

iGas energy GmbH

Hydrogen for a Green Future

Effective energy storage and recovery of valuable resources:
Efficient plant design for the energy revolution

Products

Smap3D Plant Design



Conserve resources and thereby safeguard the future – this is the mission of iGas Energy GmbH. Since 2016, the company from Stolberg in North Rhine-Westphalia, Germany has been developing and producing systems that recover supposedly lost resources to reuse efficiently. The crux for moving from a consumer economy to a life cycle of sustainable raw materials is a profound knowledge of gas technology.

On this basis, iGas energy has developed various innovative systems that produce industrial gases for processes in the metal or glass industry and

that recover energy, nutrients, and renewable material from aqueous organic waste such as sludge, pomace, or green waste and return them to the material cycle. Particularly impressive is the Green Electrolyzer system which enables the storage of surplus electrical energy, one of the key factors to a successful implementation of sustainable energy. The plant manufacturer has turned its focus here to the high-pressure PEM electrolysis of water. This technology converts renewable energy, for example from wind and solar power plants, into hydrogen. This acts as a storable industrial energy

source, which can be used in fuel cell vehicles, or in the industry, or can be fed into the gas network in a methanised form. Due to its CO₂ neutrality, hydrogen will play an essential role in the future energy economy both in Germany and all over the world.

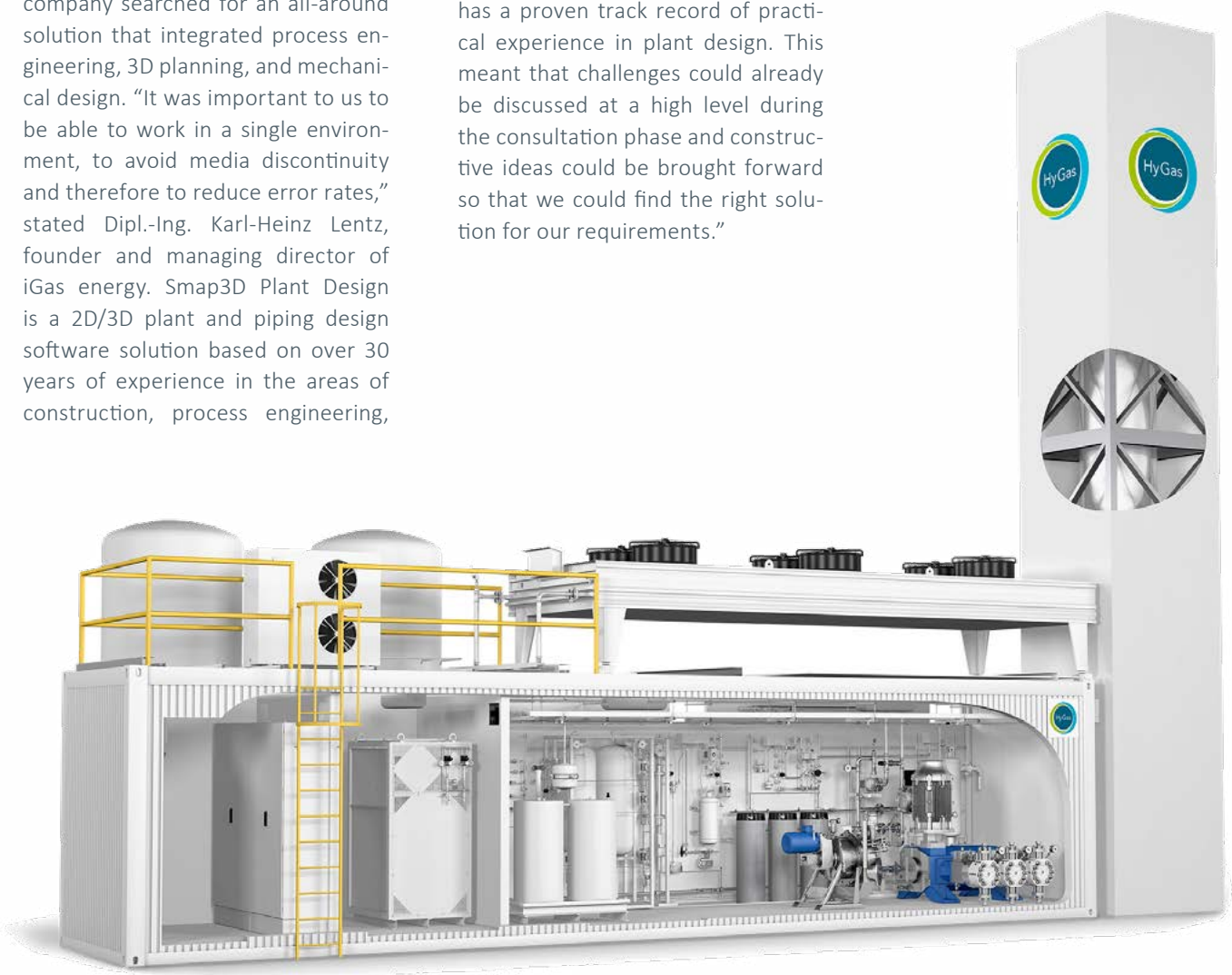
Construction and piping design from one environment

This made it even more important for the company to bring its „green hydrogen“ plants on the market as quickly as possible. For the design and planning of efficient installations, the company searched for an all-around solution that integrated process engineering, 3D planning, and mechanical design. “It was important to us to be able to work in a single environment, to avoid media discontinuity and therefore to reduce error rates,” stated Dipl.-Ing. Karl-Heinz Lentz, founder and managing director of iGas energy. Smap3D Plant Design is a 2D/3D plant and piping design software solution based on over 30 years of experience in the areas of construction, process engineering,

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and pipeline production and can be fully integrated into leading CAD systems. The development company, which goes under the same name, specializes in medium-sized machine and plant manufacturers and was, therefore, able to draw on a full range of products for this project. Karl-Heinz Lentz added “Thankfully, we have found a solution partner that has a proven track record of practical experience in plant design. This meant that challenges could already be discussed at a high level during the consultation phase and constructive ideas could be brought forward so that we could find the right solution for our requirements.”



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Power-to-X-solution:
High efficiency, extremely compact
with attention to detail

The Green Electrolyzer, which produces around 5 to 6.000 Nm³ of hydrogen per hour is designed for unmanned operation and requires only water in addition to electricity. At the heart of the system are compact stacks with an efficiency of over 80% (4,47 kWh/Nm³ hydrogen) and with a current density of 2 A/cm². The system is modular in design and very compact - especially when integrated with a container for outdoor

operation. The pipelines running to and within the unit must be planned precisely because there is only limited space available. This is where the professional software for detailed and consistent 3D piping and plant design comes into play: Smap3D Plant Design is fully integrated into the existing CAD solution and includes P&ID for process engineering, 3D piping for pipeline planning, and isometric for pipeline production. The application maps the entire process chain from the 2D flow diagrams up to the isometrics and thus enables a smooth and loss-free transfer between modules.

Another decisive reason for choosing this solution was that iGas energy requires very accurate design constructions for its complex process-engineering systems, which other solutions on the market could not reproduce. This can be illustrated with the example of valves: In conventional CAD software, valves are usually depicted symbolically. However, it is not apparent to the plant designer how much space is available around the valve to be able to operate it manually or replace it in real operation. With Smap3D Plant Design, however, this is possible. “With detailed planning in CAD, we can ensure that the system is easy to operate and maintain. The replacement of a valve in the later phase of the system’s life will not become a cost trap for us and our customers.” explained Karl-Heinz Lentz.



Integrated user support accelerates introduction

In addition to the integrated software solution, the software provider's holistic customer support was also a key factor to success. "Our focus lay particularly on the introduction and implementation of the solution so that iGas energy could work quickly and productively, which not only benefits the business but ultimately also the environment," stated Maxim Lich, managing director of Smap3D Plant Design. Among other things, the supplied standard parts library and the already large selection of predefined industrial pipe classes for the 3D planning of the environmental plants have been expanded to include further required standard parts and corresponding pipe classes. In addition, the software development house has conducted several training courses for the engineers to familiarise them with the optimal use of the new software. "The fully integrated solution and the strong support in the implementation phase was our driving force. Thanks to the fast and efficient 3D plant and piping design, our business in the energy and environment sector was able to take off in full swing." Karl-Heinz Lentz was pleased to announce. Even after implementation, the software provider assists the iGas energy team with its support and maintenance services. "Now, during ongoing operation, we use the support hotline, which

always provides us with reliable assistance. If we have a problem, they always have a sympathetic ear and a solution ready at hand," said Karl-Heinz Lentz.

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Maxim Lich
CEO

Smap3D Plant Design GmbH

