

# on air

No. 2 - February 2007

The magazine for customers and partners of Messer



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**Tough, ice cold and with real pressure – cleaning with dry ice**

Whether it is paint residues, carbon black or oils – dry ice blasting gets rid of stubborn dirt residues quickly and gently. There is a wide range of possible applications. on air looks at the process.

*Thomas Böckler, Technology Manager Industry, putting some oomph into dry ice blasting*

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**Flexible water treatment with CO<sub>2</sub>**

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*CO<sub>2</sub> tank in Tarragona*

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**Laboratory gases for a healthy life**

Messer is equipping the laboratories of the local health authority in the Slovenian town of Maribor with state-of-the-art technology.



*Health authority lab in Maribor*

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Developed as a rheumatism treatment, cryotherapy today has a wide range of uses in cryochambers. on air went to the Czech Republic to check it out.



*Cryochamber for rheumatics*

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**Tips, dates, things to know**

**Imprint**

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## Dear Readers,

Ecology, preservation of health, and economic and efficient technologies are the main issues and objectives in today's industrial world. Gases play a particularly important role in protecting people and the environment as "invisible helpers" in many industrial sectors, as well as in medicine and research.

This issue of on air looks in particular at the use of carbon dioxide. Part of our core competence is the constant development of new technologies and improvement of existing processes, thereby reducing environmental impact. The fact that carbon dioxide can help achieve this may seem strange in view of the recently confirmed climatic impact of this gas. Our cover story looks at the environmentally friendly dry ice blasting process, which is increasingly replacing conventional cleaning processes such as water or sand blasting. CO<sub>2</sub> is also becoming more important in the wastewater treatment sector. In an interview with on air, Josep Ruana from the Tarragona waterworks in Spain explains how carbon dioxide is helping to reduce the amount of chemical substances and aggressive mineral acids required for water treatment. Carbon dioxide is clearly a versatile gas.

Health, too, is being supported by gases through various applications. For example, cryochambers, which were developed back in the 70s, are experiencing a renaissance in the treatment of rheumatic disorders – successfully tested in the Czech Republic by an on air editor.

I hope you enjoy reading this issue.

Best regards,

Yours

Stefan Messer





## Messer wins Coca-Cola as a new customer in Austria

Three Austrian production facilities of the Coca-Cola Group have recently started using carbon dioxide from Messer in their drinks. The global group's production in Austria includes the mineral waters Römerquelle and Markusquelle. Messer in Austria is delighted to have won this well-known customer: after all, Coca-Cola regained first place in the list of best global brands in 2006, ahead of Microsoft and IBM.

*Herbert Herzog, Messer Austria*



*Carbon dioxide from Messer adds sparkle to these drinks in Austria.*

## Tires for Europe

Hankook Ltd. is building its first European production facility in the Hungarian city of Dunaújváros. The Korean tire manufacturer has chosen Messer as its partner for the supply of gaseous nitrogen which Hankook requires for the production of around ten million rubber tires per year. From March 2007, Hankook will be supplied with five million cubic meters of nitrogen a year by the Hungarian Messer subsidiary, until a generator is commissioned. Hankook's Hungarian facility is of strategic importance, being one of the centers of the production network that links Korea, China and Europe.

*Anita Kötél, Messer Hungarogáz*



*The Korean tire manufacturer Hankook will commission its new Hungarian production facility in spring 2007.*

*The history of carbon fiber use: the material is being used in an increasingly wide range of sectors thanks to new production technologies and falling prices.*

## Carbon fiber needs nitrogen

Thanks to new technologies, carbon fiber is used, among other things, in the space industry as well as the automotive, plastics and construction industries. In the production process, nitrogen is used for inerting during carbonization of the fibers. Messer has signed a contract in Hungary in connection with the expansion of production at Zoltek, thus further cementing the partnership between the companies. Messer's investment of 2.65 million euros will secure the long-term supply contract with the largest carbon fiber producer in Hungary.

*Anita Kötél, Messer Hungarogáz*

## Foodapest in Budapest

The Hungarian Foodapest trade fair is an international hub for new technologies in the food industry. In 2006, the Messer stand enjoyed record visitor numbers. Messer showcased its technologies, such as its patented applications for transport refrigeration, drinks treatment and MAP (modified atmosphere packaging), to a large number of existing customers and interested visitors. Foodapest takes place every two years and is one of the most important trade fairs in Hungary.

*Anita Kötél, Messer Hungarogáz*

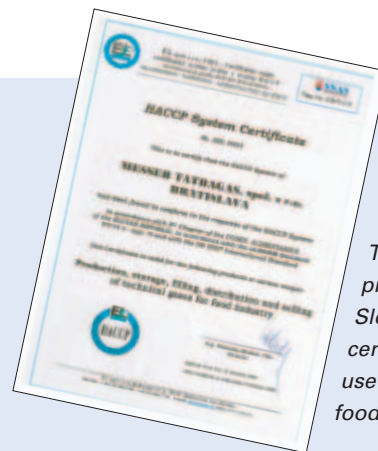


## Carbon dioxide – a way to a better environment

Environmental awareness in companies is changing – backed up by tighter legislation for the protection of air, soil and water. The Milleara Klatova a.s. dairy in the Czech Republic is the first company in Central Europe to have converted its wastewater neutralization plant from sulfuric acid to carbon dioxide from Messer. This simplifies the technological process while at the same reducing the costs for maintaining the pH by 36 per cent.

*Antonín Kroupa, Messer Technogas*

*The production of milk products results in wastewater which is neutralized with CO<sub>2</sub>.*



*The Messer products in Slovakia are certified for use in the food industry.*

## Gases are foodstuffs

Gases that are used in the food and drinks industry are subject to strict legislation since they themselves become "foodstuffs" through their use. Messer in Slovakia has been awarded ISO 9000 certification along with the HACCP certificate: Messer's production, warehousing and distribution thus meet the strictest quality standards for technical gases in the food industry in line with the European Directive.

*Jana Duchova, Messer Tatragas*

## New filling plant in Denmark

Messer is consolidating its activities in the Danish market by becoming the first provider of 300 bar gas cylinders. At the end of January, a new filling plant was officially opened and commissioned for this purpose in Kolding, the center of the Danish stainless steel industry. Above all, the successful 300 bar technology has economic advantages as it offers consumers more gas per bottle and therefore longer utilization times – with unchanged cylinder size. But that's not all: the new valve makes gas withdrawal simple and safe.

*Diana Buss, Messer Group*



*Tim Evison, General Manager of Messer Denmark is delighted with the ultra-modern plant.*



*The new valve generation enables simple and safe gas withdrawal.*



*Exhibits of our applications and expert advice awaited customers at our stand.*



# Flexible water treatment with

The waterworks of Consorci d'Aigües de Tarragona (CAT) in the north-east of Spain use carbon dioxide in the treatment of drinking water. on air spoke to Josep Ruana, Director of the CAT plant in L'Ampolla, about new water purification methods and the collaboration with Messer.

Clean, pure water – we all depend on it. Today, river water can only be used for our purposes – whether as drinking water or process water – after complex purification procedures. The operators of waterworks also have to use chemicals in this process which are often difficult to dispose of in an environmentally compatible manner. But there is another way, as demonstrated by Consorci d'Aigües de Tarragona. In an interview with on air, Josep Ruana explains how the Spanish waterworks converted their purification process with the help of Messer and the addition of CO<sub>2</sub>.

*The pumping station of the waterworks in Tarragona provides drinking water from the River Ebro for almost 80 per cent of the province's population.*

**on air: What role does CO<sub>2</sub> play in the new purification process?**

**Josep Ruana:** Carbon dioxide is added to the untreated water in such a way that when the pH decreases

slightly, it is possible to use new flocculants. This allows us to achieve maximum purification results in flocculation, without the formation of by-products which could affect the water quality.

**on air: Could you explain that in a little more detail?**

**Josep Ruana:** In order to get rid of suspensions and fine solids in the Ebro water, we had hitherto used aluminum sulfate or iron chloride with polyacrylamides for flocculation. Since the new legal guidelines for drinking water treatment came into force, polyacrylamides may only be added in small quantities which are insufficient for treating the water. In order to achieve maximum water purity, we have to use other flocculants. These new flocculants require the pH of the water to be controlled. Moreover, some flocculants work better within a certain pH range, resulting in tiny suspended particles agglomerating to form flocs.

**on air: And you can control the pH with CO<sub>2</sub>?**

**Josep Ruana:** Yes, the addition of carbon dioxide plays a major role in this. Stronger mineral acids could also be used, but CO<sub>2</sub> has the advantage of lower salinity, whereas the stronger mineral acids leave behind chloride and sulfate residues.

**on air: Are there any other advantages?**

**Josep Ruana:** Yes, there are. The prevention of corrosion and scale formation is one example. According to the new laws, the water suppliers must ensure that the required water quality standard is maintained all the way to the consumer's faucet. The key here is to have sufficient alkalinity. Unlike mineral acids, CO<sub>2</sub> does not destroy the alkalinity. Furthermore, the addition of CO<sub>2</sub>



CO<sub>2</sub>

*Josep Ruana in conversation with Alex Lemee: "We worked closely with Messer at every step."*



maintains the balance between corrosion-promoting ions such as chlorides and sulfates and the corrosion-inhibiting hydrogen carbonate. Carbon dioxide is also more economical as we need less of it compared with mineral acids. What is more, we can control the pH more precisely and easily. Last but not least, the storage and handling of CO<sub>2</sub> is simple and less dangerous.

**on air: Do you always use the same amount of CO<sub>2</sub>?**

**Josep Ruana:** No, we inject variable amounts. This means that we can adapt to different situations. For example, should the water flow fluctuate, we can still keep the pH steady. We can also react in the same way to a change in temperature, alkalinity or pH of the untreated water.

**on air: Who is responsible for controlling the system?**

**Josep Ruana:** The whole system works fully automatically, with CO<sub>2</sub> injection being controlled by an auto-

matic metering device from Messer. From our control room, we only monitor the parameters which also contain information on CO<sub>2</sub> levels, temperature and pressure. In addition, an automatic telemetry system from Messer monitors the tank levels and the pressure. It sends the information directly to Messer in Vilaseca. Messer can then automatically replenish the tanks that are on-site here but which belong to Messer. We don't need to do anything.

**on air: So you work together very closely in the operation of the plant. How intensively did you cooperate during the installation of the new system?**

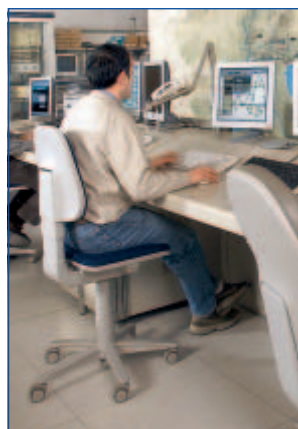
**Josep Ruana:** We worked closely together at every step. Messer was responsible for the design and construction of the entire control system, with the exception of the water flow and pH measuring equipment.

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## 22 baths per second

The Consorci d'Aigües de Tarragona waterworks are situated in the province of Tarragona in north-eastern Spain. The plant supplies drinking water, which it takes from the River Ebro, to almost 80 per cent of the province's population. Consorci d'Aigües treats up to 300 million liters of water a day, which equates to a capacity of

four cubic meters per second. In other words, each time the second hand moves, you could fill 22 bathtubs.

The water passes through the following purification stages: preoxidation, coagulation/flocculation, deposition of main particles, filtering and disinfection with chlorine.

*The plant's central control room*





*Putting the pressure on dirt: cleaning with dry ice.*

## Tough, ice cold and with real pressure – cleaning with dry ice

Dry ice blasting is a relatively new process which gets rid of even stubborn dirt residues in a particularly gentle and above all environmentally friendly way. Offering speed, flexibility and mobility in its use, dry ice blasting increasingly represents a cost-saving alternative to other cleaning processes. Plus it has even more advantages for its users.



*Dry ice can be stored in different forms – either in a block or as pellets.*



“Cleaning with a ‘solid gas’ is a stroke of genius. It is environmentally friendly and increases productivity. The potential is huge.”

Thomas Böckler, *Technology Manager Industry*



■ □ Dry ice blasting has already replaced other cleaning processes in many industrial sectors. For example, it is used for cleaning printing machines, motors, engines, facades and molds in plastic and rubber manufacturing. “Carbon dioxide in its solid form is suitable for removing lacquers, paints, oils, carbon black, plastic residues and many other stubborn residues,” says Thomas Böckler, Technology Manager Industry at Messer and contact person on matters relating to dry ice blasting.

Blasting with dry ice can be compared to sand blasting, only it is much gentler. Grains of dry ice are small, solid and cold. When these pellets hit the contaminated surface with pressure, the dirt contracts under the cold conditions, breaks loose from the surface and is then simply blown away by the air pressure and the pellets that follow. Rod-shaped pellets with a diameter of approximately three millimeters and a length of one centimeter are used for this.

### Effectively dissolved into thin air

The principle of this blasting process is to embrittle the dirt by transferring the cold energy stored in the dry ice pellets, and then to break it up and remove it under pressure. In addition to the quantity of pellets, crucial factors for the cleaning process include the material properties of the object to be cleaned, such as the starting temperature, thermal conductivity as well as the type and thickness of the dirt. Optimal results can be achieved by adjusting the quantity of pellets

and the acceleration pressure to suit the cleaning conditions. The advantage of dry ice as a blast medium is that the cold pellets, which have a temperature of minus 79 degrees, are converted to gaseous carbon dioxide during application and effectively dissolve into thin air. The result is no sand and no contaminated water – all you have to do after blasting is sweep up the dirt.

### Perfect in many areas

The process cleans monitors, leaving them residue-free, and removes oils and fats from gauges without damaging the sensitive devices. Residues caused by welding robots are easy to get rid of as only a little kinetic energy is needed to remove them. For the cleaning of circuit boards, printing machines or casting molds, a grinder is used, which grinds the pellets into sugar-sized grains. The crystalline particles accelerate the subcooling of the base material and increase the removal rate without abrading the surface.

Dry ice blasting is an alternative for cases where toxic substances have to be removed, since the contaminants are not mixed with other substances, making disposal much easier. “If the surface to be cleaned must not be damaged, sensitive parts cannot be removed or environmental regulations must be complied with, then dry ice blasting is the method of choice,” explains Thomas Böckler. “Applications that call for abrasive blasting, or where the base material and the layer to be removed have already started to



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**THE PLUS POINTS FOR THE CUSTOMER:**

- ⊕ No disposal of the blasting medium
- ⊕ Environmentally friendly, without chemical additives
- ⊕ Gentle cleaning
- ⊕ Saves costs
- ⊕ Speed and mobility of use
- ⊕ Suitable for many materials



*Almost as good as new: before and after cleaning with dry ice.*

- □ □ form a chemical bond, achieve better results with a sand or glass blaster," the dry ice expert adds.

**From CO<sub>2</sub> to dry ice**

The different physical states of substances – solid, liquid and gaseous – are particularly well-known with regard to water: ice, liquid water and water vapor. Carbon dioxide, too, occurs in these states. Gaseous

carbon dioxide is either extracted from ground sources or recovered as a waste product from a range of industrial processes. This means that the CO<sub>2</sub> that is used for dry ice blasting does not result in an additional increase in CO<sub>2</sub> emissions into the atmosphere. To turn the CO<sub>2</sub> into a solid, i.e. to change its physical state, it is first liquefied under pressure. Dry ice snow is then produced by sudden expansion. The snow is either

**A few words on work safety**

CO<sub>2</sub> is permitted in combination with food. The gas is non-flammable – it is even a well-known extinguishing agent – and it is also odorless, tasteless and colorless. Since it is about 1.5 times heavier than air, it sinks to the ground.

The dry ice has a temperature of minus 79 degrees Celsius: gloves are therefore an absolute must. A protective mask and safety goggles should be worn when dealing with dusty contamination. As with steam or sand blasting, the jet pipe must never, under any circumstances, be aimed at a person. Ear protection is also important. When using dry ice blasting in enclosed spaces, it is vital to ensure adequate ventilation.

*Appropriate protective equipment should be worn, especially when dealing with dusty contamination.*





## What other applications are possible with dry ice?

- Refrigeration of food
- Refrigeration for airport catering
- Cooling of must in winemaking
- Cooling of chemical processes



*Dry ice pellets have a temperature of minus 79 degrees Celsius and evaporate.*

pressed into blocks or pellets, the latter by using perforated plates.

## Success depends on pressure too

The effectiveness of dry ice blasting depends on the amount of cold energy and the kinetic energy. In order to remove heavy contamination, an optimum nozzle as well as an air pressure of more than ten bar is usually

necessary. The nozzle and jet pipe of the gun are adapted to the compressed air conditions. "The Messer experts check all the parameters on-site and fine-tune them in order to achieve an optimum and efficient cleaning result," says Thomas Böckler, describing the support Messer provides to customers.

*Text: Editorial team*

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## Industrial Working Group on Dry Ice Blasting

### Forum for the industry

The Fraunhofer Institute for Production Systems and Design Technology (IPK) has been conducting research and development in the field of dry ice blasting for about ten years. The successful development and distribution of such a young technology demands a high degree of communication and cooperation between industry and research establishments. The Industrial Working Group on Dry Ice Blasting, which was set up by IPK, brings together compressor and blasting system manufacturers, blast medium producers, service providers, end users and R&D establishments. It is an ideal forum for the exchange of experience and ideas, and helps with the initiation of projects and the development of new markets. Around

50 companies and research establishments, including the Messer Group, are currently represented on the Industrial Working Group on Dry Ice Blasting.

### 1st International Conference on Dry Ice Blasting

On June 21 and 22, 2007, the Industrial Working Group on Dry Ice Blasting will be hosting its first international conference in the Center for Production Technology (PTZ) in Berlin.

*This is how dry ice pellets are made: CO<sub>2</sub> snow is pressed through perforated plates.*





*Head of Laboratory Vlado Kučan working with the gas chromatograph (r.). The gases are supplied via a dense network of pipes.*



## Laboratory gases for a healthy life

**Slovenia:** The local health authority in Maribor (ZZV Maribor) carries out research into water, air and soil pollution, checks the quality of food and tests whether cosmetics and toys are suitable for use. This not only makes ZZV Maribor one of our most important partners in the field of laboratory gases in Slovenia, but by equipping the laboratories with state-of-the-art equipment, Messer has also realized a European reference project. High-purity gases such as helium 6.0 with a purity of 99.9999 per cent are used by the laboratories in sensitive measurements. Within the space of four months, 14 different supply systems

were installed at ZZV Maribor. In the gas stations, fittings with an automatic switching device were installed to provide a continuous supply of nitrogen, helium, argon, oxygen, hydrogen and more. In total, almost five kilometers of pipes and 560 different fittings facilitate the withdrawal of gas in each laboratory. Active support was provided by our sister company Messer Cutting & Welding in Frankfurt. The laboratories now also serve as a training center for all the Messer World companies.

*Asim Herceg, Messer Slovenija*

## 300 tons of air gases – a day

**France:** Limes, the new joint venture between Linde and Messer, is investing around 20 million euros in a production facility for air gases in Saint Herblain near Nantes. The joint venture, in which the French subsidiaries of the German industrial gases specialists Linde and Messer have equal stakes, was formed specifically for this project at the end of December in Paris. The plant is expected to be commissioned in the second quarter of 2008, creating around 20 new jobs in the Breton region. The air separation plant will have a production capacity of 300

tons of nitrogen, oxygen and argon per day. The plant will be fitted with state-of-the-art technology. This will facilitate the production of high-purity oxygen for laser applications, nitrogen that meets all the quality and legal requirements for use in the food industry, and argon that is required above all for welding. Many of the manufacturing enterprises based in the west of France will be able to benefit from this air gas source. Thus the new plant will significantly increase the security of supply of industrial gases in the region.

*Diana Buss, Messer Group*



*Setting the seal on the joint venture between Linde and Messer: (back, l. to r.) Richard Perrayon (Head of Business Development Bulk), Ina Bouvier (Legal Counsel, Messer France), Carsten Knecht (Legal Counsel, Messer Group); (front, l. to r.) Adolf Walth (General Manager, Messer France), Eric Guajioty (General Manager, Linde Gas France), Christian Kennedy (President Limes S.A.S.).*





*Production in China's provinces. In 2006, Messer invested more than ever before in the Middle Kingdom. Deng Ming is Project Engineer at Messer Zhangjiagang.*



## Entering new markets

**China:** Messer has eleven operational companies in China with 16 locations, six of which are joint ventures. Messer is not only concentrating on the coastal regions, but is also a pioneer in terms of investing in the provinces.

Helmut Schneider, CEO of Messer in China, sums up the success factors of our activities in China: knowing the market and your partners, conducting contract negotiations carefully and remaining flexible, without abandoning the fundamental ethical and professional principles of the management. "At the same time, it is important not just to want to avoid mistakes, but to learn from them," is one of Schneider's principles. The industrial gases business in the Middle Kingdom is largely dominated by the big customers from the steel industry. But now Messer has managed to access new market segments with three international customers.

Rohm and Haas is one of the world's largest manufacturers of special materials. The company, which is currently building a new research and development center in Shanghai, has been getting its laboratory gases from Messer since August. Kern-Liebers is a German company which, in China, specializes in the production of spare parts for precision instruments. The company is investing in the construction of a new factory building for its plant in Taicang in the province of Jiangsu. Messer will take over the gas supplies for the newly built heat treatment shops. The construction of a specific on-site plant is complicated and the safety requirements are high. Messer will use the experience

gained from this project to win other on-site customers in China. At the end of September, Messer also signed a supply contract with Benteler, one of the top 100 German industrial enterprises, which is currently investing in a new production facility for automobile parts in Qingpu (Shanghai). Future production will require large quantities of gas for heat treatment and soldering.

### Highest investment budget in 2006

In 2006, Messer invested heavily in the expansion of production facilities. In the province of Hunan, Xiangtan Messer has started building a fifth air separation plant, which will come on stream at the end of 2007. A sixth plant is planned for the end of the decade. In Foshan, in the province of Guangdong, the first plant was operating at full capacity shortly after its start-up – a second plant is already in operation. Messer supplies its customers in the Chemical Industrial Park near Shanghai via a dedicated pipeline. Messer's operations in China are based on the growth of its customers – with a higher investment volume in 2006 than ever before.

*Xia Xingang, Messer China*

*Diana Buss, Messer Group*



*Helmut Schneider, CEO of Messer China, knows the success factors of the market.*



*Different sectors, different regions – Messer has a broad market position in China and its customers include the Chinese subsidiary of Rohm and Haas.*



# Cryotherapy – warmly recommended for rheumatism patients

In the 70s, Dr. Yamauchi from Japan developed a nitrogen/cold air therapy for the treatment of rheumatism. Developed further in Europe, it is today used as whole body cryotherapy in cryochambers.



*At the official opening of the cryochamber in Teplice nad Bečvou, visitors had the opportunity to try it for themselves.*

used not just for rheumatic, neurological and orthopedic disorders, but also in the treatment of skin and lung diseases.

Dana Köpplová, who works for Messer in the Czech Republic, visited the cryochamber at the Lázně Teplice nad Bečvou spa, which Messer supplies with liquid air: "Paradoxically, I didn't feel the cold; it was more like a tingling sensation on my skin. After two to three minutes in the chamber, we exercised for 20 minutes on exercise bikes, rowing machines and treadmills – each focused on the parts of the body that were sore. After the treatment, we had a feeling of physical and mental well-being. I can warmly recommend cryotherapy!"

In July, the Lázně Teplice nad Bečvou spa company and Messer signed a contract for the construction and lease of pipelines and storage tanks as well as for the supply of liquid nitrogen and oxygen for the operation of the cryochamber. The company is the Messer Group's sixteenth customer in this field.

*Text: Editorial team*

Liquid nitrogen and oxygen are used to create temperatures as low as minus 160 degrees Celsius in the cryochamber. It is therefore vital to keep your body moving during and immediately after the treatment. A maximum of three patients – lightly dressed and wearing a headband, wooden clogs, gloves and mouth protection – use the chamber at the same time, pacing around it in circles. They need to take shallow breaths through the nose and make sure that they are not sweating or wet when they enter the treatment room, as water quickly dissipates body heat.

## Good for body and soul

Whole body cryotherapy improves the circulation of blood through the skin, connective tissue, tendons, muscles and joints. The optimum regimen should involve around ten treatments, since the repetition of the cryotreatment improves the mobility of the joints and increases muscle strength. Pain is alleviated from the first treatment. That is why today this therapy is

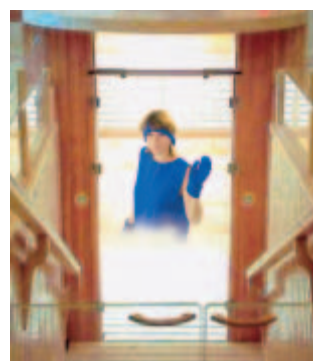
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*The freezing temperatures, which can reach minus 160 degrees Celsius, demand constant movement in the cryochamber.*



## COMPETITION

### Win...

#### ...one Messer mug – in the style of a gas cylinder cap

Here's what to do: On which page of this issue of on air does this picture appear? So, find the page and you could be the lucky winner! Simply e-mail your answer to



Closing date:  
March 22, 2007



 [diana.buss@messergroup.com](mailto:diana.buss@messergroup.com)

Congratulations to Andreas Urban, Bregenz (Austria), the winner of the model truck.

## CLUBBING FUN

### Freezing fog for hot parties...

In the past, strobe lighting and the feeling of the bass vibrating through your body were enough to give you those dancefloor thrills. But that was yesterday! Today, FogJet Streams are the latest craze. With FogJet, cold fog is produced from CO<sub>2</sub> and blown onto the dance floor. Messer already services four such systems in Austria, and others are being planned. Around 20 kilos of carbon dioxide is required for each shot – and the clubbers absolutely love it.

 [herbert.herzog@messergroup.com](mailto:herbert.herzog@messergroup.com)



*The latest craze among clubbers: FogJet – the fog machines from Messer.*



#### Your opinion please!

*What did you particularly like about on air? What did you not like? What would you like on air to cover in the near future? Please write to us at...*

 [info@messergroup.com](mailto:info@messergroup.com)

## MEGASEARCH

### Search and find...

#### ...application technologies from Messer – that's MegaSearch.

Go to [www.messergroup.com](http://www.messergroup.com) and visit MegaSearch, our database, which is full of information on more than 300 technologies. Select your sector or a particular gas, or simply enter a term and start your search. You can access easily comprehensible brief descriptions on all aspects of gas applications and their advantages.

 [www.messergroup.com](http://www.messergroup.com)





## Coming up in the next issue:

- □ Specialty gases from “a” for analysis to “x” for xenon lamps:  
A wide range of applications with high purity gases and individual mixtures.
- BABEL – follow every step. The barcode-based BABEL application developed by Messer allows customers to track the progress of steel cylinders through the supply chain with their PDA.



**MESSER** 

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