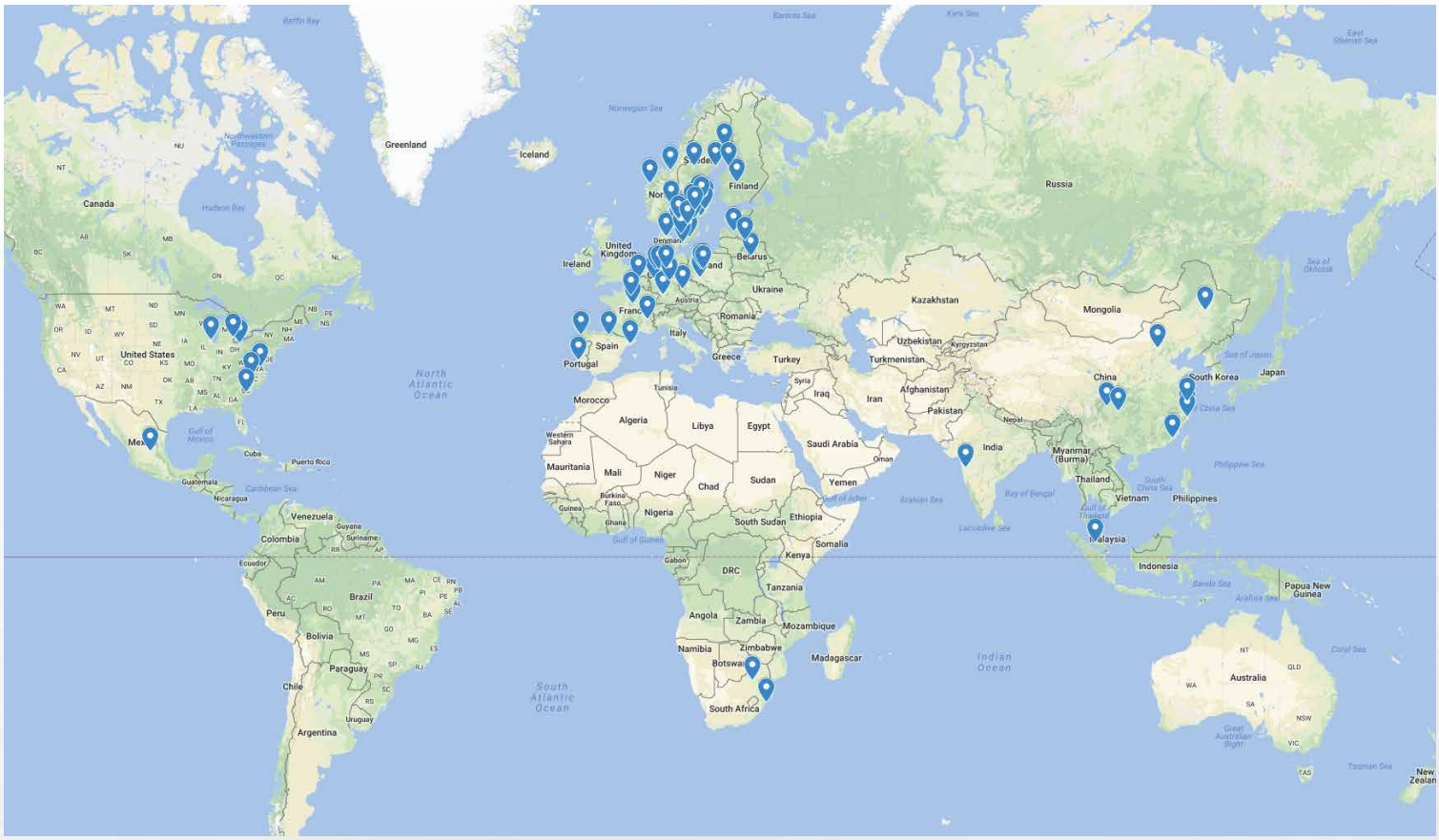
PERMANOVA
Lasersystem ab

PERMANOVA FINDS SOLUTIONS TO YOUR CHALLENGES



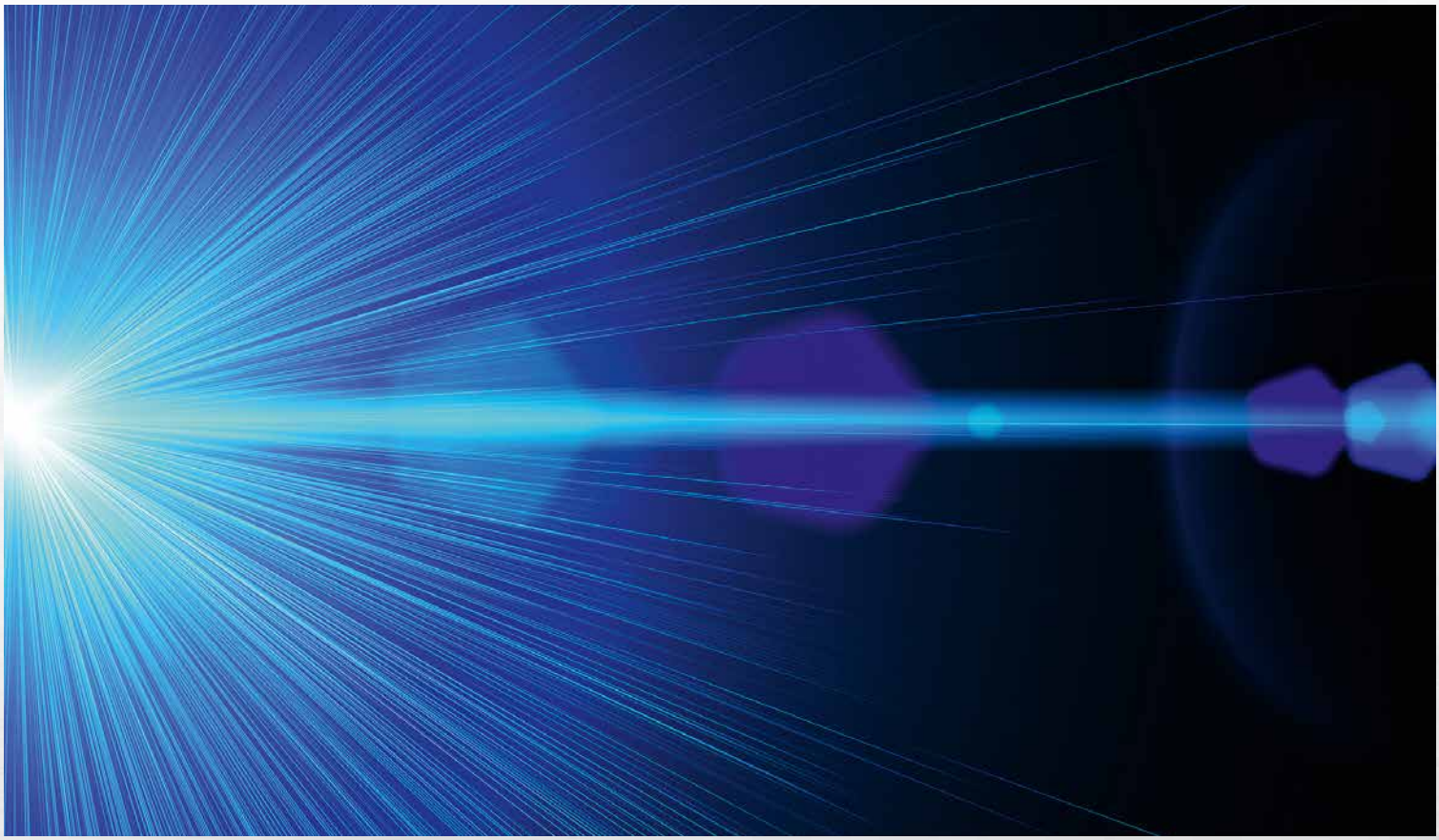
A COMPLETE PRODUCTION PARTNER

Permanova Lasersystem develops, manufactures, and installs robotic laser systems for metal working in the engineering industry. With solid technical know-how and an understanding of our customers' needs, we offer complete solutions that boost every customer's productivity, product quality, and profitability. We are there for the entire process – from idea to finished solution and then to provide service and spare parts.

A common scenario is that you as a customer need to increase your production capacity, or alternatively want to cut your production costs. We will work with you to develop a solution that ensures your production is efficient and reliable.

Permanova has been supplying laser processing tools and turnkey laser systems for more than 30 years. That is why we have the experience, expertise, and resources to take a new product or system solution and make sure that it is suitable for production conditions that demand high availability and functionality.

We have extensive experience of following our customers and supplying systems to the markets in which they are active.



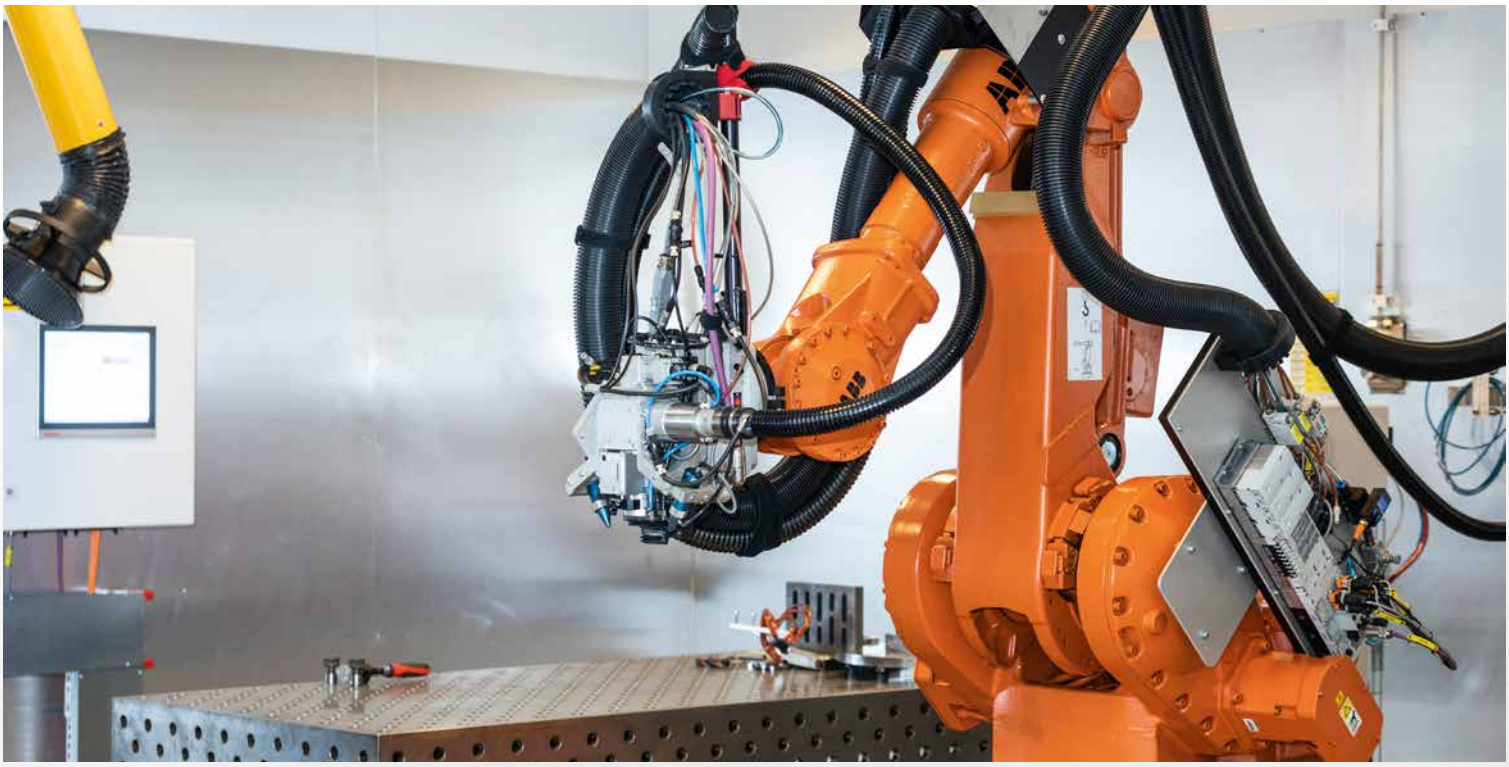
ADVANTAGES OF LASER TECHNOLOGY

For many years Permanova has been refining laser technology, making it easy and safe to use. Laser technology has several advantages over traditional technology. It is easier to access hard to reach remote areas when you want to join sheet metal. Welding with lasers is normally five to 10 times faster than traditional welding methods such as TIG welding. You add much less heat with a laser, which means less deformations in the material and usually little or no finishing is required.

Lasers are often used together with a robot, making it easy to automate the process. This provides very high technical availability, which in turn results in costeffective production. When it comes to cutting and welding, no other method is faster than using a laser.

Given that welding with a laser adds less heat, it also produces less deformations, which means that designs can be optimized in a completely different way, for example by making them more lightweight.

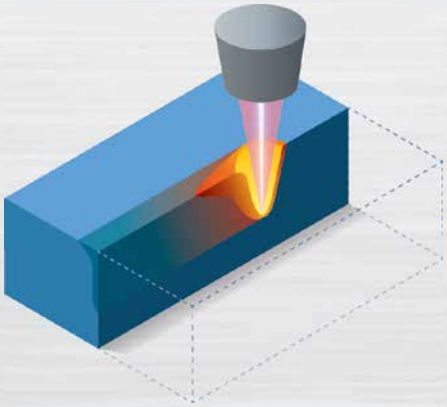
Read more here



OUR SOLUTIONS

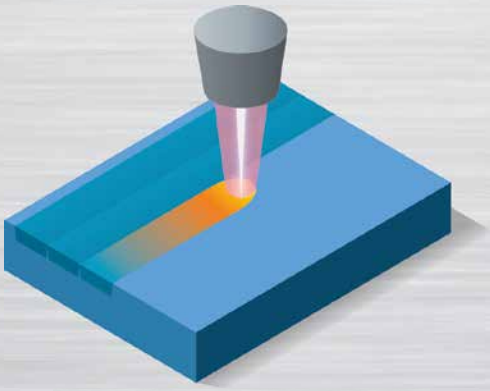
Welding

We perform two types of laser welding: keyhole welding and heat conduction welding. We choose the method that best suits the customer, depending on whether the customer is looking for strength or surface finish. Welding with lasers is normally five to 10 times faster than traditional welding methods such as TIG welding.



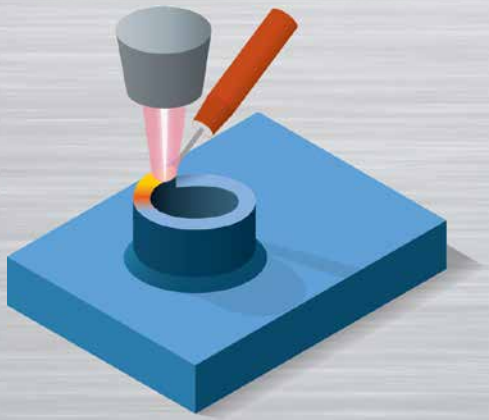
Hardening

A technique that heats the material to 1000°C and cools it quickly to make it harder and more durable. Rather than hardening the whole workpiece in a furnace, Permanova selectively hardens the specific surface with precision down to a tenth of a millimeter. This means that the other material in the workpiece which is not being hardened retains its toughness/strength.



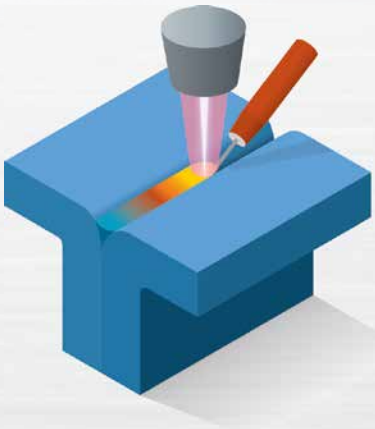
Additive material manufacturing

By allowing the laser beam to heat the material, while melting filler material in the form of wire or powder in place at the same time, a product can be coated, repaired, or a new contour created. By choosing different properties for the filler material, a product with dual material properties can be produced – often a softer and tougher base material with hard and durable surfacing.



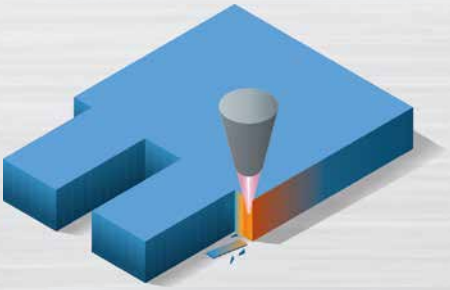
Brazing

Laser brazing is very fast compared to other methods and creates a nice, smooth surface. Laser brazing also makes it possible to join non-weldable alloys.



Cutting

Laser cutting is a cutting method in which a laser beam is used to heat the material to a temperature high enough for it to melt or be gasified. The advantage of using laser cutting is the speed and accuracy with which the contours can be cut.



CUSTOMER CASE STUDY

BROGREN INDUSTRIES

Brogren Industries is known for the high quality of the machined parts it supplies to customers in the industry. Over the years they have worked to deliver machined components.

Testing for one of their customers, Siemens, required deep, narrow welds with high tolerance requirements for penetration and positioning. When it became clear that TIG welding was not good enough and their existing station could not meet the increased demands for automated production Brogrens decided to invest in laser welding.

Laser welding tests showed that its high power density produced much higher welding speed than TIG welding. And what is more, the welds were narrow and deep. As a consequence, Brogren Industries invested in a flexible laser station from Permanova, with sufficient laser power, laser welding tools, and other equipment to meet the customer's two-fold specification.

This investment led to unique expertise that meets the needs of their most important customers, as well as creating great flexibility for different types of projects in the future. The high power density of laser welding produces deep welds with little thermal impact, which means small deformations and high dimensional accuracy in the end customer's product.

CUSTOMER CASE STUDY

SECO TOOLS

Seco is one of the world's largest providers of tools for milling, turning, holemaking and tooling systems. The company is known for providing both tools and services alike for maximum productivity and profitability.

Seco's Perfomax drills are laser-hardened, and they contacted us for help in making their production of these tools more efficient. We were commissioned by Seco to design and build a fully automated station for laser hardening.

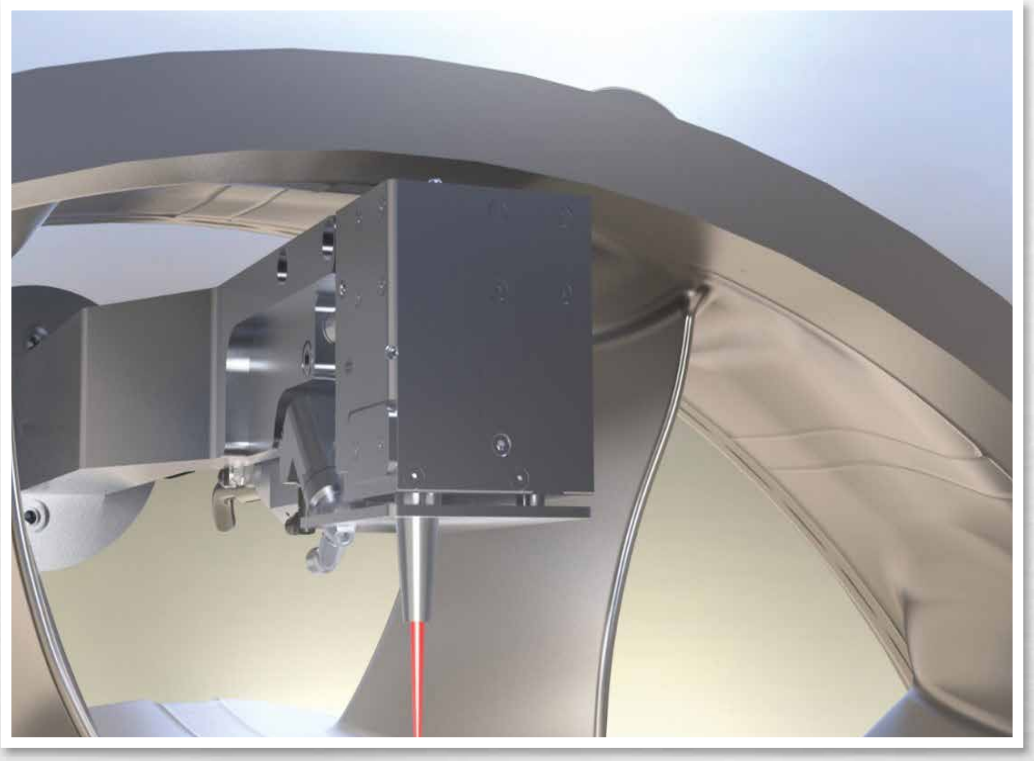
As a result of our work, Seco is now able to harden several products at the same station, meaning that their production is customer order driven. Laser hardening extends the life of Seco's drills by approximately 140 percent.

CUSTOMER CASE STUDY

WEDHOLMS

Wedholms is the largest supplier of milk cooling solutions in Scandinavia. Their manufacturing process is not only efficient and of the highest quality but also sustainable and environmentally friendly too. The high quality is especially noticeable when it comes to their laser-welded evaporators.

Wedholms were using machinery that was based on an old solution and contacted us because they needed to automate the machines. Permanova designed and installed a machine that gives fewer deformations and is faster and more flexible than their previous setup. The result is higher productivity.



CUSTOMER CASE STUDY

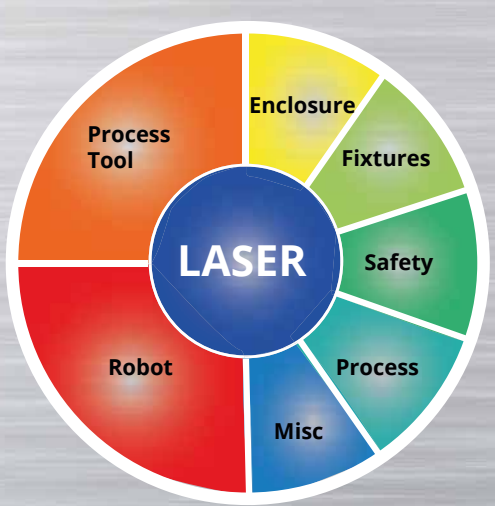
GKN AEROSPACE

GKN wanted to cut costs by automating production using robotics and laser processes, at the same time as introducing more lightweight technology. They wanted to move away from large, expensive, and heavy one-piece castings and replace them with geometrically slim components that are welded both by joining and additive material manufacturing, thus producing advanced finished components with desired properties.

Together with Permanova, GKN Aerospace Sweden has developed an advanced laser surfacing technique which, together with standard laser welding, paves the way for a very effective lightweight technique. Permanova's customized laser welding tools can reach into confined areas, meaning that GKN can produce geometrically complex components. Permanova's experience working with the automotive industry could be applied directly to robust automation solutions involving laser processes. For the aerospace industry, this means reduced weight, improved fuel economy, and lower emissions of CO2 and other products that have an impact on the environment; in other words a "greener" world.

PERMANOVA AS YOUR PARTNER

Permanova supplies complete system solutions, which entails us going through the process specification and the requirements of the equipment in close consultation with the customer before we propose a production solution. In addition to providing the equipment itself, we are more than happy to assist with our knowledge, experience, and delivery support services. Our experienced project managers are there for you throughout the process and ensure the desired quality and delivery time are achieved. The installation is carried out by our skilled engineers, and once the equipment is installed our service organization is there to ensure and maintain reliable production.



OUR OWN PRODUCTION LAB

Our premises boast a laser/robotics lab that is well equipped and flexible enough to run many different processes. The most important success factor is that we always have experienced staff on site to help our customers succeed in their experiments.

Before deciding to make an investment, our lab can be used in feasibility studies, prototype manufacturing, and for market tests. After an investment decision but before the equipment purchased is installed, a limited series production can be made. Once the equipment is installed, our lab can be used to test new products, processes, and materials. When introducing a new product, the development and optimization of process parameters can be done in a lab environment so that series production is not disturbed.

DO YOU WANT TO WORK WITH THE TECHNOLOGY OF THE FUTURE?

We offer a workplace with good prospects where you get to work with exciting technology and take on great responsibility.

Permanova has a small organization with great opportunities for development; it's somewhere where you get to run large projects in an international industry. Which means that every day is varied and challenging.

Job satisfaction, individual responsibility and varied tasks characterize the workplace climate. At Permanova, there is a high level of respect for the individual. We take care of each other and make sure that we are all doing well.

Our office is in a good location in Mölndal, close to the major city of Gothenburg and quiet residential areas.

PERMANOVA
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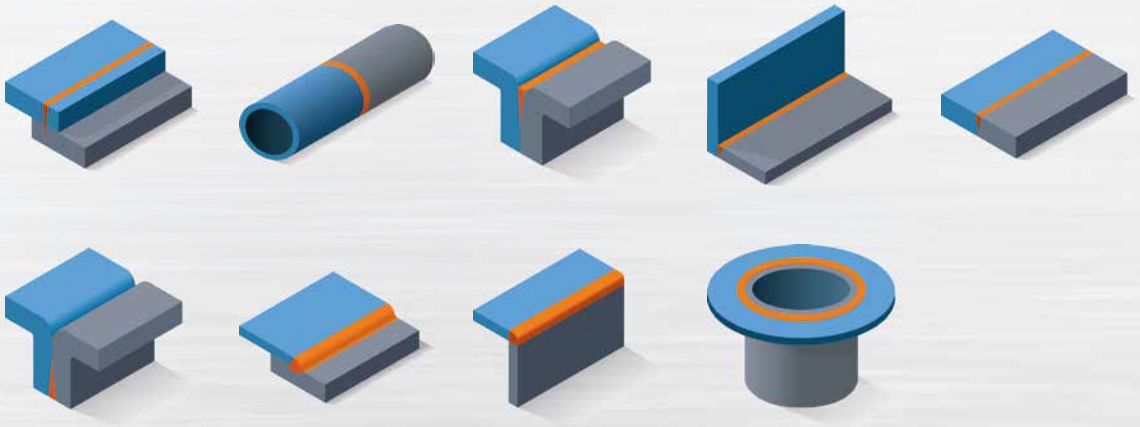
Laser technology is suitable for all types of joints.



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