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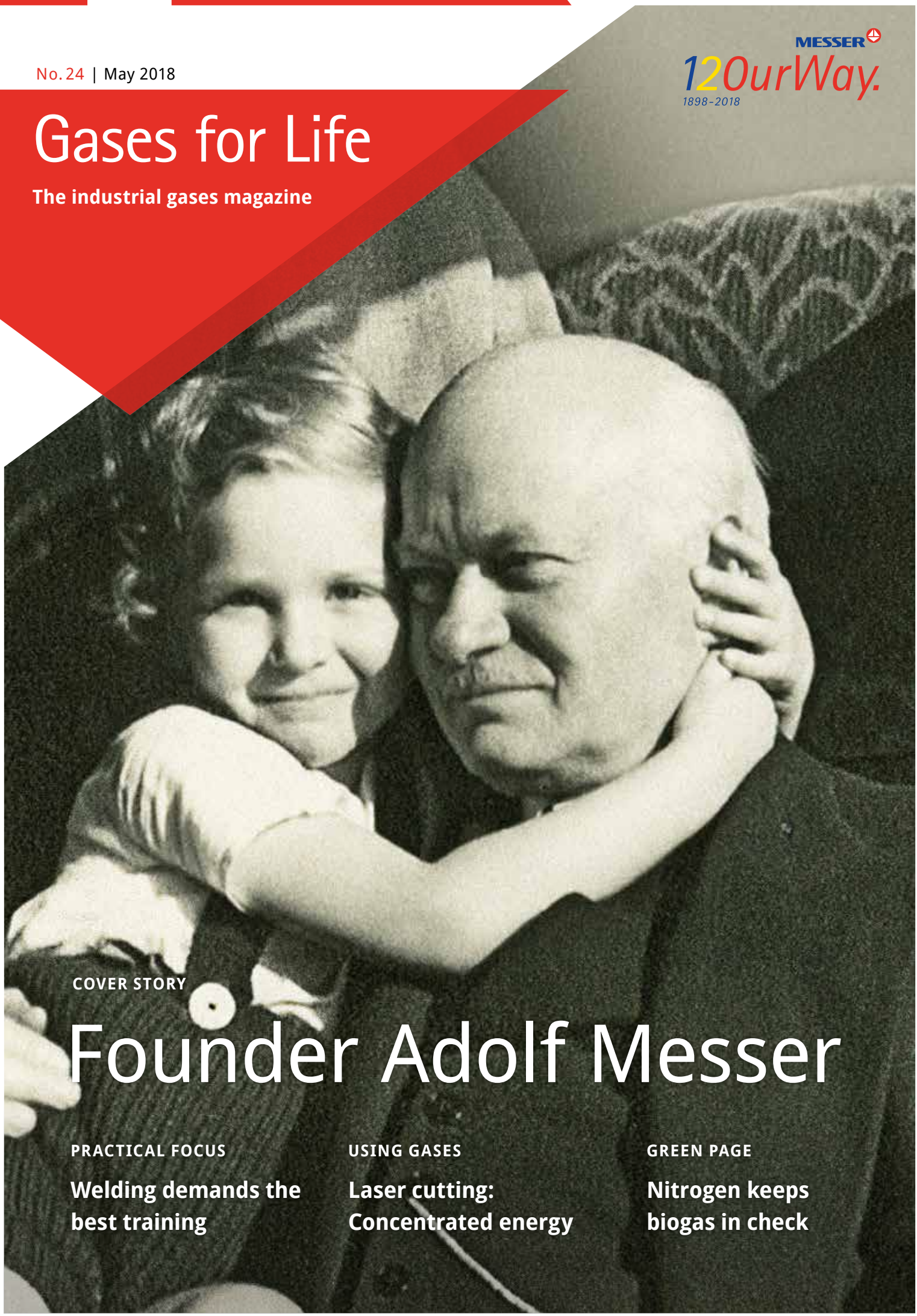
MESSER 120OurWay. 1898–2018

Gases for Life

The industrial gases magazine



COVER STORY

Founder Adolf Messer

PRACTICAL FOCUS

Welding demands the best training

USING GASES

Laser cutting: Concentrated energy

GREEN PAGE

Nitrogen keeps biogas in check

Dear Readers,

Messer is celebrating its 120th anniversary in 2018. I am sure you can imagine how proud this event makes me feel as the grandson of Adolf Messer, the company's founder. It is good to see how our family enterprise has developed up to the present day.

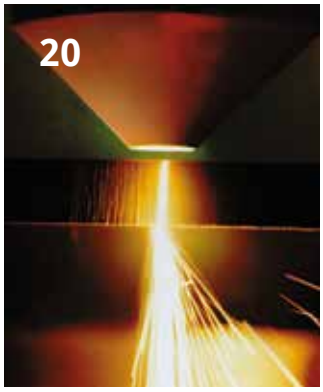
I admire my grandfather for the courage he showed in taking the first step. I take off my hat to his perseverance and strength in getting through even the most difficult of times. I also have the highest respect for what my father, Dr Hans Messer, achieved in continuing our company's strategic development and opening up new areas of business.

A more detailed description of my forefathers' contribution would be beyond the scope of this editorial. For this reason, we have decided to devote the cover story in this issue to Adolf Messer's life work. The next issue of "Gases for Life" will then focus on Dr Hans Messer. And in the issue after that, I will have the pleasure of reading about some milestones of my own work. Later in the year, we are also going to publish a special issue of "Gases for Life" featuring historical reports taken from back issues spanning the past few decades.

But for now, I hope you enjoy reading this issue and find the content interesting.

Stefan Messer
CEO and owner of Messer

The cover photo shows
Adolf Messer and his youngest child Rosemarie, around 1940



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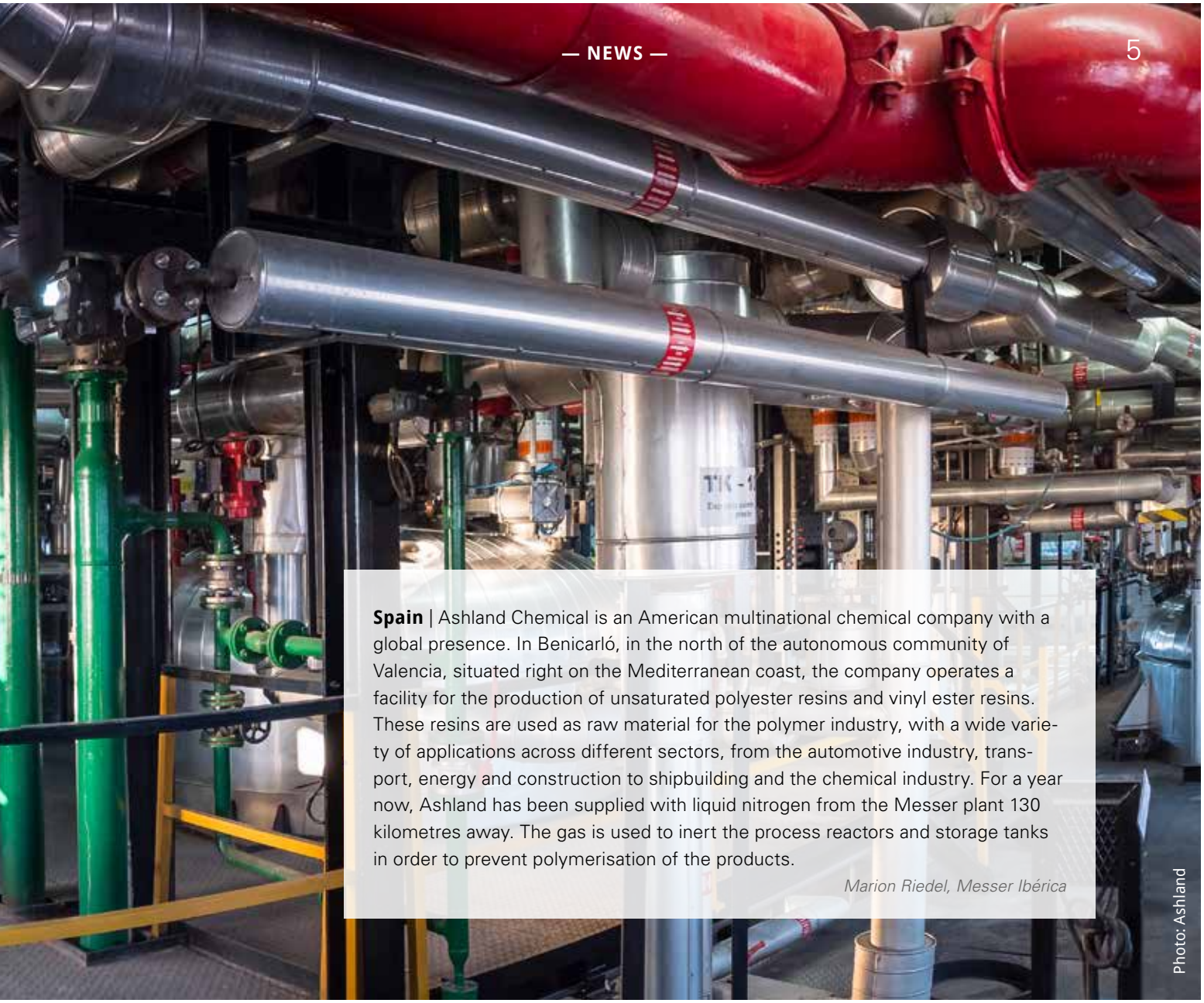
Nitrogen for inerting silos

Nitrogen filling station for zero-emission transport refrigeration

France | Messer and energy supplier GNVERT, a subsidiary of Engie, have jointly opened a special filling station for environmentally friendly refrigerated vehicles in La Courneuve near Paris. The trucks can fill up with natural gas or biogas for their engines as well as liquid nitrogen for zero-emission refrigeration of food. Natural gas engines produce considerably less exhaust pollution than diesel engines. Moreover, refrigeration with cryogenic nitrogen makes diesel-powered cooling units redundant. This gets rid of not only the exhaust fumes from these units but also the noise from the running motor. This multiple reduction of emissions is becoming more and more important, particularly when driving in inner-city areas, as environmental standards are becoming increasingly stringent. For example, Paris has been joined by Athens, Madrid and Mexico City in adopting a complete diesel ban for their city zones, due to come into effect by 2025. Further special filling stations are planned.

Caroline Blauvac, Messer France



Spain | Ashland Chemical is an American multinational chemical company with a global presence. In Benicarló, in the north of the autonomous community of Valencia, situated right on the Mediterranean coast, the company operates a facility for the production of unsaturated polyester resins and vinyl ester resins. These resins are used as raw material for the polymer industry, with a wide variety of applications across different sectors, from the automotive industry, transport, energy and construction to shipbuilding and the chemical industry. For a year now, Ashland has been supplied with liquid nitrogen from the Messer plant 130 kilometres away. The gas is used to inert the process reactors and storage tanks in order to prevent polymerisation of the products.

Marion Riedel, Messer Ibérica

Photo: Ashland

Calibration gases for sensors

Romania | Sensor manufacturer Testo gets the calibration gases for its measurement laboratory in Cluj-Napoca from Messer. The newly opened laboratory has been authorized by Romania's metrology authority. It complies with the requirements laid down in the ISO 17025 standard. Messer supplies the laboratory with high purity gases as well as defined gas mixtures, and has also equipped it with the necessary pressure control equipment. Testo operates worldwide as a supplier of measuring instruments. The company's headquarters are located in Lenzkirch in Germany's Black Forest.

Alina Mureşan and Carmen Baragan, Messer Romania Gaz

Calibration in Testo's measurement laboratory

Welding demands the best training

There are more than a dozen different welding processes, and it is hard to put a figure on the number of materials that are used. When other factors are included, such as the many different mixtures of shielding gases, we can clearly see that welding is a science in its own right. Achieving good welding results is only possible with well-trained welding technicians. It is a given for Messer not only to develop and supply optimal shielding gases but also to support the training of experts at all levels. In Slovakia, for instance, Messer is cooperating with technical colleges, welding schools and universities of technology as well as the Slovak Welding Research Institute.

The institute also functions as an internationally accredited certification body and prepares welders for the various tests that are conducted in accordance with national and international requirements. At the same time, it is the country's most important educational institution in this field. "Messer provides assistance with training, from apprentices to welding engineers. Among other things, our partners receive theoretical and practical tools from us," says Michael Holy, Managing Director of Messer in Slovakia. "Practical training involves the use of Messer gases, with course participants familiarising themselves with the different shielding gases and learning how to use the specialist equipment."

Further training as a service

It is also necessary to undergo continual further training in order to keep welding skills up to date. The specialist companies often provide the instruction themselves. Some also offer it as a service for welders from other companies, an example being the Spanish Tesol Group. Under the name of Formavigo, it runs its own training centre for welding specialists in the Galician port of Vigo.

Particularly companies that operate in the offshore sector send their specialists to this centre for training. For example, one of the ongoing projects at Formavigo is the preparation of welders for work on the construction of a 1,100-kilometre gas pipeline through the Black Sea. The welding gases that are used in training have been supplied by Messer since 2008.

Askozvar welding school in Slovakia

The training course at Formavigo led by Messer specialists gave welders from Tesol and experts from Messer the opportunity to enhance their skills.

Win-win situation

"If required, our experts are also available as course instructors," emphasises Dr Bernd Hildebrandt, Senior Manager Application Technology Welding & Cutting. He himself regularly gives lectures and leads workshops, for example at Formavigo last year. "Topics included targeted optimisation of gas mixtures for specific materials and applications. In this instance, we took advantage of our close working relationship by also sending some of our own employees to take part in the training."

However, Dr Bernd Hildebrandt reckons that it is not just the simultaneous provision of training for the customer and the supplier that creates a win-win situation: "Welding and cutting are technologies that are developing very dynamically. Progress is constantly being made in terms of attainable quality and economic considerations, with gases often playing a key role in this regard. Customers benefit from our know-how through improved results and reduced costs. We, in turn, can use the training to get them interested in the appropriate products."

Marion Riedel, Messer Ibérica, and Michael Holy, Messer Tatragas

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Mould cleaning with dry ice

Switzerland | Säntis, a long-established Swiss company, cleans mould components efficiently and gently with a dry ice blaster from ASCO. Säntis' product range includes injection-moulded packaging elements as well as multilayer film, which are required in the food industry and other sectors. Mould cleaning with dry ice pellets helps improve the cost-effectiveness of production.

Simone Hirt, ASCO CARBON DIOXIDE

Liquid gases for steel production

Vietnam I Messer supplies steel producer Toàn Thắng Steel with large quantities of liquid nitrogen and oxygen under long-term supply contracts. Market analyses assume strong growth in steel consumption in the ASEAN states, primarily due to the region's increasing urbanisation. Toàn Thắng Steel is responding to this increasing demand by switching from the electric arc process to the Linz-Donawitz process, which allows large quantities of steel to be produced economically. This process is also known as basic oxygen steelmaking because it involves pure oxygen being injected directly into the molten pig iron with a lance, resulting in removal of the dissolved carbon.

Mai Vu Thi, Messer Vietnam

Dry ice blasting ensures that moulds are cleaned in a particularly gentle, thorough and economically efficient way.

Messer receives top rating from Continental Barum

Czech Republic | As part of supplier evaluation, Messer was given the top rating (AA) by tyre manufacturer Continental Barum. The company is a subsidiary of Continental AG with an annual output of some 20 million tyres, making it one of the world's largest producers. Messer supplies liquid carbon dioxide for mould cleaning with dry ice as well as liquid nitrogen for diaphragm pressing during tyre vulcanising and for 3D printing. The assessment for 2016 was carried out in October 2017. Messer received 96 out of a possible 100 points.

Vít Tuček, Messer Technogas

Grégoire Delubria

Grégoire Delubria has been working as a graphic designer in Communications at Messer in France since 2015. He lives with his partner in Colombes near Paris.

1. What has been your greatest success at Messer?
Designing our national subsidiary's sales offering on a modular basis. I spent a lot of time developing a brochure design with attractive graphic elements, which is easy to use and edit – all in Word format, allowing colleagues to do the latter themselves. I am very proud of the result.

2. What would you say is a must-see for anyone visiting your country?
My favourite is the Musee d'Orsay in Paris. A hundred years ago it was a station, and today it houses the largest collection of Impressionist and Post-Impressionist paintings in the world.

3. What three things would you miss least?
People with negative energy, bad drivers and spiders – especially spiders.

4. Which famous person would you like to spend an evening with?
Kylie Minogue – her songs get my creative juices flowing, and I like her personality.

5. What else would you like to learn or study?
I always love to learn new things. If I had to choose: Japanese.

After switching to oxyfuel technology, Adolf Messer introduces the "Original Messer" brand in 1908 and starts selling equipment such as torches, acetylene gas generators and pressure-reducing valves.

1898

Adolf Messer sets up Frankfurter Acetylen-Gas-Gesellschaft Messer & Cie. in Hoechst for the production of acetylene gas generators and lighting appliances.

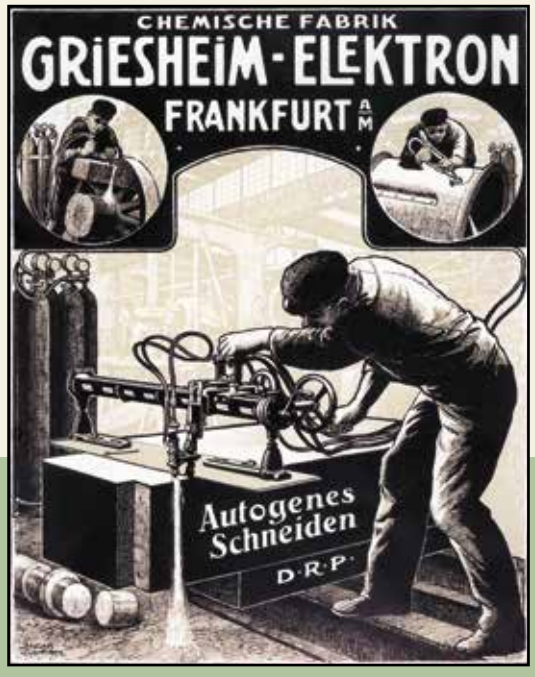
Adolf Messer.

The company founder and his work

Adolf Messer was still an engineering student when he set up a small workshop in 1898 at the age of 20. Initial successes soon followed with the construction of acetylene gas generators and lighting appliances.

The lighting installations and acetylene gas generators for heating and cooking were supplied to customers including the Feldberghotel, Hattersheim station, Bonames leather factory, the Marienhausen educational institutions as well local authorities, postal establishments, schools, inns, churches, monasteries and private customers. Before long, Messer also started looking beyond the German market. Some 300 units were exported in the first seven years after the company was set up.

Continued on page 12



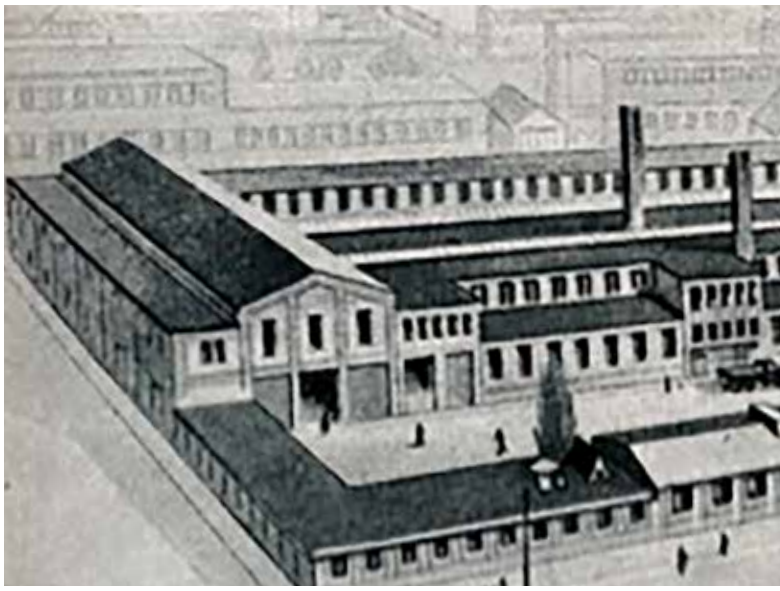
1903

Ernst Wiss develops the first hydrogen-oxygen cutting torch at Griesheim-Elektron. This is followed by equipment and machinery for oxy-fuel welding and cutting.

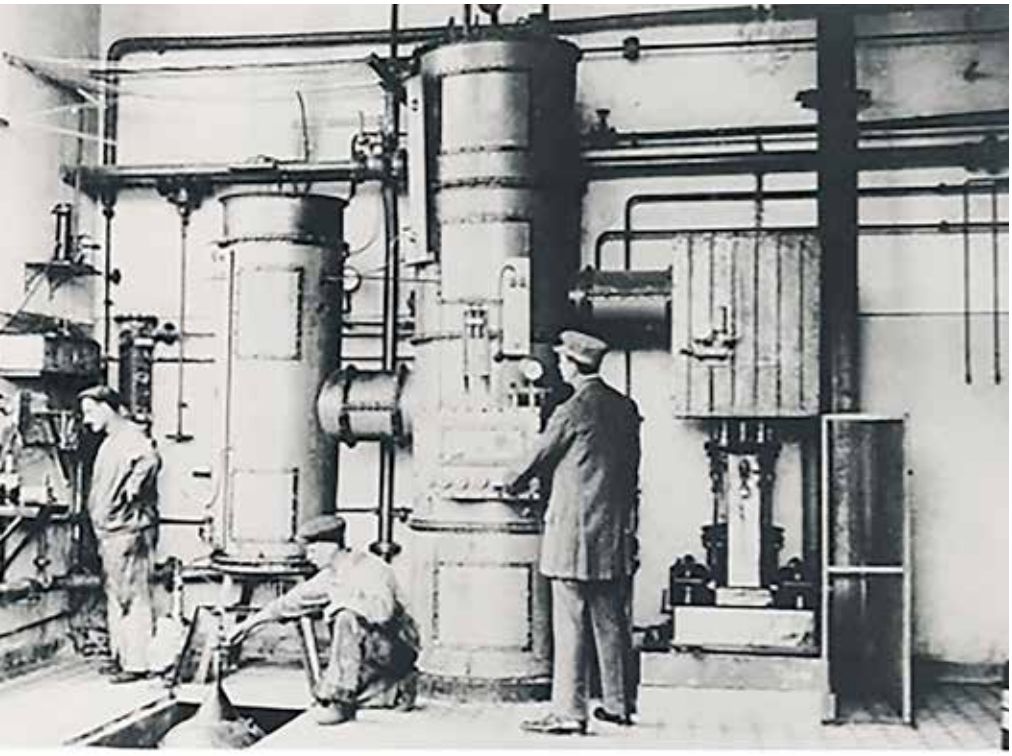
1908

First oxygen plant commissioned by Chemische Fabrik Griesheim-Elektron.

However, with acetylene lighting installations facing increasing competition from incandescent gas lighting and electric lighting systems and, moreover, with less and less demand for acetylene for cooking or heating, Adolf Messer was soon forced to find a new focus as far as the product range was concerned: he found a promising alternative in oxyfuel welding and also delivered his first air separation units abroad before the First World War. The company's expansion was also mirrored in the establishment of branches and subsidiaries at home and abroad, which evolved into an extremely important mainstay for the company.



In 1926 Adolf Messer & Co. GmbH moves to new premises on Hanauer Landstrasse in Frankfurt on the Main. The same year sees the market launch of Messer's high-powered, blowback-proof, variable-head torch for welding and cutting.



Air separation units become the company's second pillar after oxyfuel technology. Adolf Messer builds his first air separation unit on site at Rodrigo de Rodrigo in Madrid. He is there in person to commission it in 1910.

1910

The first air separation unit is sold and Adolf Messer is in Spain in person to commission it.

1912

Messer embarks on its first transatlantic venture: Adolf Messer travels to the USA where he sells torches and oxygen cylinders to a New York building site manager. The $5000 proceeds allow him to establish the Messer Company in Philadelphia.

1925

Hans Messer is born on 1 February.

The start of the First World War put a temporary stop to the company's further expansion. In the challenging economic conditions of the post-war years, Adolf Messer put a lot of energy into regaining export markets after the company's assets in Great Britain and the United States had been seized and auctioned off. In the 1920s, the company re-established contact with foreign customers and once again strengthened its domestic market position in the welding and cutting segment. The production centres had survived the First World War virtually unscathed.

Continued on page 14

Hans Messer is born on 1 February 1925. The son of Adolf Messer and his second wife Thea will one day follow in his father's footsteps and take over the family business.

1926

Messer develops blowback-proof welding and cutting torches.

1927

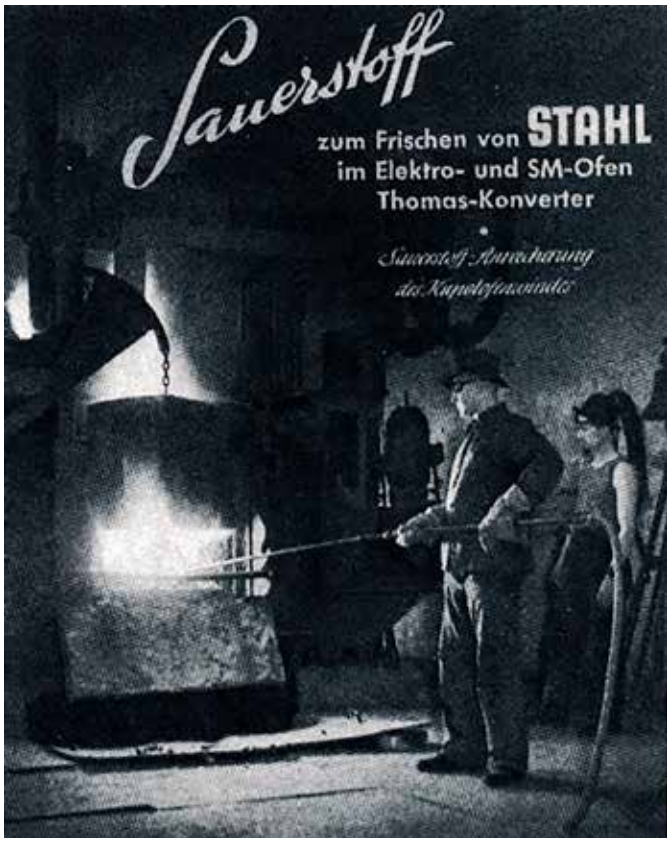
Messer develops an oxygen-saving constant pressure process with the same oxygen pressure for all sizes.

1931

Messer becomes the first producer of electric welding machines.

Even though Messer managed to continuously expand and modernise its product portfolio, the Great Depression of 1929 to 1932/33 inevitably had an impact. The global economic collapse led to a dramatic decline in industrial production. From the late 1920s, job cuts and falling sales figures were also an inescapable part of day-to-day business at Messer.

After the collapse of the Weimar Republic, the Frankfurt-based company was operating in a macroeconomic environment marked by a strengthening recovery from the severe economic crisis. German industry had already come through the worst of the recession by the spring of 1933, from which point it benefited from the global economic upturn as well as the Nazi dictatorship's "employment and armaments policies" (Gerold Ambrosius). At Messer & Co. GmbH, as at other companies, day-to-day business was increasingly overshadowed by the armaments policy being pushed by the government, resulting in several orders from German Army Ordnance for the construction of special machines. Thus, Messer electric welding machines were used to join armoured hulls, improve resistance welding in order to achieve gas-tight seals on pressure hulls and hollow bodies, or to develop the Nivosec three-dimensional flame cutting machine, which made it possible to carry out three-dimensional work on pressed armoured cupolas for armoured vehicles. The company was also involved in research work related to the construction of missiles, which the army tested from 1936, and delivered four large-scale installations to Peenemünde for the production of liquid oxygen.



The replacement of air by oxygen for refining processes in steel production was one of the factors underlying the upturn of industrial gases.

As the Allies advanced in the final weeks of the war, production at all Messer sites gradually came to a standstill in the spring of 1945. The three years or so between the end of the war on 8 May 1945 and the currency reform were almost inevitably characterised "by improvisation in every area" (Richard Bechtle). In terms of the company's development in the post-war years, it was an invaluable advantage that relations with long-standing foreign business partners

1933 – 1945

Adolf Messer manoeuvred his company through the Third Reich. On the one hand he used forced labour during the war, on the other he is said to have protected employees from persecution.
The National Socialists' armaments policy meant full order books for many companies, including Messer. At the end of the war, large parts of the factory lay in ruins.

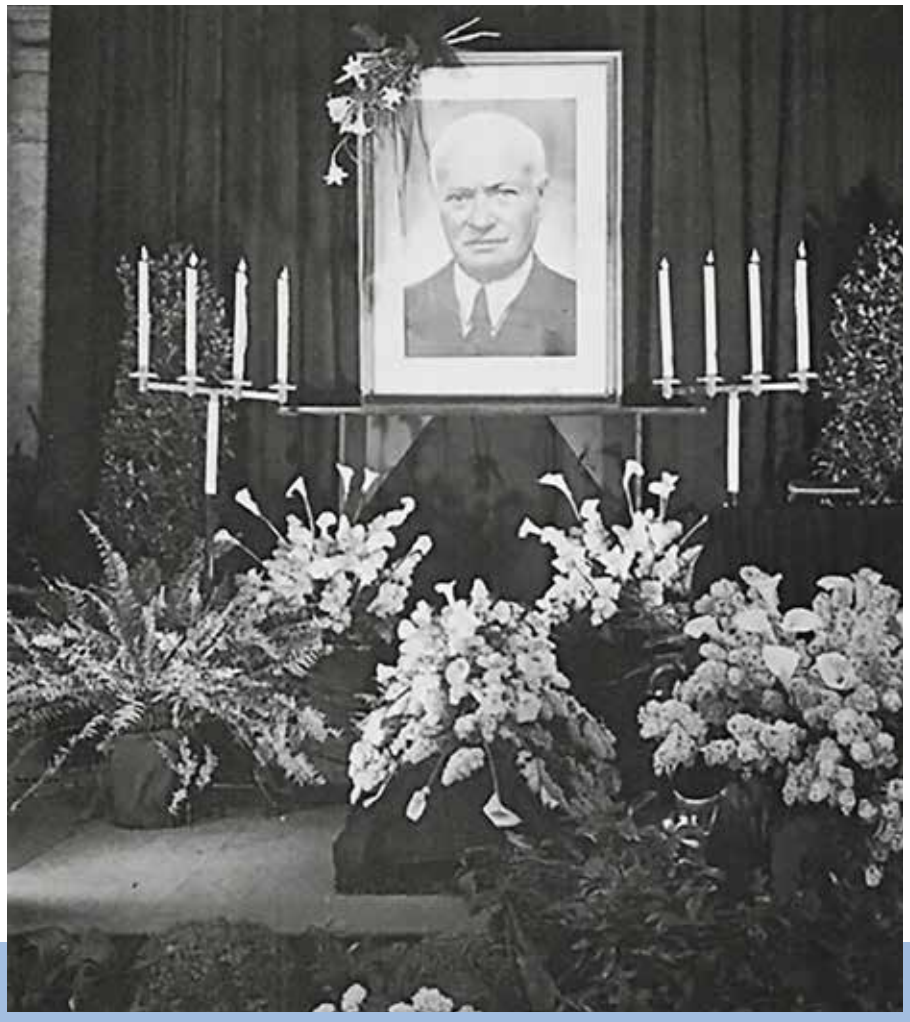
1945

Adolf Messer GmbH receives permission from the American military government to resume production of oxygen and its sale in steel cylinders.

could be quickly re-established on a basis of mutual trust in spite of the devastation caused by the Nazi state's aggressive foreign policy. In April 1946, for instance, Adolf Messer was visited by Raoul Amédéo, followed shortly afterwards by his sons Pierre and Jean, in order to revive their cooperation through the formation of Société Francaise des Appareils et Procédés Messer. Before Adolf Messer fell seriously ill and died on 13 May 1954, he had taken steps to ensure that the company would remain in family ownership. One year before his death, at the age of 74, he had decided to transfer responsibility for the overall management of the company to his son Hans.

Dr Jörg Lesczenski, Goethe University Frankfurt

In the next issue of "Gases for Life", we will report on the era in which Dr Hans Messer guided the fortunes of the company.



Funeral service for Adolf Messer on 18 May 1954 in the machine-making shop in Frankfurt.

1949

Adolf Messer is awarded an honorary doctorate by Darmstadt Technical University.

1952

American Messer Corporation founded in New York.

1954

Adolf Messer dies following a serious illness.

1955

Stefan Messer is born.

Nitrogen keeps biogas in check

Biogas is a clean, renewable and carbon-neutral energy source. Nitrogen eliminates the explosion risk when carrying out maintenance work on biogas facilities.

Biogas consists mainly of methane, the simplest compound in the hydrocarbon family. The colourless and odourless gas has the molecular formula CH_4 – in other words, it consists of a single carbon atom and four hydrogen atoms. When it combusts, it produces one carbon dioxide (CO_2) molecule and two water (H_2O) molecules. These are fairly environmentally compatible reaction products, especially if the methane has been derived from organic material. In this case, its carbon content comes from atmospheric CO_2. Thus, when burned, the amount of carbon dioxide produced does not exceed what was extracted from the atmosphere in the first place. Biogas can therefore make a significant contribution towards a more environmentally friendly energy supply and reduced consumption of fossil fuels.

Gas from waste

The source material can come from organic household waste or agricultural waste, however plants specially grown for this purpose are also used as raw material. If required, the organic material is chopped up before being conveyed to a digester, where microorganisms perform the most important part of the work – converting large parts of the raw material into biogas. The operation is a chain of complex biochemical processes, the interaction of which has not yet been properly researched in detail.

However, what has been established so far is that it works under different conditions, for instance with a high and low water content (wet and dry fermentation), in a continuous process with a constant supply of material, or as a batch process in which the digested material is removed in its entirety and replaced by a new load.

Gases for Life

In each case, the biogas produced during fermentation is extracted from the digester. It is not uncommon for it to be used on site to operate smaller combined heat and power plants which, for instance, supply a farm with heat and pass on the surplus electricity. Alternatively, the gas can also be fed into the gas network following appropriate treatment.

Inert protective atmosphere

Naturally, biogas facilities also undergo maintenance and repair now and again. At such times, explosion protection is a top priority. If the oxygen content rises above five per cent, a methane-air mixture becomes highly dangerous. Similar to when carrying out maintenance of natural gas installations or oil refineries, it is necessary to create an atmosphere that is as inert – or oxygen-free – as possible for the process of restarting the plant.

This was recently done, for example, at the Črnomelj biogas facility in Slovenia. The plant has two digesters, each with a capacity of 1,700 cubic metres. All the biogas was suctioned off prior to maintenance, and the digesters were filled with air – with an oxygen content of around 21 per cent – to allow the work to be carried out. Before biogas production was resumed, the oxygen content in the digesters had to be reduced to 3.8 per cent for safety reasons. This was ensured by injecting 5.5 tonnes of nitrogen from Messer. Since the gas-holders in the upper section of the towers are separated from the digester chamber by a sensitive membrane, the pressure was not allowed to exceed five bar. As a result, it took over 28 hours to complete the nitrogen flooding process. However, such a test of patience is a small price to pay for the safety gained.

Alenka Mekiš, Messer Slovenija

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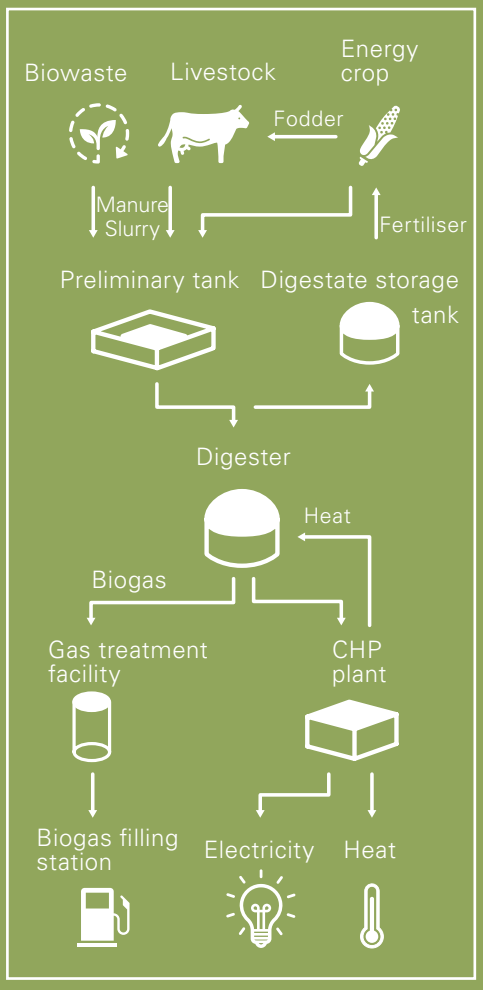
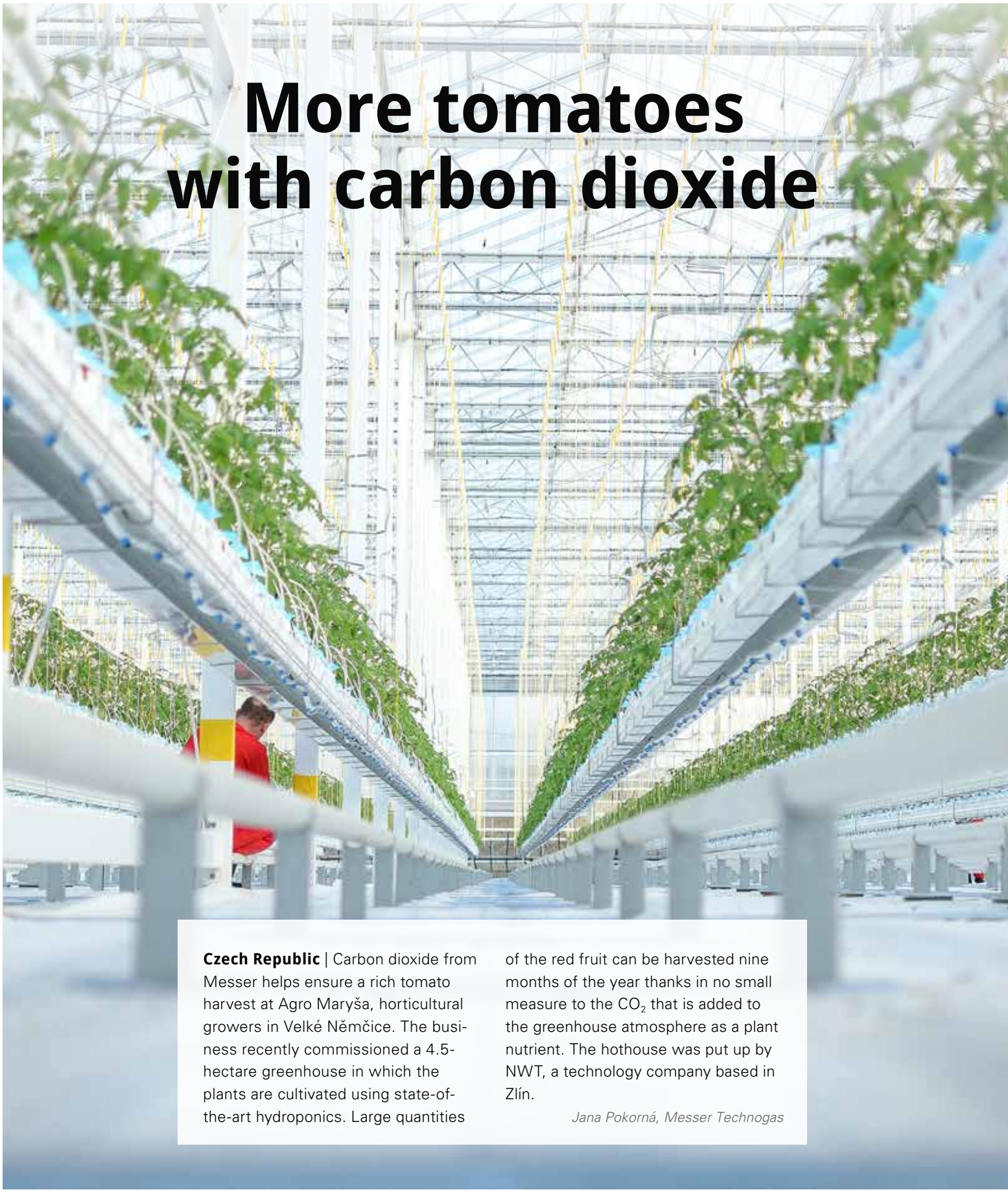


Photo: kontrast-fotodesign / istockphoto.com

More tomatoes with carbon dioxide



Czech Republic | Carbon dioxide from Messer helps ensure a rich tomato harvest at Agro Maryša, horticultural growers in Velké Němčice. The business recently commissioned a 4.5-hectare greenhouse in which the plants are cultivated using state-of-the-art hydroponics. Large quantities of the red fruit can be harvested nine months of the year thanks in no small measure to the CO_2 that is added to the greenhouse atmosphere as a plant nutrient. The hothouse was put up by NWT, a technology company based in Zlín.

Jana Pokorná, Messer Technogas

Gourmet gases ensure appetising yufka

Bosnia-Herzegovina | Food producer Klas uses Gourmet gases from Messer to package yufka dough. The nationwide market leader for milled products and baked goods has introduced modified atmosphere packaging as part of production to provide optimal protection for this particularly thin flat bread dough. An important role is played by the protective gas that is used in the process. Klas, a company with a rich tradition stretching back 115 years, also uses Gourmet gases from Messer for other products.

Ana Perić, Messer Mostar Plin

Zdenko Azinović, Davor Božić and Tihomir Šaravnja (l. to r.) enjoying Bosnian specialities made from Klas yufka dough.

Supercritical CO_2 for gentle extraction

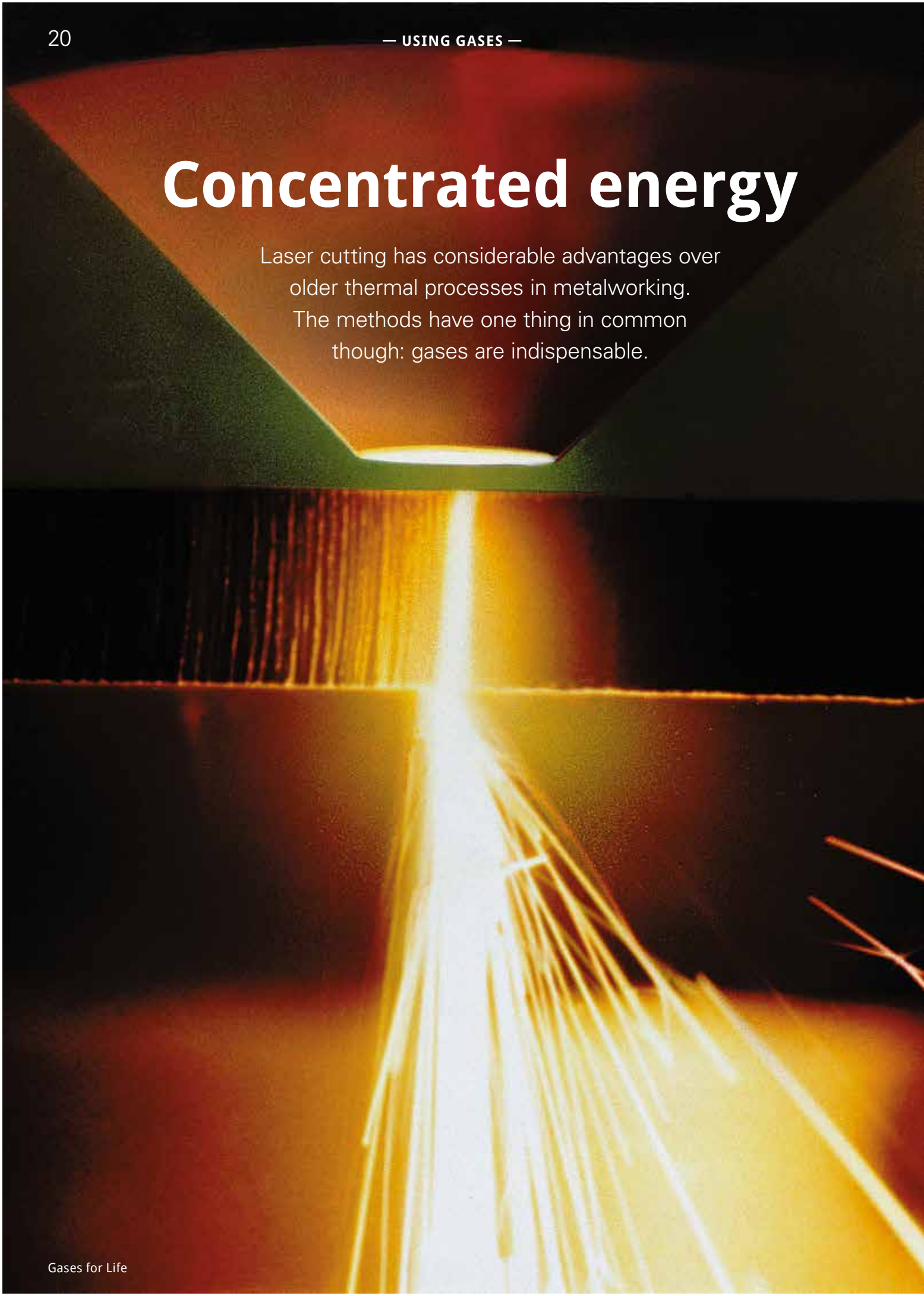
Hungary | Messer has installed a liquid CO_2 supply system at Pannonpharma, a pharmaceutical company in Pécsvárad. It consists of a storage tank for the liquid gas and the necessary distribution system with pipes, a high-pressure pump and control unit. The gas supply is part of a new facility for supercritical extraction of plant constituents. This process involves the gas being brought to the supercritical state under defined pressure and temperature conditions. This means it is neither liquid nor gaseous and is able to gently dissolve out sensitive substances from the raw material, such as essential oils or the active-substance-containing compounds that other processes would not be able to extract at all, or if so, only in small quantities. The substances obtained in this way do not contain any solvent residues. Moreover, the process is particularly environmentally friendly. Pannonpharma uses the extracts for the production of medicinal products and cosmetics. The carbon dioxide used satisfies the highest quality requirements of the food industry.

Mónika Zimányi-Csere, Messer Hungarogáz

In Pannonpharma's test laboratory

Concentrated energy

Laser cutting has considerable advantages over older thermal processes in metalworking. The methods have one thing in common though: gases are indispensable.



Some 30 years ago, the concentrated beam of light with a high energy density opened up new possibilities in welding and cutting. Compared with oxy-fuel flame cutting or plasma cutting, it achieves a significantly better cut quality. Right-angled cuts became possible, as did bare metal cuts without any trace of oxidation. Thanks to a low heat input, lasers can cut other materials apart from metal, such as wood, plastic, glass, textiles and even paper.

Laser light from CO_2

The technology started off with CO_2 lasers. They use carbon dioxide molecules – mixed with nitrogen and helium – to generate the laser beam in the resonator. Variel, a Czech manufacturer of shop fittings and shelving systems, gets these gases for its CO_2 lasers from Messer. "What matters inside the resonator is the high degree of purity and precise proportion of the gases in the mixture," explains Dr Bernd Hildebrandt, welding and cutting expert at Messer. "The mixture can be produced in a built-in mixer or obtained as a ready-made premix."

The expert is unperturbed by the fact that sales of resonator gases have been falling lately, for technical development will ensure that demand increases elsewhere. CO_2 lasers are increasingly being replaced by devices where the beam is generated in an artificial yttrium aluminium garnet (YAG) crystal or a fibre. Such solid-state lasers achieve a shorter wavelength and consequently even greater cutting precision than CO_2 lasers. "Modern laser cutters are not only getting better and more flexible all the time, but less expensive as well. Even smaller metal-processing companies are able to afford machines of their own."

Three different processes

There are three fundamentally different types of laser cutting. With flame cutting, the laser heats the material, while a constant stream of oxygen then facilitates combustion. This method is particularly suitable for low-alloy and plain steels. Slovenian metalworking specialist TehnoPOND also uses the process for this material in the manufacture of components for agricultural machinery and cars. OZT, a Czech manufacturer of shop fittings, uses it, among other things, to cut steel parts to size for shelving systems.

OZT uses a different laser technique for non-ferrous metals and high-alloy steels: in fusion cutting, the material is heated beyond its melting point by the laser beam. A powerful beam of inert gas – nitrogen or argon – blows the liquefied mass out of the groove as a high-pressure cutting gas. This involves the use of Nitrocut from Messer. The nitrogen's high degree of purity ensures perfect quality of the sections.

Finally, with sublimation cutting, the laser beam ensures that the material – plastic, paper, wood or ceramics – passes directly from the solid to the gaseous state. Here, too, nitrogen or argon is required. The gas protects the machine by keeping particles and vapours away from the laser optics.

"The purity of the gases always plays a crucial role," Dr Hildebrandt explains. "For example, flame cutting is 20 per cent faster if you use Oxycut 3.5 instead of oxygen with a purity degree of 2.5. Nitrocut has a high purity degree of 5.0 to prevent any oxidation of the sections."

Alenka Mekiš, Messer Slovenija, and Jan Kašpar, Messer Technogas

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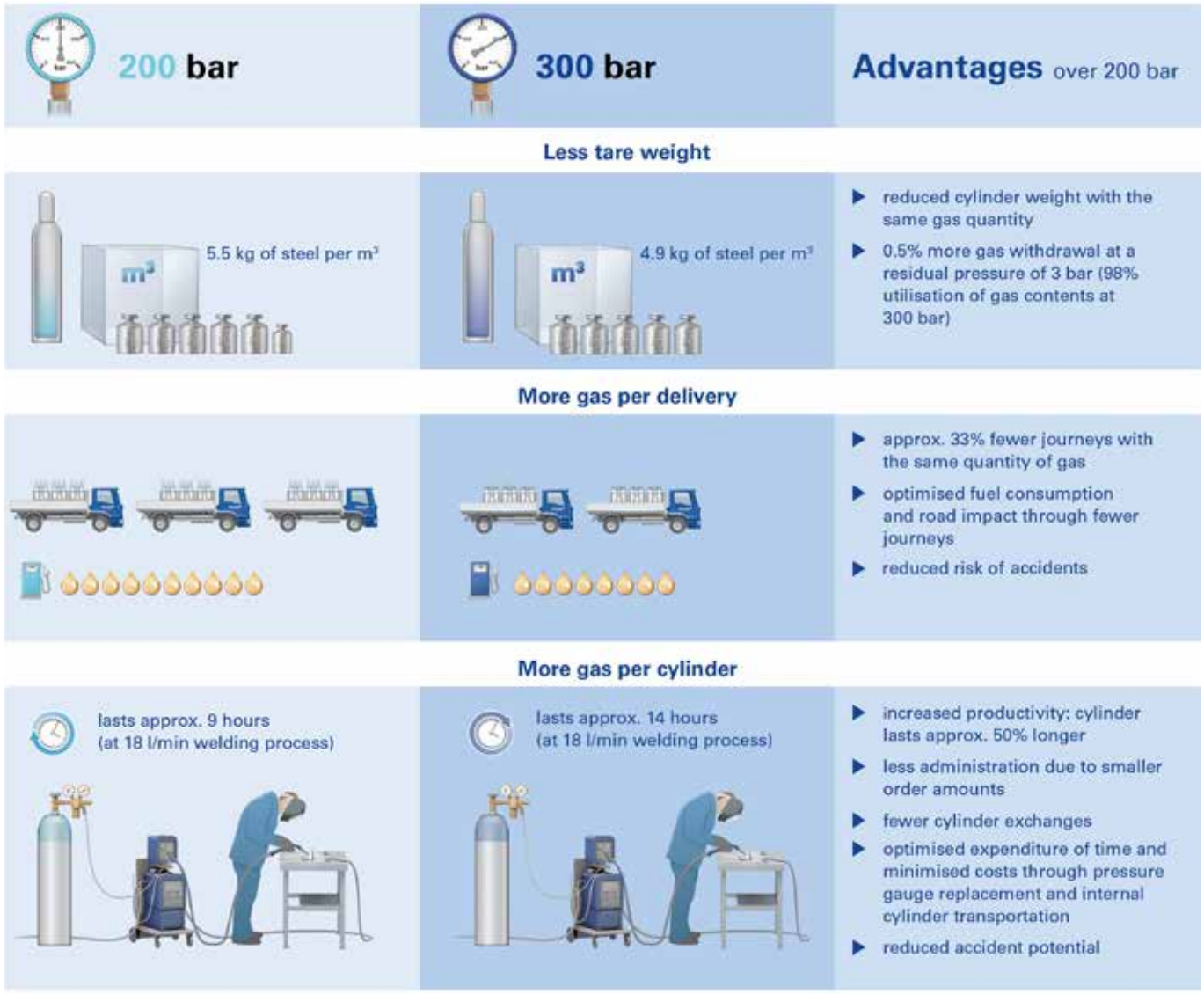
The advantages of 300-bar cylinders



International | 300-bar technology has been gaining an increasing share of the gases market for a while. The use of 300-bar cylinders offers customers a number of advantages – less tare weight, more gas per delivery and more gas per cylinder. Costs are reduced while efficiency is increased. The graphic above provides a clear overview of the advantages.

Editorial Team

Specialty gases for test laboratory

Portugal | Messer in Portugal added specialty gases to its product range a year ago. The main customer for this product group is the accredited SondarLab test laboratory in Aveiro. One of the organisations the lab works with is the Portuguese Institute for Welding and Quality (Instituto de Soldadura e Qualidade). Other key areas of SondarLab's work include emission control at industrial facilities in various sectors as well as calibration of measuring instruments at air quality monitoring stations.

Marion Riedel, Messer Ibérica

Service creates optimal conditions

International | The "Schweissen und Schneiden" trade fair in Düsseldorf is the leading welding and cutting event worldwide. In 2017, the Messer stand at the fair hosted practical demonstrations of the advantages of modern ternary mixtures, while a large audience had access to a video projection on the subject. In addition, the demonstrations provided practical tips and advice, including on how to correctly install a 300-bar pressure regulator, the right way to purge the connecting fitting when exchanging a cylinder bundle, or how to safely transport steel cylinders in a car. Experience shows that many customers find such tips very useful and that consequently there is strong demand for them. "It isn't just at the trade fair that Messer attaches considerable importance to intensive consultancy and service geared to customer requirements," emphasises Dr Bernd Hildebrandt, Senior Manager Application Technology Welding & Cutting. "We want to help create optimal conditions for use of the gases, thereby ensuring the best possible welding and cutting results."

Dr Bernd Hildebrandt, Messer Group

Messer's practically orientated service programme includes targeted technical advice.

Stopping wind turbines with nitrogen

Bosnia-Herzegovina | Pozor-based energy supplier Solik uses nitrogen from Messer to stop its wind turbines during stormy weather in order to protect them. The pressure of the gas provides the energy for the pneumatic rotor brakes. Such brakes are also common in HGVs, the difference being that they are operated with compressed air from a compressor. However, it would be too costly to install a compressor inside the nacelles as it is very rarely necessary to stop wind turbines. The cylinder-stored nitrogen performs the function of the compressor.

Ana Perić, Messer Mostar Plin

Cultivated with love

Zhu Shiqin, Messer Sales Engineer, during a customer visit in Yunnan.

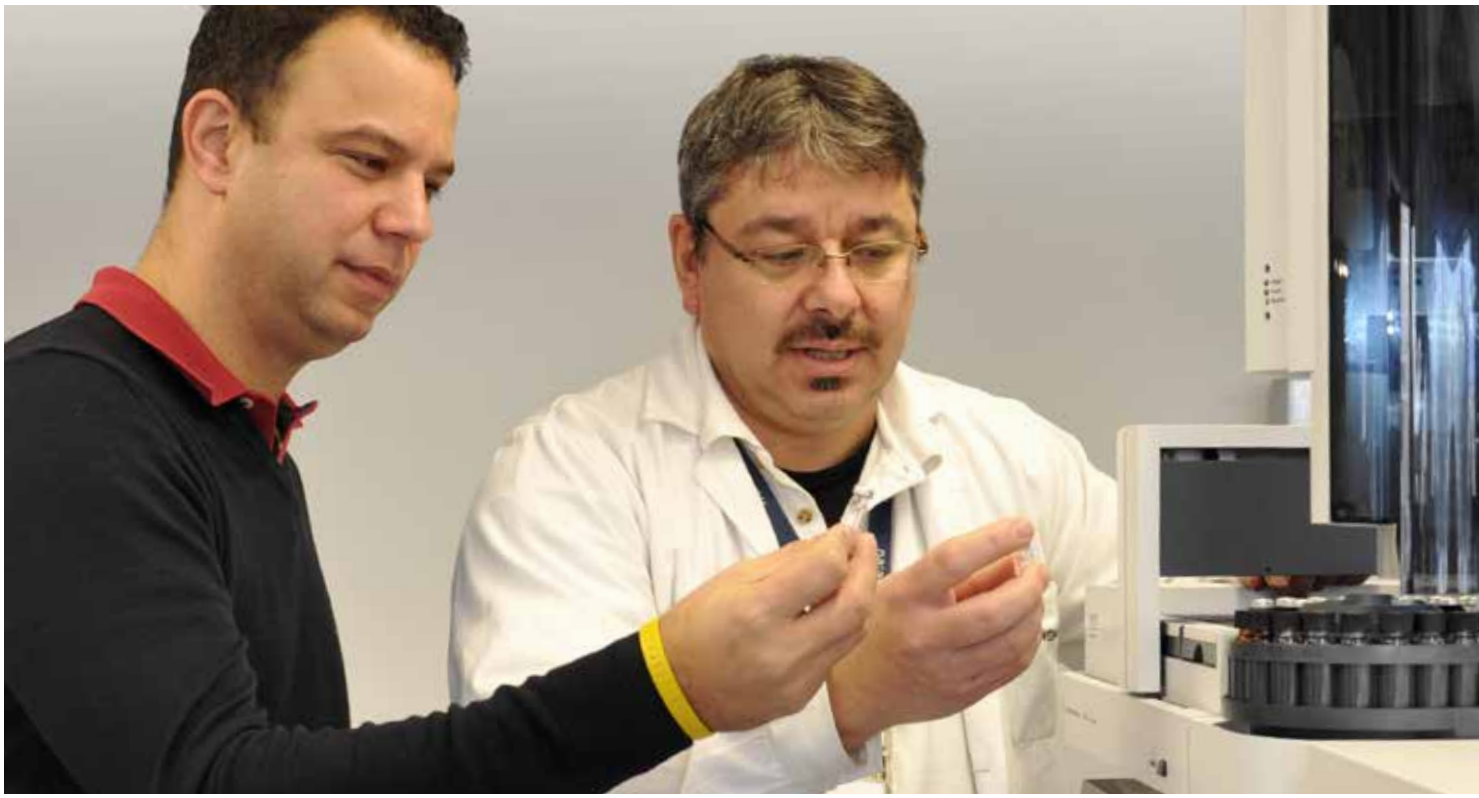
China | The company name is as flowery as the product: Ai Bi Da – Love Is a Gift – is a horticultural business in Yunnan. It grows roses using carbon dioxide from Messer. The queen of the flowers responds very well to an increased supply of the gas. It increases the rate of photosynthesis, leading to enhanced flower growth and quality. As a result, Ai Bi Da is able to harvest 1.2 million roses a year in its 7,000 m^2 greenhouse.

Zhang Hai, Messer China

Protective gases for meat

Vietnam | Meat products manufacturer Nhat Nguyen in Hưng Yên recently became one of the first companies in Vietnam to package pork using the modified atmosphere packaging (MAP) method. Messer advised the company during installation of the packaging machine, installed the gas supply and now supplies the necessary food-grade gases. Nhat Nguyen wants to use MAP to extend shelf life, improve product presentation and achieve greater packaging flexibility. The company also intends to use MAP technology for beef products in future. Messer in Vietnam is currently testing MAP processes for bread and fruit packaging for other companies.

Vu Thi Mai, Messer Vietnam



Csaba Lovász (r.) in conversation with László Radnóti, Head of Specialty Gas Department at Messer Hungarogáz

Carrier gases and protein content

Chemist Csaba Lovász, Senior Analyst, WESSLING Hungary Kft.

Congratulations on the opening of your new knowledge centre! What kind of work does it do?
The international Wessling Group specialises in laboratory analyses. In Hungary, we are one of the biggest providers of accredited chemical and microbiological tests. Our main fields of work are environmental protection, food safety and public health. Besides the laboratory tests, we also carry out joint projects with nearby universities at our new knowledge centre in Budapest.

What did you pay attention to with regard to the new gas supply system?
We made sure that the apparatus with high gas consumption is concentrated in one area. We have also provided for the possibility of expanding the system.

What do you need gases for?
We need carrier gases for analytical methods such as gas chromatography and mass spectrometry. This involves the use of helium, hydrogen, nitrogen and argon in cylinders. With certain chromatographic methods, we use liquid CO_2 to cool part of the gas chromatographic column as well as to cool down parts of the apparatus that heat up during operation. In addition, during certain sample preparation processes, we use large quantities of nitrogen to reduce the volume of sample extracts in a non-destructive way by blowing off the solvent. And with the aid of oxygen, we can determine the protein content of food and animal feed.

What does that involve?
We burn the organic components in a high-purity oxygen atmosphere. The nitrogen oxides produced in this process are determined by means of chromatography. The amount of nitrogen allows us to calculate the protein content.

What requirements do you expect your gas supplier to meet?
Our priorities are quality and flexibility. The gases that come into contact with our samples must have a very high and reliable degree of purity. And sometimes we need to be resupplied at short notice to allow us to continue working without a time delay. With Messer we can be sure of both these aspects. Cooperation is excellent and very professional.

Kriszta Lovas, Messer Hungarogáz

Win a delicious prize!

Simply answer our question about this issue of "Gases for Life" and win a food hamper with seasonal specialities:

How many Messer installations were exported in the first seven years after the company was set up?

Please send the answer by e-mail with the subject line "Gases for Life Competition" to: **angela.bockstegers@messergroup.com** The deadline is 1 June 2018. Please include your name and address. The competition is unfortunately not open to employees of the companies of the Messer Group and their families. In the event of multiple correct entries, a draw will determine the winner. The result of the draw is final and not subject to appeal.

Congratulations!

The winner of the last competition is **Matthias Groh** from **Heuchelheim, Germany**. The correct answer was: "Nitrogen"

The "Gases for Life" editorial team

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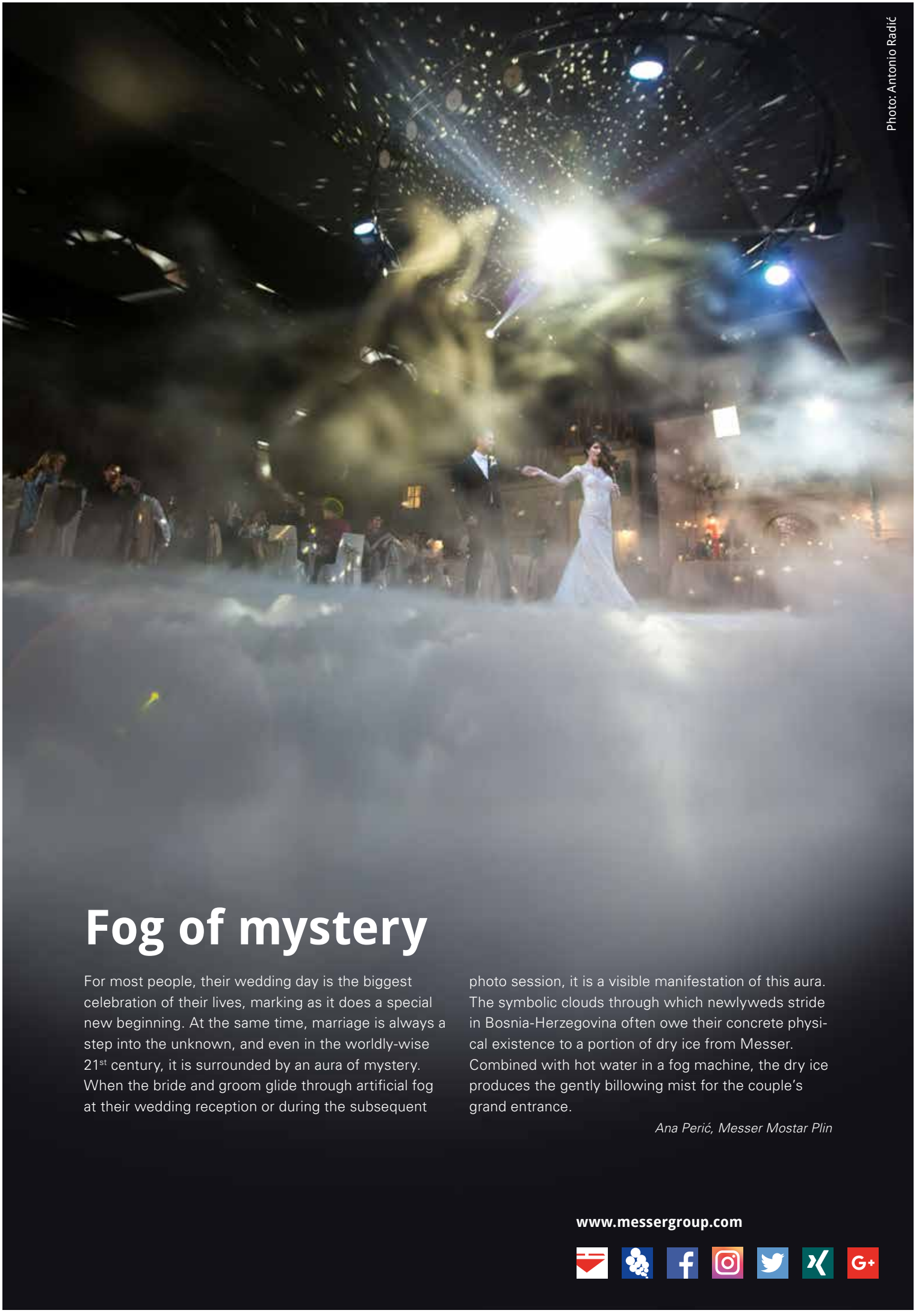

Photo: Antonio Radić

Fog of mystery

For most people, their wedding day is the biggest celebration of their lives, marking as it does a special new beginning. At the same time, marriage is always a step into the unknown, and even in the worldly-wise 21st century, it is surrounded by an aura of mystery. When the bride and groom glide through artificial fog at their wedding reception or during the subsequent photo session, it is a visible manifestation of this aura. The symbolic clouds through which newlyweds stride in Bosnia-Herzegovina often owe their concrete physical existence to a portion of dry ice from Messer. Combined with hot water in a fog machine, the dry ice produces the gently billowing mist for the couple's grand entrance.

Ana Perić, Messer Mostar Plin

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