

## **Superlative hydrogen compression: higher differential pressure with only one stage**

New oil-free screw compressor from AERZEN for efficient compression of electrolysis hydrogen

**With the VRW536M, AERZEN is further expanding its portfolio of screw compressors for hydrogen compression. The design and water injection of the innovative compressor stage allow the highest differential pressure to date in a single-stage oil-free screw compressor in the competitive environment. The result: minimal footprint and significantly reduced investment and operating costs.**

Bringing large H<sub>2</sub> volume flows to intermediate and final pressures with fewer compressor stages without having to set up largest reciprocating compressor systems - this is exactly where the new oil-free VRW536M screw compressor from AERZEN comes in. Compression is based on the principle of oil-flooded screw compressors - with a small but subtle difference: the oil was replaced by water. The water serves both to cool the gas and to seal the internal gaps, enabling compression to higher differential pressures with highest efficiency. This stage can, thus, replace a two-stage system with classic dry screw compressors and is even more energy-efficient. For the customer, this results in significant advantages in terms of installation space as well as investment and operating costs.

### **Thoughtful down to the smallest detail**

The VRW536M is designed for an operating pressure of up to 10.0 bar (abs.) and a volume flow of up to 6,000 Nm<sup>3</sup>/h at 50 Hz. The volume flow is controlled by means of a frequency inverter (speed control), the maximum speed change is 1 Hz/s. Pre-drying of the humid H<sub>2</sub> gas is not necessary. Double-acting, water-purged mechanical seals on the conveying chamber ensure 100% oil-free operation. The use of stainless steel on cylinders and rotors guarantees longevity and flexible shutdowns under pressure with humid gas. The synchronisation of the rotors is realised via a pair of gear wheels to avoid contact of the rotors. In this way, the conveying chambers remain unlubricated and there is no oil contamination of the conveying medium. The VRW536M is available both with and without gearbox (directly driven).

**Wide range of applications**

The new package was specially developed for the efficient and safe compression of hydrogen, but is also ideally suited for other critical applications, such as flare gas or contaminated gases. In principle, the VRW536M can be ideally used as a pre-compressor (booster) for subsequent compressor technologies. The scope of delivery includes the customer-specific package with auxiliaries, the drive train, the instrumentation (optionally with machine monitoring), and on request also the complete control system and the acoustic hood.

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## **The company**

Industrial plants all over the world are provided with gaseous media using AERZEN blowers and compressors. The innovative AERZEN machine technology is based on the experience of more than 150 years of company history. The AERZEN product portfolio, including rotary lobe compressors, positive displacement blowers, turbo blowers and screw compressors, offers besides standard products customised special solutions. Digital services can be used to increase efficiency, availability and productivity in a sustainable and future-oriented manner. In addition, the After Sales Service of Aerzener Maschinenfabrik GmbH offers the complete range of services - from the full maintenance contract to repairs and upgrade of existing plants.

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