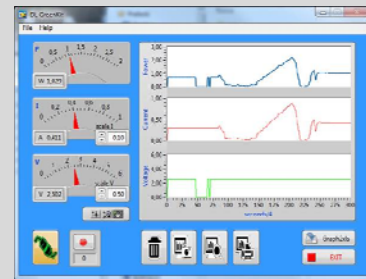




SOLAR-WIND-FUEL CELLS ENERGY TRAINER



This trainer has been designed for the study of renewable energies: solar energy, wind energy and hydrogen fuel cell systems.



Complete with connecting cables, experiment manual, interface to PC and software for data acquisition and display.

DL GREENKIT

TRAINING OBJECTIVES

- Assembling a fuel cell
- Producing and storing hydrogen
- Determining characteristic curve of solar panel
- Hydrogen/oxygen or hydrogen/air operation
- Determining characteristic curve of electrolyser
- Determining electrolyser efficiency
- Learning about Faraday's laws
- Determining characteristic curves of fuel cell
- Determining fuel cell efficiency
- Determining decomposition voltage of water
- Building a model hydrogen car
- Using methanol to generate electricity
- Determining characteristic curves of DMFC
- Influence of the surface of a solar module on voltage and current intensity of a solar module
- Voltage and current in a series connection of solar panels
- Voltage and current in a parallel connection of solar panels
- Voltage and current in a solar panel as a function of light intensity
- The characteristic current-voltage curve of a solar panel
- Electrical Energy from wind energy
- Effects of the wind speed
- Wind from different directions
- Influence of the number of rotor blades
- Influence of different positions of the blades
- Observation of a wind wheel under load
- Current voltage characteristic of the wind generator
- Storage of electrical energy from wind by using hydrogen technology
- Concept of an autarkic system with renewable energy

Approx. packing dimensions: 0.81 x 0.61 x 0.61 m.
Net weight: 29 kg.



Technical specifications

Electrolyser cell:

5 cm³/min H₂; 2,5 cm³/min O₂;
1.16 W

RFC H₂/O₂/Air:

Electrolyser mode: 5 cm³/min H₂;2.5 cm³/min O₂;
1.16 W
Fuel cell mode:
H₂/O₂ mode: 300 mW
H₂/air mode: 100 mW

PEMFC Kit:

H₂/O₂ mode: 600 mW
H₂/air mode: 200 mW

Methanol Fuel Cell:

Power: 10 mW

Gas storage: 30 cm³ H₂; 30 cm³ O₂

Solar module: 2.0 V / 600 mA

Battery Box: 4.5 VDC / 0.8 A

Power supply: 1.2 A

Load (fan): 10 mW

Load (car): 150 mW

Cable length: 250 mm

Wind generator

(Average performance with table fan)

U_{max} =6.0 V

I_{max} =0.3 A

Solar module: 2.0 V / 600 mA

Decade Resistor:

Max. capacity: 1.2 W

Ports: 2 mm

Weight: 190 g

H x W x D: 40 x 160 x 130 mm

Multimeters:

Ports: 2 mm

Weight: 140 g

H x W x D: 125 x 70 x 30 mm

2 carrying cases: 140 x 450 x 380 mm. each

Weight: 4 kg. each

Option:

Double spotlight with 2 halogen lamps.