

The Armfield advanced renewable energies range is a specialised learning system for the technical education in universities and vocational training centres.

The kits cover Photovoltaic and Wind Energy generation, Fuel Cell and Battery Technology, Thermal Energy and the construction of a controllable Smart Grid on a laboratory scale.

PROVIDES A WIDE RANGE OF EXPERIMENTS ON SOLAR HYDROGEN CYCLE ON A LABORATORY SCALE

“The RE14 Advanced Fuel Cell Technology system provides students with a self-contained modular system, covering current fuel cell technology on a laboratory scale.

Using the system students can undertake experiments covering working principles, efficiency, and characteristics curves of electrolyzers and fuel cells. In addition to a PEM-fuel cell, it also contains an ethanol-fuel cell to compare the different technologies.

Including three PEM-fuel cells the kit enables students to build fuel cell stacks. H₂ Charger and H₂ Storage are provided with the system to allow for the easy generation and storage of hydrogen.”



Supplied in an aluminium case



Features / benefits

- ▶ Comprehensive experimentation system on fuel cell technology
- ▶ Two different fuel cell technologies: PEM and ethanol fuel cells
- ▶ Buildable fuel cell stacks with three PEM fuel cells
- ▶ Easy hydrogen generation and storage with H₂ Charger and H₂ Storage
- ▶ Laboratory scale
- ▶ Modular design
- ▶ Supplied in a self-contained aluminium case
- ▶ Includes in-depth manual and predefined experiments

UK office - email: sales@armfield.co.uk tel: +44 (0) 1425 478781 (for ROW)
USA office - email: info@armfield.inc tel: +1 (609) 208-2800 (USA only)

Issue: 1

URL: <http://www.armfield.co.uk/re>

Applications

ME ChE CE IP

We reserve the right to amend these specifications without prior notice. E&OE © 2022 Armfield Ltd. All Rights Reserved

Experimental content

- ▶ What does an electrolyzer do?
- ▶ Characteristics of an electrolyzer
- ▶ Hydrogen production with the H2 Charger
- ▶ Hydrogen storage with the H2 Storage technology
- ▶ Characteristics of a PEM-fuel cell
- ▶ Characteristics of an Ethanol-fuel cell
- ▶ Faraday and energy efficiency of the electrolyzer
- ▶ Faraday and energy efficiency of the PEM-fuel cell
- ▶ Parallel and series connection of PEM-fuel cells



Requirements

Scale



1Ph



Electrical supply: 110-230V AC 50-60Hz

- ▶ Level and stable work surface

Overall dimensions

Tray

| | |
|--------|--------|
| Length | 0.640m |
| Width | 0.165m |
| Height | 0.370m |

Packed and crated shipping specifications

| | |
|--------------|---------------------|
| Volume | 0.038m ³ |
| Gross weight | 10Kg |

Related curriculums

- ▶ Chemical Engineering
- ▶ Environmental Energies
- ▶ Renewable Energies

Ordering specification

- ▶ 1 x Base unit large
- ▶ 1 x Potentiometer module
- ▶ 1 x Motor module without gear
- ▶ 1 x Solar module 2.5V, 420mA
- ▶ 1 x H2 Charger
- ▶ 1 x H2 Storage
- ▶ 1 x Gas storage module
- ▶ 1 x Aluminium case
- ▶ 3 x PEM-fuel cell module
- ▶ 1 x Electrolyzer module 2.0
- ▶ 1 x Ethanol fuel cell module
- ▶ 1 x Propeller
- ▶ 0,15 x Silicone tube 2mm
- ▶ 1 x Lamp with table clamp
- ▶ 1 x Safety test lead, 50cm, red
- ▶ 1 x Safety test lead, 50cm, black
- ▶ 2 x Safety test lead, 25cm, red
- ▶ 2 x Safety test lead, 25cm, black
- ▶ 2 x Safety socket adapter SA 4000 red
- ▶ 4 x Safety socket adapter SA 4000 black
- ▶ 2 x Digital multimeter
- ▶ 1 x Valve for H2 Storage

Other products in the advanced renewable energies range

- ▶ **RE10:** Advanced Photovoltaic Energy
- ▶ **RE12:** Advanced Wind Energy
- ▶ **RE16:** Advanced Thermal Energy
- ▶ **RE18:** Advanced Smart Grid Technology
- ▶ **RE24:** Advanced Battery Technology

Operational conditions

- ▶ Storage Temperature: -10°C to +70°C
- ▶ Operating temperature range: +10°C to +50°C
- ▶ Operating relative humidity range: 0 to 95%, non-condensing

Ordering codes

- ▶ **RE14:** Advanced Fuel Cell Technology

Armfield standard warranty applies with this product

Knowledge base

- > 28 years expertise in research & development technology
- > 50 years providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

An ISO 9001:2015 Company



Products CE certified

armfield.co.uk

Aftercare

Installation
Commissioning
Training
Service and maintenance
Support: armfieldassist.com