**Power Sources & Weld Controllers**

Power sources, wire feeders and weld controllers for submerged arc welding provide maximum control over deposition and penetration in single or multi-arc environments.

The Power Wave® AC/DC Offers:

- Software driven AC, DC+ or DC- output characteristics allows the user to control the deposition rate and penetration.
- Can be coupled with a weld controller or any PLC with standard Ethernet/DeviceNET™ to monitor the weld quality.
- Parallel up to 3 machines as needed and create up to 5 independent arcs for greater deposition.
- Inverter based technology saves energy and reduces phase imbalance.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Amperage (A)</th>
<th>Rated Output Current/Voltage/Duty Cycle</th>
<th>NA – 3S</th>
<th>NA – 5</th>
<th>NA – 4</th>
<th>MAXsa 10</th>
<th>HMI PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>FlexTec® 650</td>
<td>10-815</td>
<td>650/44/100%</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idealarc® DC 1000</td>
<td>150-1300</td>
<td>1000/44/100%</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idealarc® DC 1500</td>
<td>200-1500</td>
<td>1500/44/100%</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idealarc® AC 1200</td>
<td>200-1500</td>
<td>1200/44/100%</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Wave® AC/DC 1000° SD</td>
<td>100-1000</td>
<td>1000/44/100%</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Cross Slides**

Manually, semi-automatically or automatically position the weld head to the weld joint independently from the positioning equipment in both horizontal and vertical axis.

- Compact and lightweight.
- Easy to set up and operate.
- GMAW, FCAW, and SAW processes can be accommodated.
- Simple system selection.
- Slides available starting at 3x3in. (76x76mm)

<table>
<thead>
<tr>
<th>Stroke available In. (mm)</th>
<th>Load lbs (kg)</th>
<th>Motorized</th>
<th>Seams Tracking</th>
<th>Tactile</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - 6 (76-152)</td>
<td>40 (18.1)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>5 - 10 (127 - 254)</td>
<td>250 (114.4)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>5 - 10 (127 - 254)</td>
<td>450 (204.1)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Contact us for full specification and options.
**Positioners**

Present heavy or difficult to weld work pieces to the work head using tilt, rotate positioners.

- Variable speed rotation.
- Motorized tilt.

<table>
<thead>
<tr>
<th>Capacity (lbs/kg)</th>
<th>Bench Mount</th>
<th>Fixed and Variable Height</th>
<th>Tilt Range (deg.)</th>
<th>Rotation Speed (RPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>220/100</td>
<td>✓</td>
<td></td>
<td>0 - 120</td>
<td>0.4/1-15</td>
</tr>
<tr>
<td>440/200</td>
<td>✓</td>
<td></td>
<td>0 - 120</td>
<td>0.4/1-15</td>
</tr>
<tr>
<td>1000/500</td>
<td></td>
<td>✓</td>
<td>0 - 135</td>
<td>0.07 – 2.8</td>
</tr>
<tr>
<td>2200/1000</td>
<td></td>
<td>✓</td>
<td>0 - 135</td>
<td>0.05 – 2.0</td>
</tr>
<tr>
<td>5500/2500</td>
<td></td>
<td>✓</td>
<td>0 - 135</td>
<td>0.025 – 1</td>
</tr>
<tr>
<td>11000/5000</td>
<td></td>
<td>✓</td>
<td>0 - 135</td>
<td>0.025 – 1</td>
</tr>
<tr>
<td>22000/10000</td>
<td></td>
<td>✓</td>
<td>0 - 135</td>
<td>0.025 – 1</td>
</tr>
</tbody>
</table>

**Turning Rolls & Idlers**

Position the work piece with accuracy or turn at a constant speed depending on the application.

- Increase arc on time by reducing part loading/unloading and setup time.
- Able to weld internally and externally over a wide range of diameters.
- Rotate part continuously and consistently using AC VFD motors.

<table>
<thead>
<tr>
<th>Capacity (lbs/kg)</th>
<th>Diameter Range In. (mm)</th>
<th>Speed Range (IPM)</th>
<th>Bench Mount</th>
<th>Standard Duty</th>
<th>Constant Center Line Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200/1000</td>
<td>1-31 (25-787)</td>
<td>3.5 – 63</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7700/3500</td>
<td>0.5-55 (12-1,397)</td>
<td>47</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11000/5000</td>
<td>10-110 (254-2,794)</td>
<td>4 – 40</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22000/10000</td>
<td>12-125 (304-3,175)</td>
<td>4 – 40</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44000/20000</td>
<td>20-177 (508-4,496)</td>
<td>4 – 40</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>88000/40000</td>
<td>20-196 (508-4,978)</td>
<td>4 – 40</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>132000/60000</td>
<td>20-196 (508-4,978)</td>
<td>4 – 40</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Optional Features**

- Foot Control
- Digital Meter
- Castors or Rail Mount for Portability

**Applications**

- Cladding and Hardfacing
- Pipe

**Optional Features**

- Foot Control
- Digital Speed Read-Out

**Applications**

- Pipe
- Wind Tower Sections
- Pressure Vessels
- Tanks
Manipulators

The vibration free column and boom can be used for positioning the weld head for welding a variety of work pieces from small pipe to large tanks. Both longitudinal and circumferential welds can be easily automated using turning rolls or positioners.

- Multiple welding heads can be mounted on the manipulator resulting in greater output.
- AC VFD motors provide variable speed control as well as quick yet smooth start/stop motion of boom.
- Anti-fall arrest devices and limit switch are added to increase safety.

### Process Specifications

<table>
<thead>
<tr>
<th>Process</th>
<th>Light Duty</th>
<th>Standard Duty</th>
<th>Heavy Duty</th>
<th>Extra Heavy Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Stroke in. (mm)</td>
<td>48<del>138 (1,219</del>3,505)</td>
<td>79<del>197 (2,006</del>5,004)</td>
<td>118<del>276 (2,997</del>7,010)</td>
<td>157<del>276 (3,988</del>7,010)</td>
</tr>
<tr>
<td>Horizontal Stroke in. (mm)</td>
<td>48<del>138 (1,219</del>3,505)</td>
<td>79<del>197 (2,006</del>5,004)</td>
<td>118<del>276 (2,997</del>7,010)</td>
<td>157<del>276 (3,988</del>7,010)</td>
</tr>
<tr>
<td>Payload lbs. (kg)</td>
<td>330<del>606 (149</del>275)</td>
<td>880<del>1433 (399</del>650)</td>
<td>1100<del>1984 (499</del>900)</td>
<td>2315<del>2866 (1,050</del>1,300)</td>
</tr>
<tr>
<td>Approximate Torch Height in. (mm)</td>
<td>24<del>141 (609</del>3,581)</td>
<td>29<del>226 (736</del>5,740)</td>
<td>32<del>307 (812</del>7,797)</td>
<td></td>
</tr>
<tr>
<td>Horizontal Boom Speed (IPM)</td>
<td>6~118</td>
<td>6~118</td>
<td>6~118</td>
<td>6~118</td>
</tr>
<tr>
<td>Vertical Boom Speed (IPM)</td>
<td>52</td>
<td>44</td>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td>Overall Machine Height in. (mm)</td>
<td>175<del>227 (4,445</del>5,766)</td>
<td>174<del>292 (4,419</del>7,416)</td>
<td>222<del>380 (5,639</del>9,652)</td>
<td>278<del>396 (7,061</del>10,058)</td>
</tr>
<tr>
<td>Input Voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motorized Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base Speed (IPM)</td>
<td>10~103</td>
<td>11~110</td>
<td>12~118</td>
<td>11~114</td>
</tr>
<tr>
<td>Centerline Distance Rails in. (mm)</td>
<td>46 (1,168)</td>
<td>58 (1,828)</td>
<td>72 (1,828)</td>
<td>116 (2,946)</td>
</tr>
<tr>
<td>Rail Type lbs. (kg)</td>
<td>48 (22)</td>
<td>66 (30)</td>
<td>66 (30)</td>
<td>66 (30)</td>
</tr>
<tr>
<td>Base Height in. (mm)</td>
<td>46 (1,168)</td>
<td>58 (1,828)</td>
<td>72 (1,828)</td>
<td>116 (2,946)</td>
</tr>
</tbody>
</table>

### Welding Applications

- Single Arc
- Twin Arc
- Tandem Arc
- Please Call

### Wire Mounting

- 60lbs Coils
- 250lbs Reels
- Please Call

*Overall machine height is with travel cart base and will decrease in case of fixed base.*
**Cladding Systems**

Use Lincoln Electric equipment and process expertise for a wide variety of applications. Systems include:

**Advanced Programming Control**
- All welding parameters are programmed and controlled via a single digital controller.
- Independent control of each wire improves the control.

**Advanced Weld Head**
- Can accommodate up to 8 individual isolated wires.
- Quick change, long life contact tip design.

**System Includes**
- Weld Lathe with headstock, tailstock and controller
- Wire feeder and weld head
- Flux recovery system
- Power Wave® AC/DC 1000 SD®
- Rotary ground

---

**Orbital Systems**

Automate precision welds on pipe applications to increase productivity and quality.

- System components can easily and quickly be replaced in the field by operators reducing downtime.
- Built to withstand a rugged production environment and harsh environmental factors.
- Mobile work station cabinet houses controller, pendant, power source and water cooler to increase mobility.
- The controller captures all the weld information and critical data which can be stored on the system internally or exported via USB port for analytical and statistical reporting.

**System Includes**
- APEX™ 2100 Orbital Controller
- HELIX™ T55 Weld Head
- Track Ring
- Power Wave® S500 Power Source
- Cool Arc® 55 Water Cooler
- Mobile Workstation

---

**Seam Welders**

Quality seam welders for inside or outside seam welds of “Can Sections” as well as flat plate applications of varying lengths.

- Adjustable clamping fingers hold the edges of the weld joint firmly to reduce or eliminate tack welding.
- Maximum penetration is achieved with an even weld bead, both top and bottom.
- Precision drive motor ensures maximum accuracy of the welding location.
- Tabletop design ensures less deflection and more heat absorption.

**System Includes**
- Seamer with pendent controller
- Welder, wire feeder and weld head
- Cool Arc® Water Cooler

**Optional Features**
- Different bed lengths available
- GMAW, GTAW and SAW process options
**Camera Systems**

Remotely monitor the weld joint with a quality screen complete with cross hairs.

- **Camera** – High quality S-Video camera with dual LED is enclosed in a rugged frame.
- **Display** – 15 in. (381 mm) VGA LCD with 1024 x 768 display.
- **Cooling System** – The camera has a standard .24 in. (6 mm) air inlet port to accept shop air to keep camera cool from heat generated from continuous welding.
- **Software** – The integrated software control includes auxiliary light intensity adjustment, single or dual cross hairs mode and target grids.

**Gantry Systems**

Servo driven gantry systems provide an extra weld axis for extra flexibility.

- The gantry has three degrees of freedom with large stroke length.
- Optional large carriage area on the gantry for power source and wire spool.
- Clear digital display and controls make it easy to set weld modes, strike/start/end options, travel stop/start timers and other parameters.

**Bore Welding/Cladding**

Hotwire GTAW welding, depositing high strength alloys for surfacing applications.

- 4 axis fixture with automatic torch centering and advanced vector control drives combined with precision fixturing and servo drives allow for unparalleled voltage control for arc length.
- Programmable current pulsation and sloping provide ideal pulse control with minimal dilution especially at the starts/stops on intersecting bores.
- Integrated tolerance checking and Ethernet connectivity provide convenient process verification on critical components.

**Optional Features**

- Several mounting options are available
- Air Filter/Regulator Kit

**System Includes**

- Bore cladding manipulator with pendant controller
- Power Wave® S350 with ArcLink®

**Optional Features**

- Camera system can be added to monitor the process
Manipulator
Portable self-contained welding system with tilt rotate positioner and gripper.
- 4x4 ft (1.2 m) portable manipulator with telescopic arm (110V).
- FLEXTEC® 650/NA-5 submerged arc package.
- 250lb (113 kg), 5X5 in. (127x127 mm) motorized slides with joystick control.
- 1500lb (680 kg) tilt positioner (110V) with foot control.
- Gripper suitable for 1 in to 20 in. (508 mm) pipe diameter.

Tandem Cruiser™
Tandem Submerged Arc Tractor
- Strong and rigid design ensures weld head stability.
- Removable, lightweight, impact resistant aluminum user interface can be used to set and save procedures, apply limits and lockouts.
- Multiple configurations allows for flexible system for set up with or without a track.
- 5x5 in. (127x127 mm) 250 lbs. (113.4 kg) motorized slides with joystick control.

Side Beam
Tandem Submerged Arc
- Side beam with 25 ft (7.62 m) of stroke along the main axis with 10x10 in. (254x254 mm) of fine turning along minor axis.
- 2 x Power Wave® AC/DC 1000SD®, with 2x MAXsa® 29 Feed Heads and 2 x MAXsa® 19 Controllers and tandem Sub Arc head.
- LIN-CS450 motorized slide system with laser seam tracker and vision system.
- Flux recovery system with separate vacuum unit and heated separation chamber.
- All control and weld cables

Options
- Tactile Seam Tracker
- Flux recovery
- MIG package to replace submerged arc package

Applications
- Shipyards
- Heavy plate fabrication
Lincoln Electric, founded in 1895 is the world leader in the design, development and manufacture of arc welding products, robotic welding systems, weld fume removal products, and plasma and oxyfuel cutting equipment. Recognized internationally as The Welding Experts®, Lincoln Electric provides leading technology products and solutions.

Lincoln Electric is proud to offer both Mechanized Automation Products and complete Integrated Solutions. We understand the important factors that can increase or hinder a customer's welding productivity. Advancement of welding processes themselves has been complemented by the continuous development of these systems and accessories to meet the changing needs of our customers. If your application involves welding carbon steels, stainless steel, low alloy or nickel based steel you can be assured that by choosing Lincoln Electric, you are investing in a welding partner with the right experience and the right products to help you be a world class fabricator.