

Frequently Asked Questions; *HydroGen™*

- What IS the *HydroGen™* Electrolyser?

The *HydroGen™* is a retro-fit unit which is now going into full production following extensive R&D in collaboration with Sheffield University and support from the European Union. It comprises the Electrolyser, the Control Unit and the Water reservoir.

- How does the *HydroGen™* Electrolyser work?

The electrolyser uses electricity to separate water (H₂O), into Hydrogen (H) and Oxygen (O₂) mix. These gases are then introduced into a conventional engine to supplement the supply of fossil fuels (such as diesel), and to cause it to accelerate the combustion process.

- What benefits does this bring?

Adding oxy-hydrogen mix leads to cleaner and faster burning of the fuel mixture. It promotes more efficient combustion of the fuel in the combustion chamber, which results saving fuel and reducing emissions.

- Can it be installed on any vehicle?

Yes; we have 12V and 24V versions of the unit, and it can be installed on domestic cars, vans, trucks, road sweepers, busses. In general, to any type of internal combustion engines.

- Is it safe?

The system has no dangers whatsoever, as Hydrogen is produced ON DEMAND by the engine itself, (electronically managed by the Control Unit allowing operation of the system only when the engine is running and the produced gas is used). There is therefore NO surplus Hydrogen at any time. There is NO storage of hydrogen at any time!!! The system works with very low pressure and is totally safe even in the event of an accident.

As a result, the system has been approved by the VCA (Vehicle Certification Agency), and does not require a VSO (Vehicle Special Order)

- Can the Hydrogen damage the engine?

No. Hydrogen is introduced at very low levels (around 6% of the total fuel mix) and at very low pressure (0.3 bars). It combusts at slightly LOWER temperatures than diesel itself, and actually CLEANS the engine as it operates so that NO soot deposits are left on the internal surfaces of the engine.

- How is engine performance affected?

Engine performance is actually IMPROVED slightly, because it runs leaner and cleaner. We only improve the combustion process

- What happens to the hydrogen if the engine stalls or there is a mechanical failure?

The Control system monitors gas flow; pressure, flow rate, water levels and ONLY produces Oxy-hydrogen if the engine is actually operating. It shuts down when the engine is turned off or stalls. There is NO gas storage in any case

- What happens if the water runs out?

When the water reservoir runs low, the Control System alerts the driver. It continues to operate for a further 8 hours. If the water is NOT replenished, the Control System shuts the unit off and the vehicle continues to run on diesel in its conventional way.

- Does it just use ordinary water?

No, the system needs distilled water. Ordinary water carries micro-organisms which will 'clog' the electrolyser plates and reduce its ability to generate Oxyhydrogen.

- What happens if we use ordinary water?

Reduces the efficiency of the system and needs to be restored

- How much does the water cost and where does it come from?

Distilled water costs around £1/ litre and is supplied directly from WFE.

- How much water does it use?

The system uses approximately 1 litre for every 24 to 34 hours operating time. The system has a total of 3.6 liters of water. Refilling depends on the mode of operation. It is designed to match the various operating intervals.

- Where does the electricity come from to power the unit?

The required electricity is supplied directly from the electrical system of vehicle. The 24 V version of the electrolyser uses approximately 17 to 21 amps. Due to the low levels of pressure required and the small amounts of Hydrogen that needs to be produced, only a small amount of electricity is needed.

- Is any damage done to the structure of the vehicle or the engine when it is installed?

No. The plastic tubes are fitted to the air intake at the manifold via a dedicated, removable sleeve. The electrolyser is either contained within its own housing (for external fitting) OR within the boot cavity of smaller vehicles.

- What is the **HydroGen™** lifetime?

The **HydroGen** has no moving parts, so we expect it to outlive the lifetime of the vehicle. The unit can then be removed, renovated and re-fitted to a different vehicle so it has inherent value. We DO service the units, to ensure that the components are all performing as they should, and we have a dedicated service team to undertake this annually, OR in-house technicians can undertake this themselves.

- **Are vehicle warranties affected?**

If vehicles are still under warranty, we would NOT fit the electrolyser / unless otherwise agreed/ as this WOULD affect your warranty with the manufacturer.

However, older vehicles (Euro 3, 4, 5) deliver greater improvements than Euro 6 anyway.

If you have any other questions and need more information, we will be happy to answer

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