

ICP-AGIR Best Practice for Almeria (Spain)

Project H2-ISE Green Hydrogen	
	CITY OF ALMERIA (Spain)
Departments / Institutions involved	ISE ENGINEERING OF GRANSOLAR GROUP
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Description of the best practice	H2-ISE project uses sustainable electric mobility with fuel cell vehicles by putting a hydrogen-powered vehicle into circulation. The production of renewable hydrogen is promoted through the use of photovoltaics and the water comes from the collecting of superficial rooftop water. Additionally, GRS introduces to the market a new electrolyser development.
Theme and sub-theme if appropriate	Circular Economy Air quality

Description of Best practice	
Challenge Addressed	<p>The main target of our project was tested the feasibility of on-site production and refuelling of light vehicles with green hydrogen looking for a sustainable mobility powered by alternative fuels.</p> <p>The project not only contributes to the promotion of the use of green hydrogen for mobility, proving the maturity of mobility with fuel cells, but it also proves the efficiency of the production and consumption of hydrogen on site and will contribute to national, European and global objectives. referring to the installation of hydrogen recharging points for mobility or "hydrogens".</p>

<p>Solution Implemented</p>	<p>ISE has developed a project called H2-ISE, which includes the installation and commissioning of a 100% of a green hydrogen production plant, including a hydrogen refuelling station. Our Pilot plant is based on the Technology Park in Almería.</p> <p>The origin of the hydrogen will be 100% renewable since all the energy necessary for electrolysis comes from the photovoltaic installed in the canopy of the car park where the recharging point will be located.</p> <p>Taking solar self-consumption into account, in this project is ensured the electrolyser is capable of operating in isolation from the grid, reaching a load factor close to 23% and producing an average of 1.5 kg of green hydrogen per day, capable of supplying a vehicle with a daily range of about 167 km.</p> <p>H2-ISE supposes a production of hydrogen totally isolated from the network from energy point of view. The production and consumption of hydrogen will take place in the same location, both being integrated in maritime containers or skids.</p> <p>The project not only contributes to the promotion of the use of green hydrogen for mobility, proving the maturity of mobility with fuel cells, but it also proves the efficiency of the production and consumption of hydrogen on site and will contribute to national, European and global objectives. referring to the installation of hydrogen recharging points for mobility or "hydrogens".</p> <p>Supporting the lines of work aimed at reducing the price of green hydrogen and the development of cheaper electrolysers, this new development of an alkaline electrolyser with KOH electrolyte is included, which could be scaled up its development and technological.</p> <p>The most relevant technical aspects of our pilot plant are described as follow:</p> <ul style="list-style-type: none"> • PV Production installed: 19.25kWdc in a canopy which use is destined exclusively to power the hydrogen production block. • Environmental water generator: capable of extracting the necessary water from the environment to cover the production of hydrogen. In this way, the installation will be able to operate in isolation from the supply network.

	<ul style="list-style-type: none"> • Green hydrogen production block: including a new 10kW alkaline electrolyser designed by E22 (Energy Storage Solutions) with KOH electrolyte, according to the BOP (balance of Plant). • Dispensing block: composed of a compressor, cascade pressurized storage system and dispensing hose. The set is capable of storing a total of 15kg of hydrogen in three (3) pressure scales: 300 bar, 500 bar and 1,000 bar, including the required arrangement that allows vehicles to be recharged at 700 bar or 350 bar depending on the model of vehicle to be refuelled. <p>Further information of this solution can be provided by reaching Mela García-Pérez at mgarciap@ingenia-se.com.</p>
<p>Partnerships</p>	<p>ISE and E22</p>
<p>Lessons Learned</p>	<p>The project works in the R+D lines of the renewable gas sector, emphasizing the technological improvement of high-pressure hydrogen supply points, proposing a high-pressure refuelling infrastructure with an approved connection interface between the hydrogenator and the tank of the vehicle.</p> <p>The dispensed gas will be certified as 100% renewable since it is powered by a photovoltaic installation which belongs to the project.</p>
<p>Main Milestones</p>	<p>The project not only contributes to the promotion of the use of green hydrogen for mobility, but also proves the efficiency of the production and consumption of hydrogen on site</p> <p>This project will contribute to national, European and global objectives. referring to the installation of hydrogen recharging points for mobility or "hydrogens".</p>

Materials for promotion

Graphic Material



Online links

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