-angle wire drive assembly
- RAD 780
  High speed, right-angle wire drive assembly

Flux Hopper

Automatic flux valve will carry 11.3 kg of flux.
The opening is sized to allow hook-up of any flux-hopper mounted recovery system.
A slag screen is also provided.

DESCRIPTION

- 11.3 Kg capacity
- Power supply 115 V

Compressed Air Flux Feeder

The automatic air compressed flux feeding system is electronically controlled to enable pre-heated flux to be kept at a constant temperature.

CHARACTERISTICS

- Storage capacity from 120 up to 205 litres.
- Working temperature 100° C
- Voltage supply 220 V
- Max Input Power 2800 W
- Max Air Pressure 6 bar

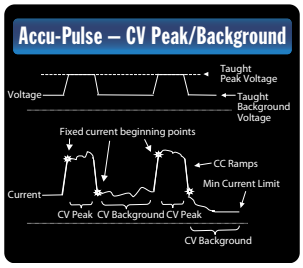
Control Terminology

Accu-Pulse® STANDARD on all Axcess models

The patented Accu-Pulse process allows for precise control of the pulse arc. Accu-Pulse provides optimum molten puddle control and has power to increase wire feed speeds and deposition 20 to 25% in many applications.

Benefits

- Shorter arc lengths possible
- Better puddle control
- More tolerant of contact tip to work variation
- Less audible noise
- No arc wandering in tight corners
- Narrow arc plasma column
- Allows weld to fill in at toes increasing travel speed and deposition
- More tolerant of poor fit up and gaps
- Ideal for seam tracking robot welding applications

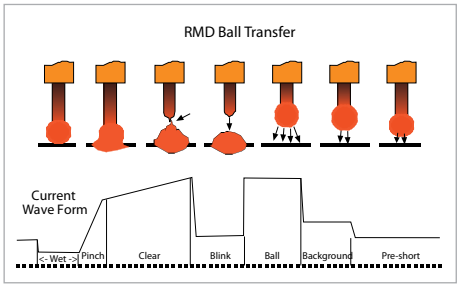


RMD™ (Regulated Metal Deposition)

Precisely controlled short-circuit transfer technology, available on PipeWorx™ Welding System and as an option on Axcess® models. For spatter reduction, up to 20% reduced heat input, or filling gaps. Reduces weld training and improves weld quality.

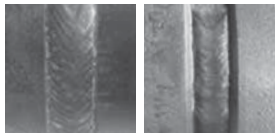
Benefits

- Well suited to thin materials
- Can replace TIG process in some applications
- Gap filling
- Spatter reduction
- Provides less heat into work piece
- Excellent performance on stainless steel
- Can be combined with other Axcess®-related programs
- Minimize distortion
- Use larger diameter wire on thin materials



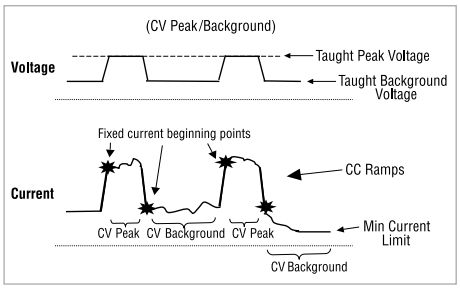
Pro-Pulse™

On the PipeWorx™ Welding System, easier-to-use pulse welding method than conventional pulse for out-of-position pipe welding applications. Offers precise arc and puddle control even in narrow weld joints, providing optimum molten puddle control for out-of-position welding.



Benefits

- Ideally suited to fill and cap pass welding
- Easier puddle control than conventional spray pulse
- Shorter arc lengths and narrow arc cone for out-of-position welding
- More tolerant of tip to work variation
- Improve fusion and fill at toe of weld
- Less heat input reduces interpass cooling time and improves weld cycle time
- Enables one-wire with one-gas weld procedures



Accu-Speed™ OPTIONAL on all Axcess models

Accu-Speed is a variation of the Accu-Pulse process and was developed for the type of arcs needed in automated welding applications. Accu-Speed has a tighter driving arc that can be directed into the joint, yet still remains stable at the higher travel speeds used in automated welding. In general, Accu-Speed has lower average voltage and amperage when compared to Accu-Pulse.

Benefits

- Up to 20% greater travel speed than Accu-Pulse
- Lower average voltage/amperage than Accu-Pulse
- Tight, driving arc
- Remains stable at higher travel speeds

Accu-Curve™ STANDARD on all Axcess models

Accu-Curve is a variation of the Accu-Pulse process. The transitions from peaks to background voltage are "curved". The curved transitions provide a "softer" feel without sacrificing the tight arc lengths that allow for better puddle control that have become the hallmark of the Accu-Pulse process.

Benefits

- "Softer" arc feel than Accu-Pulse
- Maintains tight arc lengths
- Maintains better puddle control

Auto-Line™

Allows for any primary input voltage within a range, single or three-phase, 50 or 60 Hz. Also adjusts for voltage spikes within the entire range.

Auto-Link®

Internal inverter power source circuit that automatically links the power source to the primary voltage being applied (230 V or 460 V), without the need for manually linking primary voltage terminals.

Axcess® File Management

Software that turns a standard Palm™ handheld or PC into a remote pendant control for all Axcess systems. Allows e-mailing, storage, and transfer of welding programs.

Extended AC Balance™ (30–99%)

Controls the amount of oxide cleaning (amperage time in Electrode Negative) on Dynasty® 350 and 700. Essential for high quality aluminum welds.

Fan-On-Demand™

Internal power source cooling system only works when needed, keeping internal components cleaner.

Hot Start™

Used on some Stick (SMAW) machines to make it easier to start difficult-to-start electrodes. Used for arc starting only.

Lift-Arc™

This feature allows TIG arc starting without high frequency. Starts the arc at any amperage without contaminating the weld with tungsten.

Low OCV Stick™

Reduces OCV on several Maxstar® and Dynasty® models when power source is not in use, eliminating need for add-on voltage reducers.

Wind Tunnel Technology™

Internal air flow on many Miller inverters, that protects electrical components and PC boards from contamination, significantly improving reliability.


ALUTIG
ELGATIG
CROMATIG
AUTO
PAC
ELGACORE
ELGA CORE
DRY
PAC
CROMA
CORE
CROMA
MIG
RÖRELEKTROD
RØRTRÅD
YDINTÄYTELANKA
GOPAC

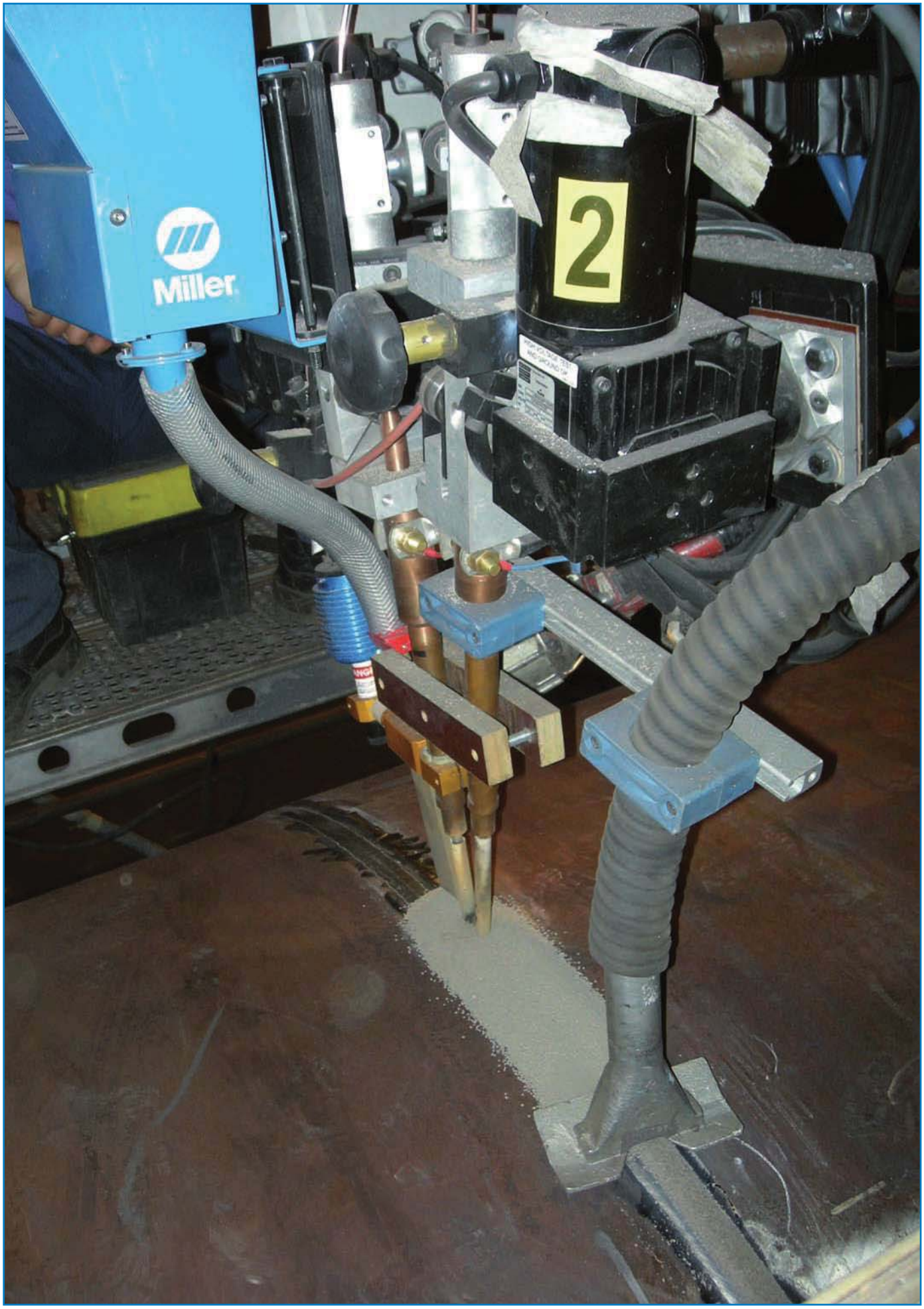
Selection Guide for Welding and Cladding products for specific segments

C-Mn and Low Alloy Stick (SMAW) Electrodes		AWS	PRESSURE VESSELS	HEAVY WALL REACTORS	HEAT EXCHANGERS	STORAGE TANKS	TURBINES	PLANT COLUMNS & TOWERS
C-Mn	**P48M (C-Mn)**	A5.1 E7018 1-H4R	●	●	●	●		●
Low temperature	**P62MR (0,9Ni)**	A5.5 E7018G	●			●		
	P63MR (0,9Ni)	A5.5 E7018-C3L	●			●		
	P65MR (0,8Ni - 0,2Mo)	A5.5 E8018G	●			●		●
	P48K (2.5Ni)	A5.5 E8018-C1	●			●		●
	P58K (3,5Ni)	A5.5 E7018-C2L	●			●	●	
Creep resistent	**P81CR (0,5Mo)**	A5.5 E7018-A1	●			●		
	P83CR (1 ¼ Cr - 0,5Mo)	A5.5 E8018-B2	●	●	●			
	P84CR (2 ¼ Cr - 1Mo)	A5.5 E9018-B3	●	●	●			
Stainless and Ni-base stick (SMAW) Electrodes								
Austenitic	**CROMAROD B308L**	A5.4 E308L-15	●	●	●			●
	CROMAROD 308L	A5.4 E308L-17	●	●	●			●
	CROMAROD B309L	A5.4 E309L-15	●	●	●			●
	CROMAROD 309L	A5.4 E309L-17	●	●	●			
	CROMAROD B309LNb	(A5.4 E309Nb -15)	●	●	●			
	CROMAROD 309MoL	A5.4 E309MoL-17	●	●	●			
	CROMAROD B316L	A5.4 E316L-15	●	●	●			
	CROMAROD 316L	A5.4 E316L-17	●	●	●			●
	CROMAROD B317L	A5.4 E317L-15	●	●	●			●
	CROMAROD 317L	A5.4 E317L-17	●	●	●			●
	CROMAROD B347	A5.4 E347-15	●	●	●			
	CROMAROD 347	A5.4 E347-17	●	●	●			
	CROMAROD 385	A5.4 (E385-17)	●	●	●			
Duplex	**CROMAROD DUPLEX B**	A5.4 E2209-15	●	●	●		●	
	CROMAROD DUPLEX	A5.4 E2209-17	●	●	●		●	
	CROMAROD 2507R	A5.4 E2594-17	●	●	●			
	CROMAROD 2507B	A5.4 E2594-15	●	●	●			
Nickel-base	**CROMAROD 625**	A5.11 ENiCrMo-3	●	●	●	●	●	
	CROMAROD 82	A5.11 (ENiCrFe-3)	●	●	●	●	●	
Submerged Arc C-Mn & Low Alloy Steel Wires								
C-Mn	**ELGASAW 103 Si**	A5.17 EH12K	●		●	●		●
Creep resistent	**ELGASAW 103Mo**	A5.23 EA4	●	●	●			
	ELGASAW EB2R	A5.23 EB2R	●	●	●	●	●	●
	ELGASAW EB3R	A5.23 EB3R	●	●	●	●		●
	ELGASAW EB3V	A5.23 EG	●	●				●
High strength	**ELGASAW 103NiMo¼**	A5.23 EG	●	●		●		●
	ELGASAW 103Ni1Mo	A5.23 EG / EF3	●	●		●		●
Low temperature	**ELGASAW 102Ni1**	A5.23 ENi1	●			●		
	ELGASAW 102Ni2	A5.23 ENi2	●			●		
Submerged Arc Fluxes								
Basic	**ELGAFLUX 285B**	EN 760 SA AB167ACH5	●		●	●		●
High basic low impurity	**ELGAFLUX 400B** (for step cooling application)	EN 760 SA FB155ACH5	●	●	●	●		●
High basic	**ELGAFLUX 500B**	EN 760 SA FB155ACH5	●	●	●	●	●	●

Selection Guide for Welding and Cladding products for specific segments

Submerged Arc Stainless and Ni-base Wires		AWS	PRESSURE VESSELS	HEAVY WALL REACTORS	HEAT EXCHANGERS	SPHERE STORAGE TANKS	TURBINE	PLANT COLUMNS & TOWER
Austenitic	CROMASAW 308L	A5.9 ER308L	●	●	●	●		●
	CROMASAW 316L	A5.9 ER316L	●	●	●	●		●
	CROMASAW 318L	A5.9 ER318L	●	●	●	●		●
	CROMASAW 309L	A5.9 ER309L	●	●	●	●		●
	CROMASAW 347	A5.9 ER347	●	●	●	●		●
	CROMASAW 309MoL	(A5.9 ER309MoL)	●	●	●	●		●
	CROMASAW 309LNb	NA	●	●	●			
	CROMASAW 317	A5.9 ER317L	●	●	●			
Duplex	CROMASAW Duplex	A5.9 ER2209	●	●	●	●		●
	CROMASAW 2507	A5.9 ER2594	●	●	●			
Nickel-base	CROMASAW 82	A5.14 ERNiCr-3	●	●	●			●
	CROMASAW 625	A5.14 ERNiCrMo-3	●	●	●	●		●
Submerged Arc Stainless and Ni-base Fluxes								
Basic: SS and Ni-base	CROMAFLUX 380	EN 760-SF CS2DCH5	●	●	●	●	●	●
High Basic: SS	CROMAFLUX 300B	EN 760-SA FB2DC	●	●	●	●		●
Gas-Shielded Flux-Cored Wires (FCAW)								
Austenitic	CROMACORE DW 308L	A5.22 E308LT0-4/1	●	●	●	●		●
	CROMACORE DW 309L	A5.22 E309LT0-4/1	●	●	●	●		●
	CROMACORE DW 309LNB	A5.22 E309LCbT1-4/1	●	●	●	●		●
	CROMACORE DW 316L	A5.22 E316LT0-4/1	●	●	●			
	CROMACORE DW 317L	A5.22 E317LT0-4/1	●	●	●			
	CROMACORE DW 309MoL	A5.22 E309LMoT0-4/1	●	●	●			
	CROMACORE DW 347	A5.22 E347T0-4/1	●	●	●			
	CROMACORE DW 347-H	A5.22 E347T1-4/1	●	●	●			
Duplex	CROMACORE DW 329A duplex	A5.22 E2209T0-4/1	●	●	●			
	CROMACORE 2507	A5.22 E2594T1-4/1	●	●	●			
Nickel-base	CROMACORE DWN 625M	A5.34 ENiCrMo3T0-4	●	●	●	●		
	CROMACORE 625	A5.34 ENiCrMo3T1-4	●	●	●	●		
Stainless and Ni-base Strips								
Austenitic	CROMASTRIP 308L	A5.9 EQ308L	●	●	●			
	CROMASTRIP 309L	A5.9 EQ309L	●	●	●			
	CROMASTRIP 21.11L	A5.9 (EQ309L)	●	●	●	●		●
	CROMASTRIP 309LNB	A5.9 (EQ309LNb)	●	●	●			
	CROMASTRIP 21.11LNb	A5.9 (EQ347L)	●	●	●			
	CROMASTRIP 316L	A5.9 EQ316L	●	●	●			
	CROMASTRIP 317L	A5.9 EQ317L	●	●	●			
	CROMASTRIP 21.13.3L	A5.9 (309LMo)	●	●	●			
	CROMASTRIP 347L	A5.9 EQ347L	●	●	●			
Nickel-base	CROMASTRIP 625	A5.14 EQNiCrMo3	●	●	●			
	CROMASTRIP 82	A5.14 EQNiCr3	●	●	●			
Electroslag Strip Cladding Fluxes								
SS High speed	CROMAFLUX 450 ESC	EN 760-SA FB2DC	●	●	●			●
SS Std speed	CROMAFLUX 480 ESC	EN 760-SA FB2DC	●	●	●			●
Nickel-base	CROMAFLUX 650 ESC	EN 760-SA FB2DC	●	●	●			●


SICES


Miller
2

Submerged Arc Torches System

OBT 600

600 Amp, 100% duty cycle torch with concentric flux flow nozzle.

PROCESS
- Submerged Arc Welding (SAW)
- Wire diameter 1.6 - 5.5 mm

OBT 1200

1200 Amp, 100% duty cycle torch with concentric flux flow nozzle.

PROCESS
- Submerged Arc Welding (SAW)
- Wire diameter 1.6 - 5.5 mm

TWA-1

1200 Amp, 100% duty cycle twin torch with concentric flux flow nozzle.

PROCESS
- Submerged Arc Welding (SAW twin)
- Wire diameter 1.2 - 2.4 mm x 2

Single Wire Narrow Gap Torch

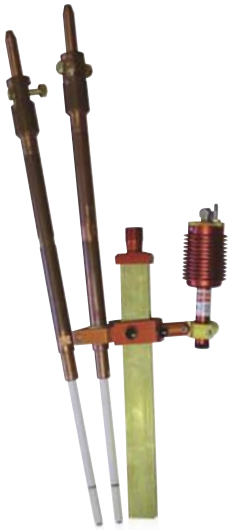
800 Amp, 100% duty cycle torch for narrow gap.

PROCESS
- Submerged Arc Welding (SAW)
- Wire diameter 2.4 - 4.0 mm
- For depth 50 - 350 mm
- Insulation type Veflon up to 200° C
- Insulation type Ceramic up to 350° C

Tandem Wire Narrow Gap Torch

800 Amp, 100% duty cycle torch for narrow gap.

PROCESS
- Submerged Arc Welding (SAW tandem)
- Wire diameter 2.4 - 4.0 mm
- For depth 50-350 mm
- Insulation type Veflon up to 200° C
- Insulation type Ceramic up to 350° C



Single Wire Narrow Gap Flat Torch

800 Amp, 100% duty cycle torch for narrow gap.

PROCESS
- Submerged Arc Welding (SAW)
- Wire diameter 2.4 - 3.2 mm
- For depth 100 - 250 mm
- Insulation type Ceramic up to 350° C

Introduction

The Cladding processes

Weld overlay using Stainless Steel and Nickel-base strips and fluxes for both internal and external surfaces is a widely accepted technique in the manufacture of process equipment. These cladding materials are designed to withstand the various corrosive media and high temperatures deriving from the service conditions.
Strip cladding is used with both the Submerged Arc (SAW) and the Electroslag (ESW) processes.
Excellent results are achieved by way of strong mechanical bonding, weld deposit chemistry and fast deposition rates, leading to greater productivity.
The ESW process enables single layer welding, further enhancing productivity.

Submerged Arc Welding process (SAW)

Standard SAW equipment can be simply adapted to enable the conversion from solid wire to strip. The requirement is for an adaptor plate to be fitted and the appropriate strip cladding head attached. The choice of power source depends on the process and need to produce sufficiently high welding current to suit the thickness of the material and the size of strip to be used.

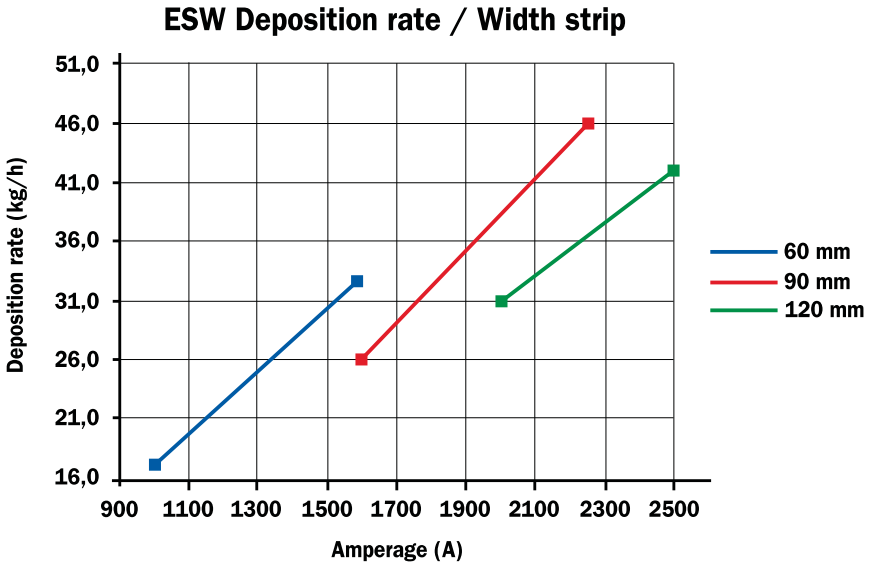
Electro Slag Welding process (ESW)

Due to the high current density of the ESW process, high capacity welding power sources are required for strip cladding. The choice of welding power source depends on the size of strip used, and needs to offer stable characteristics and precise adjustment to suit the welding application.
To meet the required power for ESW cladding, it is often necessary to connect two or more welding power sources together. This can be achieved by linking the machines using the appropriate parallel control kit.
Additional equipment such as a magnetic steering device, used with wider strips to ensure consistent weld bead formation, can also be attached to the cladding head.

Key benefits of the ESW strip cladding process

The key benefits of using the ESW strip cladding technique compared to the SAW process are that the deposition rates are much higher and the dilution with the base material is lower.
ESW results from the ohmic resistance heating effect in a liquid electro-conductive slag. No electric arc is produced and the strip melts from contact with the hot molten slag bath. Flux feeding is from one side only, unlike the SAW process where the flux is fed onto both sides of the arc.

- **Deposition rate up to 70% faster.**
- **Dilution very low, 10-13%. Almost 50% lower than the SAW process.**
- **Increased travel speed with selected fluxes.**
- **Weld deposit chemistry obtainable in one layer with selected strips and fluxes.**
- **Flux consumption significantly reduced.**
- **No electric arc, open weld pool.**
- **Very flat weld deposit, smooth tie-in and clean uniform surface.**



HDC 1500 DX Control Unit Automatic Weld Control

Automatic digital weld controllers offer reliability, flexibility, and performance with their ability to interface with AC or DC, CC/CV power sources having remote contactor and output control capabilities.

CC CV
CV
AC DC

PROCESSES
- Submerged Arc Welding (SAW)
- Electroslag (ESW)
- GMAW Spray
  (with customer-supplied solenoid)

CHARACTERISTICS
- Supply Single phase 115 VAC - 10 A
- Welding power source CV, AC or DC
- Set up/Menu
  - Flux Valve Control
  - Burn-back/Crater Time
  - Wire Feeder Speed Control
  - Ampere/Voltage/WFS Range look
  - # 12 programs
  - Arc Time and Arc Cycles
  - Preflow/Postflow
  - Start time/Run-in

Sub Arc DC 1250 Submerged Arc Welding Power Source

Three-phased, CC/CV DC power sources are designed to provide a superior arc for the SAW/ESW welding process as well as air carbon arc gouging plus the endurance to handle demanding industrial applications.

CC CV
DC
3 Phase

PROCESSES
- Submerged Arc Welding (SAW/ESW)
- Flux Cored (FCAW)
- Stick (SMAW)
- MIG (GMAW)
- Air Carbon Arc (CAC-A)
  Cutting and Gouging

CHARACTERISTICS
- CC/CV
- DC
- Three-Phase
- Amperage 100 - 1250 A
- Voltage 10 - 60V
- Rated Output 1000 A at 44 VDC (100% duty cycle)
- Voltage Supply 380 - 400 - 440 VAC
- Power Input @ Rated Output 73 KVA-53 KW

Sub Arc AC/DC 1250 Submerged Arc Welding Power Source

Three-phase squarewave AC/DC machine with phase-shifting capability with steps to refine arc. AC square wave provides excellent quality of penetration/bead profile and high performance in deposition rate with low heat input (increase mechanical properties and reduce distorsions).

CC CV
DC
3 Phase

PROCESSES
- Submerged Arc Welding (SAW/ESW)
- MIG (GMAW)
- Air Carbon Arc (CAC-A)
  Cutting and Gouging

New!

CHARACTERISTICS
- CC/CV
- DC/AC Variable Squarewave
- 81 balance ratios
- Three-Phase
- Frequencies 10 to 90HZ
- Amperage 250 - 1250 A
- Voltage 25 - 44 (71 OCV)
- Rated Output 1000 A at 44 VDC (100% duty cycle)
- Voltage Supply 380 - 400 - 415 VAC
- Power Input @ Rated Output 98 KVA-53 KW

Cladding Heads

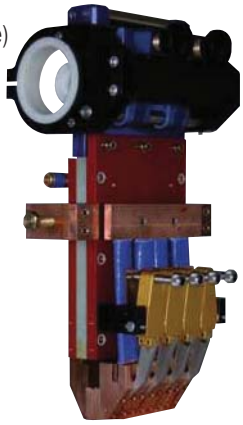
For Standard Application

It is recommended that all cladding SAW/ESW heads are used in conjunction with the Miller RAD 100/400 drive motor.

TNA 120

CHARACTERISTICS

Max current 3600 A (100% duty cycle)
Dimension 230 x 230 x 470 mm
Weight 22 Kg
Water cooled
Strip width 60 - 90 - 120 mm



TNA 90

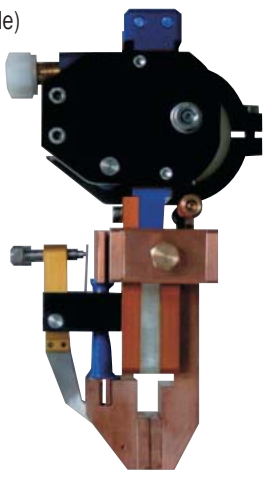
CHARACTERISTICS

Max current 3000 A (100% duty cycle)
Dimension 220 x 230 x 400 mm
Weight 18 Kg
Water cooled
Strip width 30 – 60 - 90 mm

TNA 60

CHARACTERISTICS

Max current 2100 A (100% duty cycle)
Dimension 200 x 230 x 360 mm
Weight 12 Kg
Water cooled
Strip width 30 – 60 mm



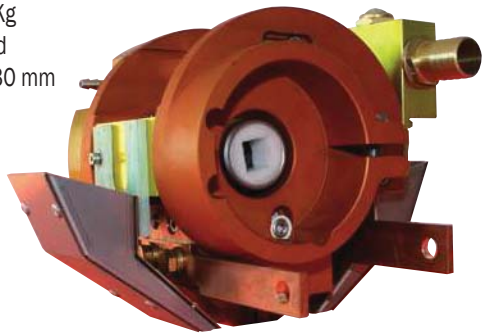
For Nozzle and Pipe Application

The following head is designed for SAW/ESW both Circunferential and Longitudinal Cladding.

TNA 30

CHARACTERISTICS

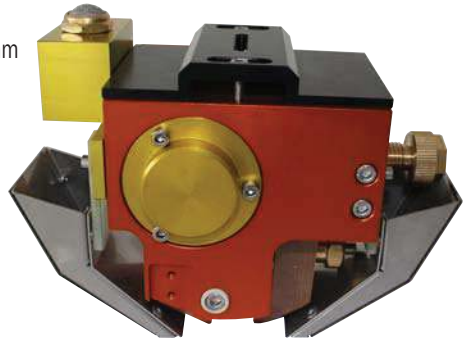
Minimum inside diameter pipe clad 310 mm - 12”
Max current 1000 A (100% duty cycle)
Dimension 230 x 160 x 224 mm
Weight 6.2 Kg
Water cooled
Strip width 30 mm



TNA 10

CHARACTERISTICS

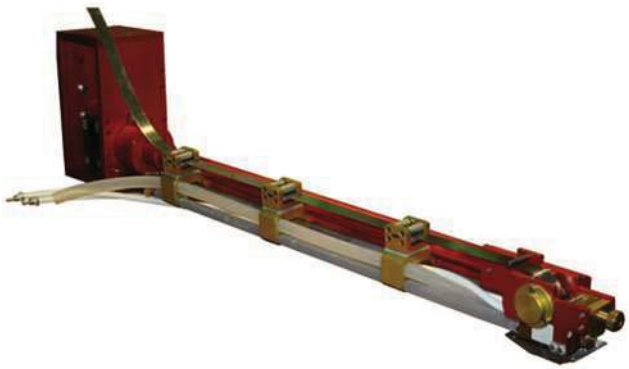
Minimum inside diameter pipe clad 260 mm - 10”
Max current 850 A (100% duty cycle)
Dimension 200 x 160 x 200 mm
Weight 6.0 Kg
Water cooled
Strip width 30 mm



TNA 8

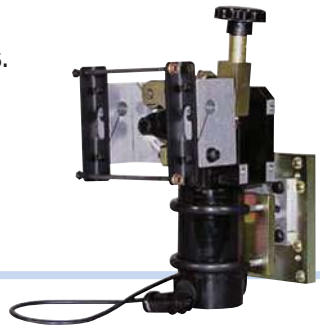
CHARACTERISTICS

Minimum inside diameter pipe clad 203 mm - 8”
Max current 750 A (100% duty cycle)
Dimension 125 x 160 x 134 mm
Weight 5.5 Kg
Water cooled
Strip width 30 mm



Wire Drive Assemblies

Miller offers either standard or high-speed 115 V Heavy-duty wire assemblies.



CHARACTERISTICS

- RAD 100
  - Low speed, right-angle wire drive assembly
- RAD 400
  - Standard speed, right-angle wire drive assembly

Magnetic Steering Device

BLC-10A / BLC-6A

The magnetic steering device is intended for use with the ESW process. When used with stainless steel and nickel-base strip and fluxes, it ensures that the cladding process achieves uniformity, in terms of level and uniform weld bead edge formation. Additionally it controls the weld bead ripple formation which maintains the consistency of both bond integrity and appearance.

CHARACTERISTICS

Weight 15 kg
Dimension 530 x 280 x 400 mm
Power 220V /110V 50 - 60 Hz
Solenoid 6 A 12 VDC (blue) / strip 60 mm. A 24 VDC (red) / strip 90-120 mm.

Parallel Control

Allows easy connection of two or more Miller Welding power sources.
This is the perfect solution for increased amperage applications.

Strip De-Reeler

Strip spool holder from 150 to 1.000 Kg. with adjustable inner diameter.

Compressed Air Flux Feeder

The automatic air compressed flux feeding system is electronically controlled to enable pre-heated flux to be kept at a constant temperature.

CHARACTERISTICS

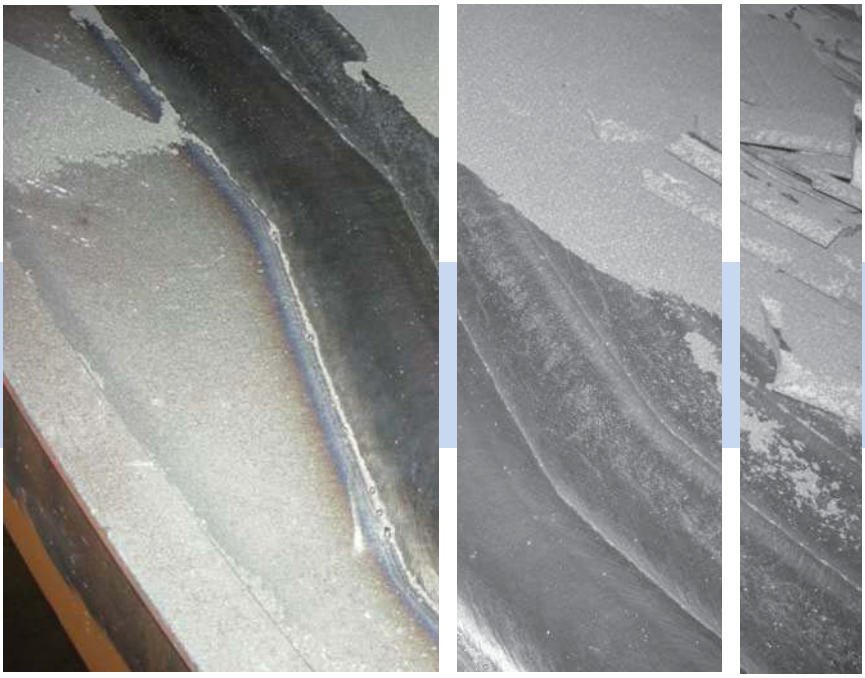
- Storage capacity from 120 up to 205 litres.
- Working temperature 100° C
- Voltage supply 220 V
- Max Input Power 2800 W
- Max Air Pressure 6 bar

Selection Guide Flux-Strip Combination

STRIP	AWS	EN 14343-B	EN 14343-A	EN 18274	TYPICAL STRIP COMPOSITION
CROMASTRIP 308L	A5.9 EQ308L	BS 308L	B 19.9L	-	C 0.015 - Cr 20,5 - Ni 10
CROMASTRIP 309L	A5.9 EQ309L	BS 309L	B 23.12L	-	C 0.015 - Cr 24,0 - Ni 13
CROMASTRIP 21.11L	(A5.9 EQ309L)		B 22.11L	-	C 0.015 - Cr 21,0 - Ni 11
CROMASTRIP 316L	A5.9 EQ316L	BS 316L	B 19.12.3	-	C 0.015 - Cr 19 - Ni 12.5 - Mo 2.8
CROMASTRIP 317L	A5.9 EQ317L	BS 317L	B 19.13.4L	-	C 0.015 - Cr 19 - Ni 13.5 - Mo 3.5
CROMASTRIP 347L	A5.9 EQ347	BS 347	B 19.9Nb	-	C 0.015 - Cr 20 - Ni 10 - Nb 0.8
CROMASTRIP 309LNb	(A5.9 EQ309LNb)	BS 309LNb	B 23.12LNb	-	C 0.015 - Cr 24 - Ni 13 - Nb 0.8
CROMASTRIP 21.11LNb	(A5.9 EQ347L)		B 22.12LNb	-	C 0.015 - Cr 21 - Ni 11 - Nb 0.6
CROMASTRIP 21.13.3L	(A5.9 EQ309LMo)	BS (309LMo)	B 21.13.3L	-	C 0.015 - Cr 21 - Ni 13.5 - Mo 2.8
CROMASTRIP 82	A5.14 EQNiCr3			BNi 6082 (NiCr20Mn3Nb)	C 0.015 - Cr 20 - Ni bal. - Nb 2.5 - Mn 3 - Fe 1
CROMASTRIP 625	A5.14 EQNiCrMo3			BNi 6082 (NiCr22Mo9Nb)	C 0.015 - Cr 22 - Ni bal. - Mo 9 - Nb 3.5 - Fe 0.4

FLUX	EN	DESCRIPTION
CROMAFLUX 450 ESC	760 SA FB 2 DC	Fluoride - Basic ESW flux for stainless steel strips at high travel speed
CROMAFLUX 480 ESC	760 SA FB 2 DC	Fluoride - Basic ESW flux for stainless steel strips at standard travel speed
CROMAFLUX 650 ESC	760 SA FB 2 DC	Fluoride - Basic ESW flux for nickel-base strips at standard travel speed

DEPOSIT CHEMISTRY	PROCESS	N° OF LAYERS	FLUX	STRIP	STRIP	
				Layer 1	Layer 2	A
308 L	SAW	2	saw flux	**CROMASTRIP 309L**	**CROMASTRIP 308L**	750
	SAW	1	saw flux alloyed	**CROMASTRIP 309L**	-	730
	ESW	1	**CROMAFLUX 480 ESC**	**CROMASTRIP 21.11L**	-	1250
	ESW	1	**CROMAFLUX 450 ESC**	**CROMASTRIP 309L**	-	1450
	ESW	2	**CROMAFLUX 450 ESC**	**CROMASTRIP 309L**	**CROMASTRIP 308L**	1450
316 L	SAW	2	saw flux	**CROMASTRIP 309L**	**CROMASTRIP 316L**	750
	SAW	2	saw flux alloyed	**CROMASTRIP 21.13.3L**	**CROMASTRIP 316L**	800
	ESW	1	**CROMAFLUX 480 ESC**	**CROMASTRIP 21.13.3L**	-	1250
	ESW	2	**CROMAFLUX 450 ESC**	**CROMASTRIP 309L**	**CROMASTRIP 316L**	1350
317 L	ESW	2	**CROMAFLUX 480 ESC**	**CROMASTRIP 21.13.3L**	**CROMASTRIP 317L**	1300
347	SAW	2	saw flux	**CROMASTRIP 309L**	**CROMASTRIP 347L**	750
	SAW	1	saw flux alloyed	**CROMASTRIP 309LNb**	-	750
	ESW	1	**CROMAFLUX 480 ESC**	**CROMASTRIP 21.11LNb**	-	1250
	ESW	2	**CROMAFLUX 480 ESC**	**CROMASTRIP 21.11LNb**	**CROMASTRIP 347L**	1250
	ESW	1	**CROMAFLUX 450 ESC**	**CROMASTRIP 309LNb**	-	1450
	ESW	1	**CROMAFLUX 450 ESC**	**CROMASTRIP 309LNb**	-	2450
Alloy 82	SAW	2	saw flux	**CROMASTRIP 82**	**CROMASTRIP 82**	750
	ESW	2	**CROMAFLUX 650 ESC**	**CROMASTRIP 82**	**CROMASTRIP 82**	1250
Alloy 625	SAW	2	saw flux	**CROMASTRIP 625**	**CROMASTRIP 625**	750
	ESW	2	**CROMAFLUX 650 ESC**	**CROMASTRIP 625**	**CROMASTRIP 625**	1200
	ESW	1	**CROMAFLUX 650 ESC**	**CROMASTRIP 625**	-	1350

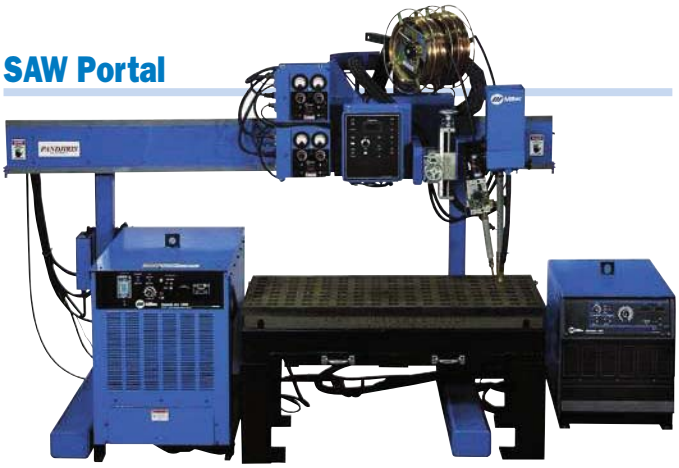


ESW Cladding
CROMAFLUX 450 ESC + CROMASTRIP 309 LNb 90x0.5 mm

WELDING PARAMETERS			TYPICAL CHEMICAL COMPOSITION										BASE MATERIAL
V	mm/min	Strip size mm	C	Mn	Si	Cr	Ni	Mo	Nb+Ta	Fe	Other	FN	
28	120	60x0,5	0,02	1,5	0,6	19	11					6	CMn
30	130	60x0,5	0,04	1,5	0,8	18,5	10					4	CMn
25	180	60x0,5	0,03	1,2	0,4	19	10					5	CMn
25	280	60x0,5	0,03	1,3	0,5	21	11					6	CMn
25	320	60x0,5	0,02	1,2	0,5	19,5	10					10	CMn
28	130	60x0,5	0,02	1,3	0,6	18	13	2,5				6	CMn
28	120	60x0,5	0,02	1,4	0,5	19	11	2,6				7	CMn
25	210	60x0,5	0,03	1,3	0,4	18,5	11	2,5				6	CMn
26	260	60x0,5	0,02	1,3	0,4	19	12	2,6				8	CMn
25	180	60x0,5	0,02	1,1	0,6	18,5	13	3,2				8	CMn
28	130	60x0,5	0,03	1,1	0,7	19	10		0,4			8	2,25Cr1Mo
28	120	60x0,5	0,035	1,1	0,6	19	10		0,5			5	2,25Cr1Mo
25	180	60x0,5	0,03	1,2	0,5	18,5	10		0,5			6	2,25Cr1Mo
25	210	60x0,5	0,02	1,3	0,5	20	11		0,4			8	2,25Cr1Mo
25	310	60x0,5	0,035	1,5	0,5	19	10		0,5			6	2,25Cr1Mo
25	310	90x0,5	0,035	1,7	0,4	19,5	10		0,5			8	2,25Cr1Mo
28	120	60x0,5	0,02	3,5	0,5	20	Balance		2,5	3			CMn
25	210	60x0,5	0,02	3	0,5	20	Balance		2,2	3,5			CMn
28	120	60x0,5	0,01	1,1	0,2	21	Balance	8	2,8	4			CMn
25	300	60x0,5	0,01	1,1	0,2	21,5	Balance	9	3,2	4			CMn
25	230	60x0,5	0,03	1,1	0,5	21	Balance	9	2,8	9			CMn

Fully Automated Solutions

ESW Cladding System

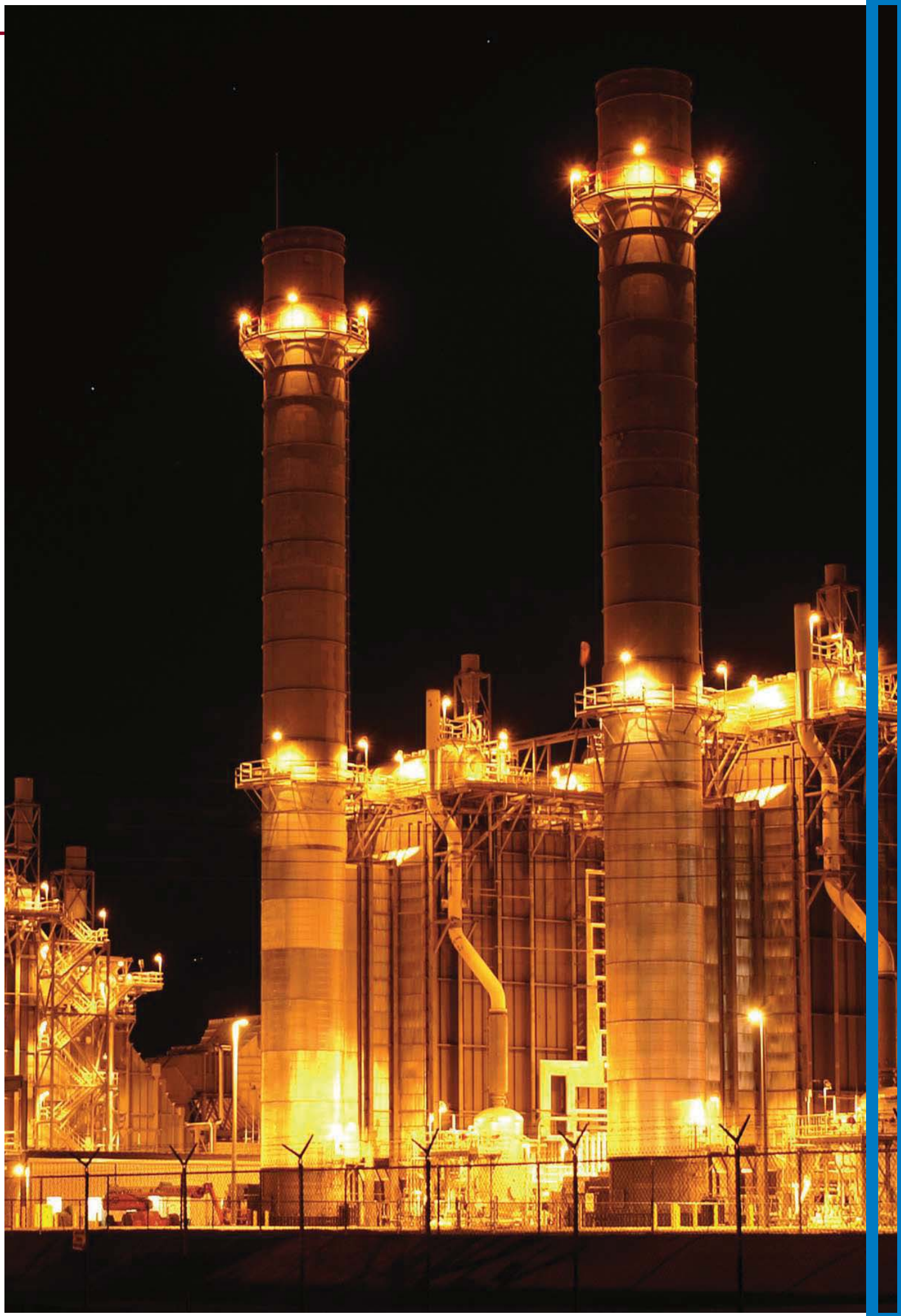


SAW Portal

SAW with Mobile Power

SAW Column and Boom

SAW Triple Arc



Center of Competence - ITW Welding Italy
Via Privata Iseo, 6/E - 20098 San Giuliano Milanese - Milano - (Italy) - phone +39 02 982901

ITW Welding Products BV
Edisonstraat, 10 - 3261 LD Oud-Beijerland - (Netherlands) - phone +31 186641444

ITW Welding France
ZAC de la Bonne Rencontre, 2, Voie Gallo Romaine - 77860 Quincy Voisin - (France) - phone +33 160041166

ITW Welding Products U.A.E.
Dubai Airport Free Zone - (United Arab Emirates) - phone +97 14 2996621 - e-mail: contact@itw-me.ae

ITW Welding Products Russia
Neverovskogo str., 9 - 121170 Moscow - (Russia) - phone +7 4952325329

ITW Welding Products Spain
Cno Viejo de Alboraya, 11 - Bajo - 46020 Valencia - (Espana) - phone +34 963935398

ITW Welding Products Turkey
Abdi Ipekci Cad. No: 129 Kat: 1 - 34150 Istanbul - (Turkey) - phone +90 5325494622

Elga AB
Jarntradsvagen 2 Box 277 S-433 25 Partille - (Sweden) - phone +46 317264600

Orbitalum Tools
Josef-schuttler - Str. 17 - D 78224 Singen - (Germany) - phone +49 7731792-0

ITW Welding Torches Europe D-Tech GmbH
Im Scholp 1, D - 47559 Kranenburg - (Germany) - phone +49 28268011215

AEC Technology
Via Leonardo da Vinci, 17 - 26013 Campagnola Cremasca - CR - (Italy) - phone +39 0373 752111

Miller Electric Manufacturing Co.
1635 W. Spencer St. - P.O. Box 1079 - Appleton, WI 54912-1079 - (USA) - phone +1 920 734 9821

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