



ESAB ICE™ boosts welding productivity at I.P. Huse by 60%

Norway may be no stranger to ice, but ICE™ (Integrated Cold Electrode) technology is still a fairly radical concept. At Norwegian winch specialist I.P. Huse, deposition rates of 25 kg/h with just a single power source and welding head are now the norm, thanks to ICE™ – the world's most productive SAW (Submerged Arc Welding) process.

Anchoring the Norwegian offshore industry

Located on the small and beautiful island of Harøya on the Norwegian west coast, between Molde and Ålesund, I.P. Huse has a business history dating back to the beginning of the last century. Today, I.P. Huse is a world leader in the design and manufacturing of winches for anchor-handling vessels. Known for its high quality products and advanced production methods, the Harøya factory has some 130 employees and is dedicated to consistent improvements in productivity. The company also manufactures winches for the ocean-going tugs that tow oil platforms. These massive winches can exert a pulling force in excess of 600 tons. Typical customers include shipyards, shipowners and oil companies.



Picture 1: Tore Magnus Haugen, Assisting Foreman/Welding, in front of a winch in production.

Longtime partners

I.P. Huse has long been a user of ESAB products, involving close cooperation between the companies in designing solutions tailored to I.P. Huse's needs, including a telescopic boom system.

Having already cooperated for so long, partnering on development of the ICE™ concept to a fully verified production solution seemed only natural. ESAB's Automation partner in Norway, Welmax A/S, has provided essential assistance. This cooperation has proved a great success. Following the introduction of ICE™ technology, I.P. Huse has noted increases in deposition rates of up to 60%.



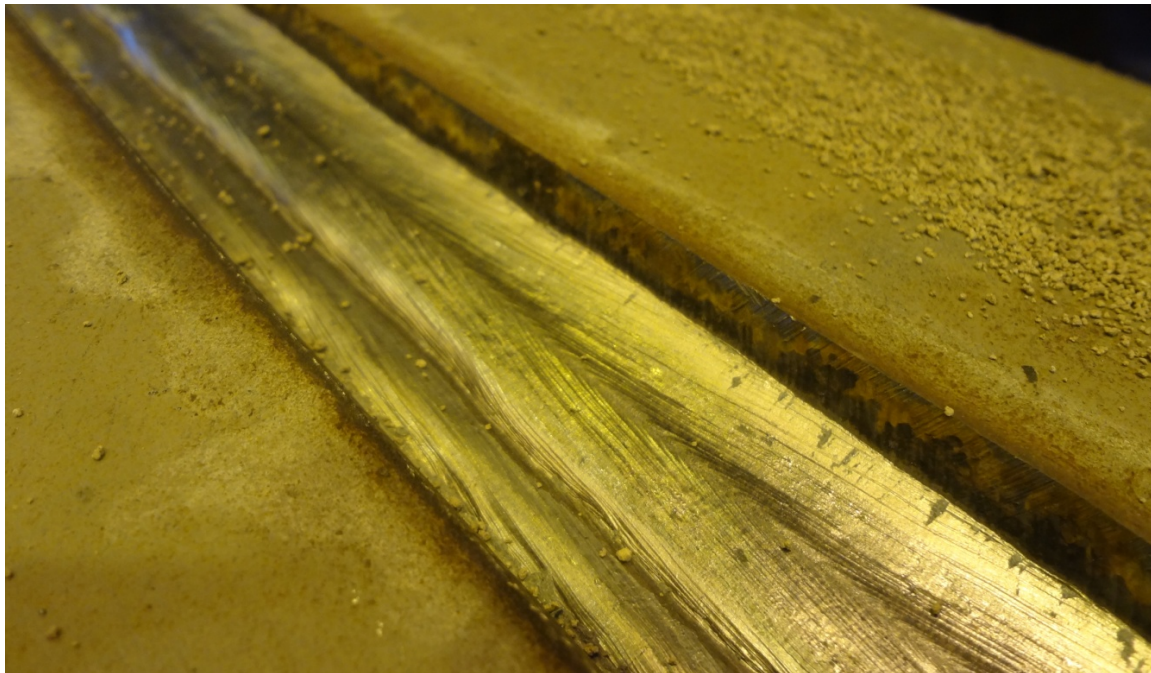
“We are delighted to have been able to cooperate with a company like I.P. Huse in finalizing the development of ICE™ technology and thoroughly verifying the technology in a demanding production environment. The fact that Trygve Folgerö and the team at I.P. Huse have been using ICE™ successfully in production for a few years now is evidence of the robustness of this technology. The level of productivity achieved speaks for itself,” says ESAB’s Hannes Raudsepp, Chief Engineer/ICE™.

“We are very proud of our part in the development of ICE™ technology. We are also proud to have the most productive SAW process operating in our factory,” says Trygve Folgerö, the welding engineer responsible for I.P. Huse’s participation in the development program, involving the testing and introduction of ICE™ technology in real life production.

Welding with ICE™

I.P. Huse currently has four welding stations in operation utilising the ICE™ technology. One of these has recently been upgraded with a new Aristo™ 1000 AC/DC power source, to further increase productivity. I.P. Huse is the first user for this combination of ESAB’s latest generation SAW power source with the ICE™ technology, benefiting already now from a solution that will be released to market during 2013.

I.P. Huse employs OK 15.24S cored 2.4mm wire and OK Flux 10.62 to maximize deposition rates and weld quality in its ICE™ process. The Welding Procedure Specifications (WPS) employed by I.P. Huse in production average between 20 and 25kg/h, using a single power source, while maintaining heat input below 3kJ/mm and welding speeds at 85cm/min. Using a single ICE™ welding head, I.P. Huse has attained up to 30kg/h and above in filling runs, satisfying ISO 15614 and impact toughness requirements at - 40°C.



Picture 2: Surface quality welding 30.6kg/h in a 45-degree included angle joint.

Prior to implementing ICE™ technology, I.P. Huse’s focus on consistent improvement ensured that it was already achieving the optimal productivity available, having selected ESAB’s Twin welding solution. This makes the increased deposition rates of up to 60% with ICE™ still more impressive.



This looks even better when compared with two other common solutions: single wire (4mm) and tandem (two separate 4mm single-wire welding heads) in a typical I.P. Huse joint (50mm single-sided V-groove with an included angle of 45°). Employing a single ICE™ head, I.P. Huse has achieved productivity gains of up to 200%, compared to a single wire. Even compared to a typical tandem solution, I.P. Huse's ICE™ welding stations offer a 100% productivity advantage in filling runs.

"At the moment, we are not focusing on improving deposition rates further. We don't need to, when welding at 30 kg/h," says Marius Patrascu, welding engineer at I.P. Huse.

Safe and reliable welding process

ICE™ process regulation and equipment is designed for optimal process stability. ICE process regulation software features three key elements: a start sequence that ensures arc ignition before starting the cold wire; full CA regulation, connecting the speed of the cold wire with the speed of the hot wire – and a stop sequence that ensures cold wire retraction from the arc and melt pool. As an integral part of the overall design, these patent pending features make for a safe and reliable process.

"The ICE™ process has proved itself to be safe and welds extremely well," says Tore Magnus Haugen, Assisting Foreman/Welding.

"Just push start and I can weld a full shift without stopping," says Egil Arne Otterlei, a welder on one of the ICE™ stations.

Easy to use

The PEK process controller is very easy to set, requiring only the setting of a single additional parameter prior to welding with ICE™.

"Easy to set and even easier to fine tune. I don't need to change the active parameters when I need more or less filler metal," says ICE™ welder Magne Myglebust, referring to the Flat Cap Control™ feature. This enables adjustment of the amount of "cold wire" used in the weld, without needing to change the active parameters and heat input. The welder has full control over the reinforcement height, ensuring a flat cap with excellent wetting. Preventing overfilling also saves on consumables.

Trygve Folgerö is determined that I.P. Huse will continue to lead the industry towards ever higher productivity.

"The ICE™ welding process works really well. We are now planning to upgrade all our stations with ICE™ and Aristo™," he states.