A revolution in welding technology

Keyhole TIG Welding
Keyhole TIG.

Ten years.
Twenty engineers.
One vision.

A relentless focus on welding’s holy grail.

Developed by the Australian Government’s Commonwealth Scientific & Industrial Research Organisation (CSIRO), K-TIG is a high speed, single pass, full penetration welding technology that eliminates the need for wire, edge beveling or skilled operators and produces flawless welds up to 100x faster than TIG welding in materials up to 16mm in thickness.

The result of ten years of research and four years of product trials in six countries has resulted in a new welding technology of extraordinary speed and simplicity. Welcome to K-TIG.
Creating a new welding technology requires more than breakthrough physics. It requires passionate people.

A fusion of technology, dedication and inspiration.

K-TIG is dedicated to the development of next-generation welding technologies. We’re driven by a desire to innovate and transform. The breakthrough nature of our solutions and the delight of our customers are testament to the passion, creativity and perspiration of our people.

Our team has unique expertise in advanced physics, materials science, weld engineering and plant automation. Our customer’s aspirations are the central focus of both our research and product philosophy. Our people strive for nothing less than order-of-magnitude productivity gains with every K-TIG product developed.
A welding process with extraordinary speed.

In thick materials.

K-TIG provides order-of-magnitude increases in productivity, with welding speeds up to 100x faster than conventional TIG/GTAW welding.

K-TIG welding systems perform welds up to 16mm in a single pass, while eliminating the need for filler wire, edge beveling and skilled operators. K-TIG’s value proposition is as powerful as it is straightforward. Productivity up. Costs down. Payback measured in months, not years.
Precision welding at its finest.

A K-TIG weld is performed autogenously, without the need for filler wire, in a single full-penetration pass. The resulting weld is 100% parent material, without multiple fusion lines, virtually eliminating the potential for inclusions, porosity and other defects typical of many welding processes. K-TIG’s ripple-free weld pool provides an exceptional quality cap and root that requires no back-gouging, finishing, cleaning or grinding.

The K-TIG welding system executes programmable weld sequences that adjust weld parameters dynamically to ensure exceptional quality welds that are repeatable – every time.

Nuclear grade weld quality comes standard.
More materials.
Titanium. Zirconium.
Stainless steels. Hastelloy.
Niobium. Ferroniobium Alloys.
Cobalt alloys.
Nickel alloys.
Super alloys.
Monel. Bisalloys.
Carbon steels.

Incredible results on more materials. In a single pass.

K-TIG provides exceptional results across the widest range of exotic and conventional materials, and excels in medium to heavy gauge austenitic metals.

K-TIG welding is a low distortion process. Unlike plasma, laser and electron beam welding, K-TIG is tolerant to imperfections and creates a highly stable, self-correcting full-penetration keyhole across a wide spectrum of specialist metals.
A welding system for a connected world.


Quite simply, the world’s most intelligent welding system.

K-TIG welding systems can capture detailed weld data for every weld performed, and stores it locally or in the cloud for complete weld data traceability, monitoring and maintenance.

K-TIG’s controllers are designed to integrate with virtually any form of plant automation equipment, from robots and seamers to rotators and positioners, and can control dozens of external devices.

If connected to the internet, K-TIG controllers update their firmware and software from K-TIG in the background, automatically.
Advanced welding for advanced manufacturing.

A high performance process for specialised industry applications.

K-TIG has application across a wide range of industries where mission-critical quality, speed and cost-effectiveness are paramount, including:

- Tube & pipe manufacturing
- Heat exchange
- Oil & Gas
- Ship building
- Defence & Aerospace
- Pressure, suction & cryogenic vessels
- Nuclear industries
- Corrosion resistant vessels
- Minerals processing
- Production plants
- Power generation
- Filtration and water treatment
Reducing the footprint of fabrication.

Industrial fabrication, and the welding process in particular, is a highly energy intensive process involving the consumption of large quantities of gas, electricity and consumables.

K-TIG consumes as little as 1/20th of the energy and gas consumed by TIG/GTAW for the same weld, dramatically reducing the carbon footprint of our customers.

We’re committed to the development of technologies which reduce energy consumption, improve the sustainability of our industry and improve occupational health and safety.
Our customers.
The reason we do what we do.

Passionately customer centric.

K-TIG’s commitment to its fabrication customers is absolute. It is at the heart of everything that we do. We measure our success not by sales but by the referenceability of our customers.

We think, live and breathe production welding. We take great pride in commissioning every K-TIG system, training our customer’s teams and integrating K-TIG into production environments ranging from simple to highly complex.

K-TIG stand by, warranty and support every system component.
How it works.

Incredible performance. At the touch of a button.

The K-TIG welding process involves a specially controlled high current arc which opens a full-penetration keyhole in the join between the two surfaces to be welded.

The resulting weld is 100% parent material, eliminating the need for edge preparation or filler materials. The K-TIG controller monitors every aspect of the welding procedure to produce flawless welds at speeds up to 100x faster than traditional TIG without the need for experienced operators. K-TIG provides enormous labour, material, gas and energy savings for a wide range of welding applications.
The keyhole process.

K-TIG is a high performance TIG process developed in Australia by the Commonwealth Scientific & Industrial Research Organisation (CSIRO). The process and associated technologies are patented, distributed and supported globally by Keyhole TIG Limited.

K-TIG is an automated, full penetration process which pierces all the way through the joint, completing the weld without the need for a backing bar or filler materials.

K-TIG uses self-induced effects to generate a plasma jet. There is no orifice, making the process extremely simple to manage and optimise. Just one welding gas is used, and its flow rate is not critical.

K-TIG keyholes have extremely high stability. The nature of the keyhole created by the K-TIG process allows it to dynamically self-correct for fluctuations in arc forces. The K-TIG process operates over a wide range of welding currents and travel speeds. Setup is straightforward.
The K-TIG Welding System


- **K-TIG 1000 Power Supply**: 100% duty cycle. Highly precise power delivery to 1000 Amps. The consistency of the K-TIG process, the benign behavior of the weld pool and the exceptional weld quality is the result of deep integration between the power unit and the K-TIG controller.


- **K-TIG Wire Feeder**: System integrated, microprocessor controlled, 7m per minute wire feeder with precision drive. Automatic & manual feed. Wire diameter from 1.0mm to 1.6mm. Adjustable wire guide positioner.

- **K-TIG Torch**: Heavy duty, water cooled K-TIG welding torch provided in a T-profile, axial format or engineered specifically to customer’s requirements. Robust quick connect water and gas fittings.

Intelligence. Precision. Speed.