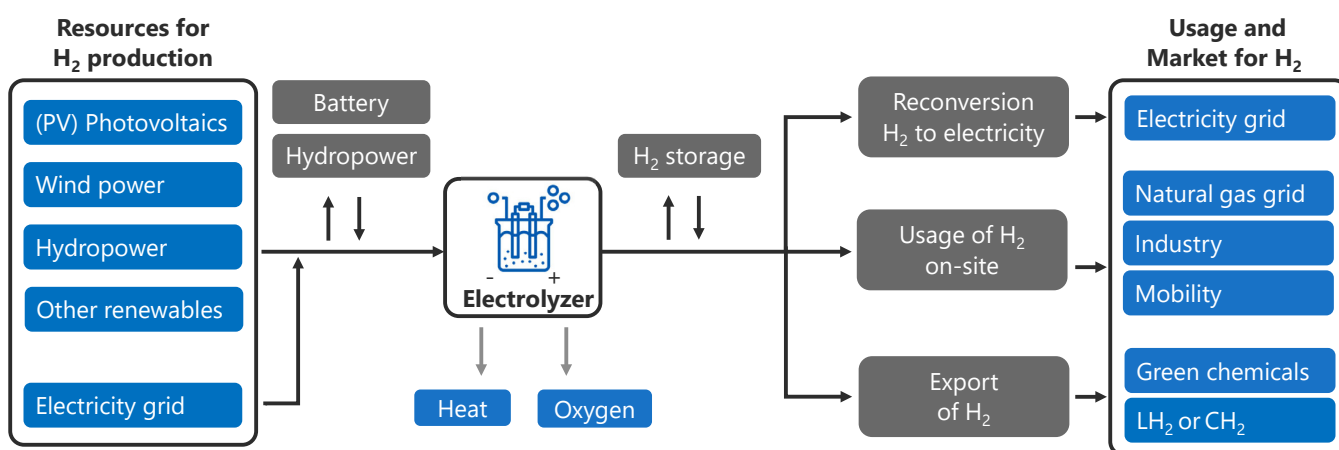




**FICHTNER**

# H<sub>2</sub>-Optimizer

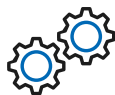
Historically low renewable energy prices and legally binding decarbonization goals are driving the development of hydrogen economies. Energy systems producing hydrogen through electrolysis can easily become complex when considering the techno-economic specifics of their components. Matching a fluctuating energy supply with the required demand profiles is another challenge. To achieve economically viable and competitive hydrogen systems, their individual components need to be optimized and dimensioned. Using the “Fichtner H<sub>2</sub>-Optimizer”, Fichtner’s experts support clients worldwide with a wide range of services to set up economic projects considering the entire value chain of green hydrogen, green fuels and green chemicals.



## How to develop a successful hydrogen project?

The challenges of green hydrogen and green chemicals projects are manifold. To ensure the success of such projects, the following questions need to be answered:

- What are the dimensions of the main components?
- What are the costs of hydrogen?
- Which business model can be applied?



## Dimensioning of main components

The Fichtner H<sub>2</sub>-Optimizer enables dimensioning of the main components - such as the electrolyzer, storage(s), and electricity generation capacity – based on given demand and/or electricity generation and price profiles. Different technical options can easily be modeled and considered. It also enables suitable technology selection (e.g. PEM vs. alkaline) and justification.



## Calculation of hydrogen costs

The levelized cost of hydrogen (LCOH) depends on many factors within a project. Dimensioning of the main components influences the project’s capital expenditure and operation costs. Electricity prices and plant utilization also play important roles.

All of these can be calculated and compared within the Fichtner H<sub>2</sub>-Optimizer for different technical options.



## Evaluation of business models

Fichtner’s experts support clients to identify and develop sustainable use cases for hydrogen. With the H<sub>2</sub>-Optimizer, business models considering the entire hydrogen value chain can be tested, optimized, evaluated and validated.



### Standardized product

Fichtner's experts support clients to identify and develop sustainable use cases for hydrogen. With the H<sub>2</sub>-Optimizer, business models considering the entire hydrogen value chain can be tested, optimized, evaluated and validated.



### Renewable energy for hydrogen

Using renewable energy to generate green hydrogen or green chemicals increases overall project sustainability. Fichtner has extensive experience in designing, tendering and supervising the implementation of renewable energy-based power systems.



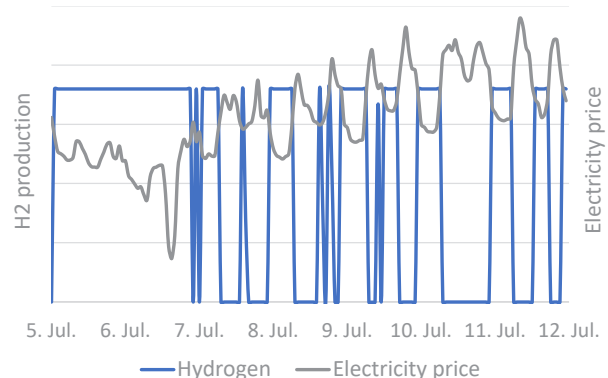
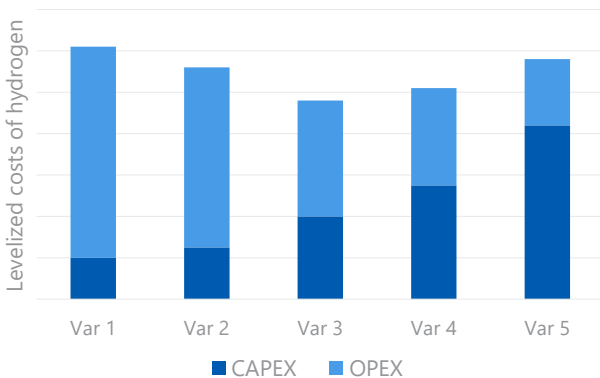
### High quality and accuracy of results

Technical parameters and costs are based on a comprehensive database. With an hourly resolution in calculation the Fichtner H<sub>2</sub>-Optimizer produces results of high quality and accuracy.



### Already approved

The Fichtner H<sub>2</sub>-Optimizer has already been successfully applied in several projects where Fichtner has supported its clients in setting up initial project ideas, optimizing complete systems and testing business models as a basis for decision-making.



## Fichtner H<sub>2</sub>-Optimizer - A powerful tool for development of successful hydrogen projects

Are you operating a renewable energy plant? Are you thinking about how to participate in the growing hydrogen market? With the Fichtner H<sub>2</sub>-Optimizer, you can tackle the key barriers to setting up a commercial hydrogen project. It helps you understand how to make money with hydrogen and how a successful and robust business case might be achieved. Considering the entire value chain, the main components of the hydrogen system are dimensioned and levelized costs of hydrogen (LCOH) are calculated.

# FICHTNER

Fichtner is one of the leading independent engineering and consultancy firms for infrastructure projects. With its home office in Stuttgart, Germany, and its subsidiaries, affiliated companies, branches and project offices throughout the world, the Fichtner Group can call on a global network of experienced experts for planning and executing projects in the fields of energy, water, environment, transportation and IT. Fichtner's focus is on providing independent consultancy to develop bespoke solutions that best meet the needs of its clients.

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