



H2planet fuel-cell vehicle experience

Hy-Go

Hydrogen moved projects



Hy-Go

Fuel-cell powertrain

This is one of the most desirable configurations on-board for electric vehicles: replacing all of the batteries in the vehicles for a battery-free configuration which allows to save weight and cost of replacement of batteries. This is one of the major tasks of H2planet staff that through the use of supercapacitors with progressive charging systems allows you to make an electric vehicle completely powered by an hydrogen fuel-cell PEM thanks to use of supercapacitors with progressive charging systems.



Hy-Go

Fuel-cell range extender



This configuration combines the latest battery technology, or even the more traditional, in order to increase the autonomy of the vehicles up to over twice and it is an alternative to the configuration powered by fuel-cell and supercapacitors. The fuel-cell system guarantees performance that can not be compared with batteries allowing charging even in off-grid and in a completely automatic way.

Agrirobot "Zaffy" (progetto EU)

A very special electric vehicle with a delicate mission: collecting the precious flower of saffron. H2planet has the solution for your most ambitious and sophisticated projects.

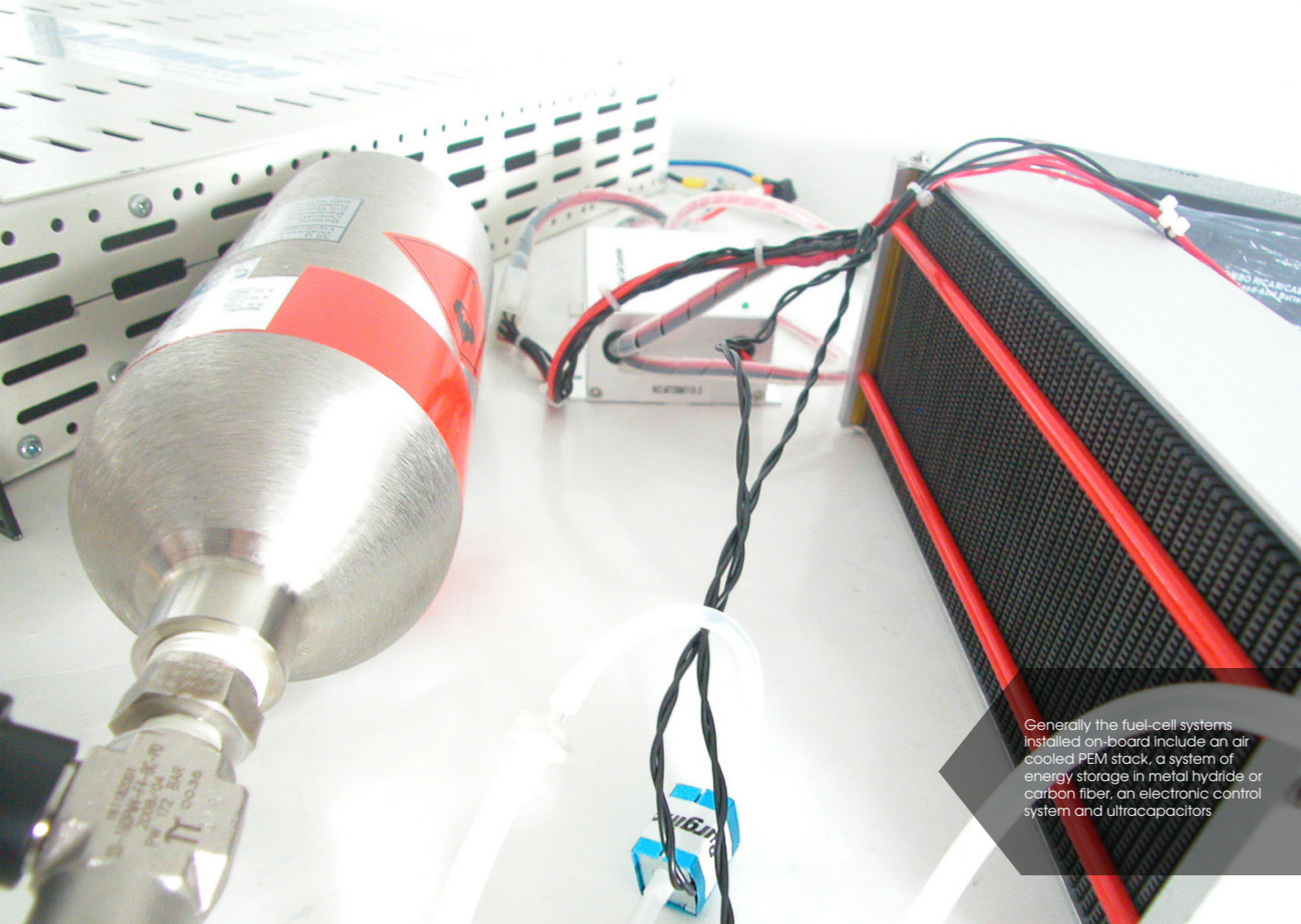


The use of H2planet fuel-cell systems on-board has doubled the range of electric vehicles

The key issue is firstly to understand that saffron flower is a valuable product...No pollutant emitted by traditional internal combustion engine could be tolerated during collection. The choose of the optimal system configuration is crucial: the identification of the appropriate source of hydrogen on-board and the most appropriate storage technology. In this configuration, the fuel-cell system was studied in order to achieve the required autonomy range using a simple system of charging the lead-gel batteries on board. Before the installation on board of the fuel-cell system, the range of the vehicle was short and allowed short collection operations, often characterized by the need to return to replace batteries. The robotic vehicle has been provided with an appropriate storage system: 1000wh of accumulation in hydrogen able to charge batteries with a capacity of 29ah at 12vdc. This ensured the doubling of the range of the vehicle, optimizing the harvesting operations, saving time and reducing the risks due to the maneuvering of the vehicle during return, related to the high chance of damaging the precious flowers.



Ease of integration and installations flexibility of H2planet fuel-cell systems, makes solutions completely reliable and user-friendly also for less experienced users and installers.



Generally the fuel-cell systems installed on-board include an air cooled PEM stack, a system of energy storage in metal hydride or carbon fiber, an electronic control system and ultracapacitors

The integration can be made by using spaces and enclosure boxes already on board, or providing dedicated cabinet or existing plug and play generators supplied by H2planet with current outputs apt to the load.



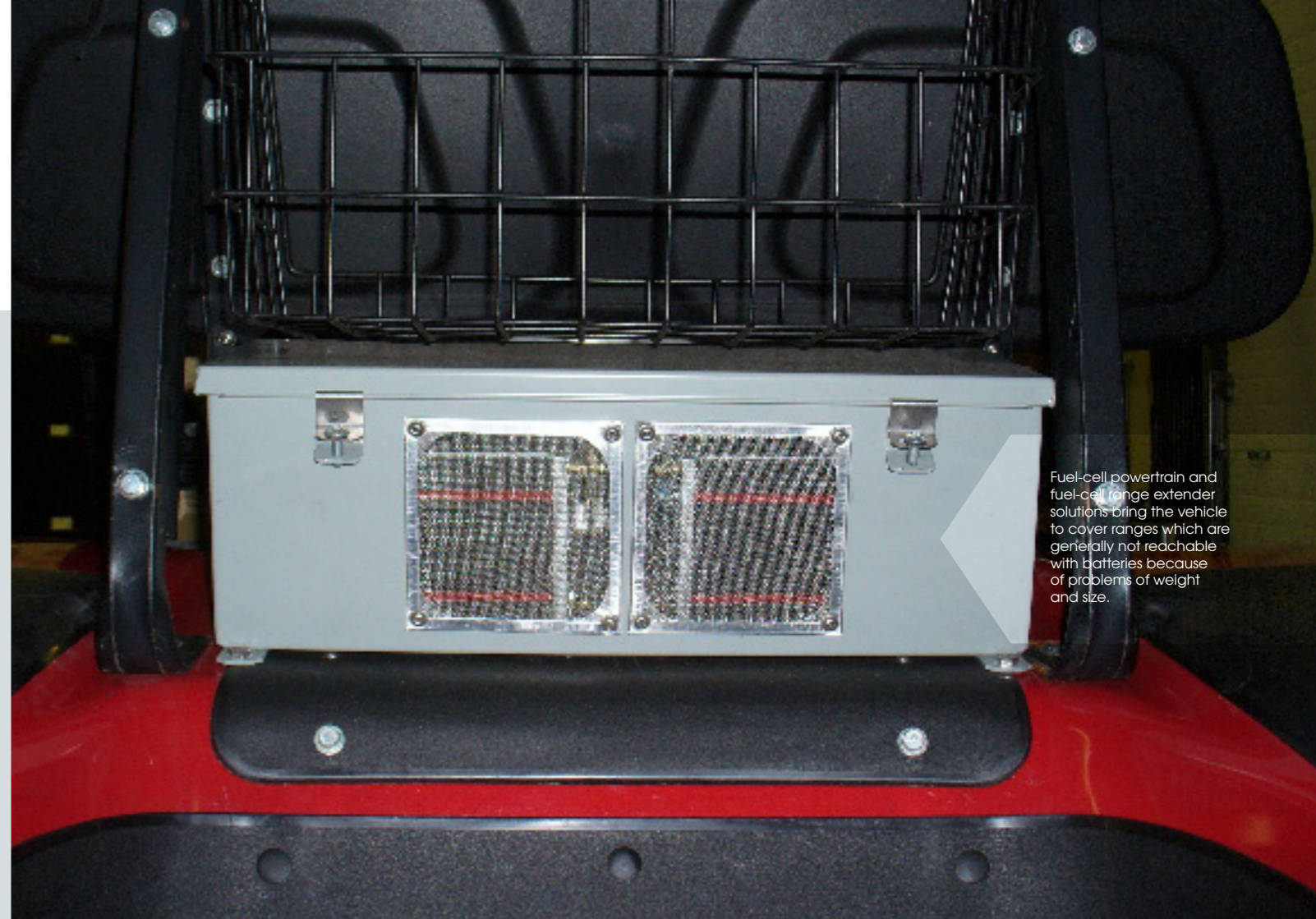
Golf car

The fuel-cell innovation applied to sport enters the world of golf. Vehicles with no need to recharge for the whole day and charging hydrogen stations powered by the sun.

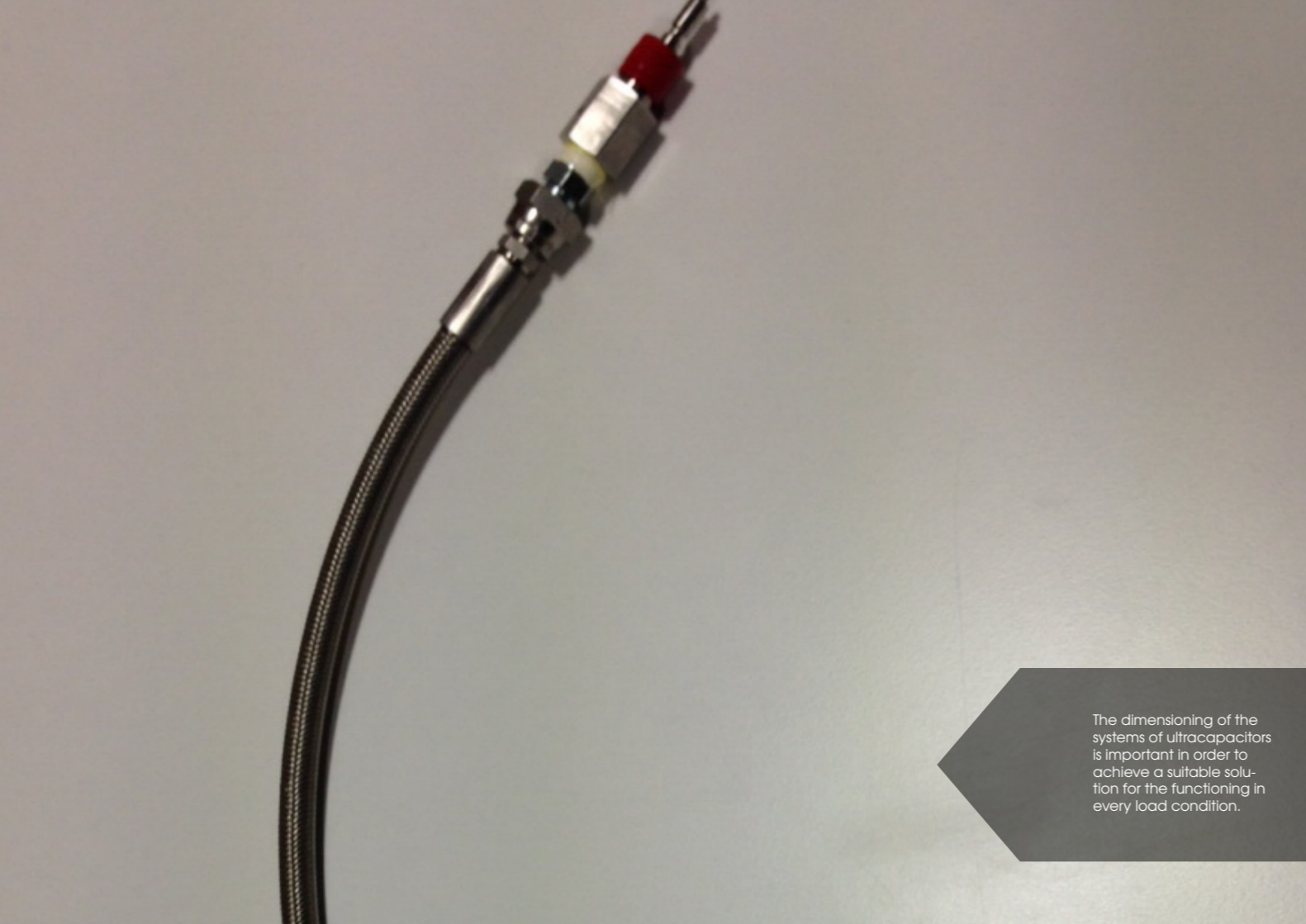


Golf cars are one of the most efficient applications of fuel-cell technology.

The on-board fuel-cell system on was initially developed following the idea of supporting the recharging of batteries on-board with a peak power of 200W. Later, after testing the efficacy, the power supply was made total fuel-cell powertrain completely independent from batteries and characterized by the lightness of the system with 2000W installed. The hydrogen storage system with initially 1000Wh was extended to support high flow rates of hydrogen typical for stack of 2000W using cylinders of high-pressure storage in aluminum. The battery life up to 8 hours allows to recharge the vehicle in 5 minutes with the H2planet charging stations in a fuel-cell powertrain configuration. Instead, for a fuel-cell range extender configurations many solutions of PEM stack are provided depending on the desired speed of recharge. These vehicles are configurable with different storage systems on-board up to several kW and with immediate power up to over 3000W, they are also interesting solutions which are suitable for disabled people. In each cases, the weight saving is very significant and can reach over 50% up to 70% for some types of storage systems in carbon fiber. Golf Era is changing!



Fuel-cell powertrain and fuel-cell range extender solutions bring the vehicle to cover ranges which are generally not reachable with batteries because of problems of weight and size.



The ease of integration allows to create systems with single or multiple power stack facilitating an easy placement of the fuel-cell system and the H2 storage in the available space on-board.

The dimensioning of the systems of ultracapacitors is important in order to achieve a suitable solution for the functioning in every load condition.



Special vehicles

H2planet help the customer from the basic idea to solution the technical of the most ambitious projects. Vehicles for filming are one of this special cases.



The mechanical arm allows maximum flexibility in film shooting on the move

Which are the most typical problems or motion pictures during filming of your favorite series and movies? The vibrations of the vehicles, the noise and the impossibility of having visible exhaust emissions. An electric vehicle is the only way to solve these problems. But these are not the only issue on board: the mechanical arms that usually moves during shooting and get up

and bend, consume a large amounts of energy and with absorption slightly lower than 300W. The study conducted by H2planet has enabled to develop for the customer a fuel-cell range extender customized system in order to buffer the charging of the batteries on board and ensure manoeuvre autonomy of mechanical arm for the shooting with no impact on the range of the vehicle.

The result on the shoot has been immediately concrete ensuring a full day of shooting with no the need of batteries replacement and the return of the vehicle. Small private charging stations allows rapid charging of H2 metal hydrides cartridges in low pressure after the end of shooting. Hydrogen, fuel-cell, action!

The energy consumption of an average on board filming day heavily compromised the shooting time. The hydrogen fuel-cell system has solved many problems by reducing the economic impact

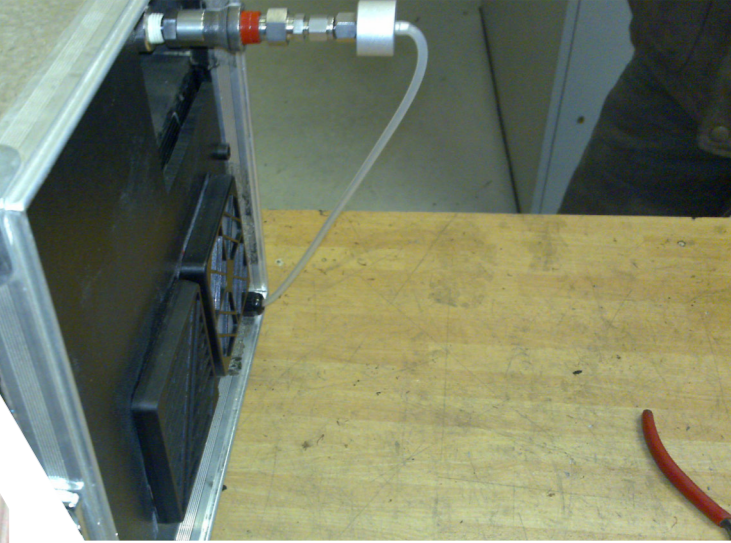




The fuel-cell system, if properly well-aired the fuel-cell system can be placed in multiple cabinet solutions ideal for transport according to the different requirements of size and weight of the customer



The energy storage in hydrogen has to be dimensioned depending on the hours of operation planned and depending on the power peak to be supplied with various models of fuel-cell



E-bike (EU project)

The “e-mobility” is going through an era of deep development and innovation. Fuel cell solutions contribute to finally solve the problem of batteries and their replacement.

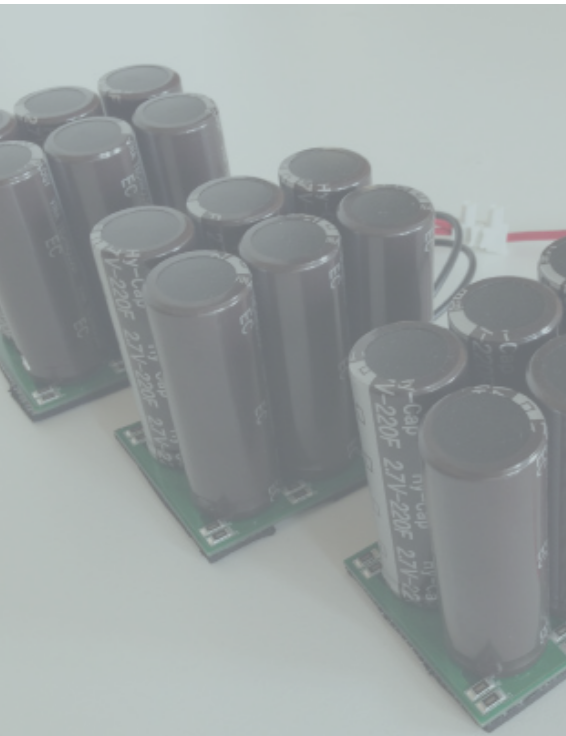


H2planet worked as a technical partner for this project of hydrogen bike

H2planet has proactively contributed to the realization of the project of e-bikes with the supply of complete systems; but this is part of a much more ambitious project: totally eliminating power batteries of the electric motor on-board thanks to a full fuel-cell powertrain solution. The most interesting part of the project was definitely the creation of customized

metal hydride system and its power plant. H2planet has customized the color of the hydrides and also the system of ultracapacitors that are able to “react” to request of starting torque of the vehicle. The configuration of the vehicle which allows the fitting of the metal hydride system into the steering column of the bicycle ensures maximum safety with a great

advantage from the aesthetic point of view. This vehicle represents, to this day, the only one bike with fuel-cell with the best design and best technical characteristics thanks to the combination of fuel-cell technology of the latest generation and the advanced energy storage system at low pressure. The charging system is also available in the version “on bike”.



Zero-emissions, with electric pedal assistance, 100% powered by hydrogen fuel-cell. Up to 300W peak power and autonomy up to over 3 hours at maximum power. All this and more thanks to H2planet solutions for e-mobility



All customized according to your needs: the PEM fuel-cell stack, the cylinder metal hydrides, the electronic control system maintenance charging of the ultracapacitors and firmware management



Even the most stringent requirements of space and weight can be met and satisfied. Working together with the H2planet technical staff will allow you to become part of a unique mission: forever changing the world of e-mobility with zero emissions



Hydrogen and fuel-cell experience

Via Campo Rivera 135
20069 Vaprio D'Adda (Milano)
Italia

Tel (+39) 02 9098 9883
Email staff@h2planet.eu