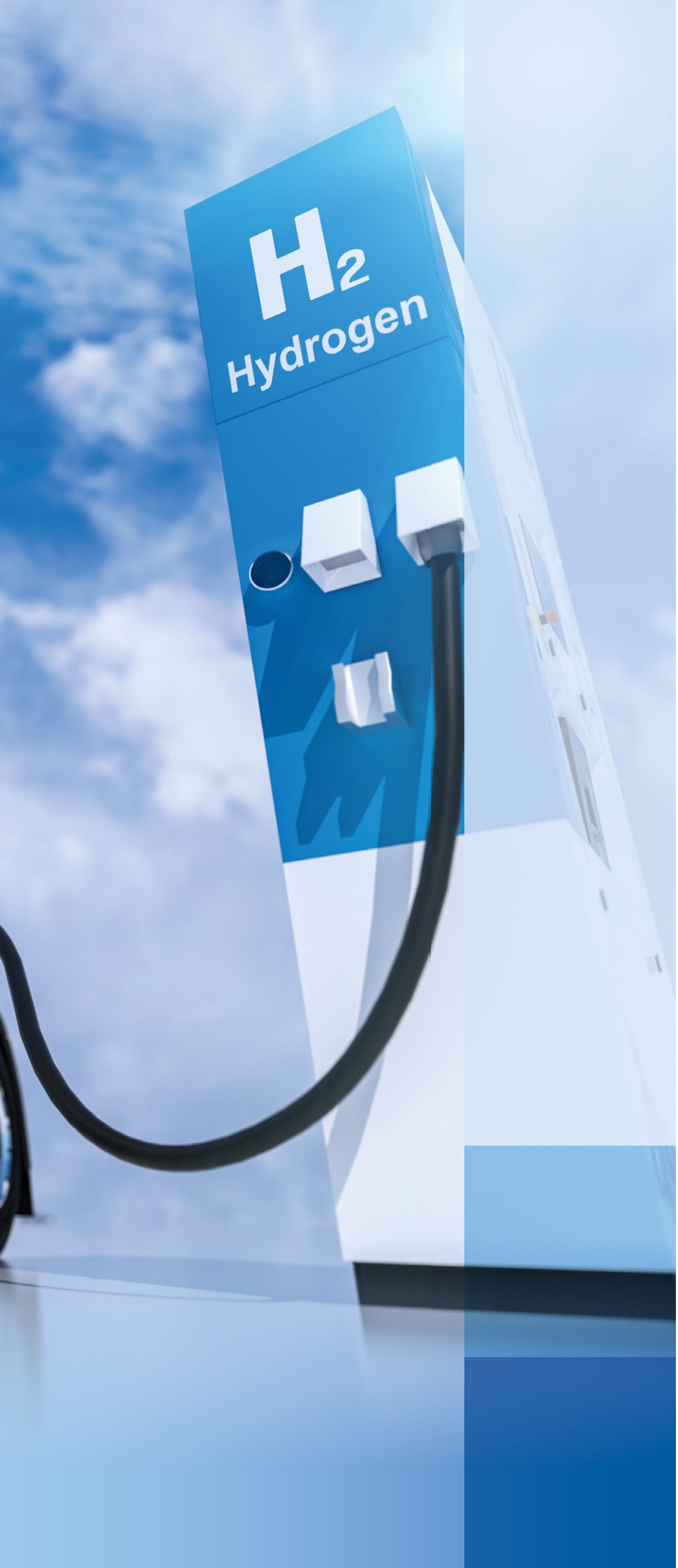
Trust in Technology

Safeguarding hydrogen technologies

IABG


Hydrogen H_2
zero emission H_2



Safeguarding hydrogen technologies

Hydrogen plays a central role in the energy transition. Produced in a climate-neutral way, it has the potential to permanently reduce CO_2 emissions in industry and transport. H_2 will also make a contribution as a storage medium for green electricity in the future. From the production of H_2 and its storage in suitable tanks to the use of hydrogen in fuel cells we qualify entire systems and also individual components for their safe use.

We have extensive testing facilities in several test centres, including a test site for conducting **high-risk tests**. Whether electrolysers, cryogenic pumps or pressure accumulators – we not only take care of **testing**, but also partial steps from development to administrative processing in connection with the approval of products. We develop and build the **test systems** required for the qualification of new products according to your customer-specific specifications. Planning, construction and operation of complete **hydrogen** test centres round off our services for you.

SERVICES

Testing Services
Qualification tests on hydrogen components and systems, e. g. hydrogen storages, compressors, pumps, valves

Test Systems
Development and construction of customised test systems, such as bursting chambers

Test Centers
Planning, construction & operation of complete hydrogen test infrastructures

IABG

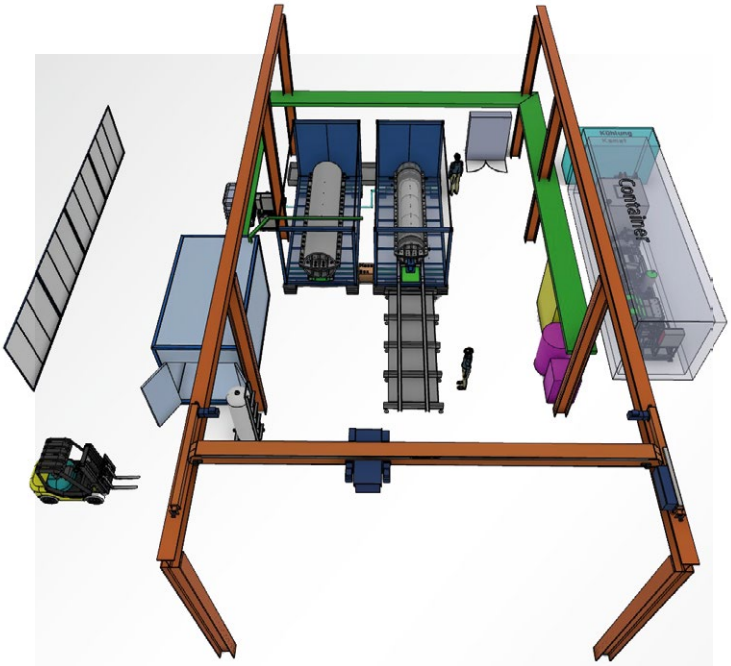
Testing Services

OUR SERVICES

- Static and dynamic load tests
- Environmental simulation
- Burst tests
- Vibration & Shock
- Impact, fire, drop tests

Water hydraulic tests

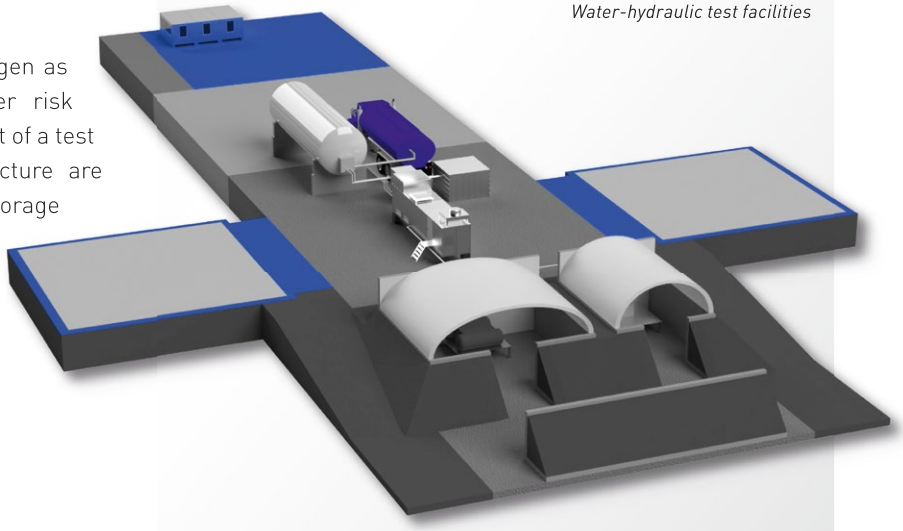
We carry out water-hydraulic tests at our Dresden site. This means that the containers are first filled with water instead of H_2. While we use pressure tests to prove the tightness of a container or component, the pressure is increased in burst tests until a failure occurs. The tests are supplemented by cycling tests. Here, the test items are pressurised many times to prove that they can safely withstand the operational stress caused by filling and removal processes over their entire service life.



Water-hydraulic test facilities

Tests with hydrogen

At site in Lichtenau, we conduct the tests with hydrogen as the test medium, which naturally entails a higher risk potential. We ensure that even in the (unintended) event of a test item failure, neither people nor the test infrastructure are harmed. Secured test sites and a 4.5 t liquid hydrogen storage facility are set up on the test site. Thus, IABG has test facilities for tests with liquid (LH2, sLH2) as well as gaseous hydrogen (CGH2).



Hydrogen test facility

Nationales Innovationsprogramm Wasserstoff- und Brennstoffzellentechnologie | nip

Ausgelobt durch: Bundesministerium für Digitales und Verkehr

Gestaltung und Umsetzung durch: NOW GMBH.DE | ptj Projektträger Jülich Forschungszentrum Jülich

TECHNICAL DATA **HYDROGEN TEST SYSTEMS**

Hydraulic test systems

- Bursting or cycling chambers up to over 1,000 l volume
- Static pressure generation up to 2,200 bar
- Dynamic pressure generation up to 1,500 bar and 10 cycles/minute

Hydrogen test facility

- Stockpiling of 4.5 t liquid hydrogen
- Purge gas supply LN2, He
- Test media: (s)LH2, CcH2, CGH2
- Multiple, independent test sites
- Carrying out high-risk tests

We test according to these standards, among others

EC 79 • EN 12245 • IEC/DIN EN 61373 & ISO11119-2 • UN ECE R134 • UN ECE GTR 13 • EU 406 • EU 535 • SAE J2601

YOUR ADDED VALUE

- Complete test infrastructure and test execution
- Including high-risk tests for the qualification of hydrogen technologies
- From a single source

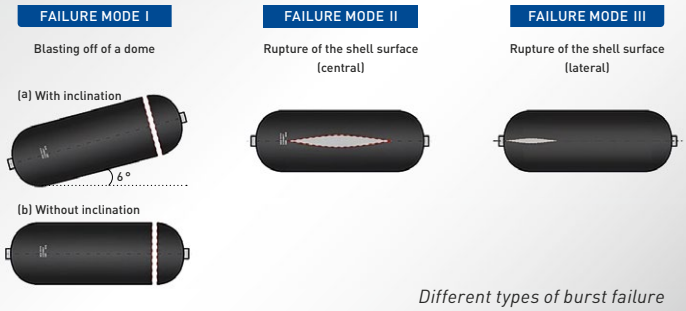
Test Systems

Development & construction of bursting chambers according to your requirements

Pressure vessel testing under bursting conditions presents us with special challenges. This applies on the one hand with regard to ensuring a **safe test environment**, but also with regard to its **economic operation**.

The correct design of the bursting chamber is essential: it must be ensured that the energy released in the event of a bursting of the test specimen is absorbed and that a **hazard to the environment** can be **ruled out**.

We usually fulfil the extremely complex requirements of **bursting pressure testing** of fibre-reinforced high-pressure vessels as a **customised test system**. The bursting pressure test system is specifically adapted to the requirements of the respective test items. This includes, among other things, the dimensions, the volume and the required bursting pressure of the test items.



Different types of burst failure (worst-case consideration)

To calculate the design of the bursting chamber, we use our many years of expertise in **high-dynamics simulation** and a **unique simulation environment**, combined with our expertise in mechanical design.

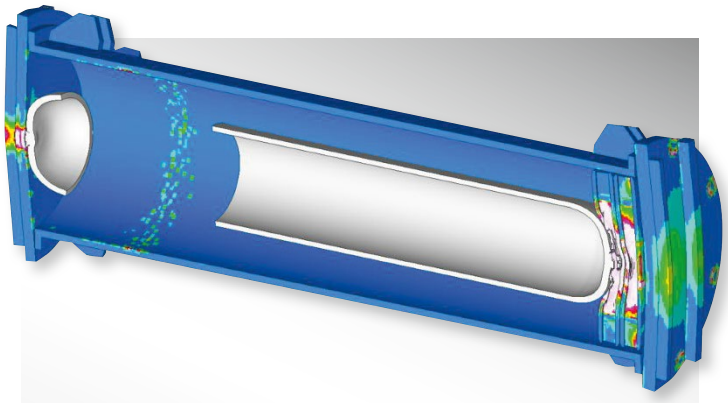
In addition to the aspect of safety, we attach great importance to ease of operation. Our concept allows **H_2 tanks to be tested close to production on** test benches with high utilisation and short cycle times. In this way, we ensure **economical operation** of the bursting chamber.

OUR SERVICES

- Analysis of possible failure modes of the test specimen
- Validation of the concept through our high-dynamics simulation
- Mechanical design and manufacture of the customised bursting pressure system
- Turnkey complete system for use close to production.

YOUR ADDED VALUE

- Safe bursting pressure system according to your specific requirements
- Easy-to-operate high-pressure test stand with short set-up times and thus a high cycle rate
- Many years of experience in the development and construction of customised test benches



Simulation burst chamber: failure of a high-pressure accumulator

Test Centers

From the idea to your H_2 test center

Our experts from specialist planning, project management and the H_2 area guide you safely through the individually desired services and transfer all requirements into a real existing plant – so that you can test and qualify safely.

General contractor

1. Consultancy and studies
2. Test facility planning
3. Tender management
4. Realisation

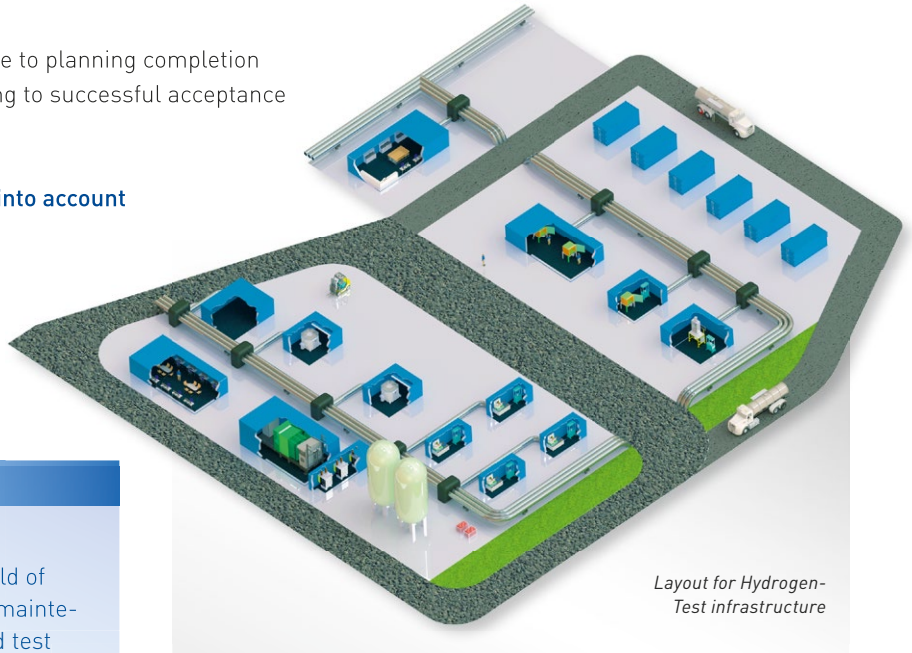
Technical project management

General contractor service

- Fully comprehensive planning from the initial phase to planning completion
- Realisation support from the completion of planning to successful acceptance
- One contact for all project issues

We identify the applicable standards and take them into account throughout the development process

- DIN EN ISO/IEC 17025
- EN 9100
- ISO 14001
- ISO 9001



Layout for Hydrogen-Test infrastructure

YOUR ADDED VALUE

- Manufacturer neutrality
- Many years of experience in the field of planning, realisation, operation & maintenance of complex test facilities and test centers
- One contact for all project issues
- Demand-oriented, cost-efficient and interdisciplinary service provision
- Expertise in public procurement and pricing law

HYDROGENIUM

Kofinanziert von der EUROPÄISCHEN UNION
Europäischer Fonds für regionale Entwicklung

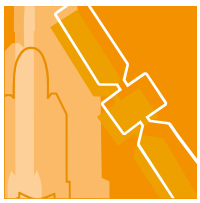
Baden-Württemberg

AUTOMOTIVE

INFOCOM

MOBILITY, ENERGY & ENVIRONMENT

AERONAUTICS



SPACE

DEFENCE & SECURITY

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