

FATAL DIVING ACCIDENT IN THE MALDIVES

Operators under scrutiny - BAUER KOMPRESSOREN starts information initiative for breathing air safety

A tragic diving accident happened in the Maldives on 22 May 2008. A Russian dive master died from carbon monoxide poisoning as a result of contaminated breathing air during diving; ten other divers from Germany, Australia and Russia were injured, some seriously. The tragedy took place on board a safari boat in the South Ari atoll. According to investigations of the Maldivian authorities, incorrect handling and servicing of the compressor system led to the contamination of the breathing air of the eleven divers during the filling of the cylinders. By contrast, a technical compressor defect can be ruled out.



Defective intake hose with tape patches on the boat

The following facts have so far been established: a few days before the accident the HONDA drive motor for one of the compressors on board the safari boat failed. A motor mechanic trained to service the HONDA motor examined the unit and determined that due to lack of servicing and oil the machine was a total write-off. In this connection he also inspected the air intake filter of the compressor and determined that this was unusually coked. Whilst the paper lamella of the filter usually turn

grey during normal use as a result of the airborne particles until the filter is clogged and must be replaced, the massive coking of the system on the safari boat could not have arisen by normal air pollution. Rather, it was attributable to the intake of soot particles from exhaust gases from the ship's diesel and / or combustion exhaust gases from the other compressors and to a substantial extent judging by the degree of carbonisation of the air filter.

Photos taken after the accident also prove that the intake hoses were defective and had been patched up at numerous places using adhesive tape. The ends of the hoses and the faulty hose sections were also located in the exhaust gas flow of the combustion motors of the other compressors and of the ship's engine.

The tragic accident shows that a danger to life and limb from poor breathing air can be virtually ruled out by correct operation of the systems. However, incalculable risks may arise even in the safest system if it is handled / installed incorrectly or wrongly or poorly serviced.

This subject must in future be brought to the attention of system operators and divers alike. Whilst high quality breathing air is one of the most important components of safe and good equipment, since breathing air is concealed invisibly in diving cylinders and is therefore intangible, many divers and filling stations are often not aware that health and, as has now been shown on the Maldives, ultimately also life, depend on the quality of the inhaled air.

Bauer Compressors has reacted to the tragic incident on the Maldives and the frequently observed negligence of safety amongst operators and is now launching an information initiative in matters of breathing air safety. Reference is made here to the absolutely necessary safety precautions.

The formula for breathing air of best quality is as follows:

BAUER compressor

+ correct installation

+ correct handling

+ regular servicing

+ critical consumers

= **maximum safety.**

For operators of breathing air compressors there are two important reasons why greatest attention must be paid to the purity of breathing air.

1. Safety for customers and own employees

The accident in the Maldives shows that there is a need for much instruction in essential safety measures in many diving bases. For moral reasons alone the safety of customers and staff should be of prime importance for every operator of a breathing air compressor. The operator bears the responsibility for the health of his customers and should face up to his responsibility by investing in the safety and therefore in the requisite measures to maintain and service the compressors.

2. Safeguarding livelihoods

In addition, a diving accident such as the most recent fatal accident on the Maldives, usually leads to a slump in guests and therefore is extremely threatening to the livelihood of the respective operator. Following the incident observed throughout the world and met with great consternation many customers will be more sensitive to the subject of safety and in future will find out beforehand which safety precautions are taken by the compressor operators to guarantee the purity of breathing air. Below is a checklist of safety aspects which in future

should be given greater attention by customers when selecting their diving bases and which is therefore of enormous importance for system operators.

- **Are original filter cartridges used and is a log book with the replacement intervals conducted?**
- **Is a constant filter monitor used such as SECURUS from BAUER KOMPRESSOREN?**
- **Is the compressor positioned such that only clean air is taken in?**
- **Is a filter cartridge with Hopcalite system used when combustion engines are in use?**
- **Is breathing air regularly tested by certified institutes / specialised dealers?**
- **Does a mobile test laboratory such as AEROTEST SIMULTAN HP exist?**



BAUER filtration technology for purest breathing air

Operators of compressors should retrofit to meet safety standards. Accessories to improve or secure breathing air quality are presented on following pages.

Filter cartridges with additional CO filter

Special filter cartridges are offered by Bauer Compressors that distinctly reduce the carbon monoxide in the breathing air. This additional filter stage is called Hopcalite. In a chemical process it is able to convert CO in breathing air to far less toxic CO₂.

The filter cartridge should be used if the risk exists of air containing carbon monoxide being drawn in. This is generally the case if compressors are used with combustion engine. Where compressors are used on ships, there

is an additional danger that carbon monoxide is taken in from the exhaust gases of the ship's engine for a brief period.

The Hopcalite cartridge serves as additional protection for temporary air pollution. Since the filter can dissolve only a restricted quantity of CO in breathing air, a permanent intake of polluted air is to be prevented and, of course, the safety precautions set out in the operating instructions must continue to be observed.

The AEROTEST Simultan HP – Your mobile breathing air test laboratory

The AEROTEST enables users to measure any pollution in breathing air in an uncomplicated, safe and time-saving manner. In view of its low weight, its size and low purchase price, the AEROTEST case is recommended both for system operators and end consumers alike. The device offers a great deal of safety for a small amount of money.

Using the AEROTEST the following concentrations in breathing air can be determined: carbon monoxide (CO), carbon dioxide (CO₂), water vapour (H₂O) as well as synthetic (with the aid of the newly developed impactor) and mineral oil.



AEROTEST SIMULTAN HP

Advantages of AEROTEST:

- **Polluted breathing air can be recognised early on, thereby preventing dangerous situations and accidents**
- **Measuring the water content in breathing air can prevent a dangerous icing of the breathing controller in good time**
- **Permits measurements to be made to DIN EN 12021**
- **Serves as your own mobile test laboratory**
- **Can be connected to compressors or directly to pressurised air cylinders.**