

***SPECIAL ALLOYS™***

EXPECT

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FROM





CONSUMABLES FOR  
HIGH-END APPLICATIONS

The new brand SPECIAL ALLOYS™ is part of our ongoing commitment in providing total welding solutions

LINCOLN ELECTRIC and METRODE have joined their forces and unified their metallurgy know-how and product range. SPECIAL ALLOYS™ is our new product brand for special consumables and solutions.

**WE NOW OFFER MUCH MORE THAN BEFORE:** A larger product portfolio, more machine & application know-how, testing results and data. This will offer increased efficiency and improved service to our customers.

WE OFFER A GLOBAL SUPPORT TO THE HIGHEST DEMANDING INDUSTRIES

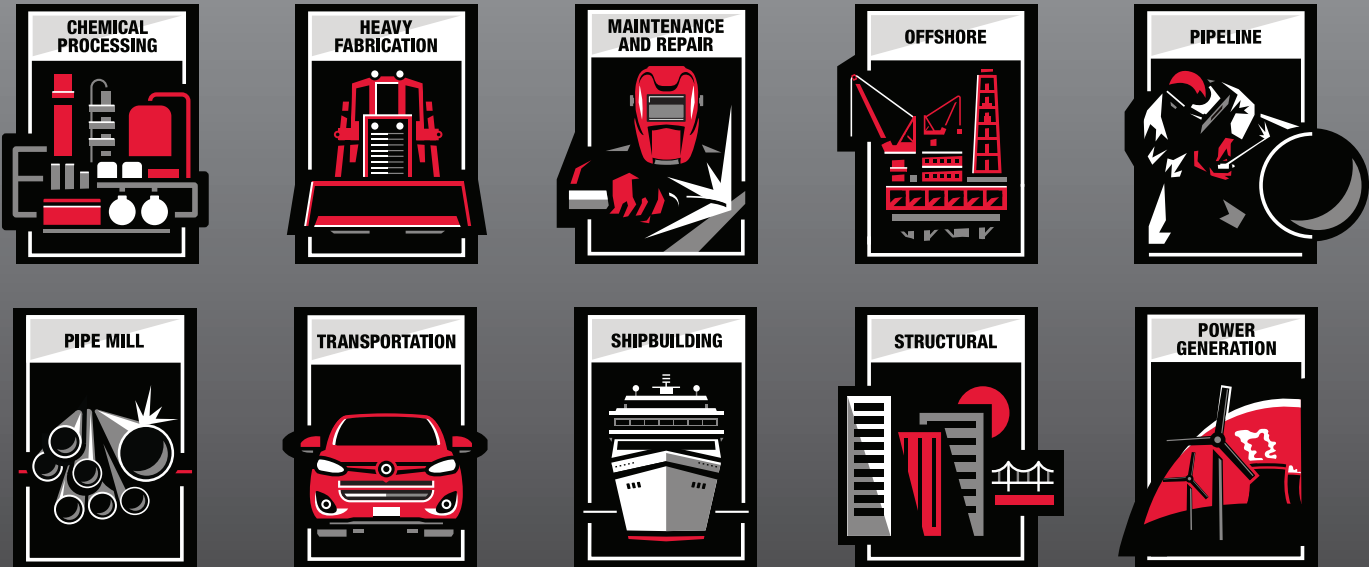


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SPECIAL ALLOYS™

APPLICATION  
SUPPORT

AUTOMATION

TOTAL  
SOLUTION

CUTTING

BRAZING &  
SOLDERING

WELDING  
EQUIPMENT

ACCESSORIES

WELDING  
CONSUMABLES



BEING PRESENT LOCALLY  
MAKES US MORE AWARE GLOBALLY

SPECIAL ALLOYS™

120  
YEARS OF EXPERIENCE



NUMBER ONE  
IN WELDING

160 ACTIVE IN 160  
COUNTRIES  
WORLDWIDE

325  
R&D ENGINEERS  
WORLDWIDE

42  
SOLUTION  
CENTERS

11 000  
EMPLOYEES WORLDWIDE



2.7  
BILLION USD REVENUE

LOCATIONS

- Global Headquarters
- Solution Centers



# ADVANCED SOLUTIONS FOR SUBMERGED ARC WELDING

High performing consumables in combination with unique equipment capabilities can move your submerged arc welding solution to the next level.

MORE

# FULL SOLUTION PROVIDER

- SPECIAL CONSUMABLES TO MEET DEMANDING TECHNICAL REQUIREMENTS
- EXCELLENT WELDABILITY AND BEAD APPEARANCE
- HIGHEST DEPOSITION RATES
- DEEP PENETRATION

# SPECIAL ALLOYS™

## LINCOLN ELECTRIC IS THE SUBMERGED ARC PROCESS SPECIALIST

Together we will develop the best solution while maximizing your savings through highest deposition rates, highest quality and optimized parameters.

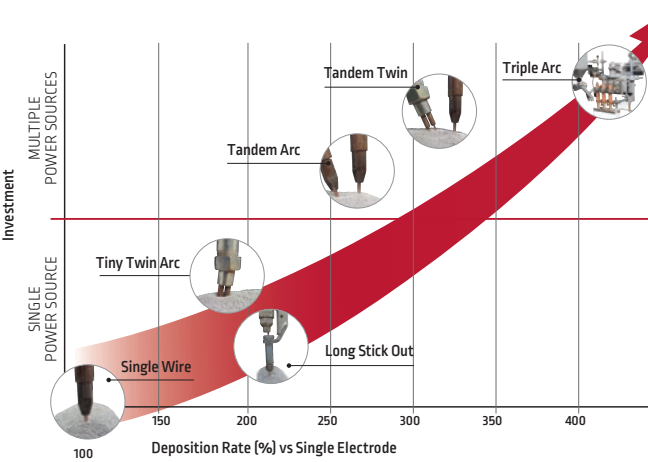
## SAW EQUIPMENT AND CONSUMABLES

Our SPECIAL ALLOYS™ portfolio covers all major alloy ranges including high strength low alloyed, CrMo range for Thermal Power and Chemical Processing as well as Stainless steel and non-ferrous grades.



## CONSUMABLES

Our SPECIAL ALLOYS™ consumables cover a wide range of alloys meeting the narrowest chemical analysis, most demanding mechanical properties and at the same time offering the best weldability.



## POWERWAVE™ & WAVEFORM CONTROL™ TECHNOLOGY

We have combined the capabilities of our power sources with consumables behavior and process control and have developed high efficiency SAW solution.



## THE NEW DIMENSION IN STRIP CLADDING

Fabrication of Critical Process Equipment (CPE) largely involves Strip Cladding.

LINCOLN ELECTRIC offers a complete product package for this application. A full range of SPECIAL ALLOYS™ consumables for all commonly used alloys and processes is available. All products are backed with detailed technical references proven to meet the toughest mechanical and chemical requirements.

# MORE

## FULL SOLUTION PROVIDER

- 30% CONSUMABLES REDUCTION
- 48% WELDING TIME REDUCTION
- ALWAYS SINGLE LAYER FOR ALL STAINLESS AND NICKEL ALLOYS
- EXTRA HIGH SPEED WELDING UP TO 40 cm/min
- LESS THAN 5% IRON CONTENT IN SINGLE LAYER ALLOY 625 CLADDING
- POSSIBILITY OF THIN LAYER DEPOSIT DOWN TO 3.5 mm WITH BOTH 60 mm & 90 mm STRIP

## SPECIAL ALLOYS™

### MEETING THE TOUGHEST REQUIREMENTS

LINCOLN ELECTRIC offers a complete product package for this application. A full range of SPECIAL ALLOYS™ consumables for all commonly used alloys and processes is available.

### PRODUCTS

We have all required products for strip cladding including Cladding head, Magnetic steering device, Consumables, Power source, Digital Controller and Data logging. For decades Lincoln Electric products have been applied worldwide for Submerged arc as well as Electroslag cladding.



### CONSUMABLES

Our SPECIAL ALLOYS™ products cover full range of consumables for Submerged arc strip cladding as well as Conventional and Hybrid Electroslag strip cladding. We offer all necessary alloy ranges such as Ni Alloy 600, Ni Alloy 625, Ni Alloy 825, Ni Alloy 400 as well as Austenitic stainless grades such as 308L, 316L, 347.



### ADVANCED CONTROL TECHNOLOGY

The digital Z5 controller offers advanced control technology with real time data logging and traceability.



### POWER SOURCES

We have combined the capabilities of our power sources with consumables behavior and process control to achieve highest accuracy and efficiency.



## TOTAL SOLUTIONS FOR PROCESS PIPING

Energy industry requires huge amount of piping work - From Oil & Gas to Power Generation and LNG.

Solutions are available for piping diameter from 2" up to 48" with Thicknesses from 2 to 100mm for various alloys and applications also under PWHT.

# MORE

## FULL SOLUTION PROVIDER

- BUG & BAND
- POWER SOURCES
- WELDING CONSUMABLES
- QUALIFIED PROCEDURES (WPS)  
FOR ALL MAJOR ALLOYS

## SPECIAL ALLOYS™



### PRODUCTS

Our SPECIAL ALLOYS™ products cover full range from C-Mn to CrMo 11, CrMo22, P91, P92, stainless steel and nickel base materials. All products are available for all processes of manual (SMAW, GTAW) and automatic welding (GTAW, FCAW, GMAW-P) and for various joint types, from normal V joint to compound and narrow gap joint.



### POWERWAVE™ & WAVEFORMCONTROL™ TECHNOLOGY

We have combined the capabilities of our power sources with consumables behavior and process control and developed high efficiency solutions.



## FULL RANGE OF CONSUMABLES FOR DEMANDING APPLICATIONS

Special Alloys™ has one of the largest ranges of consumables available from a single source via a global distribution network.

SPECIAL ALLOYS™ is focused on the higher performing materials in low alloy steels, stainless steels, high temperature alloys and nickel based alloys. There are also products specifically for the maintenance and repair of in-service assets. Easy selection and purchase of SPECIAL ALLOYS™ can be offered via a global network.



## METALLURGICAL EXPERTISE

- LOW ALLOY
- STAINLESS
- HIGH TEMPERATURE
- NICKEL-BASE
- OTHER NON-FERROUS

## SPECIAL ALLOYS™



### LOW ALLOY

Consumables suitable for welding, engineering and structural steels, from high yield strength to specialized heat and creep-resistant CrMo types reaching the threshold of stainlessness at 12%Cr.

### STAINLESS

Coverage of all stainless grades, including not only the ferritic, martensitic and austenitic steels, but also duplex grades. Additionally consumables for cryogenic applications and nuclear applications.

### HIGH TEMPERATURE

300H, 800 and HP40 series designed with controlled carbon content and microstructure for service temperatures of 400-800°C and creep resistance as well as hot corrosion and oxidation like 800 and HP40 series.

### NICKEL-BASE

Consumables indicated for highly corrosive environments as well as applications requiring superior mechanical properties. The group includes grades like 625, 600, Alloy 22, Alloy 276, Alloy 400 and EPRI P87.

### OTHER NON-FERROUS

LINCOLN ELECTRIC offers not only Aluminum, Copper, Bronze and Cupronickel consumables, but also electrodes based on pure nickel and nickel-iron alloys required for maintenance and repair of cast iron products. Additionally we provide solutions to minimize surface wear found in different working environments. The product range includes martensitic, chromium carbides, Co base and Hadfield consumables.





## MORE TECHNICAL APPLICATION SUPPORT

Providing customers not only the adequate product but also the suitable solution.



## APPLICATION SUPPORT

- IN-HOUSE DEMONSTRATION & TRAINING
- ON SITE QUALIFICATION SUPPORT
- TECHNICAL KNOW-HOW
- GLOBAL AVAILABILITY



## SPECIAL ALLOYS™

### EXPERIENCED TEAM

Today, LINCOLN ELECTRIC has a team of highly experienced welding scientists and engineers, not only in the welding process but also the metallurgy behind it. With SPECIAL ALLOYS™, Lincoln becomes even stronger.

### TRAINING & DEMONSTRATION

With worldwide technical Solutions Centers LINCOLN ELECTRIC carries out training and demonstration on the technology, techniques and safety practices associated with welding, incorporating our SPECIAL ALLOYS™ consumables.

### QUALIFICATION

LINCOLN ELECTRIC qualifies welding professionals for challenging industries with state of the art consumables and equipment. Additionally the SPECIAL ALLOYS™ product range provides solutions for key industries such as Power Generation, Oil & Gas, LNG as well as nuclear applications.

### TECHNICAL DATA

SPECIAL ALLOYS™ consumables are manufactured according to the highest international quality standards and specifications. Additionally our welding consumables are extensively tested, so customers can have access to a broader database of test results, product data sheets and technical publications.

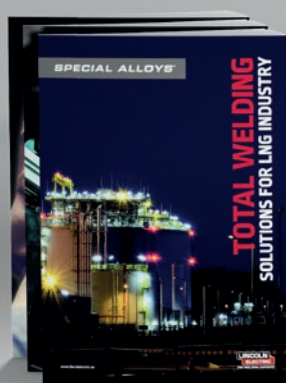
VRTEX 360 WELDING SIMULATOR





**MORE SPECIAL  
SOLUTIONS  
FROM 1 HAND**

***SPECIAL ALLOYS™***



#### **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 customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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 requirements.

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[www.lincolnelectric.eu](http://www.lincolnelectric.eu)

**LINCOLN®  
ELECTRIC**  
THE WELDING EXPERTS®