

# News from CompAir

## IT'S A CURTAIN CALL FOR COMPAIR'S TURBOSCREW COMPRESSOR Portable Compressor Protects Marine Life During Bomb Disposal at Sea

A CompAir C210-TS NA TurboScrew compressor, hired by hydraulic engineers Hydrotechnik Lübeck GmbH (Hydrotechnik), has helped to protect marine life in the Baltic Sea - in a specialist test application to create a protective curtain of air bubbles during bomb disposal.

There are estimated to be several hundred thousand tonnes of munitions left over from the Second World War in the North and Baltic seas and these can only be disposed of by detonating them safely. However, unprotected underwater explosions involving large amounts of charge (250 kg of TNT or more) are usually lethal to humans and marine mammals within a 4 km radius and can cause hearing damage up to 30 km away.

For this reason, Hydrotechnik chose to perform a series of tests in partnership with the Interior Ministry for the state of Schleswig-Holstein. These were to prove the effectiveness of using a bubble curtain to minimise the environmental impact of detonating up to 100 large munitions off waters southeast of the Kiel Fjord in the Baltic Sea.

CompAir distributor, Peter Gay in Bremen hired out the portable, TurboScrew compressor, which proved to be ideal for the application, reducing the shock and sound waves from the detonation of a 250 kg munition by a factor of 20. In addition, the unit used up to 30% less diesel than all other comparable compressors on the market, to deliver a high standard of energy efficiency and low operating costs for Hydrotechnik.

To achieve optimum results from the test, perforated plastic pipes are laid on the seabed in a circle around the munition. The holes in the pipes have a defined size and are carefully spaced to optimise the protective effect of the bubble curtain.

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Once all preparations for the detonation are complete the compressor is started up and air is blown into the system. In the space of minutes a curtain of air bubbles forms around the detonation site, rising from the seabed to the surface. Detonation is triggered and the energy from the explosion takes the path of least resistance – inside the bubble curtain towards the water's surface. The result is a 'soft' explosion that minimises harm to marine life in the Baltic Sea.

The bubble curtain technique has been used for decades for water decontamination, to prevent the ingress of salt water, to keep sea areas free of ice, as breakwaters and compressed air oil barriers and for noise protection in underwater pile driving.

However, creating an effective bubble curtain requires a thorough understanding of how compressed air bubbles form and behave in water and also a great deal of experience. Klaus Wreth, who is responsible for this type of application at CompAir concludes, "Companies like Hydrotechnik and CompAir have the necessary technical equipment and the know-how to set all the parameters correctly – the air pressure of the compressor, the number of nozzles per metre of pipe, the shape of the nozzles in the pipe, the alignment of the nozzles, the volume flow of the compressed air, the nozzle diameter and the bubble diameter,"

### **About CompAir's TurboScrew Compressor**

The technology used in CompAir's TurboScrew series offers a high standard of energy efficiency and reliability, thanks to the QSB 6.7 motor, developed by CompAir in collaboration with Cummins. Using bi-turbo technology, CompAir TurboScrew drive units offer excellent fuel consumption.

This is due partly to the use of a second exhaust gas turbocharger that pre-compresses the intake air for the screw compressor stage. The patented machine concept increases the efficiency of the compressor system significantly, especially in day-to-day part-load operations. This technology also makes the machines the lightest in their class.

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