

# WITH WITT YOU ARE ...



**H<sub>2</sub>**   
**READY**

Mixtures of hydrogen and other gases are already used in various industrial processes, and further hydrogen applications are constantly being added. Hydrogen is increasingly used as a raw material, process gas or energy carrier, but the gas is highly flammable and reactive as well as explosive when mixed with oxygen. The demands on the necessary equipment and gas safety technology are correspondingly high.

## OUR PRODUCT RANGE FOR HYDROGEN

Special materials are used for hydrogen applications, such as suitable stainless steels for the housings or elastomers made of EPDM or FFKM for the seals. With a declaration of conformity, we assure you of the suitability for hydrogen.



### › GAS MIXER

- for two or more gases
- reliable and precise
- individual gas mixtures (e.g. hydrogen-natural gas)
- meet the highest safety requirements
- for both low and high output ranges
- intuitive operation



### › PRESSURE REGULATORS & OULET POINTS

- Dome-loaded pressure regulators, spring-loaded pressure regulators and complete pressure regulating stations as well as outlet points
- precise and constant pressure control even with fluctuating flows and inlet pressure
- for almost all pressure and flow requirements
- individual solutions precisely tailored to your needs



### › GAS ANALYSERS & HUMIDITY METERS

- quickly and precisely determine gas concentrations or moisture content in gas mixtures
- state-of-the-art sensor technology and intuitive operation
- ensure the quality of your processes
- separate or integrated into mixing systems
- stationary or mobile analyser for measuring humidity
- dew point -110°C to +20°C
- reliable, fast and accurate



### › FLASHBACK ARRESTORS

- highest quality from the market leader
- combination of all known safety elements for optimum protection against flashbacks and backfires
- prevention of explosive mixtures in the gas line
- for safeguarding individual cylinders, tapping points or pipeline systems
- up to 17 barg operating pressure for hydrogen
- extensive product range with numerous connections
- per DIN EN ISO 5175-1, fully BAM-certified

As a market leader with decades of experience, WITT offers relevant components for hydrogen applications and production: Gas mixers, gas analysers, pressure regulators and fittings. WITT products are field-proven and set the standards in terms of safety and performance and make your hydrogen process safe and efficient. With WITT you are H<sub>2</sub> READY.



#### > GAS NON-RETURN VALVES

- definitive valve design prevents dangerous gas backflow and unwanted gas mixtures.
- opening pressure approx. 4 mbar, with low pressure drop
- ideal for applications with very low operating overpressures
- flow-optimised for high flow capacity
- high-quality elastomer seals prevent leakage



#### > GAS FILTERS

- enable the finest filtering of impurities
- protect downstream fittings and processes
- filter fineness down to 0.5 µm (model 77) available, connections from 3/4" to DN100



#### > SAFETY VALVES

- definitive protection against even minimal overpressures
- high flow rates
- individual opening pressure from 5 mbar to 45 bar
- models AV 619 and AV 919 are perfectly matched to the pressure and temperature ranges of PEM and solid-oxide electrolysers, model SV 805 for alkaline electrolysers
- optional: individual TÜV certification of set pressure



#### > HOSE COUPLINGS

- lightning-fast, safe and error-free connection of the hose to the outlet point or the torch
- absolute gas tightness ensured after disconnection
- integrated gas non-return valves prevent the formation of explosive mixtures in the supply lines
- BAM-certified to EN561/ISO7289

## EXAMPLES OF HYDROGEN APPLICATIONS AND GENERATION

Hydrogen is not only the future, but already the present. Today, hydrogen applications already offer a real technological alternative to conventional processes.

### HYDROGEN AS AN ENERGY CARRIER

#### > POWER-TO-GAS/ELECTROLYSIS

Power-to-gas applications involve the production of hydrogen by means of water electrolysis or methane reforming using electricity generated by renewables. Among other things, the hydrogen serves as an energy storage medium and can be used later to generate energy as required. It is already used as back-up power banks as an alternative to diesel generators. There are also schemes to blend hydrogen into methane grids for domestic heating systems.

#### > FUEL CELL

The best example here is the fuel cell. In fuel cells, hydrogen and oxygen combine to form water, thereby releasing a large amount of energy. WITT safety technology can also be found in the latest fuel cell heating appliances - in the form of high-quality flashback arrestors or gas non-return valves / check valves.

#### > GREEN HYDROGEN IN THE NATURAL GAS NETWORK

The addition of green hydrogen into the natural gas grid and thus the partial replacement of natural gas (methane) is considered a possible step towards a climate-neutral energy supply. WITT offers gas mixers tailor-made for these hydrogen-natural gas mixtures. These devices from the market leader in gas mixing technology reliably generate specific gas mixtures, to the highest standards of precision and safety.

### HYDROGEN AS A RAW MATERIAL

#### > CHEMICAL INDUSTRY

In the chemical industry, large quantities of hydrogen are used as a raw material. Especially for the production of ammonia or methanol, green hydrogen can be used instead of hydrogen produced by steam reforming of natural gas.

#### > E-FUELS

E-fuels are often understood to be synthetically produced fuels. They can be used to run combustion engines without having to resort to fossil fuels. Hydrogen from renewable sources is a possible raw material here. This process, known as Power to Liquid, makes it possible to produce a crude oil-like substance from hydrogen, which then forms the basis for 'synthetic' diesel fuel.

### HYDROGEN AS A PROCESS GAS

#### > SEMICONDUCTORS

Hydrogen often plays an important role in semiconductor production. For example, for 'cleaning' the fibre optics with a deuterium (hydrogen isotope) mixture. Or in copper-wire bonding, where hydrogen as part of the protective atmosphere increases the process quality. In both applications special WITT gas mixers ensure the necessary precision of the gas mixture.

#### > METAL WORKING

Hydrogen is a popular gas in metal processing, for example as a protective gas in heat treatment of metals or in special autogenous welding applications. Here WITT flashback arrestors ensure the highest level of safety when handling this high-energy fuel gas.

#### > STEEL PRODUCTION

Huge amounts of CO<sub>2</sub> are still generated in steel production. A new technology route is the direct reduction of iron ore. If hydrogen based on renewable energies is used, the reduction process is largely CO<sub>2</sub>-free.

#### > DIESEL DESULPHURISATION

The combustion of sulphur produces toxic gases such as sulphur dioxide. Using catalysts and hydrogen, sulphur and sulphur compounds can be removed from natural gas and refined petroleum products (petrol, paraffin, diesel, etc.) and reduce the environmental pollution caused by car and air traffic.



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