

No. 17 Issue 03 | December 2015

MESSER 
Gases for Life

Gases for Life

The industrial gases magazine

Gases in pulp and paper production

Getting the chemistry right

Deburring die castings:
Protection for
material and budgets

Noble gas production:
Golden air

Strategy:
Focus on Cylinder



Dear Readers,

Every accident is avoidable – that isn't just an empty phrase but an expression of our conviction. As an industrial gases specialist, it is our duty to know and efficiently avoid hazards that may arise for employees and customers as a result of our work. That is what we are doing with maximum effort – and with success: between 2013 and 2014, the accident rate at Messer dropped significantly from 36 to 18.

A positive development like this doesn't just happen by chance. We use initiatives such as our "Safety Day 2015" (see page 9 for more information) to highlight potential sources of danger and raise awareness of safe work practices. At the same time, we acknowledge commitment to safety across the company with our Safety Award. This year the award went to Messer in Romania. The picture above shows the award being presented.

With this year's final issue of "Gases for Life", I would like to thank you for your interest in our company. I hope we managed to provide you with useful facts and exciting insights into the world of gases.

I wish you and your families a peaceful Christmas and an enjoyable festive season as well as success and health in 2016.

Best wishes,

Stefan Messer



Cover Story

10

Getting the chemistry right

Cover photo:
Bernhard Thaller,
Application Specialist
for Pulp and Paper at
Messer in Austria.

In principle, papermaking is simple. In practice, however, industrial-scale production requires a number of challenges to be mastered. So that each stage of paper production can take place without interruption, in an environmentally friendly manner and with better quality, the chemicals commonly used in the past are increasingly being replaced by gases.



Practical Focus

6

Protection for material and budgets

In the die-casting process, thin burrs are formed above the joints on the finished piece. In order to remove them, liquid nitrogen and a gentle blasting medium are used. Deburring zinc, aluminium, titanium and magnesium components is thus made easier, more reliable and more cost-effective.



Using Gases

14

Golden air

Messer has strengthened its market position in China by commissioning a new plant for the production of high-purity krypton and xenon. The facility in the central Chinese city of Panzhihua in Sichuan province produces the noble gases with a purity of 99.999 per cent.

Good for you and the environment

This magazine not only brings you interesting articles and interviews – it is also kind to the environment. "Gases for Life" is printed on 100% recycled paper.



If you want to stop reading

"Gases for Life" please cancel your subscription rather than simply throwing the magazines away. You can do this by sending a short e-mail to angela.bockstegers@messergroup.com. We would kindly ask you to dispose of any magazines that you have finished reading as waste paper.

We will gladly send you additional copies of "Gases for Life" and are always happy to get new readers. In both cases, all that is required is a quick e-mail to angela.bockstegers@messergroup.com.

Other Sections

| | |
|----|-------------------|
| 4 | News |
| 8 | Worldwide |
| 9 | People Focus |
| 16 | Interview |
| 17 | Green Page |
| 18 | Focus on Cylinder |
| 19 | Dialogue; Imprint |

Collecting „Gases for Life“

For long-term storage of our magazine, request the free "Gases for Life" slipcase.

Contact: angela.bockstegers@messergroup.com



Slovakia: Gas for wastewater neutralisation

Environmental protection with CO₂

Messer in Slovakia was hired by construction firm Hochtief to build a station for neutralising alkaline groundwater with CO₂ near the town of Žilina. This water is generated as wastewater during the construction of a tunnel. It has to be neutralised – in this case in a particularly environmentally friendly way, as the neutralised wastewater is discharged into a nearby stream, which flows into a lake that is used as a drinking water supply. Hochtief therefore decided to neutralise the wastewater with CO₂ rather than with mineral acids. With the Messer process, the wastewater's salt load is not increased through the addition of chloride or sulphate.

The tunnel construction, which began in March 2015, is due to be completed within two years.

Peter Michalica, Messer Tatragas



China: Rubber deflashing with cold nitrogen

Targeted embrittlement

Zhejiang Chuangcheng Auto Parts supplies rubber parts such as sealing rings, damping elements and gas pedal rubber pads to the Chinese car industry. Last June, the company, which is based in Shaoxing in the eastern Chinese province of Zhejiang, switched from using a manual deflashing process to a mechanical one in combination with cryogenic gas: the flash that forms on the rubber mouldings during the production process is made brittle by cryogenic nitrogen and can then be easily removed in the deflashing machines. Messer in China is supplying the gas and has installed a nitrogen storage tank for this purpose at Zhejiang Chuangcheng's factory site.

Jasmine Yan, Messer China

Slovenia: Process optimisation with oxygen

Airy environmental protection

In 2016, Messer in Slovenia will build a modern air separation unit in Škofja Loka for nitrogen, oxygen and argon production. There is an important oxygen customer right next door: Knauf, a family company, uses the gas in a state-of-the-art technology that improves the quality of mineral wool production. Knauf is thereby also making a contribution to environmental protection by reducing its sulphur and carbon dioxide emissions. Moreover, less filter dust and waste is produced. The air separation unit – right next to the Knauf

site – will also make transportation with road tankers unnecessary. Messer is investing some 15 million euros in the construction of the unit, which will create up to 20 new jobs. The unit is due to be completed within one year of building permission being granted.

Alenka Mekiš, Messer Slovenija



Virtual model of the new air separation unit in Škofja Loka



Frozen meatballs

Meatball lover: Gunnar Ringst,
Administrative Director –
Accounting at Messer GasPack.

Belgium: CO₂ for freezing meat products

New ELV, a producer of minced meat products based in Poederlee, Belgium, uses liquid carbon dioxide from Messer to deep freeze its food. The cryogenic process preserves the high quality of the products, inhibits the growth of bacteria and optimises the moisture content. New ELV was formed in 1995 out of a meat-processing company that had been set up in 1935 by the Laeremans-Van Reusel family. It specialises

es in the manufacture of minced meat products such as meatballs, which are supplied to customers that include other Messer customers: they use the minced meat products in the manufacture of ready meals, soups or barbecue specialities.

Kurt Vervalle, Messer Belgium

Poland: Nitrogen for heat treatment

Endolin for Maxhütte

The pipe manufacturing plant Maxhütte in Sosnowiec, Poland, is equipping its heat treatment furnace with Messer's Endolin process. Here a special controlled atmosphere consisting of a mixture of hydrogen, carbon monoxide and nitrogen is produced. Hydrogen and carbon monoxide are produced in an endogas generator from natural gas and air which is diluted with nitrogen from a Messer tank. Endolin mixtures have a particularly high reduction potential which permits cost reduction, improves quality and increases safety in the process. Seamless and welded cold-finished steel pipes are manufactured in Sosnowiec. The pipe plant belongs to the Max Aicher Group.

Aleksandra Kuczka, Messer Polska



Protection for material and budgets

In the die-casting process, it is difficult to avoid small quantities of the liquid metal penetrating the chinks between the individual parts of the mould. On the finished piece, this material forms thin burrs above the joints, which have to be removed after casting. The use of liquid nitrogen and a gentle blasting medium allows this to be done fully automatically and without causing any damage. Deburring zinc, aluminium, titanium and magnesium die castings is thus made easy. Costs and reject rates can be drastically reduced.

Zinc is an inexpensive metal with a low melting point. It already starts to melt at 420 degrees Celsius, which means that it can be worked with a relatively low energy input. Zinc alloy die castings are therefore a ubiquitous part of our day-to-day lives: toy cars, door locks, auto parts, fittings, plugs, casings and zippers are just a few of the things that are made of zinc.

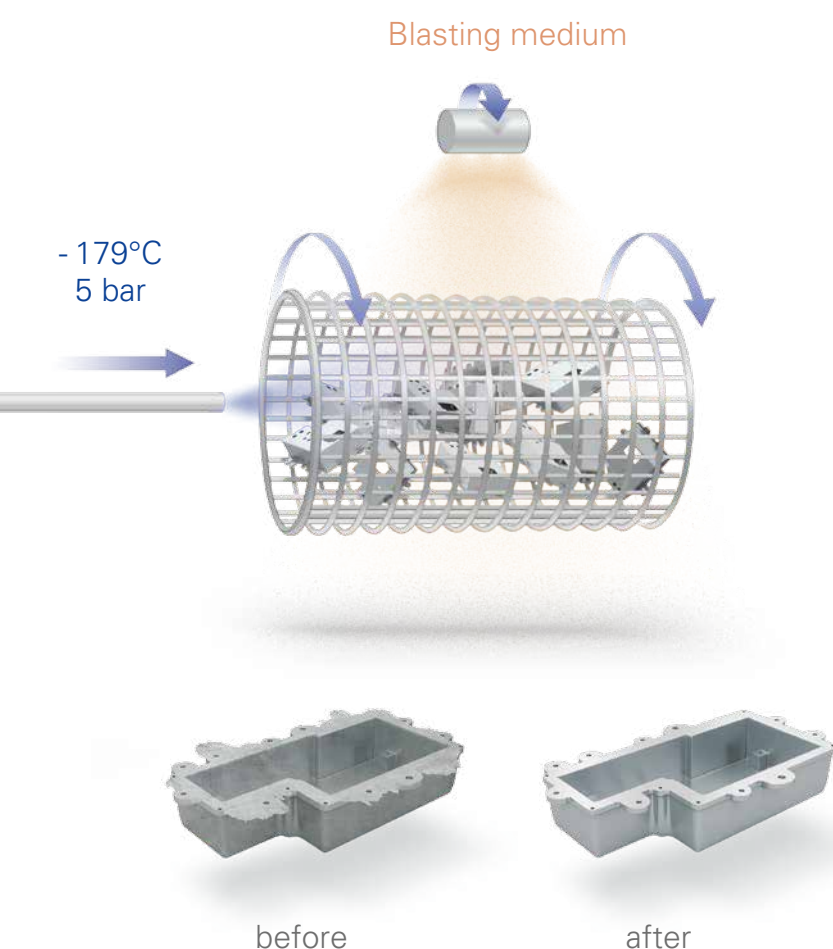
Explosive deburring produces a lot of rejects

Parts produced in smaller numbers are usually deburred by hand – an elaborate and expensive process. In the case of mass-produced items, explosive deburring has traditionally been the preferred method: a controlled explosion in a protected chamber produces temperatures up to 2,000 degrees Celsius, causing the thin burrs to burn. However, the force of the detonation or the high temperature can also damage the workpiece itself, leading to reject rates of up to 40 per cent due to distortion.

By contrast, deburring with cryogenic nitrogen does not cause any damage at all. The workpieces are put in a wire mesh rotary drum. Simple bulk goods such as plugs or toy cars are tipped into the drum while complex parts are attached to frames. Liquid nitrogen is then conducted into the drum and expanded until a temperature down to minus 60 degrees Celsius is achieved. The fine burrs are deep-frozen and rendered brittle almost immediately while the greater mass of the shaped parts makes them less susceptible to cold temperatures. The burrs can now be removed from the castings with minimal force.

The mechanical action needed for this is provided by small plastic spheres. As with sand blasting, plastic granulate is fired at high speed at the parts in the drum. The brittle burrs are broken off and removed in their entirety. The parts themselves, however, remain undamaged. The soft plastic does not even leave any traces on the surface. This method is therefore technically far superior to the conventional processes. It achieves both better and reproducible deburring quality, even in the case of complex shaped parts with internal burrs.





The difference between before and after can be seen clearly on the bodywork of these model cars.

Reducing unit costs

"The buyers of die castings, for instance in the car industry, have increasingly demanding requirements with regard to quality and precision," explains Thomas Böckler, Application Specialist at Messer. "On the other hand, the manufacturers themselves have an interest in both high-quality and more efficient processes. For example, in the case of electronic components, which may only cost a few cents, manual deburring is out of the question. However, they are very sensitive to distortion, and thus here our process offers the optimal solution. Moreover, the unit costs per kilogramme of die casting are clearly lower compared with explosive deburring."

It is easy to find out whether it is worth investing in a new cryogenic deburring facility. "First of all, we carry out a free deburring test with the customer's products," explains Thomas Böckler. "They can then gauge whether the result meets their expectations, and we can calculate whether contract deburring or the company's own facility would offer the optimal solution."

Editorial Team



Further information: Thomas Böckler

Specialist for Gas Applications
in Industry

Phone: +49 (0) 2151 7811-227

thomas.boeckler@messergroup.com

Poland: Argon for power plant construction



30,000 weldseams

The coal-fired power station in the Polish city of Opole is to get two additional generating units, each with a capacity of 900 megawatts. This is the largest investment in Poland's energy sector in 20 years. The project will involve having to perform more than 30,000 weldseams on the boilers and heating elements. In addition to supplying the argon that is needed for TIG welding, Messer in Poland is also providing the central gas supply for the construction site. The size of the facility presents

a particular challenge when it comes to installation, with the gas having to be made available at a height of up to 125 metres. The new generating units will operate with supercritical steam and therefore use the primary energy more efficiently than conventional technology can. They are due to go into operation in 2017 and 2018. The power station's existing capacity is 1,532 megawatts.

Aleksandra Kuczka, Messer Polska

People Focus

6 questions for

Sophia Nguyen Thi The Sang

Sophia Nguyen Thi The Sang has been working in Specialty Gases sales at Messer in Vietnam since 2006. Over this ten-year period, she has managed to convert many prospective customers into loyal customers. She lives with her husband and four-year-old daughter in Binh Duong near Hanoi, where the company's head office is also located.



- 1. A working day is perfect, ...**
for me as a sales specialist, when I get as many orders as possible and am able to conclude new supply contracts. Plus, of course, a perfect working day should not be marred by complaints. Instead, there should be friendly conversations with customers.
- 2. What I absolutely need for my job is ...**
not just to meet the budget targets but also to achieve profit for the company. In addition, I want to increase Messer's market share in the area of specialty gases and hardware in the southern half of the country.
- 3. A novel/film which I can recommend without hesitation is ...**
the new sequel to Fast and Furious.
- 4. I can get irritated ...**
by people who do not take responsibility for their work and always try to blame somebody else.
- 5. I can get excited about ...**
chatting and having fun with my lovely colleagues, within and outside the company.
- 6. My wish for the future ...**
is that my sales figures will contribute as much as possible to the company's development and the growth of Messer's market share in the specialty gases sector.

International: Safety Day 2015

Every accident is avoidable

Between 2013 and 2014, the number of accidents at Messer fell from 36 to 18. This is pleasing – and perhaps the international Safety Day which Messer held for the third time on 11 September also helped. As in previous years, this year's Safety Day – held throughout the Messer Group – was used to raise awareness of safe and careful behaviour at work and at customers' premises. This time the focus was on new guidelines which

have been developed by the European Industrial Gases Association (EIGA) and are applicable to any area of work in which people ensure a safe environment by avoiding mistakes.

The next Safety Day at Messer will take place on 9 September 2016. Until then the watchword is: every accident is avoidable.

Diana Buss, Messer Group

International: Cylinder labels changed

New labels for gas mixtures

The cylinder labels for the Messer Group's gas mixtures have had a new look since 1 st June 2015. It complies with the requirements of the European directive on the Classification, Labelling and Packaging of Chemicals (CLP), which came into force for gas mixtures on this date.

The directive is based on the United Nations' Globally Harmonized System (GHS).

The new labels feature modified identification symbols: the previous danger symbols with black imprints on an orange background are now replaced by hazard pictograms with black symbols on a white background in red-rimmed diamonds; new symbols have been added, such as for gases under pressure. The hazard and precautionary statements have been expanded and renamed. The R and S phrases used before have now been replaced by H and P statements (hazard and precautionary statements). The former indications of danger have now given way to the signal word "Danger" or "Warning".

Dr. Joachim Barbe, Messer Group



Getting the chem

Mix cellulose with water and spread the mixture thinly over a fine mesh screen. Press a bit and dry, and the sheet is ready – papermaking is that simple in principle. However, in industrial production, long rolls are produced by giant machines. To ensure their uninterrupted operation, the chemistry has to – quite literally – be right at each stage of the process during which the initially watery wood pulp is turned into paper. Gases play an increasingly important role here: they replace chemicals, optimise sub-processes, improve quality and protect the environment.



Rado Kunavar, Količevo Karton, and Bernhard Thaller, Messer, checking the quality of the paper

The papermaking process starts with fibrous cellulose. Today, a substantial part of this material is recovered from waste paper. Virgin fibres are occasionally obtained from straw or other plant materials but the main source is wood: most pulp mills process wood chips. Their unwanted components are chemically broken down and dissolved in the digestion process. The cellulose that is obtained with this initial separation still has a lot of the dissolved wood components mixed in with it. The next step therefore involves washing it with water.

istry right



Washing and bleaching

In pulp washing, the pH value plays a very important role. If the alkalinity of the solution is too high, the fibres swell and retain the contaminated liquid. In an acidic environment, on the other hand, they shrink, with the result that the solution can drain much more effectively and cleaning is made considerably more efficient while requiring the same amount of effort. CO₂ allows the degree of acidity to be set to the optimal value. "The pH value during and after washing can vary considerably. The reasons for this include the different types of wood or the variable quality of the wood, depending on the time of year in which it was harvested," explains Bernhard Thaller, Pulp and Paper Application Technology Expert at Messer in Austria. "By adding carbon dioxide, you can ensure optimal conditions with a minimal amount of effort, without the need for a system retrofit, thereby saving a lot of money."

The washed pulp still contains a considerable quantity of lignin. This component gives wood – as well as brown paper grades such as corrugated board – their brown colour. In order to obtain high-quality white paper, the next step is bleaching: the lignin is chemically broken down in a multistage process. In the past, this involved the use of large quantities of chlorine with an adverse environmental impact. Today, more environmentally friendly bleaching processes predominate. Among other things, oxygen (O₂) and ozone (O₃) – the latter being derived from the former – are used as bleaching agents. The reactive gases split the lignin into smaller fragments which can be easily separated from the fibres.

Industrial giants

The pulp that is fed into the paper machine has a water content of 99 per cent. Lowering this percentage towards zero can be described as an essential part of the production process. To facilitate drying in a continuous process, it takes place over what seem like record-breaking distances. Paper machines can measure up to 600 metres, the path from starting mixture to finished paper can be several kilometres.

The machines should run uninterrupted to the greatest extent possible, if only because of the large investment. As already mentioned, the production process itself also requires continuous operation. At the same time, it is crucial that the initially runny and then increasingly viscous pulp mixture corresponds as closely as possible to the defined chemical and physical

Continued on page 12 →



Large bales of waste paper are recycled to produce cardboard.

Continued from page 11 →

specifications in each phase. Only in this way can paper of the necessary quality be produced at the end of the process.

CO₂ replaces sulphuric acid

In some process steps, mineral acids such as sulphuric acid are used to adjust the pH. Such chemicals are not only corrosive and risky to handle, they also present difficulties when it comes to dosing. Their effect does not increase in line with the quantity used. It is very

limited at first, but then increases sharply from a certain point. The risk of excessive doses therefore cannot be ruled out in principle. "With CO₂, on the other hand, excessive doses are not possible," Bernhard Thaller underlines. "As a weak acid, carbonic acid can't reach a critical level in the first place. What is more, it allows gradual and precise adjustment of the acidity to a hundredth of a pH."

Another advantage of CO₂ compared with sulphuric acid is the fact that the salt load in the paper machine circuit can

be kept low – with sulphuric acid, additional sulphate ions are introduced into the circuit water. A lower salt content improves the effectiveness of many auxiliary chemicals. The use of CO₂ also lowers the sulphate content in the paper mill's wastewater, making it easier to comply with the permissible limit.

A further advantage of adjusting the pH value with carbon dioxide is its influence in terms of the gradual dewatering of the pulp mixture as it is turned into paper.



As with pulp washing, the level of acidity determines the swelling behaviour of the fibres at this stage too. The pH value also has a bearing on the effect of certain auxiliary agents which determine the paper's uniformity and strength. The metered use of CO₂ therefore enables the quality of the end product to be improved.

This end product is wound onto huge reels at the dry end of the machine – the world's largest paper machine on the Chinese island of Hainan produces a reel of paper almost eleven metres wide, 3.6 metres in diameter and weighing 90 tonnes in just thirty minutes. If it were to catch fire, such a monster would be very difficult to extinguish and would continue to smoulder over a period of many days. Using nitrogen to inert paper warehouses can help prevent such fires in the first place.

*Dejan Šibila,
Messer Slovenija*

Interview with

**Rado Kunavar,
Technical Director at
Količevo Karton**

"Thanks to the CO₂ the cleaning can be done very quickly."



Gases for Life: What do you use CO₂ for in your paper mill?

Rado Kunavar: We use it to treat the cellulose-water mixture before it enters the actual paper-making machine. The pulp – that's what we call the mixture – is passed through various pipes and cleaning systems. Over time, deposits form. There is a risk of calcium carbonate being precipitated from the water and forming clumps. These are small pieces of lime that would contaminate the paper and adversely affect its quality. Carbon dioxide helps prevent this.

Gases for Life: How does it achieve this effect?

Rado Kunavar: The gas lowers the pulp's pH value, so the lime remains dissolved

and does not clump together. This means that no clumps whatsoever can form.

Gases for Life: Does this also prevent the deposits?

Rado Kunavar: No, because these are produced by the pulp itself. We have to clean the machine on a regular basis in any case. Every fortnight, our production switches from recycled cellulose to virgin fibre and then back again. This involves having to stop and clean the machine. Thanks to the CO₂, this can be done very quickly, significantly reducing the amount of work required. On top of that, we can dispense with the acids and alkaline solutions that we had to use for cleaning before.

*Dejan Šibila,
Messer Slovenija*

Mayr-Melnhof Karton

Mayr-Melnhof Karton is the world's largest producer of coated cartonboard made from recovered fibres. The Austrian company has seven European production sites with a total annual capacity of more than 1.6 million tonnes. The cartonboard plant in Količevo, Slovenia, specialises in the production of grammages between 200 and 500 g/m². These are used in food, cosmetics and pharmaceutical packaging, among other things.



Further information: Bernhard Thaller

Application Specialist
Pulp & Paper
Phone: +43 (0) 50603
bernhard.thaller@messergroup.com

Golden air

Photo: © SNEAT - Fotolia.com

Messer is the largest producer of high-purity krypton and xenon in China. This leading position was achieved in May 2015 with the start-up of a new plant for the production of noble gases in the central Chinese city of Panzhihua in Sichuan province. The plant has an annual production capacity of 5,000 cubic metres of krypton and 450 cubic metres of xenon with a purity of 99.999 per cent. Messer has been operating another plant of this type in Xiangtan in the southern Chinese province of Hunan since 2012. The noble gases are mainly required in the lighting industry.

Krypton and xenon are two of the rarest elements found on earth. They comprise only about 1.2 parts per million (ppm) of the atmosphere, so extracting them is like selecting a group of 100 people out of the total population of Germany (82 million). It requires a great deal of effort to separate these few molecules from the other components of air. That is what makes these noble gases so precious and why they are also called “golden air”.

Chinese buyers of Messer’s krypton and xenon products are mainly concentrated in the lamp industry. In China, this sector is experiencing rapid development. Its quick growth in recent years has even led to a worldwide shortage of krypton and xenon at times. The noble gases are used in the manufacture of light bulbs and gas lasers, amongst

other applications. Xenon lamps can produce a very bright light, the intensity of which far exceeds that of conventional lamps. Krypton is used in halogen lamps, giving them significantly greater light efficiency and a much longer life. It also allows a more compact design. In addition, xenon is used in plasma screens, in medical applications and as a fuel in ion engines for satellites. Krypton is also used as an insulating gas filling for high-quality double-glazed windows.

Accumulation in liquid oxygen

Compared with the other air gases, the boiling points of krypton (minus 153.36 degrees Celsius) and xenon (minus 108.12 degrees Celsius) are relatively high. In the air separation process, by which oxygen and nitrogen are



"It was important for us to produce our own krypton and xenon. Thanks to our state-of-the-art facilities in Xiangtan and Panzhihua, we can now guarantee our local and international customers a reliable and top-quality supply of the noble gases."

Dr. Werner Hickel, Managing Director of Messer in China

obtained from air, they therefore accumulate in the liquid oxygen. Dissolving them out of this mixture requires fine-tuned process steps such as preliminary purification, pressure build-up, methane capture and distillation. Due to their low concentration in the atmosphere, a lot of liquid oxygen is needed to obtain usable quantities of the noble gases. A special treatment facility is used to produce a concentrated krypton-xenon crude gas. In a final step, this mixture is then refined to produce the pure products.

Editorial Team



The new plant in the southern Chinese province of Hunan

Interview [5]



A pressure swing adsorption (PSA) unit supplies the Allessa chemical plant in Fechenheim with nitrogen. The installation was carried out by Messer. Allessa emerged from what used to be Höchst AG and, as part of the WeylChem Group, is now a leading European manufacturer of intermediate and end products for the fine chemicals sector.

Josef Hans

Head of Site Engineering, Allessa GmbH, Frankfurt am Main

What do you need the nitrogen for?

We use the gas to create an inert atmosphere in potentially explosive processes as well as to inert equipment. Nitrogen is vital for our plant. Our annual consumption is approximately 5.6 million cubic metres.

Is the unit capable of producing this quantity?

It is designed for a throughput of 580 normal cubic metres per hour. If we need more during peak load periods, we cover the additional requirement from our backup supply, which is switched on automatically via a mechanical pressure control system.

What quality of gas do you require?

For inerting, the oxygen content of the gas must not exceed one per cent. To be honest, I was a bit sceptical about whether this would be guaranteed with a PSA unit. But in fact, the oxygen content has always been reliably below 0.9 per cent since the start-up.

What are Messer's responsibilities?

The Messer experts planned the unit according to our specifications and pre-installed it in two containers. It was delivered in January 2014, and a week later it was already operating at full capacity. We are only renting the unit. Messer owns it, operates it remotely and deals with maintenance. Messer also ensures that our backup supply is always topped up. In our experience, Messer is a very reliable and service-oriented

partner. The PSA unit is running smoothly and very efficiently. If there are ever any problems, solutions are provided very quickly. In addition, Messer has helped us save energy by installing an EcoVap unit.

What do you use the EcoVap unit for?

It helps to cool our nine compressors. We use the waste heat to vaporise the liquid gas. We used to have some problems with fog and frost formation during withdrawal from the tank. Heat recovery with EcoVap has got rid of these problems.

Editorial Team



Dual benefit

The CO₂ emissions of Swiss food producer Hochdorf Swiss Nutrition have been reduced by 10 to 15 per cent since August 2015 through the use of an ASCO CO₂ flue gas recovery system. At the Sulgen plant to the south of Lake Constance, some 2,200 tonnes of the gas are therefore recovered every year, with most of it being put to use at Hochdorf right away.

Hochdorf has been refining agricultural products to produce high-quality foods for 120 years. Milk is one of the most important raw materials at the Sulgen plant. A steam-boiler supplies the heat that is required for various processing steps, the boiler itself being heated with natural gas. Since August 2015, the waste gases from the boiler heating system have been conducted through an ASCO CO₂ flue gas recovery system which recycles more than 90 per cent of the CO₂ emitted.

First of all, the flue gas is collected, cooled and precleaned in a gas scrubber, which removes the worst of the contamination and sulphur compounds. In an absorber tower, it is then passed countercurrent to a specially developed solvent. This solvent absorbs the CO₂, and subsequently the gas is removed from the solution again through heating. The formulation of the solvent and the process have been optimised for the Ascisorb technology so that it uses 30 per cent less energy than conventional processes. It only uses 0.9 thermal megawatts per tonne of CO₂.

In the subsequent process stages, the gas is compressed, further cleaned, dried and liquefied. Only the purified remainder of the flue gas – mainly steam, nitrogen and oxygen – is released into the atmosphere. The recycled carbon dioxide meets the purity standards for use in the food industry. A large proportion is used immediately on site, including for inert gas packaging of milk powder. Hochdorf thereby avoids the costs of purchasing the gas. At the same time, Messer in Switzerland resells the surplus CO₂ to end customers in the country.

*Simone Hirt, ASCO Carbon Dioxide Ltd,
and Reiner Knittel, Messer Schweiz AG*



The CO₂ recovery system: heat exchangers and pumps (front), absorber and desorption columns (back).



The ASCO engineers ensure smooth operation of the system by carrying out regular maintenance.



Focus on Cylinder

Hungary: Nitrogen for laser processing

Third dimension

Indupro, a laser processing specialist in Biatorbágy near Budapest, is the first Hungarian company to set up a job shop for 3D laser processing. The company specialises in contract manufacturing for major Hungarian and foreign car manufacturers and their suppliers. The main area of work includes 3D laser cutting of stamped body panels. This involves the use of Nitrocut cutting gas as well as various shielding gases and resonator gases, such as helium, nitrogen 5.0, argon and CO₂, supplied by Messer. Both CO₂ and disk lasers are used in the manufacturing cells. The three-dimensional metalworking carried out by Indupro includes welding, cutting, drilling and surface processing with laser technology.

3D laser processing is becoming increasingly important in metalworking. It can be used to work components with complex three-dimensional geometries in a single operation and with top-quality results.

Krisztina Lovas, Messer Hungarogáz



Very precise:
laser cutting

Serbia: Gas supply system for wine producer

Fruity wines from Fruška Gora

Fruška Gora is a low mountain range in northern Serbia which is famous for its rich variety of flora and fauna. It is also a wine-growing region with a centuries-old tradition. Vinum, a winemaker in Sremski Karlovci, the region's main town, has hired Messer to install a central gas supply system. This will pipe nitrogen from cylinder bundles into the storage tanks. The gas will displace atmospheric oxygen from the tanks and protect the wine from oxidation, thus ensuring that the wine's fresh and fruity flavours as well as its colour are preserved. Vinum has specialised primarily in the Blaufränkisch, Welschriesling, Sauvignon Blanc, Chardonnay and Pinot Noir grape varieties.

Sanja Šamatić, Messer Tehnogas



Romania: CO₂ for stage show

Untold launch is six-figure success

The premiere was an unqualified success: in four days – from 30 July to 2 August – the first Untold Festival drew 240,000 ravers to Cluj-Napoca in the Romanian region of Transylvania. 170 artists, among them Avicii, Armin van Buuren and David Guetta, performed across eight stages, delighting the festival's many visitors. For the stage shows, Messer supplied 5.4 tonnes of carbon dioxide in cylinders to the Pyro Events Team Fireworks Design, which specialises in fireworks and stage effects.

Carmen Baragan, Messer Romania Gaz



www.urban.ro

Imprint

Published by:

Messer Group GmbH
Corporate Communications
Gahlingspfad 31
47803 Krefeld, Germany

Editorial team:

Diana Buss – Editor-in-chief
Phone: +49 2151 7811-251
diana.buss@messergroup.com

Benjamin Auweiler, Corporate Office
benjamin.auweiler@messergroup.com

Angela Bockstegers, Corporate Office
angela.bockstegers@messergroup.com

Dr. Christoph Erdmann,
Production & Engineering
christoph.erdmann@messergroup.com

Tim Evison, Corporate Office
tim.evison@messergroup.com

Dr. Bernd Hildebrandt,
Application Technology
bernd.hildebrandt@messergroup.com

Michael Holy, Region Central Europe
michael.holy@messergroup.com

Katrin Hohneck, Medical Gases
katrin.hohneck@messergroup.com

Dr. Dirk Kampffmeyer,
Application Technology
dirk.kampffmeyer@messergroup.com

Reiner Knittel, Region Western Europe
reiner.knittel@messergroup.com

Krisztina Lovas,
Region South Eastern Europe
krisztina.lovas@messer.hu

Dr. Joachim Münzel, Patents & Trademarks
joachim.muenzel@messergroup.com

Marion Riedel, Region Western Europe
marion.riedel@messergroup.com

Marlen Schäfer, Corporate Office
marlen.schaefer@messergroup.com

Roberto Talluto, Application Technology
roberto.talluto@messergroup.com

Concept and realisation:

Agentur Brinkmann GmbH
Mevissenstraße 64a
47803 Krefeld, Germany

Text and editing:

Klartext: von Pekker!
Römerstraße 15
79423 Heitersheim, Germany

Cover photo:

Barbara Reya
Hafnerjeva 8a
1210 Ljubljana - Šentvid, Slovenia

Translation:

Contextinc GmbH
Elisenstraße 4 - 10
50667 Cologne, Germany

Go to www.messergroup.com for comprehensive information about "Gases for Life".

"Gases for Life" is printed three times a year in German, English, Hungarian, Slovakian and Czech.

The "Gases for Life" editorial team

We are ...



From left to right: Dr. Bernd Hildebrandt, Angela Bockstegers, Marlen Schäfer, Katrin Hohneck, Diana Buss, Michael Holy, Benjamin Auweiler, Dr. Joachim Münzel and Zsolt Pekker (not pictured: Dr. Christoph Erdmann, Tim Evison, Dr. Dirk Kampffmeyer, Reiner Knittel, Krisztina Lovas, Marion Riedel and Roberto Talluto)

Competition

Festive atmosphere in ...

The winner of this issue's prize draw will receive a gourmet hamper with specialities that are perfect for the cold season. For your chance to win this delicious prize, simply answer one question: In which city can you admire the famous Christmas tree shown in the photo? Please send your answer by e-mail with the subject line "Gases for Life competition" to: angela.bockstegers@messergroup.com. The deadline is 20 February 2016. Please remember to include your name and address.



The competition is not open to employees of the companies of the Messer Group and their families. In the event of multiple correct answers, the draw determines the winner. The result of the draw is final and not subject to appeal.

Combating PET waste with PET boats



The Tisza PET Cup race was held for the third time in July 2015. The competing boats are built from used plastic bottles, and the aim of the race is to collect as much waste as possible from the River Tisza and its banks. A total of 16 boats took part, and in five days the crews collected 2.5 tonnes of waste, including 30,000 PET bottles. Messer in Hungary supported the event by supplying CO₂ pellets: a small piece of dry ice is placed in each of the plastic bottles used for boatbuilding, where it is transformed into

gaseous carbon dioxide. The excess pressure thus produced stabilises the wall of the bottle and therefore the hull of the boat. The cup, by the way, was won by the team from Schneider Electric in Szigetszentmiklós under the nom de guerre "Schneci". The Tisza drains the eastern Carpathian Basin and is the largest tributary of the Danube.

Krisztina Lovas, Messer Hungarogáz

For more on this and many other gas applications, go to:
www.GasesforLife.de