



INNOVATIVE TECH START-UP

Acca Industries S.r.l

HYMOOV Device: Evolution



Breve Presentazione

- Acca industries srl is an **innovative startup with an "eco-industrial" vocation** established in October 2019, specialized in the research, development, production and marketing of innovative products and services with high technological value in the electrochemical, basic, metalworking, mechatronics, for the controlled production of hydrogen, understood in the broad sense.
- The startup has designed, **developed and patented the HYMOOV device for the production of hydrogen and oxygen on-demand (without storage)**, to be installed as a retrofit on any internal combustion engine (MCI) to improve their performance and reduce CO2 emissions and pollutants, to optimize engine combustion and reduce consumption (4 patents registered, 2 of which are international).
- The company has a **highly qualified internal team** with decades of experience made up of 4 full-time employees, 4 external consultants with continuous contracts (researchers and engineers). The company has also activated R&D collaborations with UNIPD (1 PhD student contract) and with UNIVE for the Eco-Design of devices.
- The final objective of the entrepreneurial project is **to produce green hydrogen with our device** (from 2025) which promises to offer the best contribution to decarbonisation, and therefore a safe alternative on the path towards a cleaner society.

01

Today: State of Art



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01 – Today: State of Art

Existing device ready for Market

- Acca Industries s.r.l. has **developed and patented a device for the production of hydrogen and oxygen** to be used in internal combustion engines, allowing important **environmental and economic benefits** to be obtained.
- Solution that is part of a transitional phase where **current engines are "transformed" into less polluting engines.**

01 – Today: State of Art

How it's work

The hydrogen/oxygen gas mixture is produced, through the electrolysis process, on request, only when the engine is running, and injected into the combustion chamber.

The HFI device is not a fuel cell (AFC).

ENERGY
Internal combustion engine power supply



ENERGY
Power supply from renewable sources



Demineralised Water with Electrolyte



Remote Control Dashboard (RCD) - via web application or mobile app



Installazione Plug-&-Play

production
on-demand

**HYDROGEN
OXYGEN
GAS**

Intqke



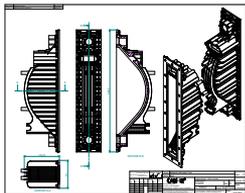
**INTERNAL
COMBUSTION
ENGINE**

The device adds a hydrogen-oxygen mixture to hydrocarbon combustion.



01 – Today: State of Art Goals achieved in 2023

- **FINAL EXECUTIVE PROTOTYPE :**
complete device **WITH OVAL BLADES**
and first APP version



- **STRUCTURED SALES PACKAGE**
(user manual, technical sheets, pre-sale agreements, framework agreements)
- **PRE-SERIES PRODUCTION**
- **PRE-SALES (end 2023)**

Consorzio di Bonifica Verona



- **B5 PATENT REGISTERED**
- Two patents have been extended internationally



- **CERTIFICATION HOMOLOGATION UN/ECE_R10**



- **FERST PROJECT (May 2023)**
Paid experimentation to obtain **the Carbon Footprint ISO 22948:2020 standard**



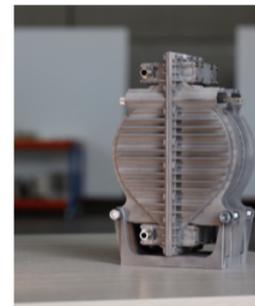
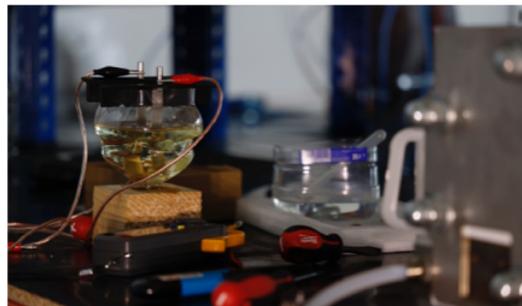
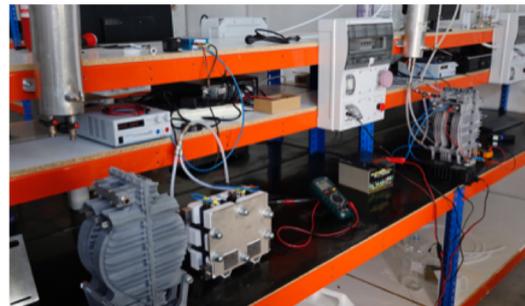
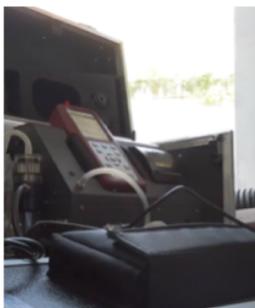


Photo showcases





Photo showcases



02

Green hydrogen testing from waste

H2E Hydrogen Supply Chain Project

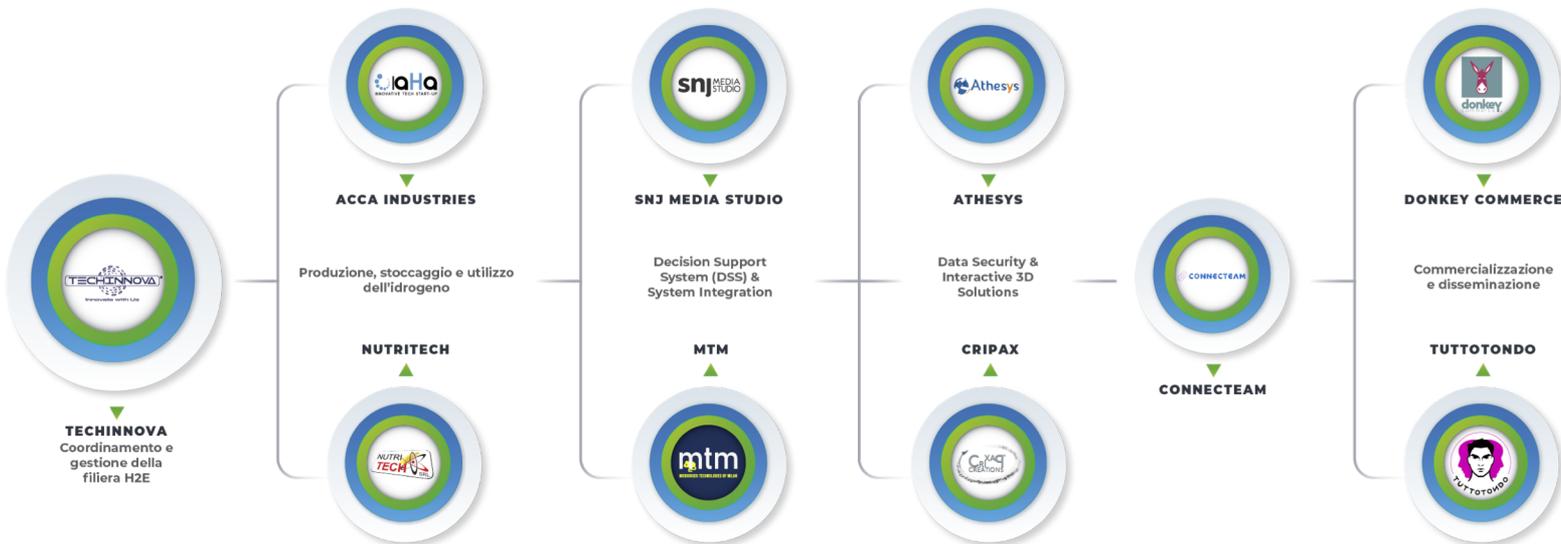


02 – H2E Project

www.h2e-project.eu

IN PROGRESS 

The **H2E project** was born as a **partnership of companies** that work together to create a complete supply chain for the production, storage and use of green hydrogen in **Lombardy**, according to the logic of circular economies.



02 – H2E Project

www.h2e-project.eu



IN PROGRESS

PRODUCING HYDROGEN FROM ZOOTECHNICAL LIQUIDS AND FISH FARMING TO DECARBONIZE THE AGRICULTURE AND FISHERIES SECTOR

The H2E project not only aims to make hydrogen usable on existing engines, but also aims to develop a **NEW SYSTEM FOR THE PRODUCTION OF GREEN HYDROGEN**, starting from secondary raw materials.

Unlike what happens with electrolysis, in which hydrogen is produced starting from water, Acca Industries and Nutritech, partners of the H2E project, have developed **a hydrogen production system starting from ammonia (NH₃) deriving from zootechnical liquids and fish farming**. The technology used to complete this process is a catalyst dedicated to stripping hydrogen at low temperatures.

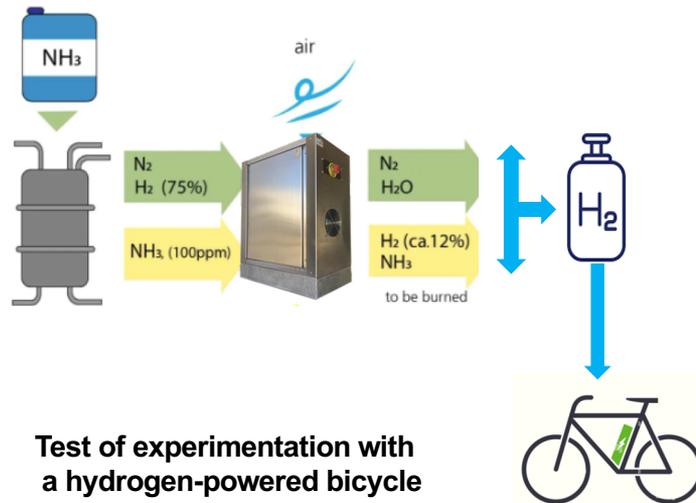
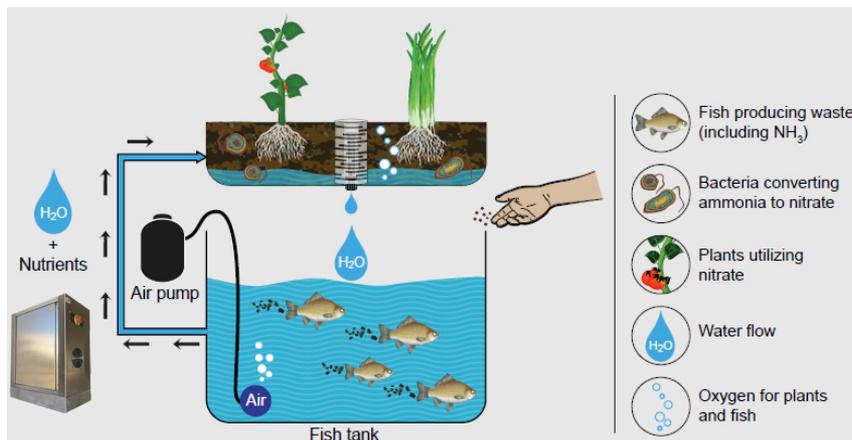


02 – H2E Project

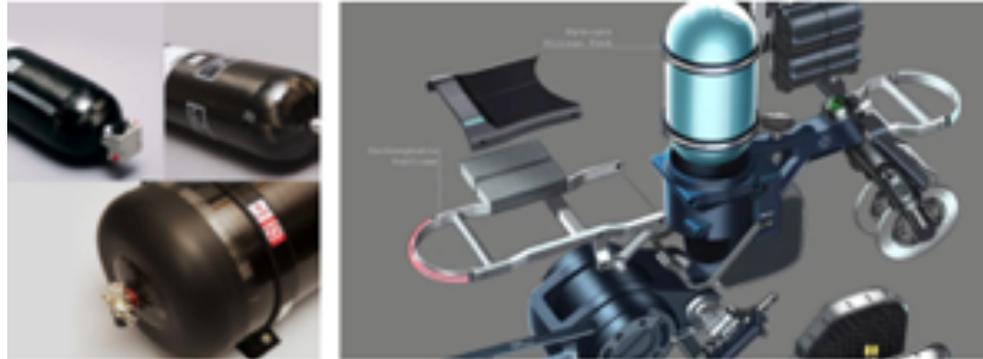


IN PROGRESS

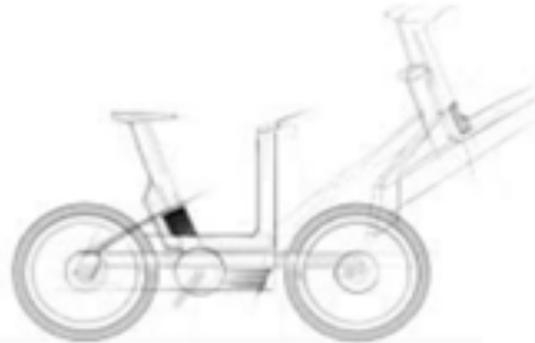
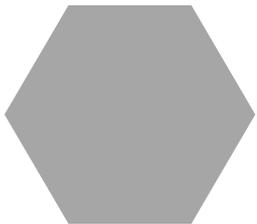
Simplified explanations of the entire project process
Production of hydrogen from animal waste



02 – H2E Project



IN PROGRESS



03

HYMOOV Device Evolution (from 2024)

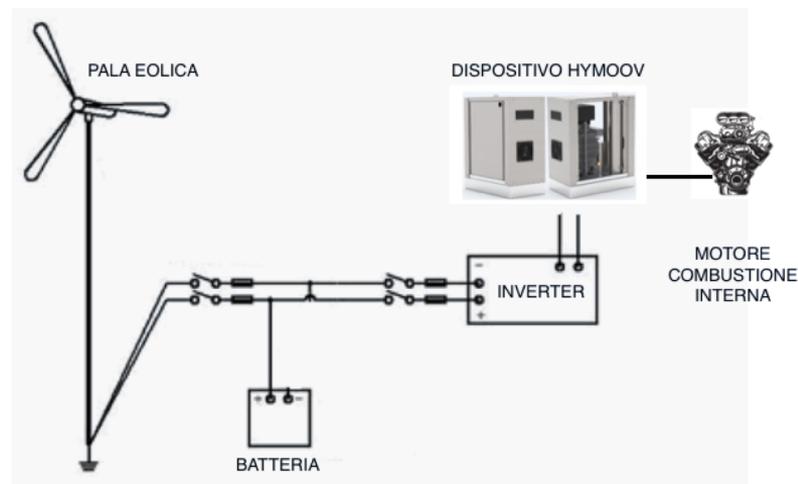


03 HYMOOV Device Evolution (2024)

Use of Renewable Energy

COMPLETION of the DEVICE with the installation of a SMALL WIND BLADE for **GREEN HYDROGEN PRODUCTION**

- The HYMOOV device, completed with a small wind turbine, will be the first step towards a very interesting new way of producing and using clean energy (green hydrogen) to power our device, instead of the energy used taken from the engine battery.
- We will soon create and install integrated on-site systems capable of allowing self-production during fishing vessel activities.
- Micro wind system for electricity production to power our device: system components, applications, hybrid systems.





04 – HYMOOV Device Evolution (2024 onwards)



Green Hydrogen Production and Storage



04 HYMOOV Device Evolution

GREEN HYMOOV DEVICE

AN INTEGRATED H2 SOLUTION FOR GREEN HYDROGEN PRODUCTION AND STORAGE

Starting from HyMoov technology and the H2E HYDROGEN SUPPLY CHAIN Project

Development of a **HYGREEN device/system** which:

- **t will contribute to the On-Demand production of green hydrogen.** It will allow the self-production of green hydrogen at an unrivaled cost. CO2 emissions will be zero, thus allowing the objective of total decarbonisation of emissions to continue.
- **It will include a high-pressure storage device for surplus self-produced energy from photovoltaic panels or wind turbines.** The surplus will be used for the generation of hydrogen which will then be stored in appropriate containers developed and patented by us. If necessary, the latter can be used as energy for various purposes.

04 HYMOOV Device Evolution

GREEN HYMOOV DEVICE

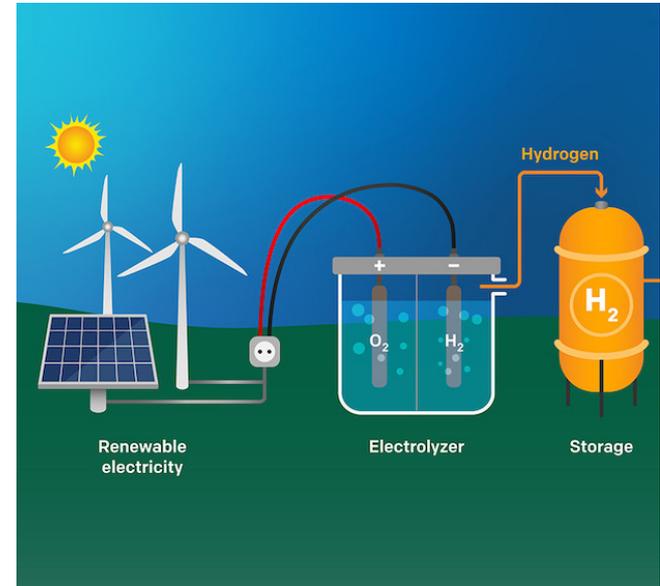
ACHIEVING THE MISSION

Producing "green" hydrogen and oxygen from water using renewable energy and secondary energy as waste.

VISION

Today, Acca Industries S.r.l has a standardized Device that can be stacked and combined for different sized projects, modulated and plug-and-play.

Tomorrow the Acca Industries technology, at the basis of water electrolysis, will make the use of the 100% green hydrogen carrier more convenient and accessible to all thanks to the design of a new compact electrolyser which will produce and store the green hydrogen produced.



04 HYMOOV Device Evolution

GREEN HYMOOV DEVICE

OBJECTIVES

- The device was created with the aim of providing a product that can be easily installed and integrated, a more compact "plug & play" system than the current Acca system, which can significantly reduce installation time.
- Massive price reduction through large-scale green hydrogen production.
- Check the entire cycle; from the production of green hydrogen for "on-demand" consumption to storage for postponed use of the hydrogen produced.

Green HYMOOV Project Renders





Andreas Hummer
CEO - Founder



Stefano Corsi
CTO-Founder



Massimo Brunelli
Additive Manufacturing
Specialist



J. C. Arroyo Rodriguez
Additive Manufacturing
Specialist



Claire Lusardi
CMO-Innovation



Marco Romani
Electronic Engineer

aHa
TEAM
(on 08/01/24)



Silvia Alfeo
Adm. Dept Social
Media



Nicolò Rossetti
Material Sciences



Massimo Bruni
Tech. Dept



Lucrezia Solofrano
Product & Visual
Designer



Fabio Ferrulli
Product & Visual
Designer



ACCA INDUSTRIES S.r.l.

Registered office:

Via Amedei 15 - 20123 Milan-ITALY

REA Number: MI 2575977

Operational offices:

- Via della Tecnica 18/A - 37060 Lavagno (VR)
- Viale Ionio 69 - 75100 Matera
- Viale Porta Adige - 45100 Rovigo
- Piazza Giacomo Zanellato-35131 Padova (PD)

www.accaindustries.com

