

REFERENCE POWER TO GAS VALVES FOR INNOVATIVE HYDROGEN PROJECT

Maximum operational safety and availability of power-to-gas plant: Uniper Energy Storage counts on true metal sealing ball valves



In 2013 Uniper Energy Storage GmbH (UST) brought the power-to-gas plant "WindGas Falkenhagen" successfully on stream. With this project Uniper has been demonstrating, as one of the first companies worldwide, a way how renewable energy can be stored in the natural gas grid in order to make production independent from consumption. For the pilot plant in Falkenhagen (Germany) Hartmann Valves supplied 24 true metal to metal sealing ball valves, designed to meet the excessive demands for service associated with pure hydrogen whilst ensuring maximum safety.



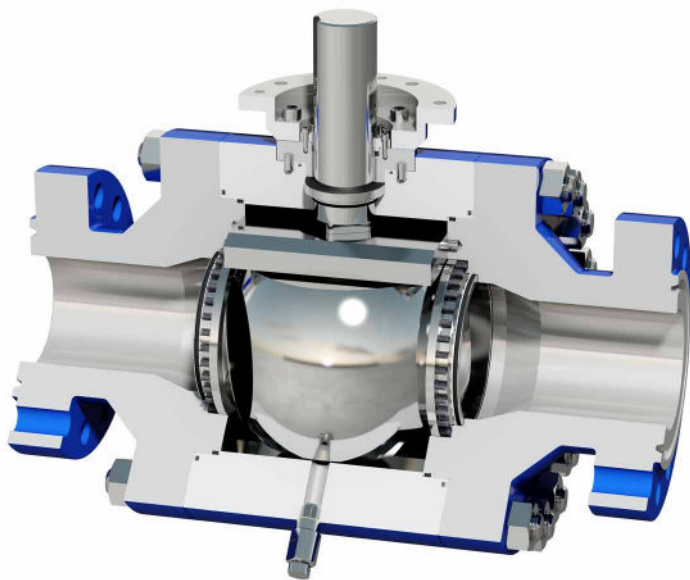
Technical data

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|----------------------|------------------------------------------------------------------------------|
| Project | WindGas Falkenhagen |
| Operator/Engineering | Uniper Energy Storage GmbH |
| Program | Power to Gas |
| Inception | October 2011 |
| Start-Up | August 2013 |
| Valves | 24 Shut-off Ball Valves (DN 25 and DN 50 up to PN 100) |
| Design | seal welded, double isolation-and-bleed (Double-Piston-Design) DIB1 (API) |
| Flow Rate | max. 360 Nm ³ /h |
| Operating Pressure | 55 bar |
| Fluid | pure hydrogen |

"With Falkenhagen we want to test on pilot-scale how a connection between power and gas grid can be achieved, how we can make the fluctuating renewable energy storable, and how we can integrate green hydrogen in other energy systems and applications."



René Schoof
Division Manager Energy
Storage Technologies,
Uniper Energy Storage GmbH



"Pure hydrogen is a challenging fluid. We have decided to use true metal sealing valves because in technical respect this is the best and safest alternative."

Dr. Helge Föcker
Manager Storage Facilities &
Project Management,
Uniper Energy Storage GmbH

TIGHTNESS OVER A LONG OPERATION TIME

Power-to-gas is a process to convert electricity produced by renewables into chemical energy. In the demonstration project "WindGas Falkenhagen" electricity and water are converted via electrolysis in up to 360 Nm³/h hydrogen which is then fed into the gas grid. This technology helps to adapt production of electricity from renewable sources to actual consumption and by this to avoid net shortages and supply management. A key component of the plant are the shut-off ball valves which have to perform under outstanding conditions: The ball valves have to be approved for hydrogen service and must be designed for tightness over a long operational period. Safety is imperative. Uniper Energy Storage GmbH placed an order with Hartmann Valves for the supply of 24 true metal sealing ball valves at nominal sizes of DN 25 and DN 50 in different pressure classes up to PN 100, some motorized. These ball valves meet all technical specifications, require low maintenance, and are absolutely tight. The ball valves are installed adjacent to the compressor and operate 3-4 cycles a day.

GOOD SUPPORT IN ALL PROJECT PHASES

Commenting on Hartmann Valves' high standards, René Schoof, Uniper Energy Storage, says: "For a number of years we have been working with Hartmann Valves in various operations. Support, service, and after sales have been first class in all project phases."

REFERENCES

Hartmann Valves is a globally accredited supplier of ball valves and wellheads which amongst others are designed for gas storage technology and chemical industry. In such industries operational availability and safety are mandatory. Hartmann true metal sealing ball valves exceed the requirements and are capable of withstanding the toughest challenges. The company continues to supply valves and wellheads to numerous gas storage projects operated by Uniper Energy Storage GmbH, such as the German underground gas storages Epe, Etzel, Krummhörn, and Bierwang. Hartmann Valves have developed expertise in valves suitable for hydrogen services in chemical industries since the 1990s. Additional power-to-gas projects such as Prenzlau, Germany have been supplied with Hartmann ball valves and the challenge of operating with helium as testing fluid have been well proved.

"During the project Hartmann Valves responded to special demands with high flexibility and was convincing with comprehensive expert advice as well as accommodating service."

Sascha Eigelt
Division Manager
Technical Office at Friedrich
Vorwerk KG (GmbH & Co.),
Direction of Tendering Procedure

