



ESAB SAW Technology Sets Industry Standard For Land-Based Wind Tower Fabrication.

- Suprarex™ HDX cutting automation system enables accurate K bevel preparation.
- Tandem SAW with Spoolarc 81 EM12K wire and OK Flux 10.72 delivers excellent low temperature toughness and deposition rates exceeding 40 lbs./hr.
- Tandem with ICE™ multi-wire SAW technology yields deposition rates approaching 100 lbs./hr., also with excellent toughness.

Situation

Wind tower fabricators need to weld hundreds or even thousands of circumferential seams annually. With plate thicknesses ranging up to 2- to 3-in. for land-based towers and up to 6 in. for offshore towers, each seam requires hundreds or thousands of pounds of weld metal. North American companies cannot compete by adding more labor, nor can they remain cost competitive if weld flaws cause excessive rework.

Complication

The traditional method of ensuring complete penetration on thicker cylindrical weldments involves back gouging. However, gouging increases cycle time and labor cost, decreasing competitiveness. At the same time, any weld defects not removed with back gouging would have to be repaired, and this becomes extremely cost prohibitive on thicker plate.

Solution

ESAB developed robust welding procedures that eliminate the need to back gouge while also minimizing defects/rework costs. Best practices typically include:

1. Precise K bevel preparation with a 3-torch automated oxy-fuel cutting system.
2. A “seal pass” made on the inside diameter (ID) with the same semi-automatic GMAW equipment used to tack weld the rolled plate.
3. Fill passes on the ID and OD made with SAW or Tandem with ICE.

Results

After two decades of proven success, most major North American wind tower fabricators now rely on ESAB automation solutions deliver an unbeatable combination: repeatable, high quality welds with minimal operator intervention, high deposition rates and mechanical properties that exceed customer requirements.

BENEFIT #1

Single Source Solution

ESAB offers a complete, integrated welding automation solution featuring the power source, consumables, wire feed and flux systems, PEK process controller and column and Boom systems such as the CaB 600M or the Telbo™ telescoping boom. A typical system features a LAF DC power source for the leading arc (to obtain penetration) and a TAF or Aristo® 1000 AC/DC power source for the AC trailing arc (to increase deposition rate).

In addition, no other welding technology provider can match ESAB's breadth and depth of SAW automation, application and process expertise.

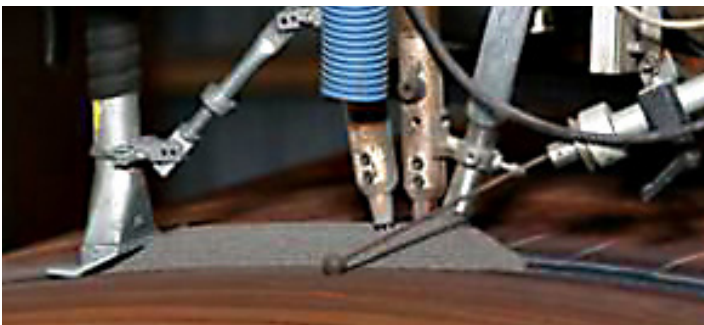


BENEFIT #2

Maximum Productivity

A typical Tandem Arc solution (DC lead/AC trail, each with 5/32 in. wires) provides deposition rates of 40 to 50 lb/hr.

ESAB's "Tandem with ICE" solution increases deposition rates up to 100 lb/hr. by replacing the AC trailing torch with ESAB's Integrated Cold Electrode (ICE) technology. ICE utilizes a third, electrically insulated wire in between and parallel to two hot wires in the same torch. The heat generated by the welding process melts a third, non-powered welding electrode, increasing deposition rates and/or travel speeds without adding more energy into the weld.



Tandem with ICE deposits up to 100 lb/hr. of weld metal.

BENEFIT #3

Excellent Mechanical Properties

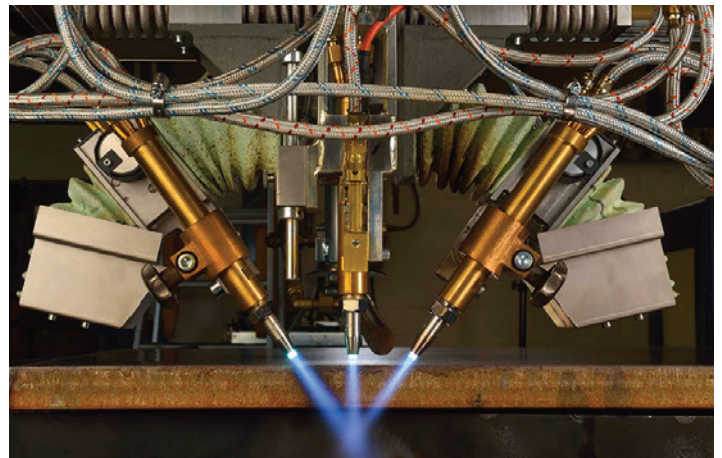
The combination of ESAB's process knowledge and Spoolarc 81 EM12K wire and OK Flux 10.72 delivers maximizes deposition rates while delivering as-welded Charpy V-Notch values up to 50 J @ -62°C (35 ft-lb @ -80 °F). ESAB designed OK Flux 10.72 specifically for the multi-layer, thick section welding required by wind towers. Users can standardize on this one flux because it works in single- and multi-wire procedures, equally well on DC and AC current and excellent slag removal in narrow joints, which allows reducing the included angle.

BENEFIT #4

Repeatable Results

Poor edge preparation that results in irregular joints is one of the leading causes of rework. By using a Suprarc HDX cutting table equipped with three oxy-fuel torches, wind tower fabricators achieve precise and consistent edge preparation (including K, X and Y bevels) in a single cutting run.

To deliver repeatable welding results, ESAB's automation and application experts work with customers to develop weld procedures and parameters tailored to their needs. After installation, ESAB then trains operators on proper equipment use and maintenance. All system components are easy to operate and designed for years of reliable operation in harsh environments.



ESAB offers a full portfolio of filler metals and equipment for Wind Tower applications. Contact your ESAB sales representative to learn more, or visit esab.com/windenergy.



ESAB / esab.com

