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ESAB COLUMN-AND-BOOM WELDING AUTOMATION SOLVES CAPACITY PROBLEM FOR MANUFACTURER OF WIND TURBINE TOWERS

ESAB has supplied an automated welding system to EWP Windtower Production AB for making longitudinal welds in sections of wind turbine towers. The highly efficient submerged arc welding system comprises a CaB 460C column-and-boom that manipulates a tandem single + twin welding head, with a FFRS Super flux feed and recovery system complete with heaters and filter unit; power comes from three ESAB Aristo 1000 welding power sources and control is via ESAB PEK controllers complemented by a GMH automatic joint-tracking system. In addition to this equipment, EWP Windtower Production AB is also using ESAB consumables, namely OK Autrod 12.22 copper-coated, unalloyed welding wire and OK Flux 10.71 agglomerated basic flux.

EWP Windtower Production needed to increase capacity in its factory in Landskrona, Sweden for manufacturing wind turbine towers, so the company decided to automate the welding of longitudinal seams on the smaller-diameter sections by installing a column-and-boom submerged arc welding system. Tenders were invited from prospective suppliers and the contract was won by ESAB due to its technical capability, the welding system's performance specification and reliability, a short lead time and competitive pricing. EWP Windtower Production has used ESAB equipment for 15 years and was confident that the new CaB welding system would be reliable and, should the need arise, ESAB could be depended on for technical support in relation to the equipment and welding process.

The customised CaB 460C column-and-boom has a working envelope that extends 6m high with 6m reach to suit the tower section diameters of up to 6m and lengths of up to 4m; maximum transport

speed for the carriage and boom is 5m/min. Structural steel grades S235 and S355 are welded in thicknesses of 12 to 60mm.

To achieve the required high deposition rate without compromising quality, the CaB system is equipped with three Aristo 1000 AC/DC welding power sources and two PEK controllers handling the Tandem Single + Twin submerged arc welding (SAW) process. This multiwire process uses two welding heads, one of which has a single wire while the other has twin wires. The lead arc, operating at high current (mostly DC+) and low voltage, ensures deep penetration, while the trailing arc uses lower current (mostly AC to avoid arc blow) to smooth and finish the weld bead. For reliable, accurate joint tracking, the GMH system features sensor fingers and servo-controlled positioning slides. Each of the two PEK controllers benefits from a clear display screen and has a facility for pre-setting the welding parameters.

ESAB provided full technical support throughout the specification process and during installation and commissioning, and also trained the operatives to ensure EWP Windtower Production maximises the benefits of this sophisticated automated welding system.

Mahyar Mansoori, the Production Manager at EWP Windtower Production, comments: “Technical support from our suppliers is very important, and this is one of the reasons why we awarded the contract to ESAB. Of course the primary considerations were price and delivery time, but we would not have placed the order if we had any doubts about the equipment’s reliability. Our experience with ESAB over 15 years, including with another column-and-boom system, has shown that reliability is exceptionally good, so we are confident that the new equipment will provide many years of dependable service for the production of wind towers.”

More information about column-and-boom and other automated welding systems is available free of charge from ESAB Publicity on 0800 3893152 or e-mail info@esab.co.uk.

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