

Welding and Cutting – Perfection for every purpose

Whether the garden gate, the car, the tram, the InterCity Express train or the ship – many things in our everyday life are made of metal materials and these are mostly produced using welding techniques. Just as varied as the products mentioned is the range of gases offered by Messer to suit the applications concerned – both in composition and form of delivery. The best known "packaging" here, of course, is the steel cylinder. This already provides great flexibility, with standard filling volumes of 10, 20, 30 and 50 liters. Filling pressures of up to 300 bar give even more room for maneuver. For larger consumption volumes, cylinders can be linked to batteries and bundles and, in some cases, liquid gases can even be stored in vacuum insulated tanks. For all welding techniques in which gases play a role, Messer offers tailor-made solutions with an emphasis on quality, economy and safety.

Holding the torch for autogenous welding and soldering

The processes used in autogenous technology demand burner gases and oxygen – but not every flame is the same. Different setting parameters, burner gases and apparatus have to be chosen for each application. For flame straightening, for example, a fast burning and precise oxy/acetylene flame is required. For soldering, on the other hand, a more slow burning gas like propane combined with air is needed. Accordingly, the range of Messer burner gases includes acetylene, natural gas, ethene, MAPP, propane, propylene and hydrogen. And the possible forms of delivery are just as varied.

Inert gas welding – it all depends on the mixture!

The number of different techniques has grown rapidly in recent years. The arc supplies the heat input, whether it is burning on a melting or a non-melting electrode. Here, the inert gas not only shields the highly reactive metal melt from the surrounding air, but it also has a controlled influence on the shape of the arc, the chemical reaction with the molten pool and the penetration profile. According to the nature of the material to be processed, a large number of tailor-made products are available. In the case of aluminum, high-alloy steels or nickel-based materials, these are optimized mixtures such as **Ferroline**, **Aluline** or **Inoxline**. In short, Messer has the right solution for every purpose.

Optimizing and speeding up laser technologies

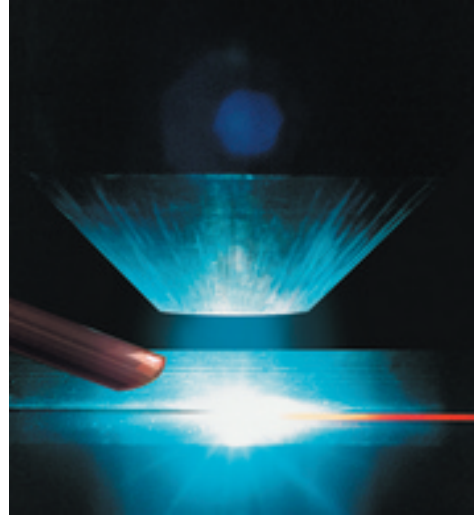
The number of applications for the laser processing of materials, such as laser cutting and welding, for example, is continually increasing. As a high precision technology, it makes particularly high demands on the quality and purity of gases. The **MegaLas** product range from Messer meets these requirements. In addition to working gases for CO₂ lasers, it also features gases and gas mixtures for cutting and inert gas welding, including helium and modified mixtures. So, when they apply new techniques, users can still benefit from Messer's advanced know-how.

Acetylene flame cutting in shipbuilding.





MIG welding of aluminum in rail vehicle construction.



Knowing how.

Inert gas feed for laser welding.

Application:	Know-how from Messer:	Advantages:
Autogenous flame cutting	Application optimized, competent burner gas selection from a wide product range, from acetylene to propane and hydrogen - Messer offers professional advice on the selection of burner gases and their supply	High performance, very good cut quality, high economy, low nozzle wear, inexpensive supply
Laser cutting	Material matched working gases, reliable, demand related gas supply	Optimum work results, maximum cutting thickness, very good cut quality
MAG welding of unalloyed steels	Qualified welding inert gases for a wide range of applications and requirements	Weld seams requiring little or no finishing work thanks to reduction of splashes and slag inclusions, high welding performance
MAG welding of high-alloy steels	Gas mixtures with customized components permit solutions specially adapted to the material	The molten pool can be influenced to suit each application and material concerned. Criteria which can be influenced are, for example, the viscosity, the penetration depth, the flank binding capacity and the heat input
MIG welding of aluminum	Aluminum and aluminum alloys have very special welding characteristics, largely due to the high melting temperature of the oxide skin - tailor-made gas mixtures can overcome this problem	Nearly poreless seams, high welding performance, very good external seam structure
WIG welding of high-alloy steels	The thermal conductivity of high-alloy steels is very low. The oxygen hungry surface can be optimally protected by specially trimmed mixtures which have a positive effect on melt flow	Seams are oxide-free or can be readily cleaned by pickling, high welding speed
Thermal spraying	The aim of thermal spraying is the production of stress resistant surfaces - the numerous process variants demand special process gases as well as gases for pretreatments and aftertreatments such as melting and cooling	Reduced or adjusted porosity according to the application concerned, optimum distribution of the filler metal, reduced stresses in the coating
Costs comparison	The profitability of a process continually has to hold its own against the competition - and gases play an essential role here. When all factors are taken into account, high-performance products often turn out to be the less expensive option!	Customer service permits cost-conscious selection, while also taking performance, consumption and prices into account

Weld seam preparation with a triple burner aggregate.

