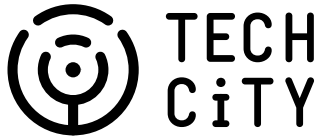


distribuição
gás natural

Aveiro Urban Challenges

CHALLENGE Galp Gás Natural
Distribuição



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Partner

GGND – Galp Gás Natural Distribuição, SA

Contact Partner for Challenge Development

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Challenge

Bicycle powered by hydrogen fuel cells

Objective

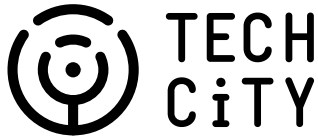
Anticipating the trend towards sustainability and innovation, Galp Gás Natural Distribuição proposes the challenge of developing a bicycle prototype powered by hydrogen fuel cells. The objective is to contribute to a sustainable urban mobility, enabling the dissemination and promotion of hydrogen as an energy solution and stimulating the application of emerging technologies, contributing to the maximization of renewable energy in the national system.

Challenge's Scope

Mobility in urban centres is currently one of the biggest challenges facing society. In one hand, there is a growing need for people and goods displacement and, in other, current levels of environmental and noise pollution arouse the need to find solutions to reduce carbon dependence and pollutant emissions. In Portugal, transport sector represents around 36% of energy consumption and is one of the main responsible for the increase of air pollutant emissions and noise production.

Recently, the Portuguese Government, through the Energy and Climate National Plan (PNEC), has made a commitment to promote sustainable mobility through the decarbonization of some sectors of the economy, such as energy and transport. Thus, the transition to low carbon fuels has become a priority.

In this sense, although the use of more efficient and sustainable transportation has been growing, the car still dominates the urban centers, mainly due to the advantages of autonomy and convenience. This fact calls for the search and promotion of solutions that provide alternative means to road transport with greater autonomy and comfort so that they can meet the dynamism of society.



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Being Aveiro, the region with ideal topographic conditions for the use of bicycles and being the region with greatest bicycle use tradition in Portugal, why not develop a hydrogen-powered bicycle prototype, thus widening the range of uses and users and substantially reducing the carbon footprint?

Challenge Development

Although its discovery was made 130 years ago and predates the discovery of the internal combustion or compression engine, only recently fuel cells have been associated with emerging technologies.

Simplifying, a fuel cell is a device that produces an electrical charge through a chemical reaction, allowing to convert up to 90% of energy contained in a fuel into an electrical energy and heat, providing a very efficient way to produce energy. This efficiency becomes extremely environmentally friendly when using hydrogen as fuel.

Considered as the fuel of the future, hydrogen is the most abundant element and lightest in the universe. Hydrogen is also the fuel with the highest energy value per unit of mass, it's non-toxic and its combustion is clean and produces no harmful emissions to the environment and doesn't contribute to the ozone hole.

The bike will be used by the following groups:

- Tourists;
- Bike sharing programs;
- Delivery services;
- Individuals in general.

Partner Mentor

Nuno Nascimento (919 704 819) - nuno.nascimento@ggnd.pt

Support websites::

<https://www.engie.com/en/news/cofely-pragma-industries-hydrogen-bikes/>

<https://www.pragma-industries.com/fr/products/light-mobility/>

https://www.linde-gas.com/en/processes/hydrogen_energy_h2/experience_h2/h2_bike/index.html

<https://www.ise.fraunhofer.de/en/research-projects/litefcbike.html>