

**Medical grade compressed air systems**

Uncompromising safety



*Made in Germany*   
*since 1907*

## Zero compromise in reliability or safety

For over 50 years, BOGE has worked with well-known hospital equipment suppliers and manufacturers of medical devices to develop customised, fully compliant system solutions for the supply of medical-grade compressed air. Our customers in hospitals rely on us daily, especially in the recent past. Reliability is key – after all, we are dealing with the safety of both patients and medical staff alike.

With the uninterrupted need for medical grade compressed air all across the hospital – anywhere from the patient’s bedside to the operating theatre – a compressed air generation system with triple redundancy at the very minimum is required. More and more hospitals are entrusting their medical grade compressed air systems to BOGE, no doubt partly due to our devices providing a reliable supply combined with exemplary efficiency.



### Fully compliant and safe

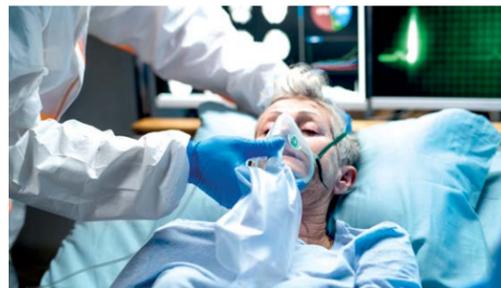
Thanks to our decades of experience, we can offer full supply reliability. At the same time, our exacting standards far exceed the statutory requirements. All medical grade compressed air systems from BOGE, supplied and certified by leading hospital suppliers and medicinal product manufacturers, comply fully with all current standards and requirements:

- MDR Medical Device Regulation (EU) 2017/745
- DIN EN ISO 7396-1
- DIN EN ISO 14971
- DIN EN ISO 9001
- DIN EN ISO 13485
- + others



### Artificial respiration

When dealing with patients, only absolutely pure and readily available respiratory air is good enough. With BOGE treatment units, the compressed air generated undergoes drying, cleaning and processing in seven stages to deliver medical compressed air compliant with DIN EN ISO 7396-1. Sterile filters (acting as an eighth treatment stage) ensure top-quality respiratory air, whether supplied for artificial respiration or destined for anaesthesia delivery systems.



### Medical systems

As medical grade compressed air is considered a pharmaceutical product and is therefore subject to the specifications of the European Pharmacopoeia, air supply systems must legally comply with a series of requirements and standards. We fully support this, as these high standards and supply reliability are in full alignment with our own quality and reliability standards which ensure uncompromising purity of the air produced.



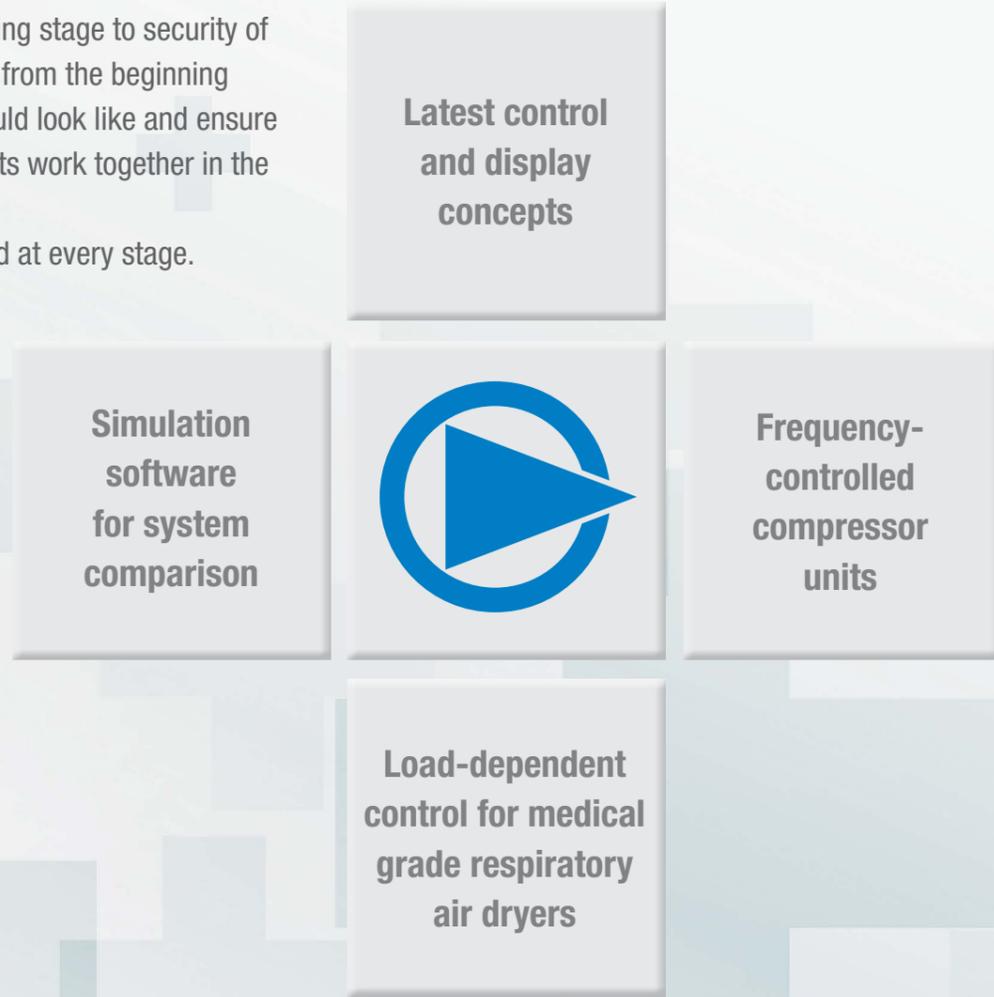
### Surgical instruments

Many surgical instruments and tools such as those used for puncturing, drilling or dissecting operate with compressed air. Medical devices also need to be inspected or dried at repeated intervals. With medical grade compressed air, everyone can breathe easy.



## Leading the way in hospitals

“BOGE Plus” means efficiency tools that make all the difference, and the benefits range from the planning stage to security of supply. We show you from the beginning what your system could look like and ensure all system components work together in the best possible way. Efficiency is increased at every stage.



### Advantages of BOGE Plus

- Medical grade compressed air systems designed using highly efficient premium components from BOGE
- Seamless interaction between all system components
- User-friendly interlocking control systems, monitoring and display solutions, monitoring and alarm functions
- Proven redundancy concept and highest safety level implemented in hundreds of German hospitals
- Automatic restart of entire system after power outage
- Conformity with all statutory guidelines and standards
- Decades of experience cooperating with leading medical product manufacturers and hospital suppliers
- Customised support during planning and design with the help of needs analyses and system simulations
- A large majority of German hospitals already trust medical grade compressed air systems from BOGE

### Control and display concepts

Highly efficient energy-saving technologies combined with ultra-modern control, monitoring and display concepts ensure seamless interaction between all system components. Should the primary system controls fail or experience any latency, the compressor control unit steps in actively to report any malfunction in the master system – ensuring the availability of the medical grade compressed air at all times.



### Compare and find the best system

A comprehensive needs analysis is key to ensuring the ideal configuration for any optimised medical grade compressed air system. The ideal tools to do this are the BOGE aireport and BOGE system simulation: by carrying out a realistic system comparison based on actual measurement data, it quickly becomes clear what the most energy efficient and standard-compliant solution will look like.



### Improved efficiency thanks to frequency control

In standard-compliant systems with triple redundancy – configured for 100% demand – the compressors are substantially oversized for normal operation. This results in unnecessary load and idling times for screw compressors running at fixed speed. Speed-controlled systems avoid this, however, lowering the system pressure continuously to the switch-on pressure level. The result is improved systems efficiencies of over 50%.



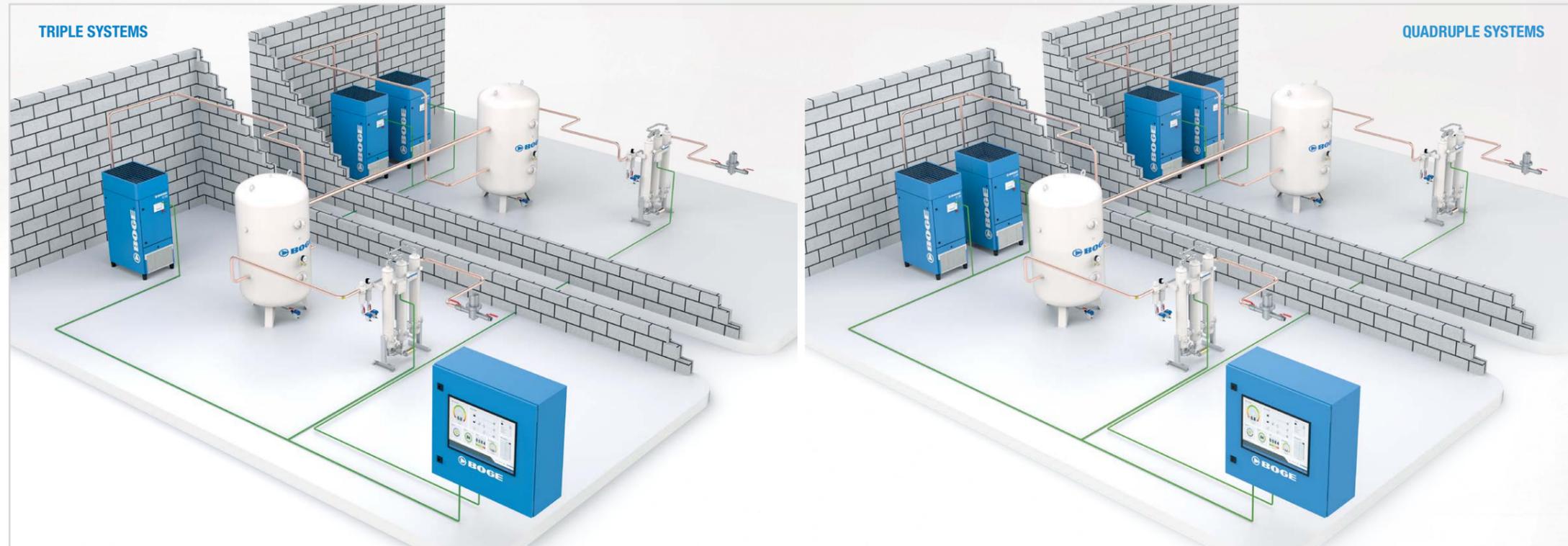
### Load-dependent control

Intelligent load-dependent control of the medical dryers means that up to 50% of the regeneration energy can be saved. This works by continuously adapting the ratio of drying and regeneration to the current moisture 'loading' status.



## Redundancy as a matter of principle – patient safety comes first

When designing a compressed air system for medical use, we gear it to the worst-case scenario every time – after all, patient safety is always top priority. Every compressed air generating system has at least triple redundancy. Compressed air buffers and medical compressed air treatment systems are designed with at least dual redundancy to guarantee a reliable supply no matter what the circumstances. A master system control coordinates safe and efficient running, and the system restarts automatically after a power cut.



### Multiple redundancy: simply more reliable

BOGE's redundancy concepts are based on our long-standing experience of applications in the medical sector, and naturally comply with all current legal guidelines and requirements. Our top priority is absolute reliability: even in a power cut, the supply of medical grade compressed air must be assured.



### Premium components as a proven basis

BOGE offers a wide portfolio of compressors designed for use in the hospital thanks to their outstanding performance in sensitive areas. They provide excellent efficiency, sound insulation and ultra-silent, low-vibration running. The spectrum ranges from screw and piston compressors right up to scroll compressors – everything you need to make a custom medical compressed air system suited perfectly to your needs.



### Flexible system design

Our modular system design means tailor-made solutions for economical operation – after all, 'modular' means optimum flexibility. We decide together with you whether a triple or quadruple system would be best. Whatever option you choose, installation in two separate fire compartments is a must to reduce the risk to the continuous supply of air even further.



### Sensor readings for the purest air

To achieve 100% medically pure breathing air, the treatment units in the DASZ-P series (with dual redundancy and running parallel) operate as a seven-stage system with two chambers which are used to dry the compressed air in a pressure swing process to remove harmful substances. Integrated filter and purification/catalytic stages ensure the required values stay far below the specified limits.



## Efficient control with surgical precision

When human lives are at stake, safety comes first – something which has become even clearer with recent events. But even in the medical sector, a compressed air system has to be cost-effective, which is why we have done our utmost to maximise efficiency and to further reduce the TCO, including ensuring low installation and running costs, or with the help of heat recovery. Highly efficient energy-saving technologies combined with ultra-modern control, monitoring and display concepts ensure seamless interaction between all system components.



### Everything under control with focus control 2.0

Our modular control system is one of the most modern in the industry: up to four fixed-speed and/or frequency-controlled compressors can be effortlessly operated, controlled and monitored thanks to the integrated master function. In addition to a whole range of clear status, function and efficiency indicators, it also has an RFID interface which ensures only authorised personnel can make any modifications to the settings.



### Efficiency and transparency? Of course!

Our higher-level control systems provide efficient and safe operation, even in installations with a dual or multi-room concept. Integrated display solutions permit comprehensive system monitoring from almost anywhere. Our intelligent compressor control systems simultaneously oversee the higher-level monitoring and control features.



### No more limits: airtelligence provis 3

This intelligent, higher-level interlocking control can handle an unlimited number of compressors, compressed air networks and accessory components. Its high-performance control algorithms monitor and control the entire compressed air station – both proactively and according to use. The control is operated intuitively with touch commands on the 15.6" display.



### The future today: BOGE connect

BOGE connect is your ticket to Industry 4.0: all system data and machine details are continuously sent to the BOGE connect portal. The data can be visually displayed on any smart device. The key advantage: BOGE connect independently detects inefficient systems, helps identify optimisation potential and simplifies servicing.



Everything from one provider

**Oxygen in unlimited quantity**

BOGE generators O 3 P to O 15 P and BOGE O 3 PE to O 15 PE produce oxygen using the high-efficiency pressure swing absorption (PSA) process achieving a purity of 90 to 95%. It is now possible to generate just the quantity you need whenever you want, making you independent from expensive suppliers.



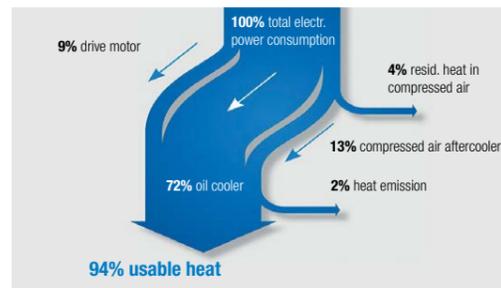
**Nitrogen as you need it**

BOGE nitrogen generators also use the principle of the pressure swing absorption (PSA) process. In this method, the nitrogen is effectively separated from the other components of the air. This results in nitrogen with a consistent purity rating of up to 5.0 (99.999%).



**Also retrofittable: Duotherm**

The BOGE Duotherm external heat recovery system also pays for itself with existing older-type screw compressors or screw compressors from other manufacturers. It can easily be fitted to existing systems, needs very little space and brings a lasting improvement in the energy efficiency of the compressor.



**Manufacturer service round-the-clock**

Should anything happen with your compressed air supply, we are always ready to help. Immediate help over the phone and technical support from our experts round-the-clock. Our BOGE "troubleshooter" hotline (+49 5206 601-140) can be reached daily 8:00 - 16:30 (German time); our 24-hour helpline number is +49 170 4400444.



Independence is invaluable: with the BOGE oxygen PSA generator, you'll produce your own medical grade oxygen which complies with EN ISO 7396-1 and is available wherever and whenever you need it. No losses through evaporation, no storage issues and no rental costs. This highly flexible system helps produce the oxygen you need safely from ambient air. You'd find it difficult to find a more economical solution.





**B**est  
**O**f  
**G**erman  
**E**ngineering

Customers in more than 120 countries worldwide trust the BOGE brand. Already in its fourth generation, this family-run company directs all its experience into developing innovative solutions and exceptionally efficient products for the compressed air industry.

