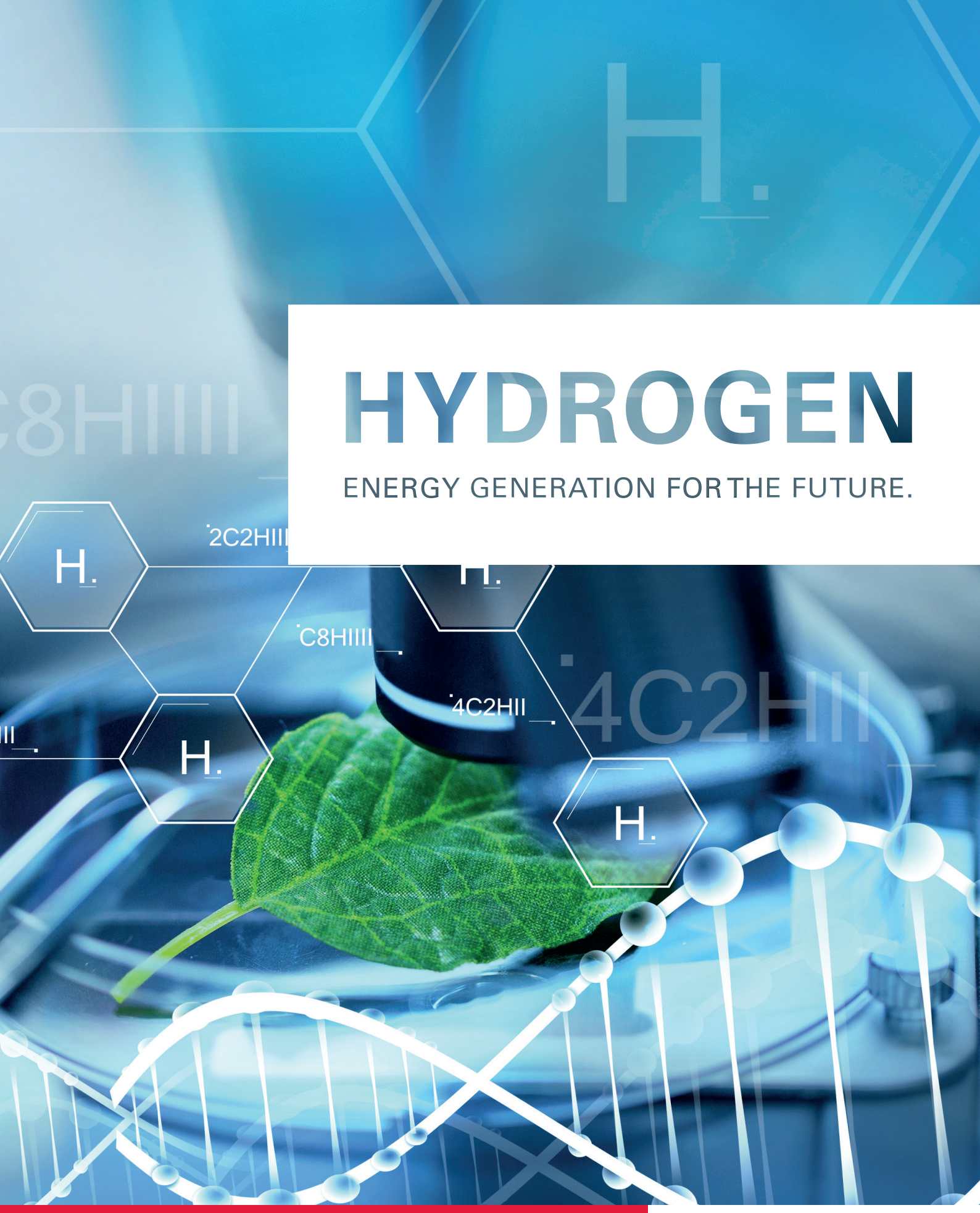
HYDROGEN

ENERGY GENERATION FOR THE FUTURE.



Customised **solutions**
for your business.

ARMATUREN GOETZE

HYDROGEN

Multiple energy source for the future

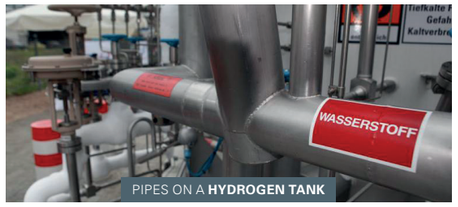
The industry for electricity generation is facing challenges to find green and sustainable resources and ways to produce electricity and so are engineers and companies for sustainable and green mobility concepts.

The production of hydrogen is already possible by using fossil fuels. But recently innovative processes are becoming more common, such as electrolysis. In this case water is split into hydrogen and oxygen. If the required electricity for this process comes from renewable sources, the hydrogen is defined as green. This process for gaining a power source of energy and a potential storage method for electricity (as the process can be reversed) makes it innovative, also for future mobility. One thing is clear: green energy is the future.

In this field Goetze is your partner regarding safety (valves). We assure the handling of hydrogen from the retrieval to the application – either in the electric part of the process or at the hydrogen filling station for vehicles. We protect filling processes, which are under high pressure or the storage of liquid hydrogen in tanks. This has a major impact on a safe handling and makes hydrogen appealing to human and nature in general.



HYDROGEN FILLING STATION **IN STUTTGART**



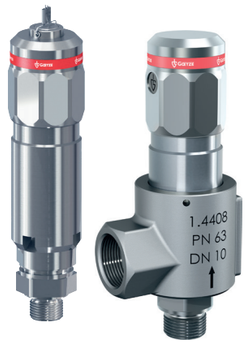
PIPES ON A **HYDROGEN TANK**


HYDROGEN RESEARCH CENTRE



HYDROGEN FUEL PUMPS


ELECTROLYSIS SYSTEM



SERIES 492

Atmospheric discharge safety valve

made of stainless steel,
angle-type with threaded connection

UP TO 1500 bar

The Series 492 atmospheric discharge safety valve is used in the field of high-pressure compressors and process plants, high-pressure air systems and to protect refuelling systems. It convinces through its compactness and design. This can optionally be ordered with a gas-tight swivel outlet for guided blow-off or for connecting a discharge pipe. Due to its special technical construction and design the series covers a pressure range that has not been catered for up to now. The valve is particularly suitable for hydrogen, as the PAI seal guarantees a very high level of tightness even after repeated response. Tightness for helium 10-6 mbar l/s.

Temperatures
from -60 °C to +200 °C

Pressures
from 50 bar to 1500 bar

Threaded connections
from ¼“ to 1“



SERIES 2400

Safety valve

made of stainless steel,
angle-type with threaded connection

Cryogenic valves must meet special requirements to provide reliable protection, for example in tanks and filling systems for liquid gases. The Series 2400 safety valve therefore are fully approven for vapours and gases as well as for liquids according to ISO 4126-1 and ASME Code Sec. VIII Div. 1. All components of the valve are specially cleaned during the production process and are thus oil- and grease free in accordance with DIN EN 12300. Due to of this, every valve is suitable for use in systems using oxygen and is marked accordingly. The use of 1.4404 and 1.4408 high-grade stainless steels render the safety valves particularly resistant to extremely cold temperatures. A FDA-compliant sealing material is used with gases that are in contact with food. The valve setting and seat insert are separately sealable which makes unauthorised adjustments easily noticeable. Overpressure from 0,2 bar up to 70 bar is relieved safely with a consistently high level of performance.

Temperatures
from -200 °C to +200 °C

Pressures
from 0,2 bar to 70 bar

Threaded connections
from ¼“ to 1½“



SERIES 455

Flanged safety valve

made of stainless steel,
angle-type with flange connections

For applications with large volumes our 455 is the valve to choose. Often, flange connections are required for installation in existing piping systems. Goetze has taken great care to achieve high performance for all sizes of the series 455, this is unique in the field of flange safety-valves in general. By exclusively using high-quality materials with outstanding media resistance and the option to protect the tightness towards the atmosphere on a high level with backpressure compensating bellows, this safety valve is suitable for almost all applications. The pressure range covers 0,2 to 40 bar and the temperature range up to +400° Celsius permits employment in a wide temperature range.

Temperatures
from -255 °C to +400 °C

Pressures
from 0,2 bar to 40 bar

Flange connections
from DN 15 to DN 100



SERIES 420

Safety valve

made of stainless steel,
angle-type with threaded connection

For supporting the hydrogen production and electrolysis processes, reliable safety valves are required which can also handle low flow-volumes and pressures. Thanks to TÜV and European approvals, the miniature safety valve series 420 allow use in applications for neutral and non-neutral gaseous and liquid media.

The cutting ring threaded connections available as an option make this valve quick and easy to install for use in small pipelines.

Temperatures
from -40 °C to +260 °C

Pressures
from 0,5 bar to 50 bar

Threaded connections
from ¼“ to ⅜“



SERIES 451

Safety valve

made of stainless steel,
angle-type with threaded connection

In processes with lower volumes and low pressures, such as hydrogen production or the electrolysis process, the protection must still be reliable. The advantages and applications of Series 451 made of high-grade stainless steel begin where versions made of gunmetal are at their limits.

The flexibility of the various versions guarantee an optimal configuration for every application. In addition to the basic version the numerous sealing possibilities and materials, back-pressure compensating metal bellows and/or a gastight cap offer the necessary optional extras required to fulfill the highest safety requirements.

Temperatures
from -60 °C to +400 °C

Pressures
from 0,5 bar to 70 bar

Threaded connections
from ½“ to 2“



SERIES 484

Pressure reducing valve

made of stainless steel,
with female threaded connections

These diaphragm and piston pressure reducing valves made of stainless steel and with female threaded connections for pneumatic and hydraulic applications are distinguished particularly by high flow rates and low pressure losses even in situations of high performance demands. The fully balanced and thus compensating valve is available with and without secondary venting as a diaphragm and piston version. The pressure is adjusted without tools via the ergonomically shaped handwheel. The extremely small pressure loss in the control operating range makes this high-performance pressure reducer almost unrivalled.

Temperatures
from -40 °C to +120 °C

Inlet pressure up to 60 bar,
Outlet pressure adjustable
from 0,5 bar to 50 bar

Threaded connections
from ¼“ to 2“

SAFETY IN HYDROGEN APPLICATIONS

As the last mechanical component in the chain of safety, safety valves are an important and indispensable part of hydrogen applications. It is therefore even more important that every component of a safety valve, as well as the manufacturing process, have specific properties.

MATERIALS
Ensure the use of high quality stainless steels. Austenitic steels with a nickel content > 10% have proven to be effective.

SEALS
Pressure, temperature, permeation (diffusion). Play an important role here. For elastomer sealing materials, comply with the NORSOK M-710 standard.

MANUFACTURING PROCESS
Set high standards for the cleaning requirements. Apart from the necessary oil- and grease-free production, production in the clean room is explicitly recommended for a hydrogen purity of > 5.0 (> 99.999 %).

APPROVALS
Even if there are currently no specific H2 approvals (yet) ... Only use type-test approved safety valves to protect your systems.

Sound technical advice from the valve manufacturer is in any case indispensable. This is the only way to take your specific conditions into account and to design the valve correctly according to the conditions prevailing on site: **+49 (0) 7141 / 488 94 60**.

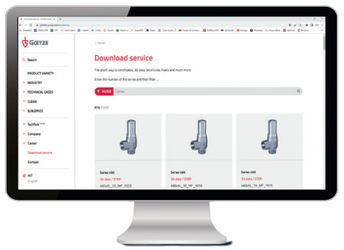
INTERNET SERVICE OF GOETZE

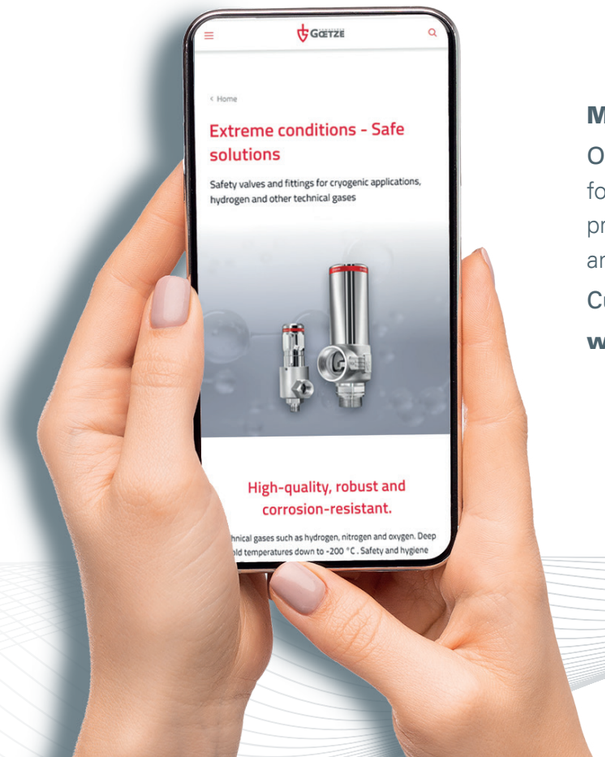
DESIGN AND CALCULATION OF SAFETY VALVES

With the help of our design programme and with the certified discharge number as well as the narrowest flow diameter of our safety valves, the valve suitable for discharging the required volume can be determined according to AD regulation A2-2000, in accordance with the international and European standard DIN EN ISO 4126, API 520 and ASME BPVC-VIII. Our experts offer you competent advice on the optimal and economical sizing of your valve.

3D MODELS AND TENDER DOCUMENTS

We provide free-of-charge our 3D models in various and common formats. On our website you will find them under the section „Download-Service“.





MOBILE WEBSITE

Our website is also available in a version optimised for smart phones. As usual, you may find your products simply and easily – also when you are out and about.

Curious? Just take a look!

www.goetze-group.com

THE GOETZE KG

Individuality for more safety

The competence of Goetze KG Armaturen has been in demand for 75 years. Our wealth of experience is as broad and varied as our areas of application for our high-performance fittings. Our well thought-out family of products covers every industrial application: Liquids of all kinds, gases, technical vapours and steam. Goetze valves are used with temperatures ranging from -270 °C up to +400 °C and the greatest possible safety is a priority.

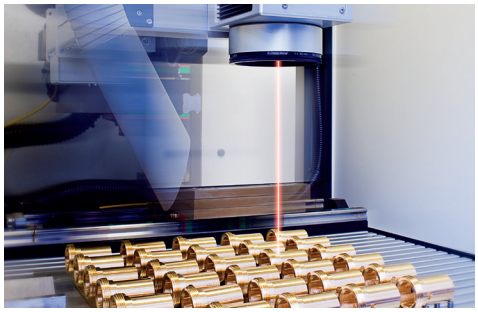
At any time, you can reach a competent contact partner as part of our in-house team at Goetze. Whether it is for the product selection, the configuration of the right valve, urgent requests, whether per telephone call or per mail, there is a personal multilingual consultant at your disposal.

We are your competent partner for all matters relating to the handling of pressure – „Made in Germany".









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