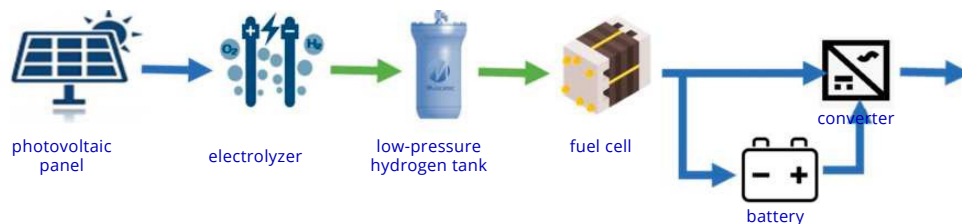




SHYAM : AUTONOMUS MULTIFUNCTION HYDROGEN STATION

Training tool for green hydrogen production and consumption.

MINCATEC Energy offers an autonomous, multifunctional hydrogen station (100W) producing green hydrogen via an electrolyzer powered by a solar panel. The hydrogen is stored in a low-pressure metal hydride tank, a technology developed by MINCATEC Energy. It powers a fuel cell to produce electricity on demand. The station's electricity consumption is simulated by a low-voltage load.



HYDROGEN STORAGE, IT'S A SOLID CHOISE !

SHYAM : AUTONOMUS MULTIFONCTION HYDROGEN STATION

PEDAGOGICAL TOOLS FOR CAP/BAC PRO, BTS/LICENCE and MASTER/ENGINEER

LEARNING OBJECTIVES :

- > **Hydrogen life cycle** : production of hydrogen by electrolysis (green hydrogen), storage of hydrogen (here at low pressure), its use via a fuel cell.
- > Principle of operation of a solar station, electricity generation using **renewable energies**
- > Introduction of the concept of **hybrid systems** : multi-source energy, chemical batteries, hydrogen, photovoltaic panels, etc.

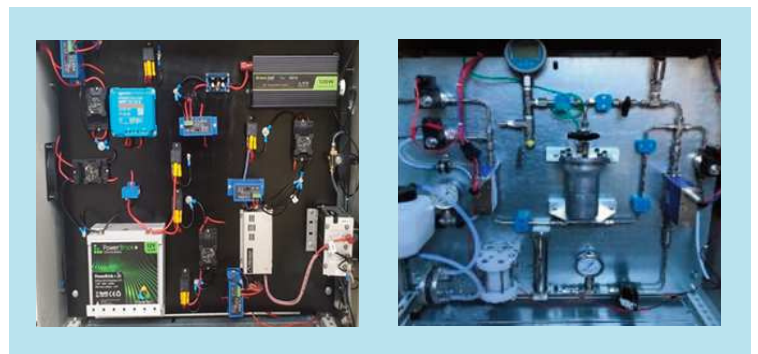
- > Control principles for **complex systems** : sensors, actuators
- > Operating principles of **Can Bus communication protocols**
- > Principles of a **multi-source energy management strategy**
- > Notions of **voltage conversion** : DC/DC & DC/AC

OPERATING PRINCIPLES :

Electricity is generated by a hybrid system comprising a photovoltaic panel, a LiFePO₄ battery and a PEM fuel cell.

The electricity generated powers both the electrical loads and an electrolyzer to produce hydrogen, stored in a low-pressure tank.

The station is controlled by an interactive supervision system developed by MINCATEC Energy: manual or automatic mode HMI, control laws and energy management.



PRODUCT BENEFITS :

- Distributed with **5 practical modules** from CAP BAC to BAC +5 level
- **Complete hydrogen value chain**
- **Easy-to-use, graphic, didactic interface** : tablet-style
- **Breakdown of electrical and hydrogen diagrams** : easier understanding for students
- **Integrated instrumentation** for system analysis and data post-processing
- **Understanding of energy management laws** for self-consumption

PRODUCT DETAILS :

- **Photovoltaic panel** 100 Wp
- **100 W electrolyzer**
- **H₂ metal hydride tank** with 10 g capacity developed by MINCATEC Energy
- **LiFePO₄ 12V 20Ah battery** with integrated BMS
- 100 W fuel cell
- 12V-230 Vac **converter**
- IQAN **controller** (Parker) / 10" display

HOW TO CONTACT US?

Axelle CHATAIN-GIGOU
Sales Manager
+33 6 88 17 80 42
axelle.gigou@mincatec.com



MINCATEC Energy
1 avenue de la Gare TGV
90400 MEROUX-MOVAL

DISTRIBUTED BY :

Cédric THOMAS
Business Developer
cedric.thomas@atv-systemes.com
+33 (0) 6 64 20 00 97



ATV Systèmes
54, Rue du Docteur Goldstein
95410 GROSLEY