# RENEWABLE ENERGY Advanced Fuel Cell Technology – RE14

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 fuel cell to compare the different technologies.



## 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

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URL: http://www.armfield.co.uk/re ME ChE CE We reserve the right to amend these specifications without prior notice. E&OE © 2022 Armfield Ltd. All Rights Reserved

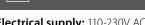
### **Experimental content**

- Explore the structure of the electrolyser and different fuel cells
- ► Properties of the electrolyser
- ► Properties of a PEM fuel cell
- Properties of an ethanol fuel cell
- Faraday and energy efficiency of the electrolyser and PEM fuel cell
- Parallel and series connection of PEM fuel cells
- Properties of a SOFC fuel cell
- ► Hydrogen storage with the H₂ storage technology





Requirements	Scale



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 <sup>3</sup>
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
- ➤ 3 x PEM-fuel cell module
- ► 1 x Electrolyzer module
- ➤ 1 x Ethanol fuel cell module
- ➤ 1 x Propeller
- ► 1 x 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 Digital multimeter
- ► 1 x Layout diagram
- ► 1 x SOFC-fuel cell module

## 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.

armfield.co.uk

An ISO 9001:2015 Company

## **Aftercare**

Installation Commissioning Training Service and maintenance Support: armfieldassist.com