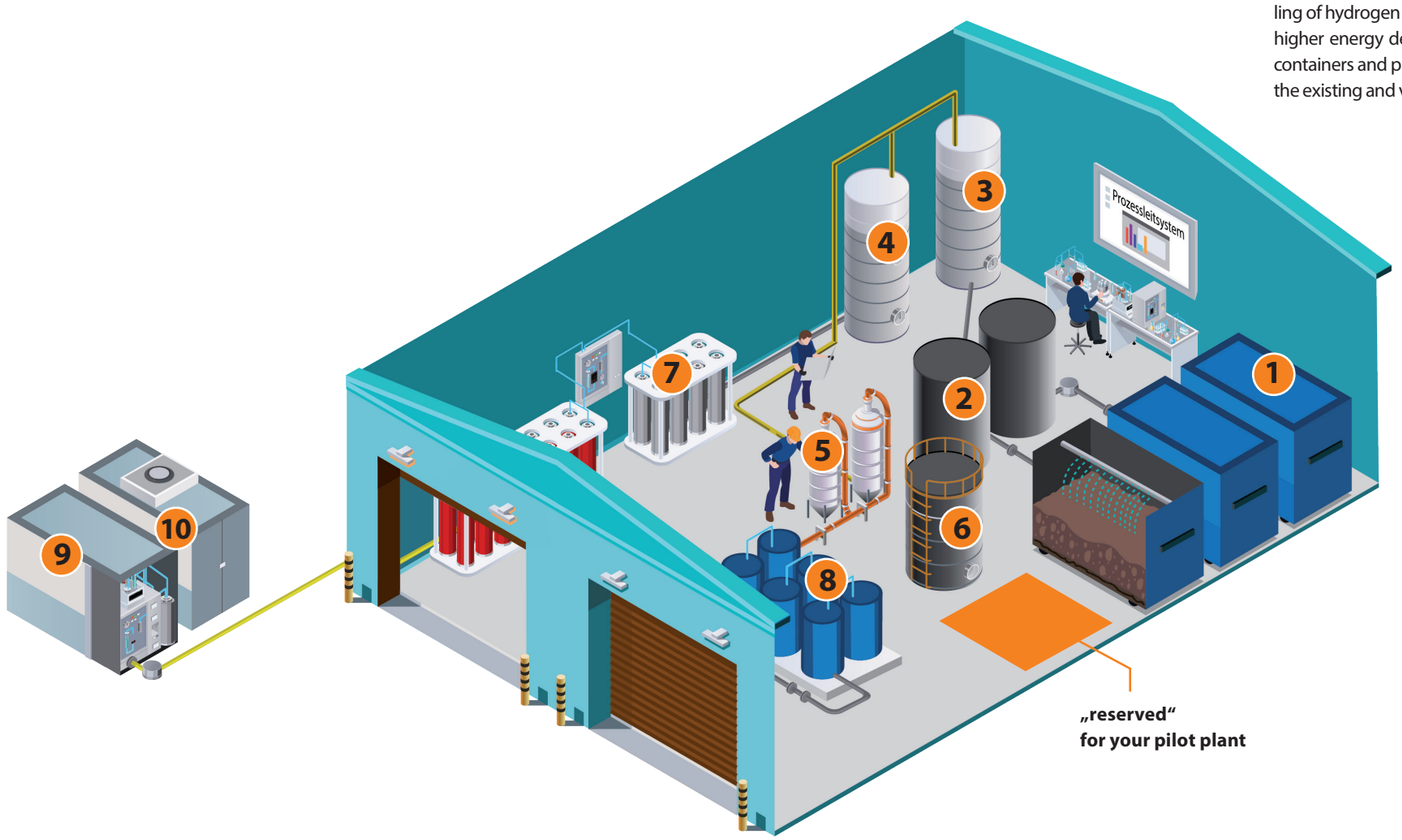
THE GICON® TECHNIKUM
ENERGY RESEARCH AT THE HIGHEST LEVEL

Customized technology development, optimization of processes and testing of technologies according to the needs of our clients.

The future of energy is being researched in Brandenburg on an area of approx. 450 m² in Cottbus. A future that GICON® wants to help shape through existing know-how, practical research and its own technological developments. The GICON® Technikum offers optimal conditions to achieve this: state-of-the-art facilities enable both organic raw materials and new technological components to be examined individually and evaluated with regard to their suitability for commercial application. Special emphasis is also being placed on the topic of hydrogen production and processing.

Focal points and target groups

The focus of the GICON®® Technikum is the upscaling of experiments from laboratory to pilot scale. This takes place within the framework of research and development projects that are carried out together with scientific research institutions. By varying individual operating parameters, diverse plant operating modes can be investigated and optimized with regard to stable and economical operation.



GICON® is pursuing two goals with the Technikum: on the one hand, new processes and approaches are being tested under practical conditions. On the other hand, feasibility studies are being carried out for clients from different industries.

Rethinking hydrogen

Since 2015, GICON®® has been researching and developing solutions for the efficient use of hydrogen in the context of sector coupling. A key topic is the conversion chain „Renewably generated electricity - hydrogen - methane“. In concrete terms, hydrogen is produced by electrolysis and, together with CO2 from biogas or industrial plants, is converted into high-quality biomethane through a specialized, innovative biological process. The advantage of methane as an energy carrier over the direct handling of hydrogen as a final energy carrier is both the considerably higher energy density and the lower material requirements for containers and pipelines. This means that the gas can be fed into the existing and very well-developed natural gas network. In the context of the current German energy transformation, this research creates excellent and cost-effective possibilities for the long-term storage and transport of renewably-generated energy.
GICON® has implemented and proven the process - developed jointly with Brandenburg Technical University at Cottbus-Senftenberg - for the biological methanization of H2 and CO2 at pilot scale.

GICON® cooperates with research institutes

Since 2006, we have cooperated closely with the Brandenburg Technical University Cottbus-Senftenberg. The foundation for the cooperation was what is now known as the two-stage GICON®® Biogas Process. It overcomes the disadvantages of conventional biogas plants by consistently separating the various microbiological processes in the two-stage plant. The process separation leads to a multitude of advantages which make it extremely economical and versatile. This globally unique process was awarded the Saxon Environmental Prize in 2013.

1. Hydrolysis: Container with original feedstock samples to be tested. The capacity is 6 t per container.
2. Intermediate storage
3. Methane reactor
4. Trickle bed reactor for biological-catalytic methanization. In addition to the high methane concentrations in the product gas, the process is characterized in particular by a low energy requirement and a high degree of flexibility with regard to changes in the hydrogen supply. A stable and continuous methanization process without the use of specialized cultures has been proven through tests - $H_2 + CO_2$ produces $CH_4 > 95\ \%$
5. Gas sampling point for the desulphurization of biogas. Gas cleaning is carried out without oxygen dosing, which brings considerable advantages in terms of costs and safety for operation and subsequent use. E.g. Power-to-Gas
6. Moving bed reactor 10m³
7. Gas bundling station
8. Drum plant for optimization and substrates
9. Electrolyzer
10. Compressor

GICON®

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