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INTELLIGENT PLATFORM ENGINEERED FOR MAXIMUM PRODUCTIVITY AND QUALITY





POWER WAVE

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Power Wave[®] Resource Center

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POWER WAVE® PROCESS CONTROL OPERATES ON THREE PRINCIPLES

It's no secret that the mindset of continuous improvement is a proven approach for improving production efficiency, quality and profitability – so why not view your welding operation the same way?

Lincoln Electric's Power Wave[®] advanced welding system allows you to do just that. Power Wave[®] is more than just a welder, it's a complete process control platform that provides a full view of your welding operation, giving you the tools you need to deliver continuous improvement of safety, quality and productivity.



WITHOUT ALL THREE PHASES OF PROCESS CONTROL, WELDING PERFORMANCE WILL NOT BE MASTERED

OPTIMIZE YOUR ARC PERFORMANCE. THE RIGHT PROCESS FOR ANY APPLICATION

Using Waveform Control Technology[™], each process can be tailored to your specific needs.

APPLICATION VARIABLES: Material / Shielding gas / Welding positions
PERFORMANCE CONSTRAINTS: Travel speed / Spatter / Part fit-up

PIONEER OF PATENTED WELDING PROCESSES



Lincoln Electric[®] pioneered the development of Surface Tension Transfer (STT), a low heat short-arc process, well before the competition.

Many More in Development!

IMPLER

Free Upgrades

* Some require additional hardware to extend capabilities

ALL APPLICATIONS. ALL INDUSTRIES. ALL PROCESSES





MORE INFORMATION IN RAPID Z® BROCHURE





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TI	HE RIGHT PROCESS FOR ANY	APPLICATION	VERIEF
MU	AC Aluminium Pulse Improved aluminium productivity and quality. ULTIMARC® CON	 Increases travel speeds by 40%. Increases deposition by 75%. Improves gap bridging capabilities. Decreases burn-through. 	Pulse 26 cm AC Aluminium Pulse 36 cm
	Pulse-on-Pulse® TIG appearance – MIG productivity.	 Offers excellent heat input control, especially on thin materials (less than 7 mm thick). Eliminates in-line weaving. Improves operator appeal for any skill level. Ensures better appearance and productivity matter using aluminium. 	
STEEL, STAINLESS & NICKEL	STT® Industry proven root pass solution.	 Simplifies open root welding for any operator skill level. Eliminates common burn-through & lack of fusion issues. Delivers larger bead, flat face, perfect back bead and excellent fusion. 	
STEEL	AC-STT TM Industry's superior thin gauge solution.	 Proven STT[®] waveform with controlled AC balance. Excellent heat-input control. No burn through, no spatter. 	0.6 mm D.6 mm D.6 mm material 2 mm
UNIVERSAL	Power Mode® The universal mode for tough applications. EXCELLENT PER HIN TO THICK	 Stable arc performance and fewer current fluctuations. More consistent weld penetration. Fewer fusion defects in welds. 	

TAKE CONTROL. EVERY MACHINE, EVERY WELD.

CONTR

Welding can be the most complex part of any manufacturing process and is often the least controlled. Your quality relies on every operator on every shift to make the same welds with the same parameters. It is clear, there are many risks to quality and cost.

The Power Wave[®] platform allows you to reduce risk and remove variation from your welding processes and operations. Designed with the operator, foreman, and engineer in mind, Power Wave's® embedded process control tools help you standardize your welding processes, increase weld quality and part-to-part consistency, and remove the guess work for operators.

Power Wave[®] enables you to:

- Standardize & save machine settings
- Reduce welding variation among operators
- Improve WPS compliance
- Allow operators to focus on welding, not machine settings
- Transfer settings among machines

POWER WAVE® MANAGER

- Part-to-Part Consistency
- · Weld Quality
- Costs · Risk
- Process Variation



WELD SEQUENCER

Changing what was done by paper work instructions to an operator guided complete welding system.

No longer is it difficult to train operators, interpret work instructions and prints, or execute and verify welds.

- Guide operators step-by-step
- Easy to follow graphical interface
- Clearly define each assembly step
- Cleary define each weld placement



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Weld Sequencer Applications

Automatic control of the welding power source based on engineering weld specifications.

- Eliminate missed welds
- Simplify work instructions, reduce costly rework, reduce inspection effort
- Improve training comprehension
- Improve post-training cycle times
- Reduce training costs



BASIC

SEMI-AUTOMATIC OPERATIONS

Quality control verification on WPS

settings and total weld count

COMPLEX SEMI-AUTOMATIC OPERATIONS

Comprehensive management of weld procedures, assembly fixtures, and part identification.



GET IT RIGHT THE FIRST TIME, EVERY TIME.



GET MORE INFORMATION ABOUT WELD SEQUENCER







INFORMATION THAT LEADS TO SOLUTIONS®

The success of every operation, big or small, depends on making the best weld in an efficient way, with zero defects, while meeting customer demand. Do you know and understand the true performance of your welding operations? Relying on traditional methods to collect and analyze operator metrics is too burdensome and often doesn't provide a true representation of your entire welding operation.

Power Wave's[®] advanced production monitoring technology allows you to easily break away from old methods with an intelligent, IoT driven platform. By providing a complete, real-time view of your entire welding operation, the Power Wave[®] platform provides the precise information you need to make data-driven decisions for continuous improvement.

CHECKPOINT®







WELDSCORE®

- Embedded quality monitoring technology
- Model-based weld evaluation
- Simple, easily understood quality score for each weld
- Monitors actual conditions at the arc, not external upstream sensors
- Real-time feedback and limit setting to verify your operations

WeldScore® is a tool intended for in-process monitoring of consistent and repeatable welding operations based upon your example welding conditions and is not a replacement for quality assurance procedures, such as non-destructive or destructive testing.



Acceptable Weld - Proper gas flow and coverage produces a good weld with no porosity.





Unacceptable Weld – Incorrect gas mix yields higher spatter levels.

TRUE ENERGY®

True Energy[®] is a proprietary Lincoln Electric technology that uses the digital control system embedded in each Power Wave® arc welding power source to measure and calculate the instantaneous amount of energy put into a weld. Customers can then use this value, in conjunction with the length of the weld, to calculate the Heat Input. Heat input calculations are used extensively in the welding industry, and the accurate calculation of these values is of utmost importance.

INPUT

- Built in to all Lincoln Electric Power Wave® power sources
- Easily comply with heat input calculations per ASME code
- No extra equipment or measuring tools necessary
- Capable of accurately measuring advanced process waveforms

Traditional Heat Input Calculation

V * A * 60 HEAT . kJ/mm Travel Speed INPUT

FAT	True Energy® Value	kl/mm	
IPUT	Distance Traveled	NJIIIII	

True Energy® Heat Input Calculation



POWER WAVE® SOFTWARE FOR FREE

Upgrade your Power Wave® Power Source Software for FREE*

Get access to the best welding solutions in the industry.



REEWARE

PROVEN PERFORMANCE. UNMATCHED DEPENDABILITY

POWER SOURCES











Power Wave®300C

- Integrated user interface and wire feeder
- 300 A at 100% duty cycle
- Output range: 5-350 A



Power Wave®S500

- The industry standard for performance and versatility
- 450 A at 100% duty cycle
- Output range: 5-500 A



Power Wave®R450

- High-performance, reliable robotic welding
- 450 A at 100% duty cycle
- Output range: 5-500 A
- Ideal for: Robotic
 Automotive, General
 Fabrication and Heavy
 Fabrication Applications



Power Wave®S700

- Flexible configuration.
 Endless possibilities
- 700 A at 100% duty cycle
- Rated output: 20-900 A
- Ideal for: High Amperage, High Deposition Applications

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ADD-ON MODULES

Built-in simple mounting solution keeps a clean & compact system









- STT[®] Module
- Expand welding capabilities
- Ideal for productivity and quality improvements with STT® welding and Rapid X[®]



Advanced Module

- Further expands welding capabilities
- Ideal for: Adding AC polarity, STT[®] and High Frequency TIG capabilities



Wireless Connectivity Module

- Simple & secure machine connectivity
- Ideal for reducing network drops & connecting remote power sources

SEMI-AUTOMATIC WIRE FEEDERS



Power Feed® 25M

- Advanced performance. Rugged, portable design
- Push-Pull functionality • Internal heating and lighting
- Dual procedure and memory buttons for on-the-fly process switching



Power Feed® 56D

- Small rigged and easy to handle feeder
- Top class four rolls drive system
- Featuring 7"TFT screen, full text message
- 50 memories available
- Optimized spool installation & internal light
- Push pull capability
- Equipped with wheels as standard



Power Feed[®] 84 Single & Dual

- Raising the bar for intelligent process feeders
- Simple & customizable controls
- Dual procedure and memory buttons for on-the-fly process switching
- Optional USB port
- Simplifies machine set-up
- Enables machine setting lockouts
- Single feed, dual feed, or boom mount options available

AUTOMATIC WIRE FEED SYSTEMS



AutoDrive 19 Provide automated welding functionality for Power Wave® S-Series

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4R100 & 4R220

- Powerful and dependable robotic wire feeders
- Patented MAXTRAC[®] 4-roll drive system
- Best in class torque for high-speed applications
- Precise speed control



AutoDrive S & SA

- High-performance, servo-drive robotic wire feeders
- Consistent arc performance from start to finish
- Touch-retract start technology for smooth, spatter-free arc starts
- Improved contact tip performance and lifespan



DOWNLOAD BROCHURE

Power Wave® equipment utilizes ArcLink® digital communication among the system components for seamless sharing of weld system parameters. ArcLink® control cables are special high quality cables for digital communication.



DURABLE TRAY MOUNTED AND POTTED ELECTRONICS

Printed circuit boards are environmentally-shielded using Lincoln Electric's engineered encapsulation and protective frame trays.

Why Lincoln Electric Power Wave® is suitable for industry

- PCB board made at the Lincoln Electric Company
- Fully encapsulated with vertical and inverted mounting position
- Capable of surviving the harshest testing conditions

TESTED BEYOND THE STANDARDS & NORMS

Power Wave® equipment is subject to rigorous quality and performance testing Rugged and reliable, Power Wave® uses only the highest quality components to meet and exceed your performance expectations.





LOCAL LINCOLN ELECTRIC ASSISTANCE AND SUPPORT

Far beyond the simple recommendation of processes or equipment, Lincoln Electric works with you by offering advice and expertise, demonstrations, feasibility studies, installation and commissioning, training, maintenance, after-sales service, and even equipment upgrades.





SOLUTION CENTERS

Visit one of our many Solution Centers to see and test our latest generation welding and cutting systems.

ADVICES AND EXPERTISES

On the basis of a personalised diagnosis, our technical specialists will analyse your needs, identify potential improvements, build solutions along with you, define action plans and give you the support you need. In your premises or in our Solution Centers.

LINCOLN AUTHORIZED SERVICE FACILITIES

Visit the Power Wave[®] website or follow the QR code to locate a Lincoln Authorized Service Facility (LASF) near you.





BEING PRESENT LOCALLY MAKES US MORE AWARE GLOBALLY



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 enquiries 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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