

H₂SKILLS

Green hydrogen expertise



**Green hydrogen from
wind and sun**

Green hydrogen from wind and sun



We are leaders in the development of expertise in the field of **green** hydrogen

H₂SKILLS
Green hydrogen expertise

At GUNT, we are actively involved in the development and implementation of a hydrogen competence strategy.

This strategy takes into account current

and future qualification requirements along the hydrogen value chain and forms the foundation for the growth of the renewable energy sector.



Product
overview H₂

Energy from wind



ET 210
Fundamentals of wind power plants



ET 220
Energy conversion in a wind power plant

Wind power as the primary source for producing green hydrogen

Energy from sun



ET 250
Photovoltaic modules measurements

Modular solar power system with accessories as the primary source for producing green hydrogen



Hydrogen electrolysis using electricity from renewable energies

The generation of hydrogen using energy from renewable sources is considered a key process for a sustainable economy. The world is investing in developing green hydrogen capabilities because it recognises its potential for economic growth, energy security and environmental sustainability.

Connecting the ET 280 modular electrolyser to the ET 255 solar and wind power energy system enables the overall efficiency of the system to be investigated and forms the basis for planning demand-oriented grid coverage.

Technologies for hydrogen production

For the production of hydrogen, GUNT offers two different types of electrolyzers: using anion exchange membrane (AEM) or proton exchange membrane (PEM).

In AEM electrolysis, water (H₂O) is broken down into hydrogen (H₂) and oxygen (O₂) with the aid of an anion exchange membrane.

Wind power



ET 255.04
Wind power plant

About the product
www

Photo-voltaics



ET 255.02
Photovoltaic modules,
illumination by sunlight
or light source
HL 313.01

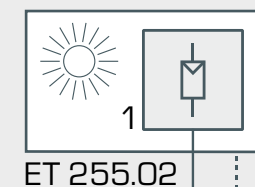
System diagram with
programmer

Simulated
characteristic curve
with ET 255.01
photovoltaic
simulator

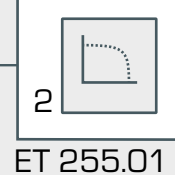
About the product
www

About the product
www

ET 255
Energy
system for
solar and
wind power



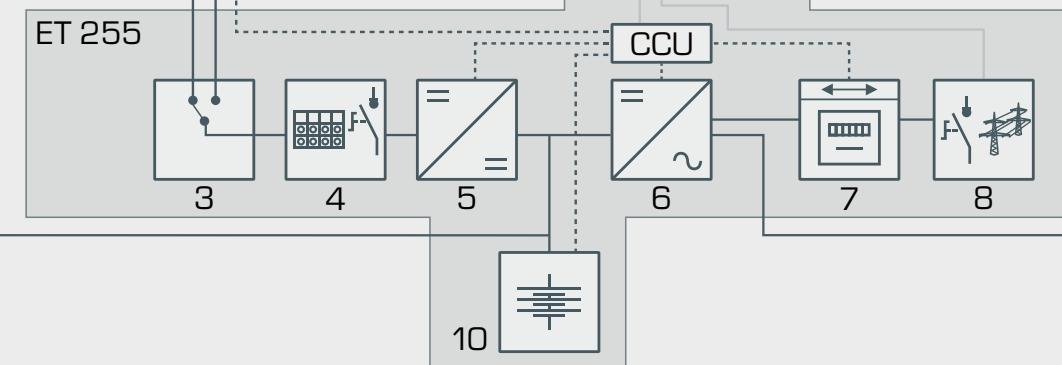
ET 255.02



ET 255.01



ET 255.04



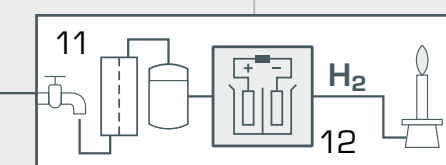
Hydrogen production



ET 280
Modular electrolyser
for H₂ (AEM)

About the product
www

- 1 photovoltaic modules
- 2 photovoltaic simulator
- 3 toggle switch
- 4 generator connection box with circuit breaker and overvoltage protection
- 5 MPP charge controller
- 6 inverter
- 7 bidirectional electricity meter
- 8 grid connection
- 9 wind power plant
- 10 accumulator as storage
- 11 raw water purification
- 12 AEM electrolyser
- CCU central communication and control unit for recording of data



ET 280

Hydrogen production with PEM electrolysis

H₂ circuit: electrolyser + fuel cell in one

The **H₂ circuit** enables variable energy use: surplus electrical energy from renewable sources is temporarily stored as chemical energy in the form of hydrogen and converted back into electrical energy when needed.

The ET 278 trainer contains all the components needed to study the conversion of electrical energy into hydrogen and the reverse conversion back in a circuit.

In an electrolyser, water is first broken down into hydrogen and oxygen. After purifying, the hydrogen produced is temporarily stored in a buffer tank and is then converted back into water in fuel cell. This produces electrical energy and closes the hydrogen circuit.

PEM-technology for hydrogen production

In industry, PEM electrolysis is a widely used electrochemical process for hydrogen production. The proton exchange membrane is used to break down water (H₂O) into hydrogen (H₂) and oxygen (O₂).



ET 278
Principles of the H₂ circuit (PEM)

Hydrogen generation with real industrial components

The ET 282 trainer contains all the components needed to investigate hydrogen production on an **industrial scale**. The typical process stages are divided into: water purification, hydrogen production and hydrogen purification and storage.

The hydrogen from the buffer tank can be filled into a gas cylinder for further use.



ET 282
Industrial electrolyser for H₂ (PEM)

About the
product
[www](http://www.gunt.de)



Contact

G.U.N.T. Gerätebau GmbH
Hanskampring 15-17
22885 Barsbüttel
Germany

+49 40 67 08 54 - 0
sales@gunt.de
www.gunt.de



GUNT Technology Limited
Unit 3 · Glenmore Business Park
Colebrook Way
Andover, SP10 3GL
t: +44(0) 1264 33 93 56
e: sales@gunt-technology.co.uk
www.gunt-technology.co.uk

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