

**iZes – Integration of smart hydrogen into refuelling**

iZes HRS

iZes are a non-profit organisation dedicated to environmental protection primarily surrounding sustainable energy. Working together with Logan Energy & H2Tec, a hydrogen refuelling station is being designed for the integration of hydrogen-based energy into the local community.



H2Tec have been working with iZes gGmbH to design, build and commission a hydrogen refuelling station that can dispense to 700 bar passenger vehicles. The system is designed to run entirely off solar power and runs in line with the appropriate CE, PED and ATEX certifications. H2Tec will go on to maintain this station.

The design of the refuelling station has been done internally by H2Tec using experience from the company’s previous hydrogen refuelling stations and incorporating new and innovative designs. The cooling system has a 53L heat exchanger and chiller designed to hit a target temperature of -10°C. Which reduces the temperature of the dispensed hydrogen, which is stored in both high- and low-pressure cylinders of 95MPa and 48MPa

The new addition to this refueller from previous ones designed is the two-stage compression arrangement allowing the refuelling station to produce its own hydrogen. An AEM and PEM electrolyser takes water from a DI water purifier to produce hydrogen with a purification of 99.99% at 30 bar.

H2Tec have also incorporated an automatic PLC control system with integrated safety relays and fault and failure detection. This control system has integrated an optional manual override.

During this project we have overcome and incorporated existing standards surrounding the safety of hydrogen into an up-to-date use of the technology and will assist in the improvement and growth of H2Tec and the hydrogen industry within Europe. It will help lay the way for future involvement in the development and production of refuelling systems.

Deliverables:	Achievements:	Benefits:
<ul style="list-style-type: none"> <li>700 bar Dispensing</li> <li>500 and 1000 bar Storage</li> </ul>	<ul style="list-style-type: none"> <li>AEM and PEM two compression stage</li> <li>Separated refuelling</li> </ul>	<ul style="list-style-type: none"> <li>Hydrogen use as a fuel for passenger vehicles</li> <li>Reduce CO<sub>2</sub> emissions</li> </ul>