

Gases for Life

The industrial gases magazine



Liquid nitrogen keeps blood preservation fresh

Ice-cold technology for blood and blood products

Meteorology:

In the heart of the storm

Practical focus:

Cost calculator shows savings potential

Interview:

Thomas Müller,
Thomas Müller Lasertechnik



Dear Readers,

Another year is drawing to a close. I hope that you will remember 2014 in a positive light. Perhaps one of our “Gases for Life” even helped to make your everyday life easier or more pleasant at one point or another.

Maybe you were able to benefit from weather reports informing you about sunshine hours or gathering storms when the weather was changeable. Balloon gases make a small contribution to this, enabling weather balloons to climb high into the atmosphere.

But heat and cold are not just meteorological features: in Odeillo, in southern France, a solar furnace research facility concentrates the sun’s rays, generating temperatures of up to 2,000 degrees Celsius. Messer organises the supply of argon needed for the experiments. NSC uses liquid nitrogen’s low temperatures for the storage of organic material. A technology developed by NSC allows biological samples to be stored in virtually any temperature range from plus 4 to minus 160 degrees Celsius.

You can read more on these subjects – as well as other interesting gas applications – in this issue of “Gases for Life”. It only remains for me to wish you a peaceful Christmas and a healthy and happy 2015.

Best wishes,

A handwritten signature in blue ink, appearing to read 'Stefan Messer'. The signature is fluid and cursive.

Stefan Messer



Photo: NSC Medical Cooling Systems GmbH

Cover Story

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Ice-cold technology for blood and blood products

Coverphoto: Oliver Sperl, Sales Manager of NSC Medical Cooling Systems GmbH. NSC has developed an innovative system for storing biological material.

Stored blood can be a life-saver. For this to be the case, it has to be stored in blood banks in such a manner that its specific properties are preserved from the time of donation through to the point of use. A new technology based on liquid nitrogen makes this possible in an appropriately wide temperature range.



Using Gases

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In the heart of the storm

High-tech satellites notwithstanding – there is no alternative to simple, gas-filled weather balloons: as they slowly rise into the air, their measuring instruments collect detailed data up to an altitude of 30 kilometres. Messer supplies a Hungarian team of meteorologists with the necessary balloon gases.



Interview

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Thomas Müller

Specialising in precision and special welding processes, Thomas Müller Lasertechnik supplies customers in a wide variety of sectors. In part two of our interview series, the owner tells us what he values about working with Messer.

Good for you and the environment

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Romania: Specialty gases in a museum

Historical insights

The National Museum of Romanian History in Bucharest uses specialty gases from Messer to carry out physical, chemical and biochemical analysis of archaeological finds in its laboratories. For example, helium is used in micro X-ray fluorescence analysis to determine the composition of metal objects or pigments used on ceramics and any kind of paintings. X-ray diffraction analysis is used, among other things, to analyse building materials from archaeological finds throughout the country, ceramics, soil, stone, gems, glass, bones and corrosion products. This involves the use of a gas mixture consisting of argon and ethane.

Oana Marinca & Carmen Baragan, Messer Romania Gaz

Slovakia: Gases for electronics plant

Lightning-fast delivery to Samsung

Messer in Slovakia managed to set up the entire supply of nitrogen and high-purity gases for Samsung in the western Slovakian town of Galanta in just one month. The gases are needed to apply a fine metal coating to plastic substrates. Messer supplies the electronics company with liquid nitrogen in tanks as well as high-purity grade 5.0 argon and oxygen in bundle stations. The guarantee of a very quick installation and immediate delivery of the gases was a key condition for the award of contract.

Juraj Petrovič, Messer Tatragas



Netherlands: Liquid nitrogen for construction project

Van Gogh on permafrost

Like everywhere else in Amsterdam, the ground water level is very high below the Van Gogh Museum. During the construction work for two new lift shafts, it was therefore necessary to prevent flooding of the excavation and to stabilise the muddy ground. This was done by freezing the soil around the shafts with liquid nitrogen. Messer supplied the gas and also provided support and soil freezing know-how. In total, up to five tanker deliveries of liquid nitrogen a day were required to keep the ground frozen round the clock throughout the construction period from the beginning of May to the end of June.

Frank Verhoof, Messer B.V.

Spain: Oxygen for plastic



Gas lowers energy consumption

In future, the chemical company Ercros will use oxygen as well as compressed air for the production of vinyl chloride monomer (VCM). The gas is used to optimise the use of energy in the production of VCM, a key chemical used in the production of PVC. Ercros is one of the leading producers of basic chemicals in Spain, with three production facilities at the Tarragona chemical park. Messer supplies the plants with nitrogen and oxygen. The two companies have worked together for more than 40 years. A five-year contract for the additional oxygen supply was signed in July. The VCM plant is currently being connected to the pipeline system in Tarragona which is operated by Messer.

Marion Riedel, Messer Ibérica de Gases

Spain: Gases for bridge-building



Bridge for AVE

In August, Talleres Dizmar, one of Messer's biggest cylinder gas customers in Spain, completed the construction of a 1,700-metre-long bridge over the Ría de Arousa inlet in Galicia. It was built for the AVE high-speed train, which will cut the journey time from Madrid to the north-west of the country to just three hours. Messer mainly supplied Ferroline welding gases and oxygen during the 18-month construction of the bridge. Dizmar has worldwide operations and was also involved in the construction of the Brazilian World Cup stadium Arena Pernambuco.

Marion Riedel, Messer Ibérica de Gases

China: Water treatment with ozone

Chlorine superfluous

One of the four waterworks in the Chinese city of Zhuzhou in the southern province of Hunan has been using ozone instead of chlorine for disinfection since 2013. The gas, which has a high oxidation potential, is produced on site from liquid oxygen. This is supplied by Messer in China and filled into two tanks, each with a capacity of 20 cubic metres. The waterworks treats 300,000 tonnes of water from the Xiang Jiang river every day. This equates to a flow rate of three cubic metres per second.

Jasmine Yan, Messer China

Belgium: Nitrogen for wholesale bakery



Yves Flamand of Messer Belgium with Paul De Groote from Eclair

Freezing for crunchiness

Eclair, a wholesale bakery in the Belgian town of Mollem, has been getting its liquid nitrogen from Messer since last May. The gas is used to keep the baked products crunchy by treating them in a linear tunnel freezer. In addition, gaseous nitrogen from cylinders is used to whip cream. The company is part of the Carrefour Group and supplies its products to Belgium and France. The customer opted for Messer because they attach particular importance to comprehensive service, expert advice and a partnership based on trust.

Yves Flamand, Messer Belgium

"I am a triple saver"

The quality of welds is considerably affected by the choice of shielding gas mixture. Significantly improved results are achieved with the new ternary mixtures. The Messer cost calculator shows how much money customers can save.

Time is money – this simple equation, in the end, also explains the cost reduction that is possible with the use of ternary mixtures. The analysis that Messer offers its customers is considerably more detailed though. The cost calculator allows a standardised total cost calculation that takes account of all the important welding parameters. The shielding gas used is a comparatively small factor in this regard, accounting for only about five per cent of the total welding costs. However, the gas mixture does have a major bearing on the quality of the result. The requirements it has to meet differ depending on the material and the welding process.

Welding vs. rework

Plain steel, for instance, is a standard material in plant construction and the manufacture of vehicles and machinery. The main priority for welding in these areas is to avoid weld spatter and slag islands at the welds as these can cause problems later on: if the surface is too uneven, water-soluble paints reach their limits. Whilst they are environmentally friendly and the most widely used paints, they are less effective at coating uneven surfaces due to their higher surface tension. This leads to damaged areas in the paintwork and, in the worst-case scenario, causes premature corrosion.

To prevent such damage, Messer has developed the shielding gas Ferroline C12 X2. This gas mixture combines argon with carbon dioxide and oxygen in order to minimise spatter and create a smooth, finely rippled weld surface. Etienne Besnard is Managing Director of Batista-MGPV, a Normandy-based manufacturer of baking trays for industrial bakery products. He has tested the shielding gas and is convinced of its benefits: "We have been able to improve the quality of our processes

and products with Ferroline C12 X2. The welds are much smoother as a result, and the extent of weld spatter is significantly reduced. The amount of reworking required has been cut by a third. In addition, we have been able to increase the welding speed by up to 15 per cent."

Speed and heat input

Faster work is also appreciated by Roger Oehri, the owner of an apparatus construction and orbital welding firm of the same name in Switzerland. Furthermore, his main priority when TIG welding high-alloy steel is



to achieve an intensive heat input. Innoxline He3 H1 is the most suitable shielding gas for his application, being a reducing gas with a high arc pressure. "Innoxline He3 H1 permits a very high welding speed, plus it is superior in many respects to the commonly used shielding gases – for instance in terms of heat input, tempering colours and preventing distortion and weld defects," says Oehri.

These advantages also have a significant impact on the overall cost.

In order to find the right gas mixture for every requirement, all the important welding-relevant data are included in the calculation carried out with the Messer cost calculator. This ranges from the operating period, the voltage, the wire feed, the type of gas used and its flow rate, to the cost of energy, labour and materials. The reworking time is a particularly important variable. In this regard, use of the right shielding gas often creates great savings potential. If the customer does not have all the data to hand, a Messer employee can obtain it on the spot. On the basis of this data, the customer is

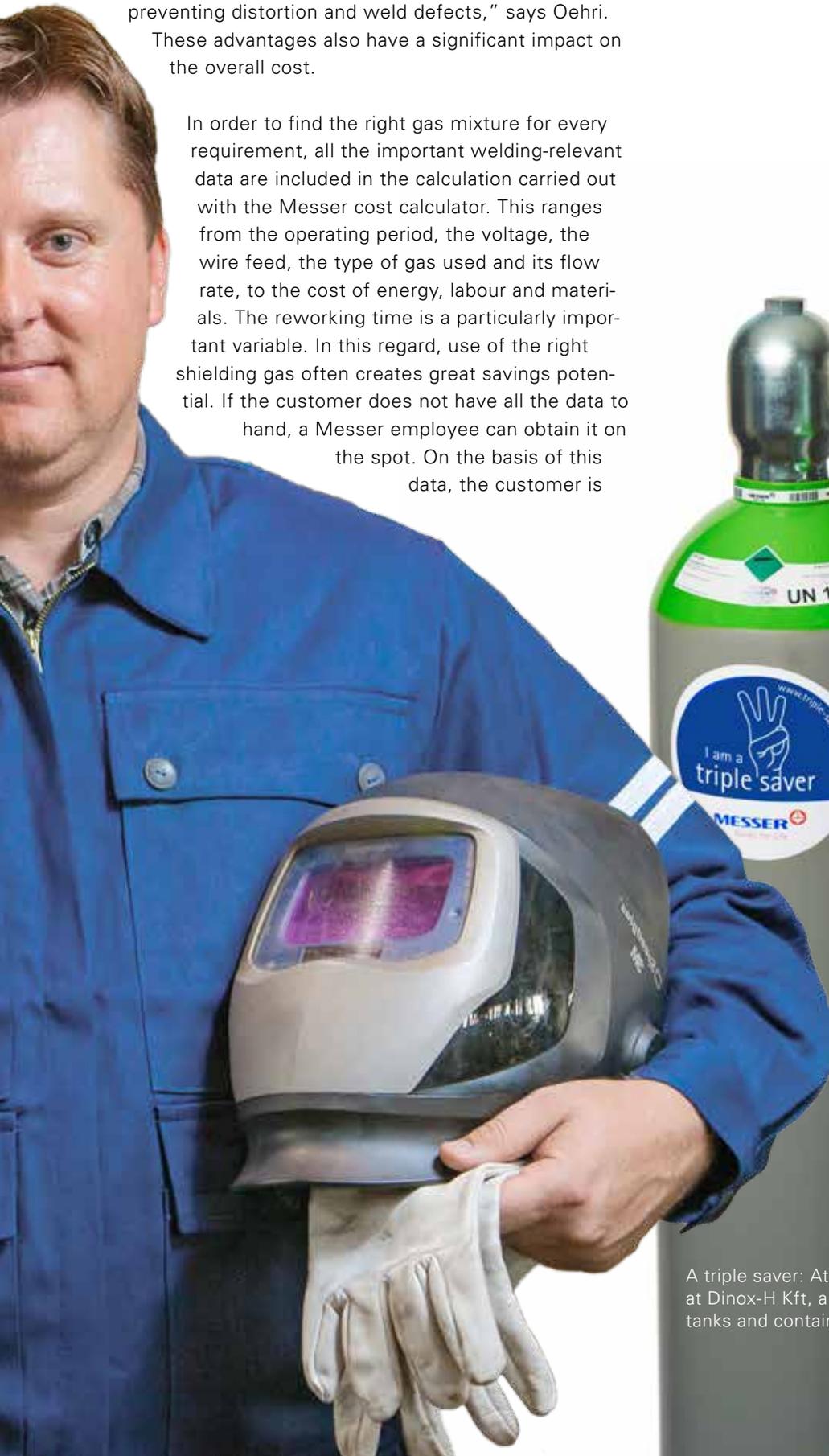
given a recommendation as to which gas is best suited to their application. And they also get a precise calculation showing what kind of effect the selection of this gas will have on their manufacturing costs.

Dr. Dirk Kampffmeyer, Messer Group



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A triple saver: Attila Könyves, Technical Manager at Dinox-H Kft, a manufacturer of stainless steel tanks and containers in Tatabánya, Hungary.

Switzerland: Argon for test series



Photo: Björn Appel, Wikimedia Commons

Centre du Four Solaire Félix Trombe, Odeillo, France

2,000 degrees from concentrated sunlight

At its headquarters in Villigen, the Paul Scherrer Institute (PSI), Switzerland's largest research centre, operates a solar furnace that concentrates the sun's rays 5,000-fold as well as a high-flux solar simulator that achieves a 10,000-fold concentration. Messer in Switzerland delivered argon to Villigen, which was used in scientific tests investigating the production of liquid fuels from water, CO₂ and concentrated sunlight. PSI has set up a further series of tests at the world's largest solar furnace in Odeillo, in southern France. The facility can supply enough

radiated power to carry out pilot-scale tests of solar chemical high-temperature processes at temperatures of up to 2,000 degrees Celsius. Messer organised an argon supply in a mobile tank for the tests in Odeillo. This involved close cooperation between the companies in France, Spain and Switzerland. The French solar furnace is located in the Pyrenees near the Spanish border. It has been in operation since 1970 and is used for tests in the fields of chemistry, power engineering and materials science.

Markus Epple, Messer Schweiz

People Focus

6 questions for

Zsuzsanna Gábeli

Zsuzsanna Gábeli has been working for Messer for 20 years. She has been the Lead Buyer of Messer GasPack since 2006. She lives with her husband in Szödliget, north of Budapest.



1. My biggest professional challenge at Messer so far has been ...
... taking part in setting up the new Messer GasPack company as a member of the management team.
2. What typifies Messer for me is ...
... the relaxed atmosphere and the fact that you are listened to. New ideas and new approaches to solutions aimed at achieving better results are always welcome.
3. My strong points...
... are a strong commitment to the company, dedication to continuous improvement and a willingness to work hard.
4. I have a weakness for ...
... any kind of music – classical, modern country music, Latin American, etc. –, my family and Tini, my Welsh terrier.
5. What fascinates you about gases and gas applications?
There are intelligent solutions through gas applications everywhere you look. I never cease to be amazed at how our gases help to protect the environment.
6. The most important invention of the last century is ...
... the development of renewable energy technologies.

Serbia: New filling plant

Helium for Southeast Europe

In October, Messer opened a new helium filling plant in Pančevo, Serbia. The noble gas is filled in different purities at the plant, from “simple” balloon gas to high purity Helium 6.0 for special applications, for example in laboratories. The Messer companies in the neighbouring countries of Croatia, Bosnia-Herzegovina, Montenegro, Albania, Macedonia,

Romania, Bulgaria and Turkey also get their helium from the new filling plant. It has initially been designed for an annual output of 380,000 litres of liquid helium and is equipped with a range of filling technologies. For customers in Southeast Europe, this means flexibility and security of supply.

Sanja Šamatić, Messer Tehnogas

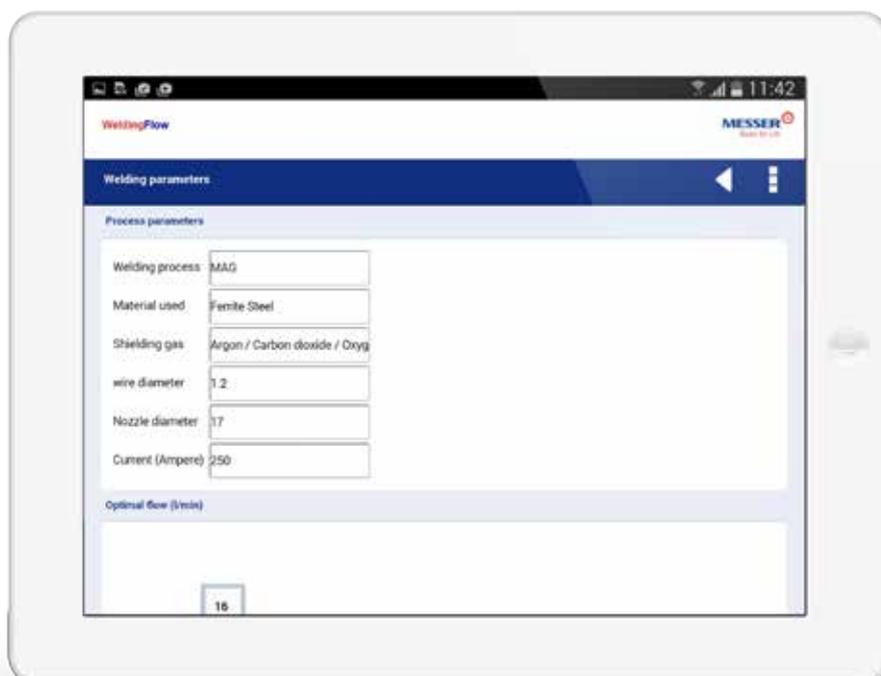
Germany: Gas flow parameters

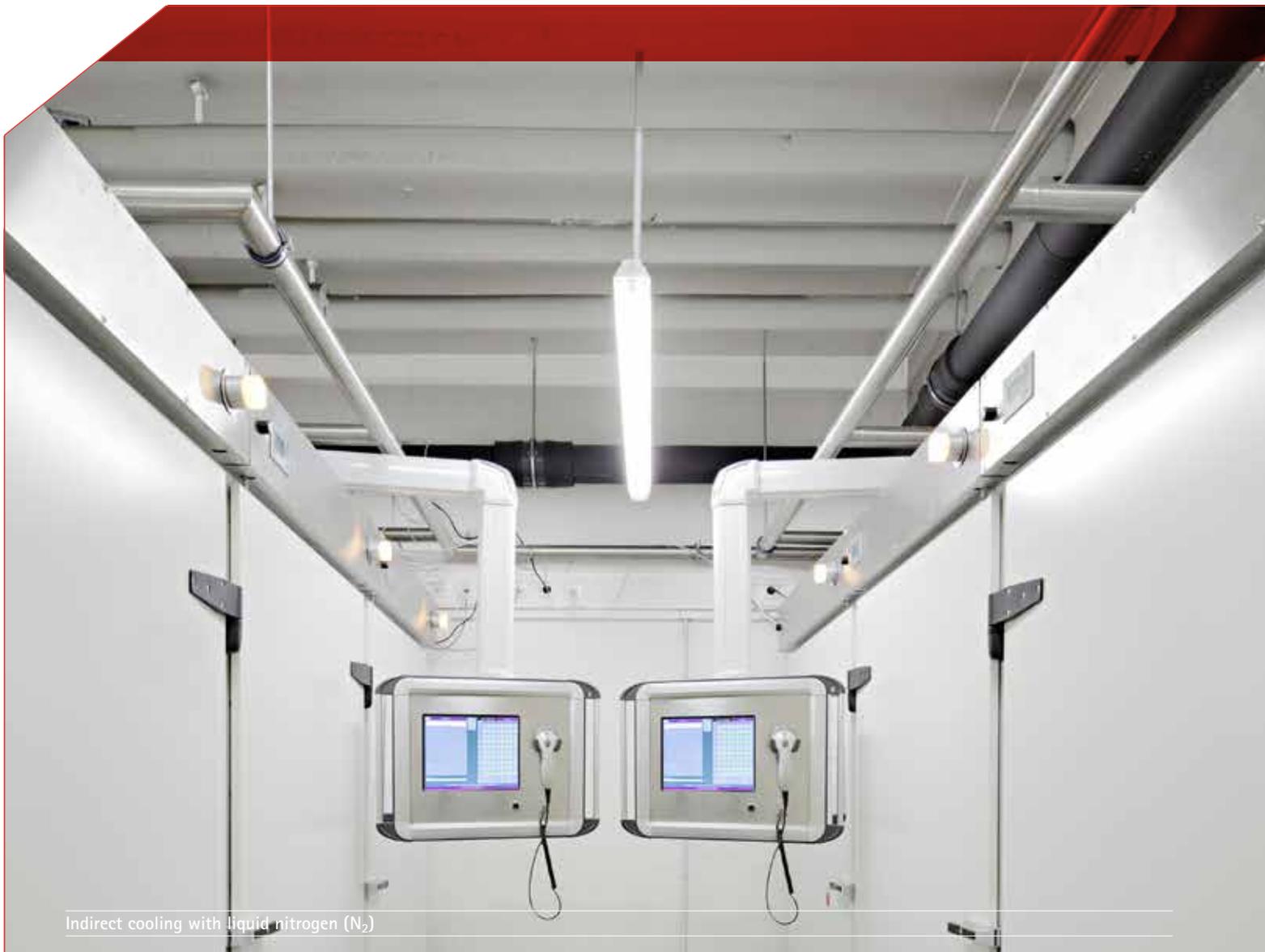
Apps provide welding help

The new “Shielding gas flow” app from Messer helps users set the right shielding gas flow for MAG, MIG and TIG welding. The user enters the parameters and receives a recommendation for the optimal gas flow. Possible pressure differences or gas losses caused by the welding equipment should also be taken into consideration. They require the gas flow to be checked at the shielding gas nozzle. Besides the app

which helps with settings, Messer offers another app which provides an overview of possible welding positions in accordance with DIN EN ISO 6947 from 2011. It vividly illustrates which welding position should be used for which welding job. The standard introduced the new PH and PJ welding positions for vertical-up and vertical-down welds on pipes. The PF and PG positions now only apply to metal plates.

Dr. Dirk Kampffmeyer, Messer Group





Indirect cooling with liquid nitrogen (N₂)

Ice-cold technology for blood and blood products

Stored blood is sometimes indispensable for saving lives. Large quantities of human blood, along with numerous blood products derived from it, are therefore stored in blood banks. These must be cooled to ensure that their specific properties are preserved from the time of donation through to the point of use. NSC, a company based in Seevetal, Germany, has developed a technology that allows organic material to be stored in virtually any temperature range from plus 4 degrees Celsius to minus 160 degrees Celsius. The low temperatures are no longer produced by electricity-powered compressors, but by gases from Messer.

Photo: NSC Medical Cooling Systems GmbH

"Blood is a very special juice", wrote Goethe in his Faust, no doubt viewing it symbolically as the essence of life. He could surely not have imagined that this juice would one day become an essential raw material for saving lives and curing illnesses. In Germany alone, some 18,000 units of blood a day are needed, and worldwide the figure is about 75 million a year, according to the World Health Organization (WHO). Blood transfusion services and clinics therefore run large cold storage facilities in order to be able to supply patients with whole blood, blood plasma and numerous other products extracted from blood at all times.

Compressors with a waste heat problem

"Conventional compressor-based cooling technology has quite a few drawbacks," explains Bernhard Keltsch, Managing Director of NSC Medical Cooling Systems GmbH. "Like ordinary refrigerators, every cooling unit has a compressor. Not only do these devices take up a lot of space and use a lot of electricity, they also produce significant amounts of waste heat. This then has to be disposed of in an elaborate process." With this type of technology, the removal of a single bag requires the entire cooling unit to be opened. This results in a lot of warm air entering the unit, in some cases causing considerable frost formation. There are no such problems with the new Biological Organization System (BOS) from NSC, which turns the cooling process the right way up, as it were. Instead of producing cold with heat-generating compressors in the cooling unit itself, it is supplied from the outside with liquid nitrogen.

Reliable and quiet

The liquid nitrogen flows into the heat exchanger of the BOS cabinet, cooling it to the required temperature. No noise or waste heat is generated in this process. In comparison with conventional units, the storage capacity is doubled or tripled without requiring any additional floor space, depending on the system.

Oliver Sperl, Sales Manager at NSC (right), demonstrates the barcode scanning process for identifying the test bag for blood, blood plasma, erythrocytes or other blood products to Thomas Böckler, Technology Manager Industry at Messer Group.

As BOS systems contain hardly any moving parts, their use reduces energy, maintenance and servicing costs by up to 50 per cent. The BOS unit stores the blood in individual thermo-holders or storage containers – depending on the model.

When removing a product, only the area designated by the IT system is opened, with sections that are not required remaining closed. This drastically reduces the penetration of warm air and the associated frost formation. At the same time, the temperature inside the units remains stable, making undesirable, detrimental warming of the stored material impossible. The cold storage facility can also be operated at normal room temperature.



Continued on page 12 →



Yassin Ied, responsible for research and development at NSC. In the background, a prototype of the BOS 1500.

→ Continued from page 11

Complete documentation integrated

Apart from the thermo-holders and storage containers for blood bags, there are also ones for other organic materials that are used in medicine and the pharmaceutical industry. These include laboratory samples and retained samples of medicinal products or tissue, which have to be reliably stored over a long period of time for purposes of quality control and monitoring.

The temperature in the BOS units can be set at a precise level between plus 4 and minus 80 degrees – in line with the specific requirements – and is kept constant at all times. In 2009, 34 semi-automatic drum systems for storing around 80,000 blood products and retained samples were installed at the University Hospital in Düsseldorf. In spite of this large storage capacity, the medical centre was able to reduce its operational and maintenance costs by a good 40 per cent

compared with the compressor technology used before. The systems have provided five years of completely trouble-free operation. Apart from the technical and financial advantages, the BOS system also makes logistics easier, stresses Bernhard Keltch: “The hardware and software of a comprehensive ERP system are integrated into the units.”

Once the user has logged into the system, the desired stock items are displayed. The management system selects the required products based on the order in which they were put into storage, thereby preventing them reaching their use-by date. When removing products, the device reads the bar codes on the holders and sends the data to the server. Each movement is recorded and meticulously documented. The BOS technology is now being used at several large hospitals and blood transfusion services domestically and abroad.



Product developer Dennis Mächling at the control unit in the prototype development department.



Robert Köppen, responsible for quality management and documentation at NSC, monitors a prototype test.

Indirect cooling replaces nitrogen bath

Indirect cooling replaces nitrogen bath. Cryogenic temperatures are needed to preserve stem cells, sperm donations, egg cells or tissue samples. Such low temperatures have hitherto only been achieved with direct nitrogen cooling.

In this process, the material being frozen lies in a bath of cryogenic nitrogen. At the bottom of the container, the nitrogen is liquid and has a temperature of minus 196 degrees. Further up, it becomes warmer and gaseous, and the temperature difference can be in excess of 70 degrees. This method also requires the container to be opened fully in order to remove individual samples. Employees therefore need protection against the cold temperatures. Not only that, but the ambient air also needs to be monitored to ensure that its oxygen content does not drop below a critical level due to the nitrogen being released.

A new version of BOS, which is capable of cooling to minus 160 degrees, is currently being developed and is scheduled to be available from the middle of next year. "The BOS process makes removal straightforward even at these extremely low temperatures," explains Thomas Böckler, who is supporting the BOS project for Messer. "Again, only individual holders are opened, so instead of a temperature drop, you have precise and constant temperature control. The stored material has no contact with the nitrogen, so the possibility of cross-contamination between the samples through a joint nitrogen bath is ruled out from the start. The unused gaseous nitrogen is safely drawn off again and can even be reused."

Editorial Team

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Interview with**Oliver Sperl, Sales Manager
of NSC Medical Cooling
Systems GmbH**

"Indirect cooling is more efficient in many ways."



Gases for Life: What makes BOS, the Biological Organization System, different from conventional cooling systems for biological material?

Oliver Sperl: We have rethought the concept of the refrigerator – for that, essentially, is what the conventional appliances are – and developed a new technology. Indirect cooling of the BOS units with cryogenic nitrogen facilitates handling which is easier and more efficient in many ways.

Gases for Life: What are the benefits for your customers?

Oliver Sperl: They save space, and their energy and maintenance costs are reduced significantly. The fact that handling is much easier and less complicated also saves working time. Our systems are fully organised and the documentation for every process is retrievable at all times. Process reliability, temperature stability as well as organisation and documentation are just as much part of the continuous improvement of NSC technology as cost efficiency.

Gases for Life: The product has already proved its worth, but sales are still at an early stage. What will happen next?

Oliver Sperl: BOS units are now in use at hospitals and blood transfusion services in Switzerland and Germany. Their advantages are already generating strong interest in the market as more and more people find out about them. And we now have a strong sales partner in Messer.

Gases for Life: Which role does Messer play?

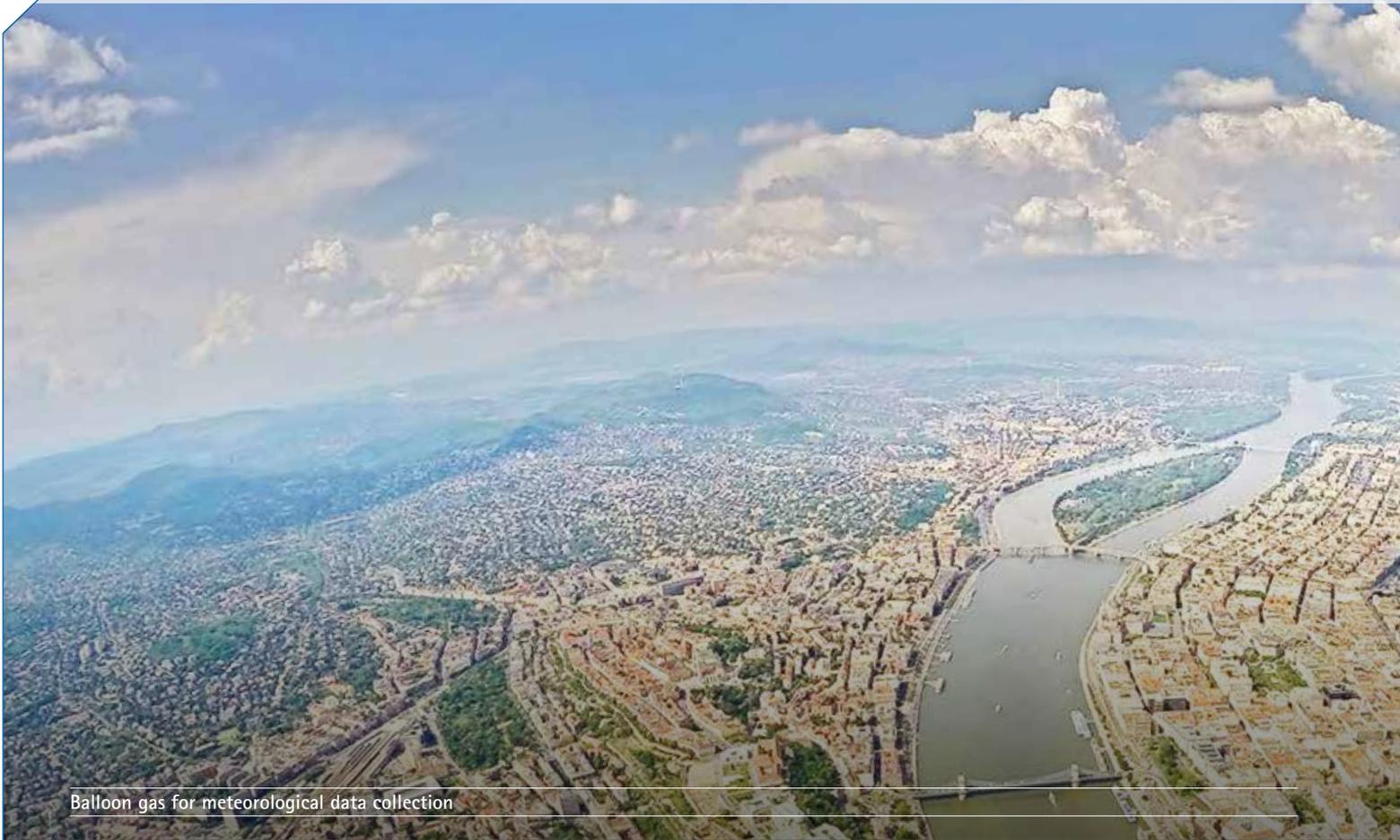
Oliver Sperl: NSC is primarily focused on development and production. Messer has a technically qualified sales organisation with a knowledge of potential customers and the capability to provide them with expert advice and support in the implementation process. The cooperation between NSC and Messer now allows both companies to offer their customers integrated and sustainable solutions from a single source and covering every aspect of the safe and stable storage of organic material.

Editorial Team

NSC Medical Cooling Systems GmbH

The company was founded in 2006 in Seevetal, near Hamburg, to develop a new technology for the storage of organic material in medicine and the pharmaceutical industry.





Balloon gas for meteorological data collection

In the heart of the storm

When it comes to weather research in the third dimension, satellites, planes and drones cannot keep up with the simple gas-filled balloon. It rises slowly, carrying the measuring instruments to an altitude of up to 30 kilometres. During this ascent, it collects data at a level of detail not achievable with other means of transport. In Hungary, Messer is supporting the team of meteorologists at Időkép (weather picture) by supplying the gas that is needed for the balloons.

A weather balloon is very similar to a normal balloon. It has a rubber skin, is filled with hydrogen or helium and is carried up into the air by the buoyancy of the light gas. However, it is a bit bigger than the usual toy variety, and climbs much higher, up to the stratosphere to be precise. The decreasing air pressure causes the balloon to expand all the time, and it finally bursts at an altitude of between 20 and 30 kilometres above the surface of the earth. The gondola containing the instruments is attached to the end of a long cord

in order to keep it out of the balloon's slipstream. During the ascent, the instruments measure the air pressure, atmospheric humidity, wind speed and other values, and transmit these to the ground station. When the balloon bursts, the gondola falls back to earth, slowed by a parachute.

Balloons for routine measurements are usually equipped with single-use instruments, which are lost in the process. At Időkép, the gondola with its high-quality instruments is tracked

down and retrieved using the on-board GPS transmitter. The Budapest-based Internet meteorologists run one of Hungary's most popular weather portals (www.idokep.hu). Last spring, the team began a series of measurements – due to last several years – that go beyond the routine function of a weather service. Among other things, their balloons are collecting data about ultraviolet and cosmic radiation as well as light pollution and its development in a specific region.



Photo: Időkép

Shot of Budapest taken from a weather balloon

“There are impressive satellite images in this field but so far practically no local photographs taken from a lower altitude and with a high resolution,” explains Gergely Nagy, one of the owners of Időkép. “We want to acquire additional and more precise information in this field through our measurements.”

In particular, the balloon measurements are intended to provide new insights into the formation of storm fronts and investigate the processes within storm cells – the smallest self-contained unit from which a storm can develop. “For example, not nearly enough is known about the vertical and horizontal processes that take place in storm cells,” says Gergely Nagy.

“A better understanding of these processes will also enable us to forecast the development of storms more accurately.”

In order to collect the necessary data, the balloon has to rise as close as possible to the storm front. When the meteorologists first launched this series of tests in April, they didn't have to travel far. A storm had conveniently built up right above the Hungarian capital, so the balloon was sent on its research journey from the park below the citadel. This premiere already delivered interesting measurements from inside the storm clouds as well as spectacular pictures from the stratosphere. The Időkép experts use the data from their

own radar network and lightning location system as well as the reports from the Hungarian Meteorological Service to help them find the storm fronts and prepare the balloon in time. The Hungarian Meteorological Service sends weather balloons into the stratosphere for routine measurements at regular intervals, also using balloon gas from Messer.

*Krisztina Lovas,
Messer Hungarogáz*



László Radnóti, head of the Specialty Gases department at Messer in Hungary, helped launch the meteorological research balloon.



Stefan Messer receives prize

In Berlin on the 7th of November Stefan Messer received the “Family Business Award” from the international consultancy and accountancy firm Ernst & Young. The award was presented at the “Entrepreneur Of The Year” competition, which each year acknowledges entrepreneurial excellence in different categories. “The entrepreneur saved the company his family founded in 1898 from imminent insolvency and repositioned the supplier of industrial gases for international business. The judges were particularly impressed with the future potential – the international setup with a broad product portfolio – as well as the entrepreneurial achievements such as taking back all the shares into family ownership. Then there is the putting into practice of social entrepreneurship as a model for responsible, sustainable behaviour,” said Peter Englisch of Ernst & Young, explaining the decision of the independent panel of judges as he presented the award. Stefan Messer received this award at a ceremony attended by well-known figures from the world of politics and business, as well as his family. First and foremost, the award acknowledges his struggle for the preservation of Messer.

Diana Buss, Messer Group

Responsible Care

Messer in Austria was presented with the “Responsible Care” certificate at an award ceremony in Gumpoldskirchen on 17 September 2014. Responsible Care is a global, voluntary initiative developed by the chemical industry with the aim of improving health, safety and environmental performance through self-regulation. Companies which meet the initiative’s

strict conditions are awarded the certificate, which is valid for a period of three years. As a gases manufacturer, Messer is a member of the Austrian Chemical Industry Association (FCIO) and has committed itself to the Responsible Care standards.

Jürgen Steiner, Messer Austria

Coca-Cola HBC AG's best supplier

The largest Coca-Cola bottler in Europe, Coca-Cola Hellenic Bottling Company AG, has awarded Messer the Best Supplier of 2013 award in the “Quality Performance & Compliance” category. To assess the performance of suppliers, all the European plants that bottle Coca-Cola and other Coca-Cola products award points over the course of a year in a structured reporting system. This ensures an objective assessment. Messer presently supplies carbon dioxide and nitrogen to CCHBC AG bottling plants in Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Poland and Serbia. The award will help Messer to continue to develop its partnership with Coca-Cola.

Tim Evison and Witold Rammel, Messer Group



Tim Evison and Witold Rammel of Messer with Miroslav Urica, Strategic Procurement Manager at CCHBC AG

A useful vacuum

Chloromethane is harmful to health. However, as a gaseous solvent, it also has some very useful properties. The chemical industry therefore uses it for the production of various intermediate goods that are then used in the manufacture of products such as shampoo and cleansing agents. Cryogenic nitrogen and a process developed by Messer allow the chemical to be sucked out of the production process without any of it being released into the atmosphere.

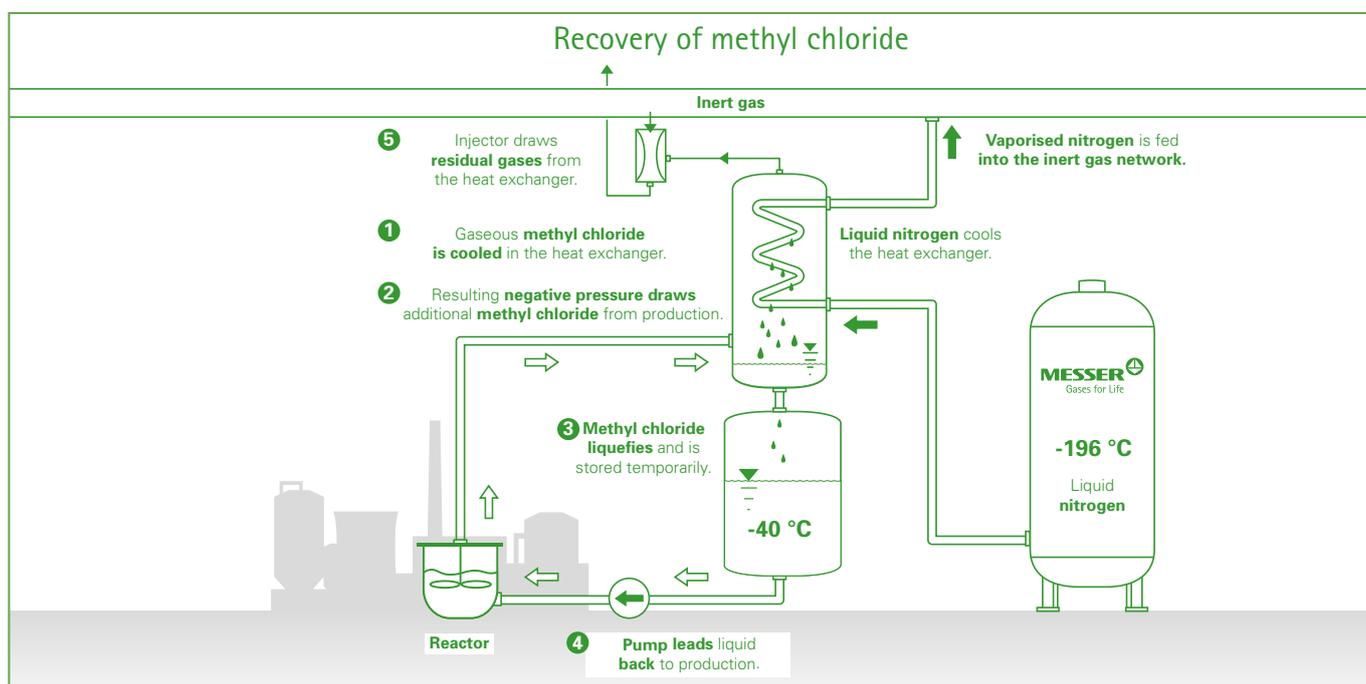
The process makes use of a simple physical variable: vapour pressure. For chloromethane (CH_3Cl , also called methyl chloride), the vapour pressure falls below 1 bar, that means a vacuum is created, at minus 24 degrees Celsius. This allows the gas to be sucked out of the production reactor. The suction process is started up by cooling a heat exchanger with cryogenic liquid. This cooling causes the chloromethane to liquefy, thus taking up much less space than in its gaseous state. As a result, it is constantly sucked into the heat exchanger. The heat exchanger therefore functions as a vacuum pump (cryogenic pump). Practically all the chloromethane is removed from the process and temporarily stored in a refrigerated vessel. This prevents emission of the harmful substance, improves the quality of the manufactured product and



Facility for methyl chloride recovery with liquid nitrogen

facilitates recovery of the solvent for further production. The cryogenic pump operates like a vacuum pump, but one which does not use any electricity. That is because the suction effect is created by the vacuum which is generated by the low temperature of the liquid nitrogen. It enters the unit as a cryogenic liquid and is gaseous and warmer when it is discharged. In this state, it can be fed into a gas network and also reused. A very small flow of nitrogen is taken from the gas network to drive an injector. This injector sucks interfering residual gases out of the heat exchanger to ensure an optimal condensation process there.

*Dr. Friedhelm Herzog, Messer Group,
and Thomas Kutz, Messer Industriegase*



Interview [2]

Thomas Müller

Owner and Managing Director of Thomas Müller Lasertechnik



What does your company do?

We are a welding business specialising in precision and special welding processes. The family company has been in existence for twelve years.

What are your most important projects?

We have customers in a wide variety of sectors such as the car industry, medical technology, the aerospace industry and mechanical engineering. We carry out prototypes, custom-made and series production as well as contract and repair welding. We also manufacture sample parts, for example vehicle radiators or applications for medical devices. Another main pillar is the repair of parts for classic cars, primarily the welding of grey cast iron or aluminium engines.

Which welding processes do you use?

Laser and TIG welding.

Which materials and gases do you use?

Depending on the material and the requirements, we use welding argon, Lasline H2, Lasline He30 and Lasline He50. The range of materials includes chrome nickel alloys, aluminium and aluminium alloys, titanium, tool steels, nickel-based alloys and copper.

What is your experience with the gases for laser welding?

The Lasline gases give us better product quality, and they have allowed us to significantly improve productivity. You get an optimal penetration profile at high welding speeds.

What are the most important quality requirements regarding your welded products?

Above all, we need 100 per cent reproducible results. For this, we need pure materials and gases which, on the one hand, have no adverse effects and, on the other hand, remain reliably stable in terms of their quality, in order to keep the welding process constant and stable as well.

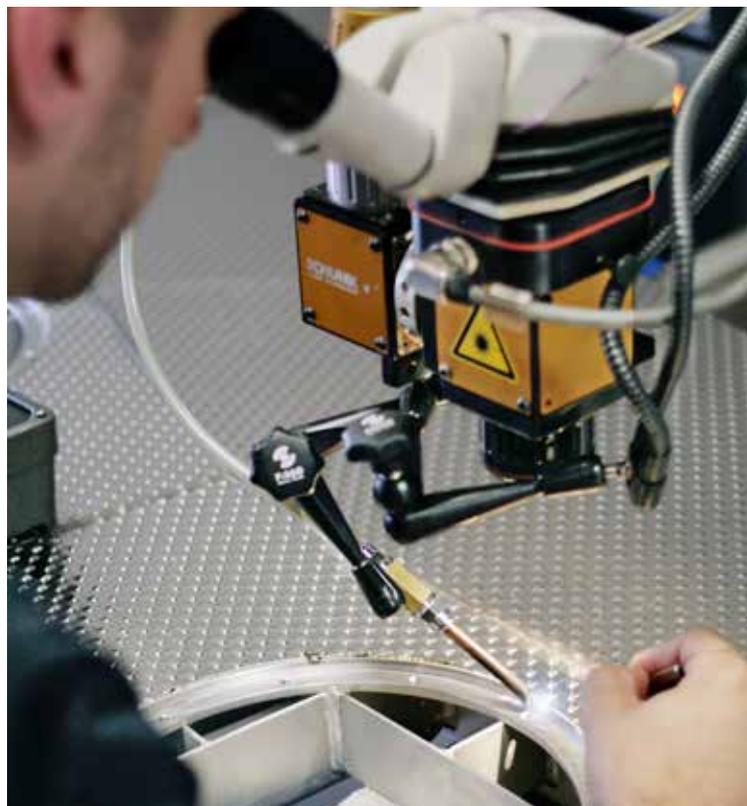
Why have you been working with Messer for twelve years?

With Lasline we can achieve welds free of oxidation in the production of components made from high-alloy materials. Apart from this advantage, we were also convinced by Messer's customer-oriented and reliable comprehensive service.

What do you expect from your gases supplier?

The same as what we offer our customers: consistently high product quality, rapid availability, good service and close, long-term cooperation.

Editorial Team



Only laser welding allows a screen plate that is subjected to stress by virtue of its design to be welded to the base frame in such a way as to ensure water-tightness and to avoid damage.

Ice cream on dry ice



The Confiserie Honold cake and chocolate shop in Zurich's old town has been creating sweet delights of the highest quality since 1905. Its exquisite creations include ice cream cakes in all shapes and sizes. As you can't really put such works of art into a shopping bag, they are delivered directly to the customer. To ensure that the ice-cold creations reach their destination in all their magnificence, they are transported with ASCO dry ice slices chilled to minus 80 degrees.

For more on this and many other gas applications, go to:

www.GasesforLife.de

