APPLICATION

INDUSTRY SPECIFIC SOLUTIONS

Flue Gas Desulfurization (FGD) Fabrication

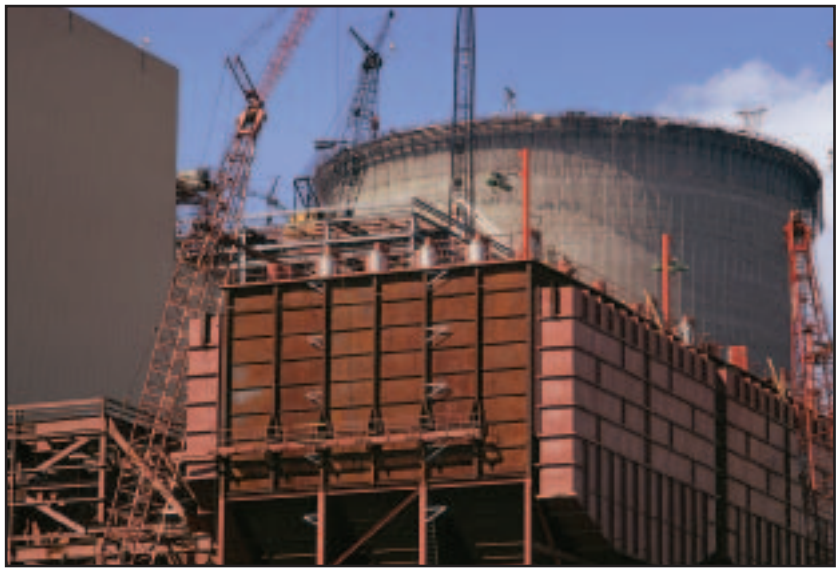
Waveform Development, Equipment and Consumables

The installation of air pollution control equipment in the power generation industry, required by government environmental regulatory agencies, permits the use of higher sulfur bearing coal. The primary purpose of the air pollution control systems, also referred to as flue-gas-desulferization (FGD) equipment, is to remove sulfur compounds that form during combustion before they enter the atmosphere.

The absorber tower used to contain and remove the sulfur from the plume, offer excellent corrosion resistance to the higher concentrations of acids that form during the plume processing. The base materials employed in these acidic environments include 2205, Ferallium 255, and several of the common chrome bearing nickel alloy base materials (625, C276, C22, and others).

Waveform Control Technology™ from the Lincoln Electric Company is suited to meet the demands of these code quality installations.

Special GMAW pulsed spray metal transfer welding programs are available for use with Lincoln consumables and recommended shielding gas blends designed to meet quality and productivity expectations.



advantages

COMPLETE PROCESS SOLUTION

Waveform Control Technology™

- Industry proven welding solutions provide superior finished weld quality
- Welding waveforms optimized for each filler alloy and shielding gas blend*

Equipment Solutions

- A variety of stationary, highly portable and lightweight power sources and wire drives
- Features secure welding procedure controls
- Rugged and reliable performance

Consumable Solutions

- Premium arc performance
- Convenient packaging
- Controlled chemistries ensure high quality weld deposits with expected mechanical properties and corrosion resistance

Technical Expertise

- Technical field support through our representatives and application engineering

*Patented. This product is protected by one or more of the following United States patents: 6,809,292; 6,795,778; 6,700,097; 6,697,701; 6,683,278; 6,660,966; 6,600,134; 6,683,278; 6,596,570; 6,570,130; 6,536,660; 6,489,952; 6,472,634; 6,636,776; 6,486,439; 6,441,342; 6,365,874; 6,291,798; 6,207,929; 6,111,216; 4,927,041; 4,861,965 and other pending U.S. patents. Similar patents are maintained in other countries.

Flue Gas Desulfurization (FGD) Fabrication

Waveform Control Technology™

Pulse Spray Transfer (GMAW-P): Heavier Fabrication

A wide array of pulsed spray transfer welding programs, designed for typical nickel filler diameters, types and shielding gas combinations are available for selection.

The use of pulse spray metal transfer is typical in lighter weight power sources. These power sources are capable of non-synergic/non-adaptive or synergic/adaptive arc operation and because of the excellent performance, the Power Wave®/Power Feed® welding systems are best suited.

Advantages of pulsed spray transfer mode:

- Lower weld spatter levels
- Lower fume generation
- Lower hydrogen weld deposit
- Excellent weld fusion
- Employable for a wider range of material thicknesses
- Out of position welding capable
- Synergic control - easy to use
- Available in a systems approach configuration that is highly portable and usable indoors or outdoors. They are employable with smaller, lighter and more portable wire feeders.

GMAW-P Test Macro on 263 base alloy

Side Bend of LNM 60/20 on Ferralium 255 base alloy

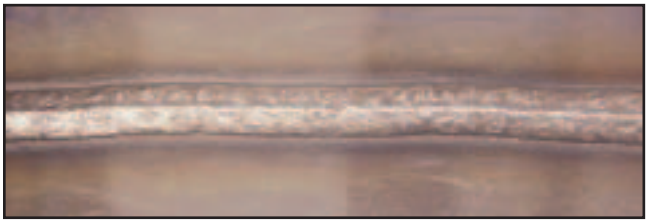
Surface Tension Transfer® (STT)®: Thinner Nickel Alloy Sheet Fabrication

STT provides the ability to significantly reduce or eliminate spatter associated with traditional GMAW-S. It has a history of use in wallpapering and chimney liner fabrication. As a unique mode of GMAW-S metal transfer, STT provides independent control of the welding output of the power source and its related arc dynamics: Background, Peak and Tail out current. This permits more accurate control of the arc energy needed to ensure good fusion.

Because of the waveform component control features of STT, spatter is controllable or virtually non-existent, and weld penetration requirements are easily met.

Advantages of STT:

- Lower or absent weld spatter and therefore less post weld clean-up
- The ability to adjust energy levels to meet finished weld performance requirements
- Eliminates incomplete fusion defects (cold lap, cold casting and lack of fusion)
- Compared to other modes of metal transfer, STT will result in the use of smaller welds requiring less filler material.
- The STT mode of metal transfer lends itself for use in “wallpapering” or root pass work on thicker sections of alloy base material.



Flue Gas Desulfurization (FGD) Fabrication

Consumable Technology

Base Material	UNS	Filler Metal AWS	Lincoln Electric Product Name
2205	S31803	ER2209	Blue Max LNM 4462
		E2209	Blue Max Arosta 4462 or Blue Max Jungo 4462
A 255	S32550	ERNiCrMo-3	Blue Max LNM NiCro 60/20 or Blue Max LNT NiCro 60/20
		ENiCrMo-3	Blue Max NiCro 60/20
		NA	Blue Max LNM Zeron 100X
		NA	Blue Max Jungo Zeron 100X
625	N06625	ERNiCrMo-3	Blue Max LNM NiCro 60/20 or Blue Max LNT NiCro 60/20
		ENiCrMo-3	Blue Max NiCro 60/20
C 276	N10276	ERNiCrMo-4	Contact Your Local Lincoln District Office
622	N06022	ERNiCrMo-10	Contact Your Local Lincoln District Office
Dissimilar Metals		ERNiCr-3	Blue Max LNM NiCro 70/19 or Blue Max LNT NiCro 70/19
		***ENiCrFe-2	Blue Max NiCro 70/19

*** Nearest Classification

Plastic Spools

Easy Open Cans

Sahara ReadyPak

Lincoln Electric's extensive line of stainless steel and high alloy products are available in a variety of packaging options.

Important Safety Note: OSHA recently announced a ten-fold reduction in the Permissible Exposure Limit (PEL) for Chromium VII to .005 mglm^3.
Work practice controls, engineering controls (such as special ventilation and exhaust) and possibly, respirators may be required.
See http://www.lincolnelectric.com/community/safety for further information

Flue Gas Desulfurization (FGD) Fabrication

Lincoln Equipment Solutions

Power Wave® / Power Feed® Systems

There are two power source/wire drive solutions that serve to meet the needs of the nickel and duplex alloy fabricator. Each features ArcLink digital communications:

For Field Erection

- Power Wave 355M and Power Feed 25M

Power Wave 355M

Power Feed 25M

For Shop Fabrication

- Power Wave 355M, Power Wave 455M or Power Wave 455M/STT and Power Feed 10M

Power Wave 355M

Power Wave 455M
Power Wave 455M/STT

Power Feed 10M

Customer Assistance Policy

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customer and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirement.

Subject to change - This information is accurate to the best of our knowledge at the time of printing. Please refer to **www.lincolnelectric.com** for any updated information.

WHAT IS NEXTWELD?

The challenges facing industrial fabricators today are growing in number and complexity. Rising labor, material, and energy costs, intense domestic and global competition, a dwindling pool of skilled workers, more stringent and specific quality demands all contribute to a more difficult environment today.

LINCOLN® ELECTRIC

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1.216.481.8100