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## More than just the air that you breathe – medical gases

**Medical gases have become indispensable in modern-day medicine. Whether as breathing gas or as anaesthetic, in medicinal baths or in diagnostics, they are applied widely. However, hospitals, doctors and patients require not only gases, but also the necessary hardware to use them.**

Very few manage to count to the end. Anyone who has undergone an operation is familiar with the anaesthetist's request as he places the mask over the mouth and nose: "Now slowly count to ten." Most patients fall silent before they reach five as the anaesthetising gas kicks in.

The use of gases in modern medicine consists of much more than routine procedures – it can often prolong or even save lives. But it is not only breathing or anaesthetic gases which find application: for example, „Gases are also deployed in minimally invasive surgery or for medicinal baths,” explains Matthias Thiele, Head of Messer's European Healthcare Business. “Cryosurgery and diagnostics using imaging (MRI) depend upon these gases' properties,” Thiele adds. Medical labs also use gases and gas mixtures. For the wide range of speciality gases, gas mixtures and breathing gases applied in medicine and in healthcare generally, two aspects are of crucial importance. Firstly, providing a customized and optimized solution to meet every requirement; and secondly, ensuring that the quality of the gases conforms to the high standards governing the health sector.

### **BREATHING EASIER – MEDICAL OXYGEN**

Respiration is patently one of the most essential of the human body's vital functions. After just two minutes, a lack of oxygen can cause irrevocable damage to organs. Consequently, artificial respiration in ambulances, in the operating theatre and in hospital wards constitutes indispensable, life-saving treatment.

Depending on the specific area of application, air, pure oxygen or oxygen-containing gas mixtures can be used as breathing gas.

Anaesthetists also use oxygen as an integral element in their anaesthetic gas mixtures. For example, it serves as an essential carrier gas to which nitrous oxide (laughing gas) and inhalation anaesthetics can be added. Oxygen is also used by doctors to treat problems in the natural absorption of oxygen in the lungs.

“In the liquid state, which oxygen assumes at minus 183 °C, it takes up a mere 1/854 of its gaseous volume,” explains Matthias Thiele. It is hardly surprising, therefore, that this is the preferred state in which to store this gas. Messer offers bulk customers, such as hospitals, a centralized oxygen supply on-site. Stored in large, vacuum-insulated tanks, the liquid oxygen is evaporated as required and then piped through to special withdrawal points from where it can be administered to patients via high-precision connecting devices.

In addition to bulk deliveries, Messer also offers its customers smaller system units. This includes, for example, the Oxystem, an oxygen cylinder supplied as a unit with integrated pressure and control console, available in two-, five-, ten- or twenty-litre sizes. Medical oxygen is also supplied in an even wider variety of sizes (one- to fiftylitre cylinders).

In combination with a pressure regulator, the smaller models of these cylinders are ideally suited for rescue and resuscitation situations.

### **FOR THE FREEDOM OF PATIENTS**

“To ensure customers are able to fully enjoy the practical benefits of this system, including high supply security, space-saving features, easy handling, clearly organized cylinder management and high cost-efficiency, Messer offers a complete one-stop service package, ranging from advice and planning to installation and maintenance,” explains Thiele. In addition to the supply of medical gases, centralized medical gas supply systems and withdrawal and connection fittings, Messer's core competences also include oxygen concentrators and liquid systems for the home care sector. The oxygen concentrator “NewLife”, for example, uses cutting-edge technology to separate the nitrogen from the ambient air (air comprises 78 percent nitrogen and 21 percent oxygen) and supplies patients with the required quantity of the residual oxygen. These concentrators are available both for in-patient and out-patient applications. The same applies to the liquid oxygen system “Companion”, which stores medical liquid oxygen in a fixed

container and which, in combination with a supply unit, doses the oxygen and dispenses it in gaseous form. Messer's delivery service

provides on-site refilling. The patient can regulate the quantity of the oxygen supply using an adjustable flow controller. As these systems operate independently from all energy sources, the patients can move around freely with them attached.

### **BREATHING GAS REQUIRES CERTIFICATION**

To facilitate optimal use of the various oxygen systems, Messer also offers a range of consumables, such as humidifiers, nasal cannulae and oxygen masks, in addition to extension tubes and matching connectors, adapters and other accessories. Messer is an accredited supplier in the field of respiration. Even in Serbia, despite its being a non-EU state, Messer has been awarded European certification for the production of medical oxygen. As the largest Serbian supplier of breathing air, Messer is the only company licensed to supply in the neighbouring EU states.

<https://newsroom.messergroup.com/en/more-than-just-the-air-that-you-breathe--medical-gases/>

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