

H₂SKILLS

Green hydrogen expertise



Green hydrogen from sun and wind

The GUNT range of devices for developing H₂ skills

Green hydrogen from sun and wind



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

H₂SKILLS
Green hydrogen expertise

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

GUNT offers two different types of electrolyser for hydrogen production: electrolyser with anion exchange membranes (AEM) and proton exchange membranes (PEM).

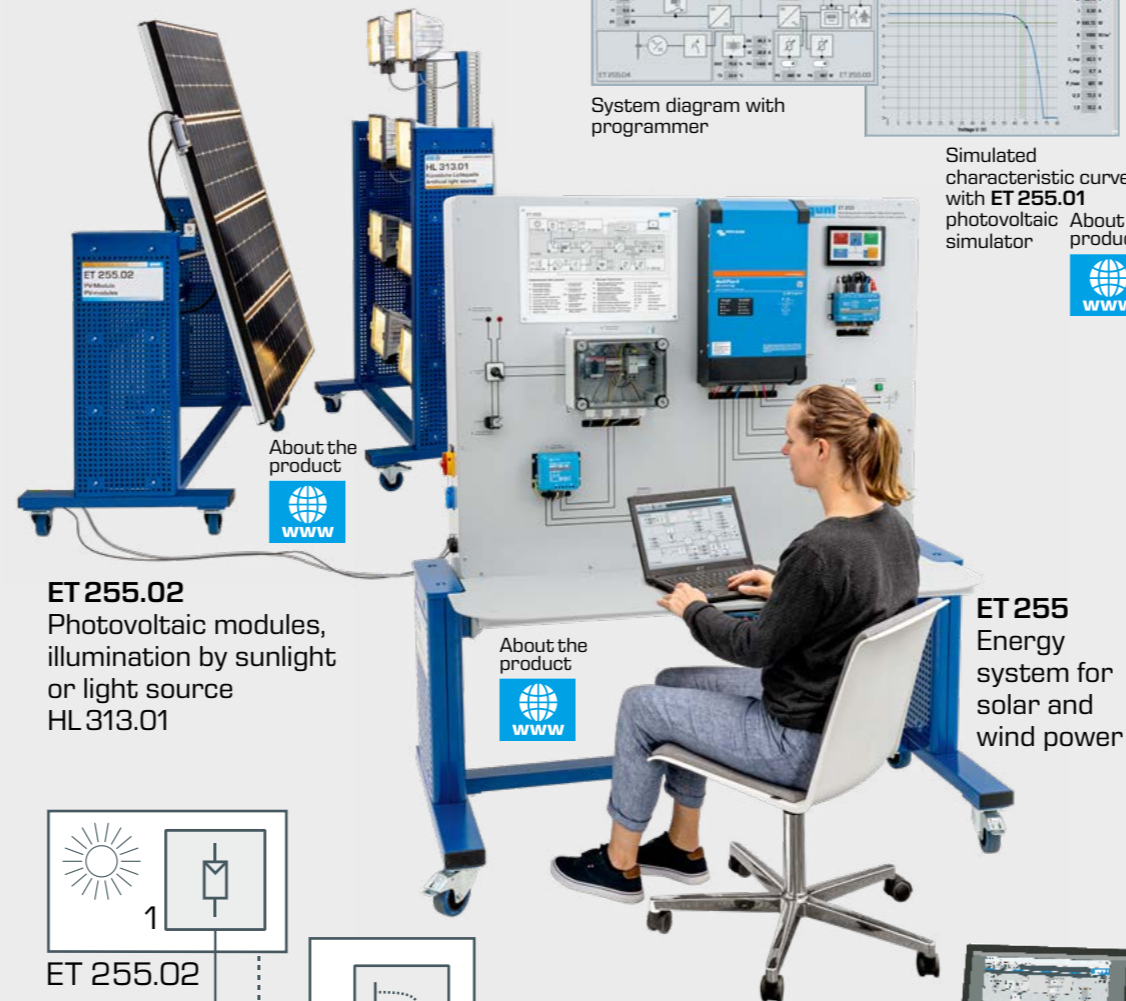
In AEM electrolysis, water (H₂O) is broken down into hydrogen (H₂) and oxygen (O₂) with the aid of an anion exchange membrane.

Wind power

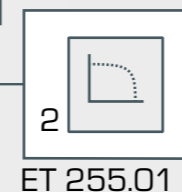
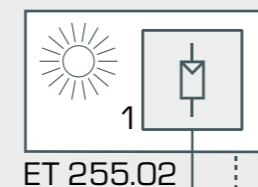


ET 255.04
Wind power plant

Photo-voltaics

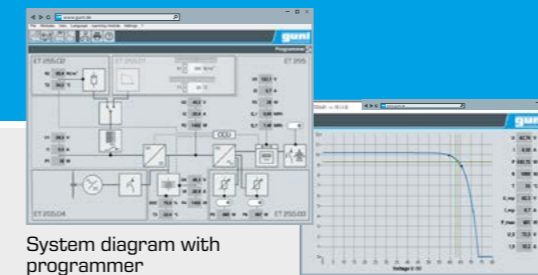
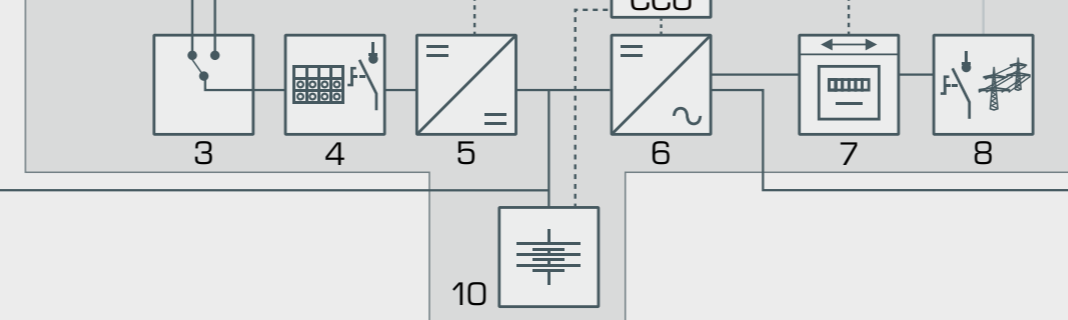


ET 255.02
Photovoltaic modules,
illumination by sunlight
or light source
HL 313.01



ET 255.01

ET 255



System diagram with
programmer

Simulated
characteristic curve
with **ET 255.01**
photovoltaic
simulator

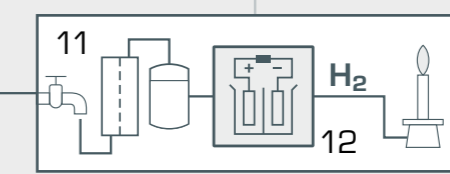


Hydrogen production



ET 280
Modular electrolyser
for H₂ (AEM)

- 1 photovoltaic modules
- 2 photovoltaic simulator
- 3 toggle switch
- 4 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

ET 255.04

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. The hydrogen produced is temporarily stored in a buffer tank after treatment and is then converted back into water in a 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 split 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 treatment, hydrogen production and hydrogen treatment 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)

Assembly of a pipe section with industrial gas booster and various valves and fittings

The compression of hydrogen is crucial for space-saving storage and higher transport capacities. This assembly station has been specially developed for training and practical work in the field of hydrogen technology: pipe assembly, leak testing, typical maintenance tasks.

MT 220
Assembly station:
gas booster
in hydrogen
technology



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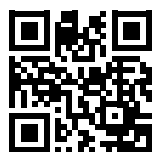
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