

**Unique didactic solution to  
practise hydrogen fuel cell  
as part of hybrid electric  
system**



Power  
electronics



Hydrogen  
Technologies



Programming  
& Testing



Modelling  
hybrid system

## General information

H2SYS has developed the MOTHYS product to practice hydrogen systems in high schools, universities and engineering schools.

MOTHYS is composed of a PEM technology fuel cell, with CAN-Bus board, flowmeter and a hybrid converter/battery allowing students to grasp a multi-energy system. An HMI on tablet allows manual control of the system and the definition of hybridization strategies.

MOTHYS integrates too an Arduino board allowing to program and test your own energy management laws through the use of MatLab/Simulink software.

## Features

Removable fuel cell system

Safe, secured and removable battery pack

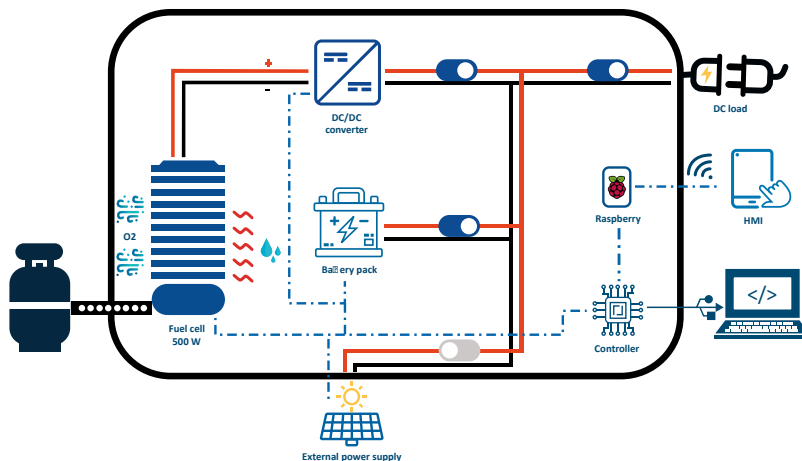
Adjustable and controlled DC converter

Use Matlab & Simulink together to design your system

Arduino Mega board

Hydrogen & Electric safeties to be used by students

## Schematics



## Technical datas

### FUEL CELL

|                               |   |
|-------------------------------|---|
| Model - power                 | AIRCELL 500 / On demand ACS 1000<br>Nominal power 500 W |
| Technology                    | PEM   |
| Hydrogen pressure             | 6 - 10 bar  |
| Hydrogen consumption (NI/min) | 6 NI/min (a flowmeter is include)                       |
| Current / voltage             | 0-50A (max 65 A) / 12-18 Vdc unregulated                |
| Safeties                      | H2 Sensor<br>Emergency stop through 24 V control        |

### BATTERY/CONVERTER

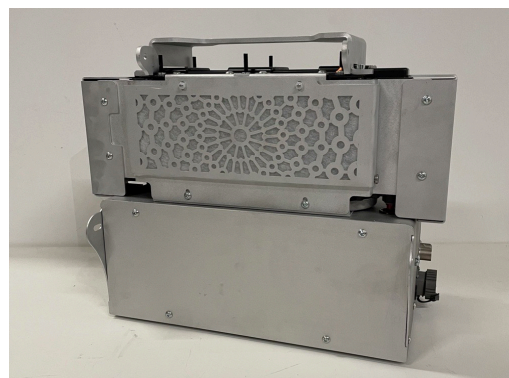
|                    |   |
|--------------------|---|
| Battery            | Lithium technology (NMC) - BMS Integrated                                 |
| Voltage capacity   | 50 Vdc / 22 Ah  |
| Max current        | 80 A (2s.)  |
| Continuous current | 53 A  |
| Reload current     | 4 to 8 A  |
| Converter          | Boost converter - Regulated voltage<br>Adaptable current limit (0 - 55 A) |
| Safeties           | Electric protection   |

### COMMUNICATION

|           |  |
|-----------|--|
| Fuel Cell | Canbus Communication integrated<br>Canbus Protocol 2.0 A |
| Battery   | Canbus Protocol<br>Bluetooth                             |
| Mothers   | Male USB-B connector<br>RJ45                             |

### SIZES & WEIGHT (EXCLUDING FUEL CELL & BATTERY)

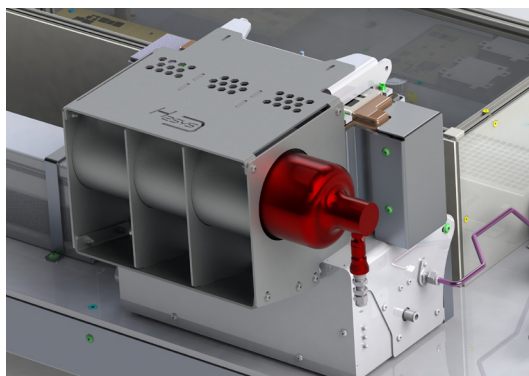
|                    |                  |
|--------------------|------------------|
| Sizes ( L x l x h) | 115 x 76 x 33 mm |
| Weight             | 38 kg            |



## SPECIAL FEATURE

*Remove the fuel cell and the battery to use it for student projects*

## Option



## HYDRIDE TANK

Hydride technology is the ideal solution for safe practical hydrogen work. The tank stores hydrogen at low pressure (<10 bar) and the exothermic reaction limits the risk of leakage. Its capacity of 500 NI (equivalent to 45g of hydrogen) allows an autonomy of about 1h30 of practical work, for a small size (length x diameter : 365 x 70 mm).

This is a better option for universities and schools that do not want to bring hydrogen at high pressure in class.

**INFORMATION  
AND  
REQUEST FOR QUOTATION**



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