

WELDING

Out-of-Box Innovation Driving Performance and Superior Results

Surerus Murphy has high-quality and innovative welding solutions that we can deploy anywhere – on a remote right-of-way, or on a busy facilities' construction site. Our ability to drive welding advancements in the energy construction industry is a point of differentiation, and one reason why we are a contractor of choice for our clients.

Our specialized collection of automated external welding units, also known as “orbital welding machines” or “welding bugs”, provide consistent welding parameters that result in easily repeatable, high-quality welds, that use a low-hydrogen welding process.

The benefit of employing this welding process is strong production rates, fewer weld repairs and the elimination of hydrogen-induced cold cracking imperfections. These advantages result in industry leading low weld repair rates because we can coat the weld immediately upon welding completion.

Automated welding units are compact and versatile and can be used in mainline construction activities, open-ditch tie-in applications as well as facility piping fabrication.

Our suite of automated welding units can be deployed without limitation, regardless of project terrain. This enables increased production rates that we pass on to the client and higher quality field welds that we do in-house without passing on the cost of field welds to a specialized subcontractor.

Advantages of Surerus Murphy's Automated Welding Equipment and Practices:

- Industry-leading weld repair rates (In three completed mega-projects that used automatic welding, we had a total weld repair rate – all three projects combined – of approximately 3%.)
- Reduced weld time of up to 60% per tie-in weld due to minimal set-up time and fast travel speed rates, we can achieve up to three 48-inch tie-ins per day.
- Accurate and precise control of welding parameters due to consistent travel speed, oscillation, voltage, and other features.
- Due to the automated programming, human error is reduced, and repeatable quality welds is increased.
- Welds are 100% low-hydrogen, which eliminates hydrogen-induced cold cracking imperfections.

Automated welding units are transportable over any terrain, providing quality welds in rural and hard-to-access, mountainous terrain.

Our road-legal welding units are robust, sturdy, easy to maneuver.

- We have custom-built mobile tie-in rigs that enable us to provide semi-automated welding to any tie-in situation, rural, congested, or urban.
- We use a picker crane that is installed on each rig. The crane enables us to safely position a welding shelter in the most precise location to provide secure welding coverage from the elements. This means, our welds are not exposed to outside elements that could contaminate the weld quality, like dust, rain, snow, etc.
- Our welding shelters eliminate the need for manually handling equipment and travelling up-and-down ladders into bell-hold excavations where the equipment could get damaged.
- Welding shelters also protect the welders with controlled ventilation, lighting, equipment, and tool storage.
- Our crawler tractor configuration enables the units to operate on slopes up to 35 degrees and the deck can hydraulically compensate the angle, maintaining a level platform for operators to safely access the bottled gases, generator, inverters without compromising the generators' fluid levels at the sloped angle.





Surerus Murphy's welding capabilities also benefit from the organization's global partnerships.

One of Surerus Murphy's parent companies, the UK & Ireland's Murphy Group, has worked on some of the most challenging and complex infrastructure projects globally. Our relationship with the Murphy Group provides seamless access to a wide variety of professional consultations to ensure successful project completion regardless of project specific challenges.

- We have direct access to Murphy Group's global welding engineering knowledge and technical experience, best practices improvements and welding personnel expertise. If it is a cutting-edge welding solution that has been provided in Europe, we have access to it and can offer it to our clients in North America.
- We also have direct access to US-welding expertise through our acquisition of WHC Energy Services. WHC Energy Services has projects in over 40 states and through this breadth of experience and geographic challenges, has gained skills expertise welding in a variety of technically challenging situations.

Welding by the numbers

Key Performance Highlights of Surerus Murphy welding practices:

Nova Gas Transmission (TC Energy):

- 6481 48-inch welds 2.9% total weld repair rate.
- 2124 42-inch welds 1.9% total weld repair rate. Mainline welding achieved a weld repair rate of 0.66%
- 186 36-inch welds 1.2% total weld repair rate. Mainline welding achieved a weld repair rate of 0.28%

Coastal GasLink (TC Energy):

- 8754 48-inch welds 2.27% total weld repair rate.

Trans Mountain Expansion Project:

- 9005 36-inch welds 3.18% total weld repair rate.



Automated Tie-In Welding on Above-Ground Pipeline Loop



Welding on a Steep Slope

Stories from the Field

Surerus Murphy's welding crews work in extreme geographical conditions – from wetlands to steep slopes to congested work environments.

Working in wet, swampy conditions brings about its own challenges as heavy equipment – like welding shacks, welding trucks and more – can get bogged down in mud when transporting them to a welding site in low-land conditions. In these environments, we use matting to protect the soil and provide stability for equipment to travel across. At many of our project sites, we used and recycled matting to protect the soil from the weight of our equipment and to enable our workers access to do their work properly.

In many ways, the converse of wetland conditions is the strategy and planning we put into ensuring welding on steep slope conditions is done safely. We use a series of anchors and winches to haul equipment and people safely down the side of a mountain, anchoring the equipment into place so our workers can safely weld. While the welding execution strategy doesn't change situationally, the safety precautions do. On steep slope conditions, welders have a heightened sense of what is happening around them. They go through competency and training to ensure that they are ready for these environments. Recently, we completed welds on nearly 250 meters of 35.5-degree post grade slope.

Another unique situation our welders often find themselves in is tie-in welding during horizontal directional drill (HDD) activity. During an HDD weld, cranes hold up one section of the pipe for our teams to weld, holding the drilling until the welds are complete. Once complete and the welds pass inspection, then the cranes are lowered, and the pipe is pulled through a tunnel or bore location. In this situation, welders need to be careful to avoid being in pinch points – once again requiring a heightened sense of situational awareness.

Our welding innovation and technology set us apart as industry leaders.

Technology, innovation, skill, and determination to deliver quality are what contractors can expect from Surerus Murphy. These are the traits that also make us a contractor of choice. It is our proven track record of delivering repeatable, consistent quality welding in difficult and challenging situations that gives our clients the confidence that our work will be high quality every time. And the safety and efficiencies we pass on to our clients demonstrate that we care about the projects we work on and support the industry's reputation.

Surerus Murphy's core values of Never Harm, Trust, Integrity, and Assured Delivery guide how we work, including how we execute our welding program.

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