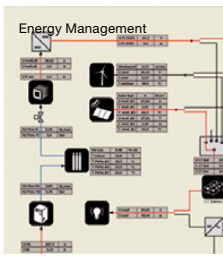
Heliocentris

Renewable Energy Technology for Training and Research

Product Overview



Energy
Generation
Storage
Management

Engineered in Germany

MAKING ZERO EMISSION POSSIBLE

The Energy Challenge

Renewable Energy Technology – A Priority Topic for Universities

Energy demand is increasing in both industrialized and emerging markets. Due to the environmental impact of conventional energy sources, government and industry are focused on renewable energy technologies as viable alternatives.

As a result of this increase in the use of renewable energy sources, topics such as energy storage, energy management and hybrid energy system design are becoming more prevalent.

Universities, colleges and research institutions around the globe are leading the training and research efforts to provide the industry with well-qualified professionals able to handle the complexity of these multifaceted energy systems.

"Close to 80 percent of the world's energy supply could be met by renewables by mid-century..."

United Nations, Climate Report, May 2011

How Heliocentris Meets the Challenge

Training & Research Solutions Driven by Industrial Experience

Heliocentris is a German industrial systems integrator of off-grid renewable energy systems and energy efficiency solutions. We provide complete solutions to address all aspects of electrical renewable energy: generation, storage and management.

In addition to our industrial experience, we have spent the last decade offering training and applied research solutions to top universities and colleges worldwide. It is as a result of this unique combination of experience that we have become a competence center for renewable energy education, training and research.

Our in-depth expertise in the fields of energy management, energy efficiency and hydrogen fuel cell technology, enable our clients to generate know-how in the key areas that help increase the use of renewable energy systems.

Off-grid Renewable Energy System implemented for BAPCO, Bahrain

Our Approach

Real-World Solutions for Training & Research

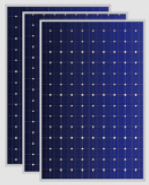
By adapting real-world technology to the needs of instructors and researchers, we ensure that the acquired know-how can be easily transferred to practical application. The result is hybrid renewable energy systems for technical training and research.

Our systems empower universities and research institutes to generate and transfer knowledge in the generation, storage and management of electrical renewable energy.

Management

- **System Dimensioning**
- **Hybridization**
- **Energy Efficiency**
- **Island- and Micro Grids**
- **UPS and Backup Power**
- **Smart Grids**

Generation



Photovoltaic

Wind Power

Fuel Cell

Storage

Battery

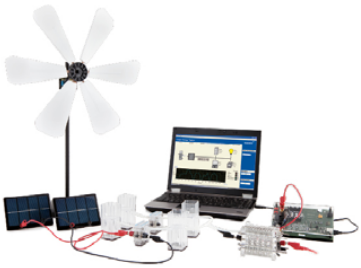
Hydrogen Generation & Storage

Product Overview

This overview helps you to identify the solutions that suit your needs best.
Learn more about their technological focus and field of application.

Training

Introductory Trainers



Clean Energy Trainer P. 7

Understanding the basics of hybrid clean energy generation and system dimensioning.

Professional Training System P. 6

A complete solar hydrogen cycle. Understanding solar powered electrolysis and fuel cell basics.

Advanced Trainers

Solar Hydrogen Extension P. 11

Real-world off-grid PV system with hydrogen generator.

Nexa Training System P. 10

Real-world fuel cell energy system for training on system dimensioning and research.

Instructor Training System P. 8

Understanding the engineering principles of PEM fuel cell systems.

Center of Excellence P.19

Research

Renewable Energy Laboratories

New Energy Lab **P. 16**

Understanding energy generation, storage and management in renewable energy hybrid systems.

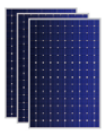
New Energy Power Supply **P. 17**

High power hybrid system for research on energy storage & management

Customized Renewable Energy Solutions

Customized renewable energy systems for specific needs of universities and research institutes.

P. 18



Photovoltaic

Wind Power

Fuel Cell

Hydrogen Generation & Storage

Battery

Genset

Fuel Cell Systems

Nexa Integration System **P. 12**

1.2 kW fuel cell integration system for application projects and research.

FC-42 Evaluation Kit **P. 13**

Evaluation kit for water-cooled FC-42 fuel cell stacks from Schunk.

HyPM Lab Solution **P. 14**

High power fuel cell system for lab application and research.

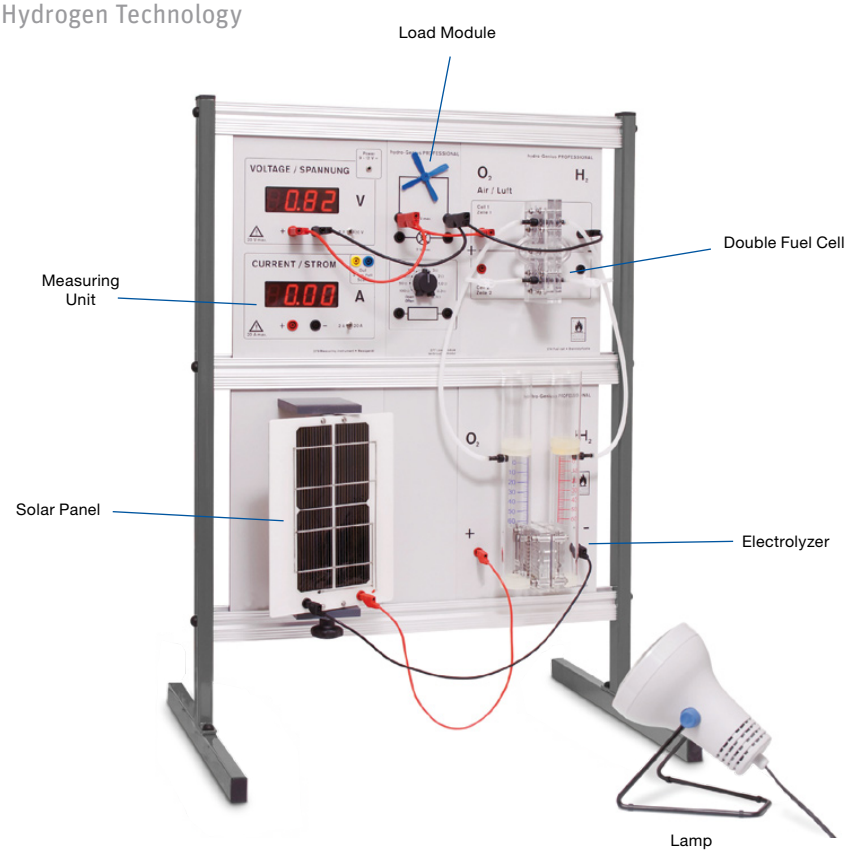
Professional

Training and Demonstration Unit for Solar & Hydrogen Technology

The Professional Training System depicts a complete solar hydrogen cycle. Electrical energy is generated by a solar panel, stored through electrolysis and reconverted in a fuel cell powering a load.

Designed for class demonstrations and hands-on use by students; solar and fuel cell technology can be examined in detail. Large components and easy-to-read displays are ideal for group presentations.

Preconfigured experiments and comprehensive documentation facilitate the preparation of classes.



Areas of Application

Suitable for introductory lectures covering physics, chemistry and technology topics:

» Molecules and chemical reactions
» Reaction speeds
» Thermodynamics
» Electrochemistry
» Energy conversion and efficiency
» Measuring and interpreting characteristic curves

Product Overview

Item	Item No.
Demo	**391**
» Solar Panel » Electrolyzer » Double Fuel Cell » Load Module » Instruction Material with Teacher´s Guide	
Complete	**392**
» Demo Package » Measuring Unit	
Accessories	
Lamp	**314**

With Instruction Material & Teacher´s Guide

Sample Experiments

» Current and voltage characteristic curves
» Faraday‘s first law
» Electrolysis: $H_20 = O + 2H$
» Energy efficiency of an electrolyzer and a fuel cell
» Thermodynamics: electrochemical processes
» Series and parallel connection

Dimensions (W x H x D): 600 x 840 x 460 mm, Weight: ca. 10.1 kg

Clean Energy Trainer

Experiment Set for Energy Generation, Storage and Supply

The Clean Energy Trainer represents a complete renewable energy micro grid. It combines solar and wind power with hydrogen based energy storage.

Designed for basic training needs, students can observe the entire energy conversion chain and learn about the individual technologies. The learning and experimentation software allows to simulate different load and weather profiles requiring students to combine the individual energy components to different setups matching energy supply or demand.

Students develop basic competence in the dimensioning of renewable energy systems.

Product Features

- PC supported measurement and experimentation
- Components can be used seperately and combined
- Comprehensive instruction and experiment guide
- Software aided:
  - Simulation of load/source profiles
  - Visualization of operating parameters
  - Generation of characteristic curves

With Instruction Material & Experiment Guide

Product Overview

Item	Content	Item No.
Clean Energy Trainer	» Wind Generator » 2 x Solar Module » 4 x Gas Storage 30 ml » 2 x Electrolyzer » Take-apart Fuel Cell Stack » Load Simulator (House) » USB Data Monitor » PC Software » Wind Speed Meter » Radiation Sensor » Manual and Experiment Guide	**410**
Accessories		
Double Spotlight		**421**
Fan		**422**

Sample Experiments

- Behaviour and characteristic curve of a solar module
- Behaviour and characteristic curve of a wind generator
- Efficiency of an electrolyser
- Efficiency of a fuel cell
- Hydrogen generation from renewable sources
- Optimal alignment of renewable sources

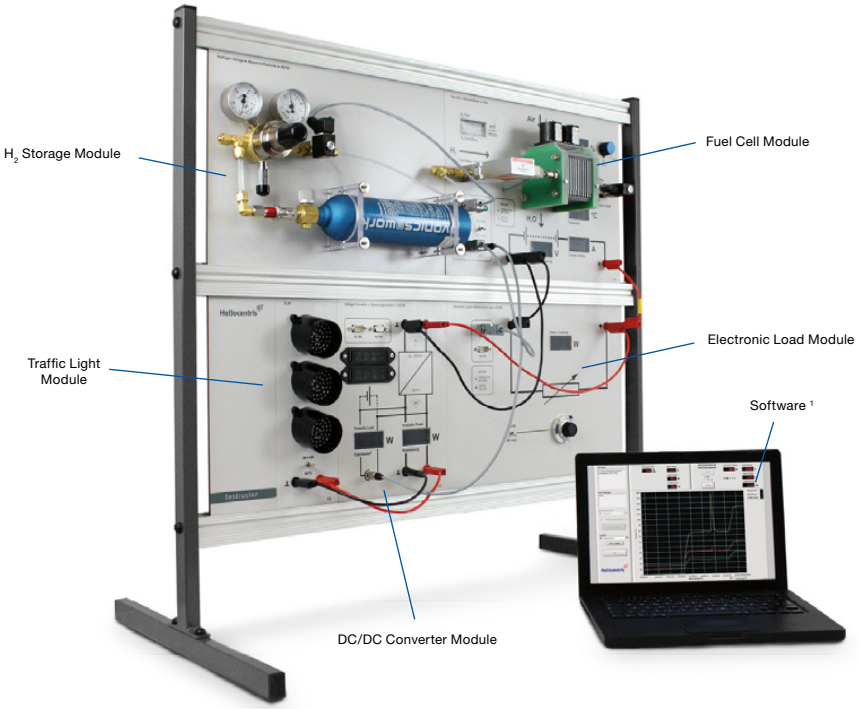
[1] Computer not included in the package

Instructor Training System

50 W Fuel Cell Training System for Teaching Engineering Principles

The Instructor Training System is ideal for teaching the engineering principles of PEM fuel cell systems. Extensive experimenting capabilities and comprehensive instruction material with predefined experiments make it a complete instruction package.

All components of the fuel cell system are displayed individually. Integrated displays for operating parameters support the instruction. The Instructor's modularity allows to easily adapt the difficulty level. The system can be operated by inexperienced users. The included software enables computer aided measuring and experimentation.



Learning Objectives

» Structure and operating principle of a fuel cell system
» Thermodynamics
» Characteristic curves and efficiency ratings
» System and power electronics

Areas of Application

Suitable for lectures and hands-on training in the following areas:
» Electrical engineering
» Energy engineering
» Process engineering
» Mechanical engineering
» Automotive engineering

With Instruction Material, Experiment Guide and Textbook

Product Overview

Item	Content	Item No.
Instructor Training System	» Fuel Cell Module » Electronic Load Module » DC/DC Converter Module » Traffic Light Module » H_2 Storage Module » Instruction Material and Software » Textbook Fuel Cell Systems Explained	**693** [2]
Hydrogen Supply		
H_2 Connection Kit 200 bar	Pressure regulator for refilling H_2 Storage Module	**631**

Sample Experiments

» Characteristic and efficiency curves
» Dependence of output on temperature and air supply
» Hydrogen/current characteristic curve
» Stack and system efficiency
» Working range of a fuel cell system
» Fuel consumption and load profiles

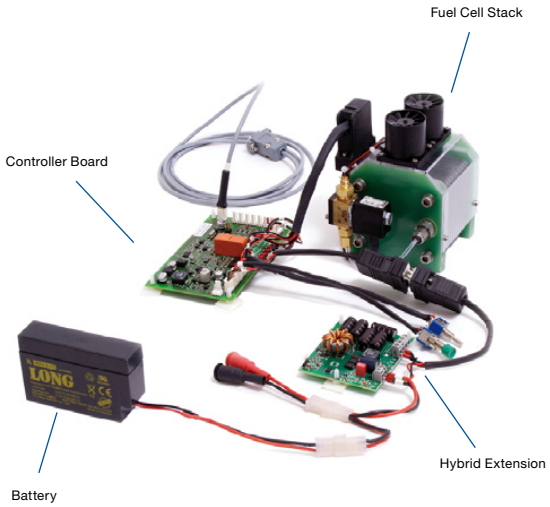
Dimensions (W x H x D): 910 x 840 x 460 mm, Weight: 22 kg
[1] Computer not included in the package
[2] Only sold with Hydrogen Connection Kit from Heliocentris

Instructor Integration System

50 W Fuel Cell System for Student‘s Projects

The fuel cell system of the Instructor Training System is also available as an integration kit for projects.

The 50 W PEM fuel cell stack can optionally be battery-hybridized to extend the power range. All components are connected by transparent interfaces, ensuring flexible use and an easy integration. The included software visualizes important system parameters.



Application Example

Product Overview

Item	Content	Item No.
Instructor Integration System	» 50 W Fuel Cell Stack » Controller Board » Monitoring Software	**611**[1]
Hybrid Extension	» DC/DC Converter » Load Regulator » 12 V Battery	**623**
Hydrogen Supply		
H_2 Connection Kit 200 bar	Supply from Compressed Gas Cylinders	**633**
H_2 Connection Kit 15 bar	Supply from Metal Hydride Canisters	**632**
Accessories		
H_2 Flow Meter	For measurement of hydrogen consumption	**635**

[1] Only sold with Hydrogen Connection Kit from Heliocentris.

Nexa® Training System

1.2 kW Fuel Cell Training System for System Dimensioning and Hybridization

The Nexa® Training System conveys advanced know-how in the dimensioning and hybridization of fuel cell energy systems and can also be used as a power system for research.

Students can design and simulate fuel cell energy systems towards specific load profiles on the basis of the system's industrial components. Fuel cell module, hydrogen storage, battery and power electronics can be examined and influenced separately. Data acquisition and system configuration are conveniently executed via computer. Users learn about load profiles, efficiencies and design criteria, making them experts in system dimensioning.

Researchers can use the system to examine detailed system performance and various set-ups:

» UPS – Uninterrupted Power Supply
» Off-Grid
» Hybrid Power System

Areas of Application

» Electrical, energy, power supply, process engineering
» Automotive

The Fuel Cell Module of the Nexa Training System is also available as Integration Kit for projects (P. 13).

Product Features

» 1.2 kW industrial PEM fuel cell module
» Learning and experimenting software with automatic generation of characteristic curves
» Central visualization & control of all system processes via computer
» Two battery capacities for experiment setups
» Output for DC and AC power
» Integrated hydrogen storage

With Instruction Material & Experiment Guide

Product Overview

Item	Content	Item No.
Nexa® Training System	» Fuel Cell Module » Power Management Module » Electronic Load » Battery Module » H_2 Storage Module » System Control via Touchscreen » Software » All-in-one PC	**793**[1]
Hydrogen Supply		
H_2 Connection Kit 200 bar	Direct supply from Compressed H_2 Cylinder and refilling of H_2 Storage Module	**736**

Learning Objectives

» Current, voltage and output characteristic curves
» System efficiency and efficiencies of individual modules
» Optimization of the power consumption of the fuel system
» System design: Emergency power supply, autonomous power supply, hybridization

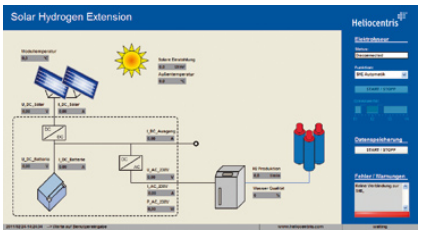
Dimensions (W x H x D): 600 x 1350 x 600 mm, Weight: ca. 150 kg
[1] Only sold with Hydrogen Connection Kit from Heliocentris.

Solar Hydrogen Extension

Training System for Solar Hydrogen Production

The Solar Hydrogen Extension is a 400 W_p off-grid photovoltaic system combined with an electrolyzer. It produces hydrogen from clean solar power and can be combined with the Instructor or Nexa® Training System to a microlab.

The system enables complete balancing of the solar hydrogen generation. Performance and generation data of the PV modules, power electronics, battery and electrolyzer are displayed in the included software and can be logged for exporting. Energy flows between the individual components are clearly visualized. Mobile solar modules with an adjustable angle of inclination and optional solar sensors allow for in depth experiments on solar power generation.



Software

Learning Objectives

- Basics of solar photovoltaic power generation
- Functional principle of an off-grid solar system
- Efficiency analysis of solar hydrogen production
- Dimensioning of a solar hydrogen system

With Instruction Material & Experiment Guide

Product Options

Item	Content	Item No.
Solar Hydrogen Extension	» Mobile Unit with with Solar System Components » 2x Mobile PV Module » Hydrogen Generator with Interface » Monitoring and Control Software » Set of Cables	
	H_2 Generator with 30 sl/h @10.7 bar	**811**
	H_2 Generator with 60 sl/h @10.7 bar	**812**
Accessories		
PV Sensor Kit	Sensors for: irradiation, module temperature and ambient temperature	**821**

Combinable Systems

Students can examine the complete energy chain from the source to the load in combination with the following products:

Solar Hydrogen Extension 30
» Instructor Training System (P. 8)

Solar Hydrogen Extension 60
» Nexa® Training System (P. 10)
» Nexa® Integration System (P. 12)

Nexa® Integration System

1.2 kW Fuel Cell System for Application Projects or Research Setups

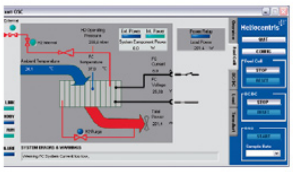
The Nexa® Integration System is ideal for demanding application projects. With its 1.2 kW fuel cell module, matching DC/DC converter and software for overall system control, training and research projects can be implemented easily.

The Nexa® 1200 Fuel Cell Module is based on the FCGen™ 1020 ACS stack from Ballard. The system features a high system efficiency and superiour life expectancy for the stack. The robust housing protects the internal system components. All interfaces are accessible on the back of the unit at one level. Integrated rails and the 19“ format simplify integration of the system. The included startup kit enables easy startup of the system in the lab.

The Nexa® DC1200 transforms the non-regulated output voltage of the fuel cell system to 24/48 V DC voltage and enables battery hybridization. The Nexa® OSC Software can be used for efficient overall system control of the Nexa® 1200 and Nexa® DC1200. Data from all components can be centrally parameterized and visualized.

Nexa® 1200


Nexa® DC1200


Nexa® OSC Software

Applications

» Lab setups for fuel cell evaluation
» Backup and emergency power supply
» Small mobile applications
» Fuel cell - battery hybridization

Product Overview

Item	Content		Item No.
Nexa® 1200	» 1.2 kW Fuel Cell Module » Monitoring and Control Software » Startup Kit		**1911**[1]
Nexa® DC1200	DC/DC Converter	24 V 48 V	**1610** **1611**
Nexa® OSC	Windows Software for Overall System Control via PC		**1870**
Hydrogen Supply			
H_2 Connection Kit 200 bar	For direct supply or refelling of Metral Hydride Canisters from Compressed Gas Cylinders		**631**
H_2 Connection Kit 15 bar	For supply from 3 Metal Hydride Canisters		**1502**
Accessories			
Startup Power Supply	AC adaptor for powering the Nexa® 1200 during startup		**1660**
Set of Batteries	For battery hybridization with Nexa® DC1200	24 V 48 V	**1650** **1651**
DC/AC Inverter	For supplying AC loads		**1620**
H_2 Flow Meter	For measuring hydrogen consumption of the Nexa® 1200		**1730**

[1] Only available with Hydrogen Supply from Heliocentris.

Technical Data

Fuel Cell System	
Rated Power	1200 W
Rated Current	52 A
Rated Voltage	24 V
Dimensions (W x D x H)	400 x 550 x 220 mm
Weight	22 kg
DC/DC Converter	
Nominal Voltage	24/48 V
Output Voltage	0-32/62 V
Input Voltage	16-50 V
Output Current	max. 55/27 A
Output Power	max. 1450 W
Dimensions (W x D x H)	320 x 170 x 80 mm
Weight	2.5 kg

Cascaded Nexa® Solution

Flexible Fuel Cell Power System for Research

For application in the lab or research Heliocentris provides a turnkey solution allowing to cascade up to 4 Nexa® Power Modules.

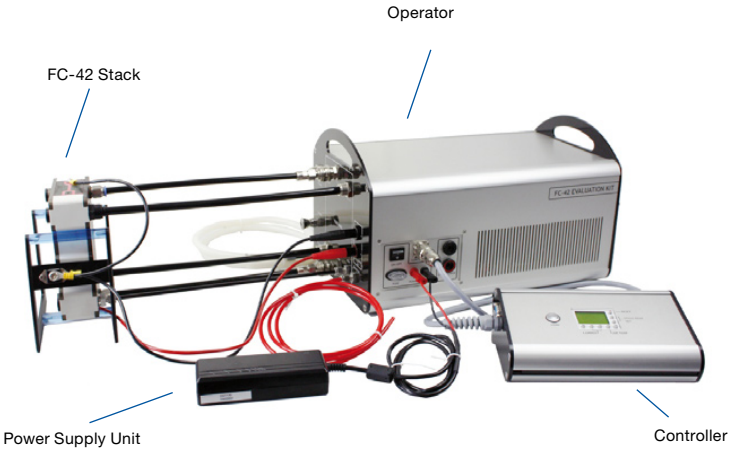
The modules can be flexibly connected depending on power requirements. The solution is delivered with an overall system control. The number of included fuel cell modules, interconnection and the output phase of the power electronics (AC or DC) can be customized.

Optionally a battery hybridization of the fuel cell modules and the ability to feed electricity into the public can be added.

Ref. No 1912

FC-42 Evaluation Kit

360 W / 720 W Fuel Cell Evaluation System



The FC-42 Evaluation Kit enables the operation of the water-cooled FC-42 Fuel Cell Stacks from Schunk and is ideal for research on fuel cell cogeneration..

The system optimally supplies the stack with oxygen and hydrogen and provides for cooling. Stack temperature and stack humidity can be controlled. Additional measuring technology or technical process components, such as temperature gauges, flow meters or humidifiers can be easily integrated. Measuring data is recorded by the included monitoring software.

Application Examples

» Research on fuel cell co-generation
» Research setups in the lab

Product Options

Item	Content	Item No.
FC-42 Evaluation Kit	» Operator » Controller » FC-42 Stack 360 W » Power Supply Unit » Monitoring Software	
	360 W Version	**1902** [1]
	720 W Version	**1903** [1]
Hydrogen Supply		
H_2 Connection Kit 200 bar	For operation from compressed gas cylinders	**631**

Technical Data

FC-42 Evaluation Kit	
Operating Voltage	20-45 V
Operating Current	0-18 A | 0-36 A
Rated Output	360 W | 720 W
H_2 Inlet Pressure	1-17 bar
H_2 Quality	min. 4.0 (99.99 %)
FC-42 Stack	
Rated Power Output	max. 360 W | 720 W
Rated Current	15 A | 30 A
Rated Voltage	24 V

[1] Only available with Hydrogen Supply from Heliocentris.
Dimensions (W x D x H): 130 x 61 x 190 mm, Weight:2 kg

HyPM Lab Solution

High Power Fuel Cell System for Lab Application

The HyPM Lab Solution is a fully integrated industrial water-cooled fuel cell system with up to 16 kW output, engineered to be operated and studied in a research environment.

The HyPM fuel cell modules from Hydrogenics are non-operational sub-systems, which require integration into a system environment. Heliocentris integrates the modules into a turnkey solution for the lab, saving researchers valuable time. They can immediately start working on the integrated, operable fuel cell system. The integration includes:

» Start-up power supply
» Cooling Circuit
» Power Electronics
» Hydrogen Safety Components
» Overall System Control Unit
» Control Software

Qualified components, reliable safety equipment and comprehensive on-site training ensure that users can safely operate the system right from the start.

Stationary Backup-Power

Mobile Power

Industrial Fuel Cell Systems

The water-cooled HyPM Fuel Cell Systems are used in emergency power supplies or small buses. They feature a completely integrated, compact design, high efficiency and good dynamics. The systems are available in two versions:

Product Options

Item	Maximum Power	Voltage Range	Max. Operating Current	Ref. No.
HyPM XR 4	4,5 kW	20 to 40 VDC	175 A	**240**
HyPM XR 8	8,5 kW	20 to 40 VDC	350 A	
HyPM XR 12	12,5 kW	30 to 60 VDC	350 A	
HyPM HD 4	4,5 kW	20 to 40 VDC	175 A	**250**
HyPM HD 8	8,5 kW	20 to 40 VDC	350 A	
HyPM HD 12	12 kW	30 to 60 VDC	350 A	
HyPM HD 16	16,5 kW	30 to 60 VDC	350 A	

XR Modules are optimized for stationary applications and are available with outputs of 4, 8 and 12 kW.

HD Modules are optimized for mobile applications and are available with outputs of 4, 8, 12 and 16 kW. They have a robust design and achieve a service life of more than 10,000 hours.

Hydrogen Supply

For Fuel Cell Modules & Training Systems

HG-Series Hydrogen Generator

The HG-Series Hydrogen Generators produce high-purity hydrogen (99.9999 %) and are suitable for direct operation of Fuel Cell Systems and filling of Metal Hydride Canisters.

The maintenance-free generators are available with a production capacity of 30 or 60 sl/h and are designed for continuous operation. The optional I/O Board enables PC-control and cascading of up to 10 generators.

Product Options	
Item	**Item No.**
HG30	**651**
HG60	**1302**
Accessories	
I/O Board HG Series	**1801**

Metal Hydride Canisters

Metal Hydride Canisters work with low pressures of 10 to 17 bar and enable the safe storage of larger quantities of hydrogen.

The canisters come in capacities of 60, 250 and 760 sl and can be bundled to increase the capacity. A quick coupling ensures safe connecting and disconnecting. The canisters can be refilled with hardly any loss of capacity at hydrogen purity 5.0.

Product Options	
Item	**Item No.**
HS60	**645**
HS250	**646**
HS760	**647**

Hydrogen Generator EL100

The ACTA EL100 Hydrogen Generator produces 100 sl of hydrogen per hour and is the ideal solution for customers requiring larger volumes of hydrogen on demand for operation of fuel cell systems or other research purposes in the lab.

With an output pressure of up to 30 bar the generator can be used to refill compressed gas cylinders. The supplied hydrogen purity of 99.94% is not suitable to refill metal hydride canisters.

Item No. 1303

H_2 Connection Kit

Pressure reducer for direct operation of Fuel Cell Modules or refilling of Metal Hydride Canisters from 200 bar Gas Cylinders.

Item No. 631

Hydrogen Detector

A portable hydrogen warning device (0~100 ppm) for monitoring the workplace together with a leak test fluid ensure safety when working with hydrogen.

Item No. 731

New Energy Lab

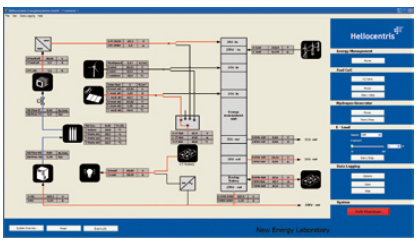
Hybrid Energy Training Lab for Experiments Related to Energy Management

The unique New Energy Lab addresses all aspects of integrated renewable energy systems: generation, storage and management of energy. Its flexible energy management unit enables the quick modification of the system's setup, making it possible to combine multiple renewable inputs with different energy storage options.

The off-grid hybrid system allows studying each technology individually or in combined setups. It combines solar and wind power with energy storage in batteries or through the generation of hydrogen powering a fuel cell. The system can further be connected to the grid. Typical scenarios, such as night-time operation, periods of no wind or the combined use of renewable and conventional energy sources like a diesel genset, can be simulated and analyzed. Various types of loads can be connected to the system or be simulated with its electronic load.

Students gain a fundamental understanding of each technology and the interrelationships between the different system components. This enables them to dimension smart and efficient hybrid systems in line with supply requirements.

Extensive measuring technology and the monitoring and control software allows for data logging and analyzing. Energy flows are visualized in real time.



Monitoring & Control Software

With Instruction Material, Experiment Guide & Text Books

The New Energy Lab is offered as a turnkey solution. Prices and system configurations upon inquiry.

Technical Data	
Photovoltaic System	1200 Wp
Small Wind Turbine	400 W
Fuel Cell Module	1.2 kW
Battery Bank	55 Ah
Electrolyzer	60 sl/h
Hydrogen Storage	1500 sl
Electronic Load	1500 W
Item. No.	**880**

Learning Objectives

- Introduction to solar, wind, hydrogen and fuel cell technology
- Dimensioning of hybrid systems
- Energy management and operation of hybrid systems
- Autonomous operation of real loads
- Scenario observation: night-time operation, periods of no wind, peak loads

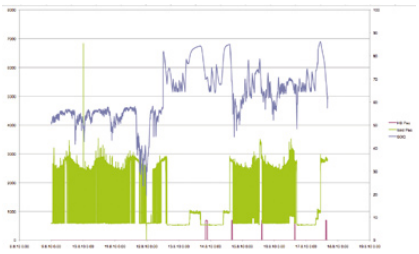
New Energy Power Supply

High Power Hybrid System for Research on Energy Storage & Management

The New Energy Power Supply is a real-world hybrid off-grid system with 4 kW peak output combining photovoltaic and wind power with hydrogen fuel cell technology for research on smart energy storage and management.

The system's external PV and wind installation feeds energy into an island grid. It provides enough power to autonomously supply a small building with energy. Excess energy can be stored in two ways – short term storage in batteries or long term storage through hydrogen production. In case of energy shortages, the system reconverts the stored hydrogen into electricity with its 1.2 kW industrial fuel cell module. Energy management technology ensures that generation, storage and usage of energy are harmonized to ensure security of supply. A connection to the public grid serves as emergency backup.

For research purposes the web-based user software collects data from over 60 data measuring points and allows for logging and exporting of data. Long-term scenario analysis on energy generation, storage and management can be conducted easily. The data can also be accessed remotely through the internet.

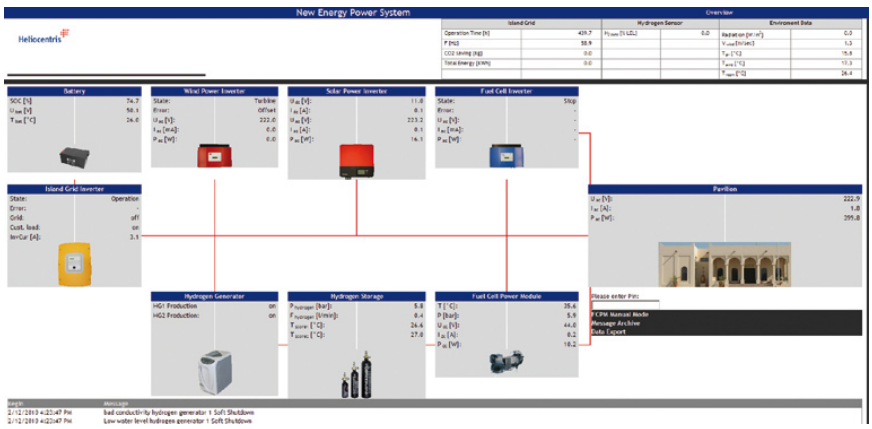


Long-term Data Sample

External PV and Wind Installation

The New Energy Power Supply is offered as a turnkey solution. Prices and system configurations upon inquiry.

Technical Data	
PV Installation	4 kWp
Wind Generator	1.7 kWp
Fuel Cell Module	1.2 kW
Electrolyser	120 slph
Hydrogen Storage	4560 sl
Battery Bank	260 Ah
Ref. No.	**124**



Monitoring Software

Customized Renewable Energy Solutions

Hybrid Systems for Research on Energy Storage & Management

For specific needs of universities and research institutes, Heliocentris offers customized renewable energy solutions with advanced energy management and storage capabilities.

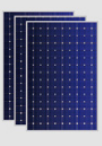
Our unique industrial expertise in the fields of energy management, energy efficiency and energy storage enables us to tailor hybrid energy systems combining various technologies, such as PV systems, wind generators, batteries, hydrogen generators and fuel cells. Your solution is dimensioned in line with your requirements. Data measurement as well as monitoring and control capabilities are implemented as required. Easy to use visualization software with data-logging functionality gathers data from multiple sensors in the system.

Among others the completed projects included the following customizations:

» Grid-tied setup
» PV systems with multiple module types
» Cascaded fuel cell systems
» Custom software interfaces & data measurement
» Remote monitoring

All solutions undergo testing and are installed on-site. Each system comes with a performance guarantee, comprehensive training and full support to ensure satisfaction.

Energy Management


Photovoltaic


Wind Power


Fuel Cell


Hydrogen Generation & Storage


Battery


Genset


Grid

Individual dimensioning of system components

» Photovoltaic Installations	up to 10 kWp
» Wind Generators	up to 6 kWp
» Fuel Cell Modules	up to 4 kW
» Electrolysers	up to 200 sl/h

Reference Installation

Off-grid hybrid system implemented for the Kuwait Institute for Scientific Research (KISR).

The installation serves as a demonstration system and represents a cornerstone for the establishment of a regional know-how center. The system has advanced energy management capabilities and offers full transparency in energy generation and management. Remote controlling and monitoring supports the Research Center in acquiring valuable data about the system's behavior.


6 kW Wind Turbine


Photovoltaic Installation


Fuel Cell, Electrolyser, Battery Bank and Power Electronics

Technical Data

Wind Turbines	1 x 6 kWp, 2 x 1,1 kWp
Photovoltaics	10 kWp
Fuel Cell	4 kW
Electrolyser	300 NL /h
Hydrogen Storage	15m²@30bar
Batteries	1140 Ah@48V
Diesel Genset	5 kW
Power Electronics	12 kW

Center of Excellence

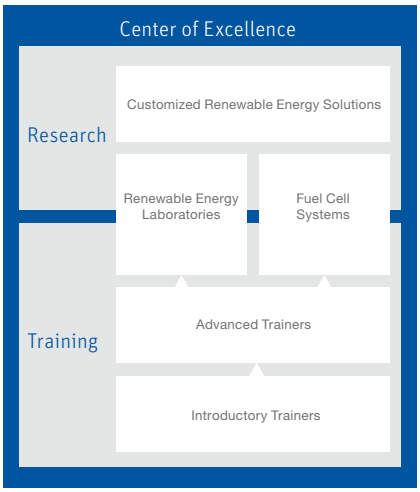
Complete Lab Equipments for Training & Research

The modularity of our product range for training and research allows for the combination of Heliocentris products to a centre of excellence in line with your field of interest.

The center of excellence enables your students to gain profound knowledge in the respective field and can be highly beneficial to making your renewable energy course appealing. The centre of excellence from Heliocentris can be adapted according to different course sizes.

Time-tested products with comprehensive documentation and training materials building on one another ensure efficient knowledge transfer, from introductory classes to research level.

German standards of quality, extensive user training and support as well as the confidence to have a single provider for the entire lab make the Center of Excellence a hassle-free solution for instructors.



Renewable Energy Lab

The Renewable Energy Lab provides a comprehensive insight into renewable energy technology. From basic know-how about solar, wind and fuel cell technology to energy storage and energy management.

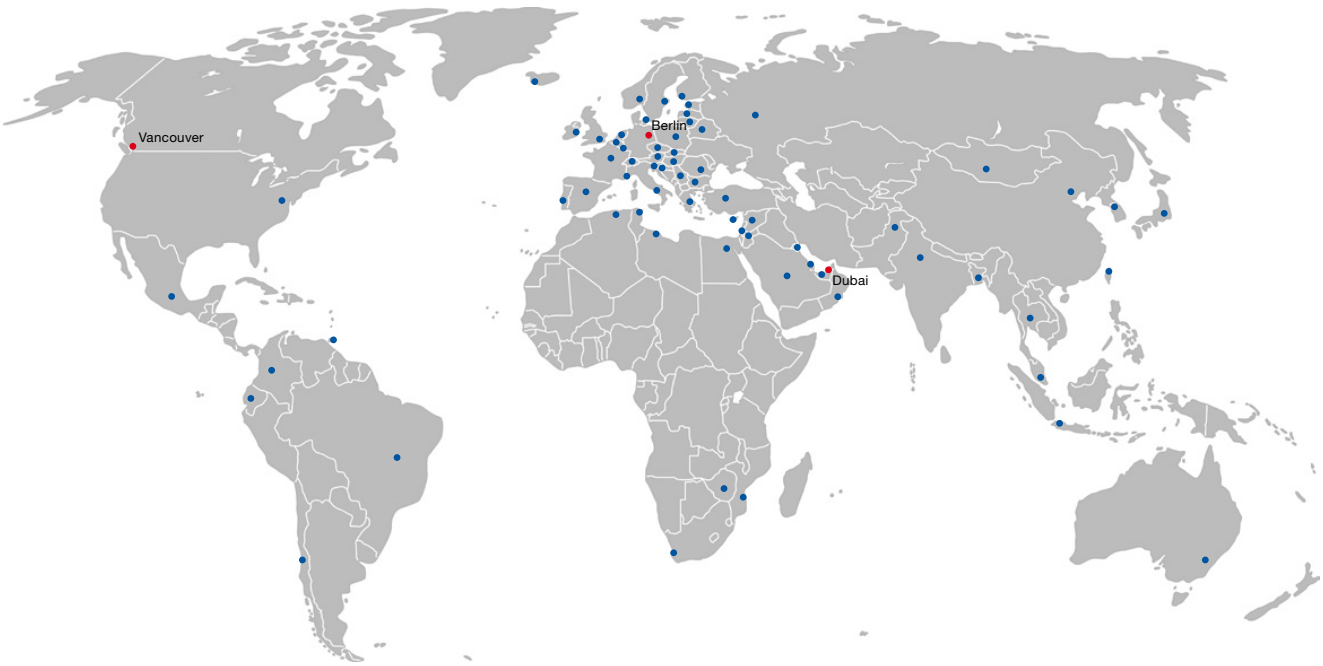
Fuel Cell Lab

The Fuel Cell Lab provides a comprehensive insight into fuel cell technology – from the basics like design and function of fuel cell systems to expert knowledge such as the combination of fuel cell systems with battery technology.

Your Global Didactic and Research Partner

Heliocentris supports instructors and researchers worldwide to increase the know-how in the field of renewable energies. To do this, we provide them with solutions specifically tailored to their needs based on the best in class technology.

Headquartered in Berlin with offices in Vancouver and Dubai and customers in over 70 markets, Heliocentris is your global didactic and research partner.



Heliocentris

Heliocentris Energiesysteme GmbH
Education, Training & Research
Rudower Chaussee 29
12489 Berlin, Germany
Tel. + 49 (0) 30 340 601 600
Fax + 49 (0) 30 340 601 599
didactic@heliocentris.com
www.heliocentris.com

Heliocentris Energy Systems Inc.
902 – 610 Granville St.
Vancouver, BC
V6C 3T3 Canada
Tel. + 1 604 684 3546
Fax + 1 604 648 9406
didactic@heliocentris.com

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