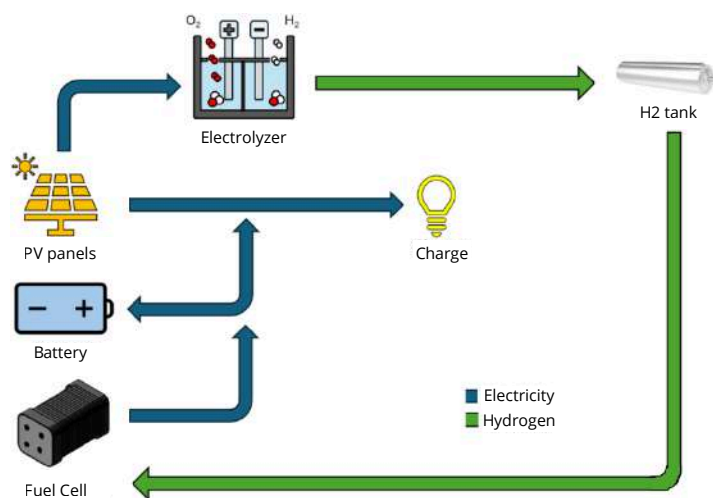




# SHYAM : AUTONOMOUS MULTIFUNCTION HYDROGEN STATION

Training tool for green hydrogen production and consumption

**Mincatec Energy** offers a multifunctional autonomous hydrogen station (180W) designed for teaching and demonstrating how a micro energy network works, producing green hydrogen via an electrolyzer powered by a solar panel. The hydrogen is stored in our low-pressure metal hydride tank. SHYAM allows users to observe and manipulate different energy production, storage, and consumption scenarios in a secure environment.



**WITH MINCATEC ENERGY, YOUR HYDROGEN IS ROCK-SOLID!**

# SHYAM: AUTONOMOUS MULTIFUNCTION HYDROGEN STATION

## EDUCATIONAL TOOL FOR CTE/ASSOCIATE DEGREE, BACHELOR'S DEGREE and MASTER OF ENGINEERING

### EDUCATIONAL OBJECTIVES:

- **Understanding the hydrogen life cycle:** production, storage, and energy conversion
- **Understanding how a solar power station works:** generating electricity using renewable energy sources
- **Discover hybrid multi-source energy systems:** photovoltaic panels, batteries, fuel cells
- **Acquire practical skills in energy management:** principles of complex system control and communication protocol operation.
- **Experimenting with multi-source energy management strategies**
- **Raising awareness about safety, the environment, and energy transition**

### OPERATING PRINCIPLES :

Electricity is generated by a hybrid system consisting of a photovoltaic panel, a LiFePO<sub>4</sub> battery, and a PEM fuel cell.

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

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



### PRODUCT DETAILS:

- 130 Wp **photovoltaic panel**
- 50 W **electrolyzer**
- 31 g **metal hydride H<sub>2</sub> tank**
- 12V 20Ah **LiFePO<sub>4</sub> battery** with integrated BMS
- 100 W **fuel cell**
- IQAN-MD5 **controller** (Parker) / 12" touchscreen display

### COMES WITH:

- 1 detailed user manual
- 5 practical assignments ranging from CAP BAC to BAC +5 level

### PRODUCT ADVANTAGES:

- **Complete** hydrogen **value chain**
- **Intuitive** interface for viewing energy flows and controlling the system in manual or automatic mode
- **Separate** and **visible** electrical and hydrogen systems for easier understanding
- **Integrated instrumentation** enabling component performance analysis and data post-processing
- **On wheels for easy movement**
- 5 meters of cable for deploying the photovoltaic panel

### CONTACT US

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



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

Julien TERRASSE  
Business Developer APAC  
+33 6 98 42 48 93  
julien.terrasse@mincatec.com



Jouhan SHIRKHANLOO  
Business Developer EMEA  
+ 33 7 62 19 66 64  
jouhan.shir Khanloo@mincatec.com



@mincatec\_energy



www.mincatec-energy.com



@Mincatec Energy