IRISH STEEL AWARDS 2025

in association with RFL STEELS LIMITED

Shortlisted Finalist | Voting ID: #6479

Finished Projects

Industrial Engineering – Equipment Manufacturing

Fabtech Robotics

Advanced Robotic Welding Solution for Water Treatment Tanks, *Cornwall, UK*

Voting ID: #6479 | Industrial Engineering - Equipment Manufacturing

Advanced Robotic Welding Solution for Water Treatment Tanks

Project Story:

Revolutionizing Water Treatment Tank Fabrication: The Robotic Welding Project that Raised the Bar.

In the competitive world of industrial fabrication, standing out requires innovation, precision, and the courage to rethink traditional methods. Our latest project—a fully robotic welding solution for large water treatment tanks—exemplifies this mindset.

Facing competition from established international firms across the UK and Europe, we leveraged cutting-edge technology, clever engineering, and a unique design philosophy to deliver one of the largest and most advanced welding platforms of its kind in Europe.

Water treatment tanks are large, complex structures that require precise, high-quality welds to ensure strength and longevity. Traditionally, welding each tank took over 40 hours using manual processes. The challenge was to reduce this dramatically while maintaining – or improving – quality, all within the client's existing facility.

We partnered with Fanuc, the world's largest robot manufacturer, whose robotic arms formed the foundation of our automation solution. These were paired with the Fronius TPSi welding system, equipped with PMC (Pulse Multi Control) technology, delivering superior arc stability and adaptability for thick metal sections.

A key innovation was our telescopic Z-stroke welding system, which removed the need for a pit by allowing vertical adjustment within standard building height. We also engineered a gantry and head/tailstock system capable of handling 20-ton parts.

To accommodate variation in tank fabrication, we developed a custom 2D weld seam tracking system, enabling real-time adjustment for precise, consistent welds.

The result: tank welding time was cut from 44 hours to just 8, improving throughput, consistency, and safety. This tailored, integrated system set a new benchmark in robotic welding, combining advanced technology with creative engineering to meet and exceed project goals.

Project Team

Project Manager – Brian Ruttle (Fabtech)
Mechanical Design Engineers – Paul Collins, Robin Toring, Damien Flathery (Fabtech, TDRi)
Robotics Engineers/Integrators – Nicholas De Klerk, Sophie Butler (Fabtech)
Welding Process Engineers – Paul Conquest (Fronius)
Controls & Automation Engineers - Declan O'Sullivan, Sergey Tsvetonav (Fabtech)
Software & Vision Systems Engineers – Miha Cerne, Finn Hourigan (Fabtech)
Manufacturing & Fabrication Team – Seamus Upton, John Flavin (Fabtech)
Installation & Commissioning Team – Paul Lennon, Declan O'Sullivan, Seamus Upton, Nicholas De Klerk, Finn Hourigan, Evan Shorten
Training & Support Specialists – Evan Shorten, Paul Lennon
Quality Assurance & Safety Officers – Mary McCoy, Sinead Maguire

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Advanced Robotic Welding Solution for Water Treatment Tanks

The Nominee thinks this deserves to win an award because:

This project represents a major achievement in innovation, engineering, and impact within the Irish steel fabrication industry.

A key breakthrough was the creation of a telescopic welding Z stroke system—the first of its kind. This eliminated the need for a traditional pit to rotate large tanks, enabling welding to take place within the existing head height of the building. It allowed full access to all weld points on tanks weighing up to 20 tons, saving the client substantial facility modification costs. We also developed a custom 2D weld seam tracking system tailored specifically for large-scale fabrication. This technology enabled real-time adaptation to material variation, ensuring consistent weld quality and significantly reducing rework.

The results speak for themselves. Automating the process cut welding time from 44 hours to just 8—an 80% reduction. This boosted production speed, reduced labour costs, and improved safety without compromising quality.

Against competition from major international firms, our bespoke, client-focused approach secured the contract—demonstrating the strength of Irish engineering on a global stage.
This project pushes the boundaries of robotic welding, delivers measurable commercial benefits, and sets a new benchmark for advanced fabrication. It fully reflects the spirit of innovation and excellence celebrated by the Irish Steel Awards.

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