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(56) Documents Cited:
GB 1561212 A **WO 2005/077058 A1**
WO 1998/055745 A **US 20050199509 A1**
US 20040074781 A1 **US 20040025807 A1**

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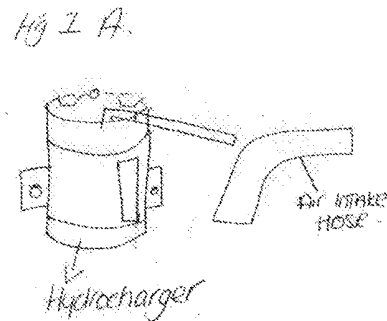
(58) Field of Search:
INT CL **C25B, F02B, F02M**
Other: **WPI, EPODOC and selected full text databases.**

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(54) Title of the Invention: **Hydrocharger**
Abstract Title: **Water electrolysis cell for reducing consumption of fuel in vehicles**

(57) An aqueous electrolysis system to provide a supplementary fuel to current hydrocarbon based fuels, to reduce hydrocarbon fuel consumption is described. An ABS plastic housing unit is provided, with 316 Stainless Steel rod electrodes. The electrolyte may be potassium hydroxide and water. Hydrogen is then produced from the cell and fed into the engine via the air intake pipe. A viewing window (figure 2, 1) to determine electrolyte levels may also be provided.



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Hydrocharger

INTRODUCTION

For several years now, the UK has been moving the issues of Global Warming and the depletion of the earth's fossil fuels further and further up the political agenda. Today, petrol and diesel prices have reached a record high, causing economic difficulties for businesses and private individuals alike. At the same time, Government is pressing ahead with its policy of taxing vehicles on the basis of their emissions – the more polluting the vehicle, the higher the tax. Although it insists that this incentivises motorists to drive more environmentally-friendly vehicles, the reality is that motorists are faced with two choices, both of which cost money they can ill afford

1. **Sell their current car and buy a new low-emission example.** Due to ever-increasing fuel prices and a draconian Road Fund Tax policy, second hand values of high-emission cars are falling dramatically, making the cost of this changing your car higher than ever. It follows that the greater the Government's "incentive", the smaller the number of people who can afford to buy less-polluting cars.
2. **Accept that there is nothing they can do about rising fuel prices and Road Fund Tax and simply find a way of paying it**

Motorists are therefore between a rock and a hard place. They would like to do the right thing and make the change, but cannot afford to do so. If they do not change, they cannot afford to run their vehicles (on which they rely) without diverting funds from somewhere else (e.g. food, clothing, education, etc). This is undoubtedly having a detrimental knock-on effect on personal lifestyles and the economy generally.

A solution...

Neil and Samantha Prendergast have been researching and developing Hydrogen on Demand systems for internal combustion engines for around five years with a view to reducing fuel consumption and reducing harmful emissions. This research has resulted in an aftermarket product called Hydrocharger that customers can be confident will increase MPG for existing cars and light vans by around 25%, and at the same time will reduce emissions by around 40%. Tests have shown that the Hydrocharger also produces very significant improvements for Heavy Goods Vehicles.

What is Hydrocharger?

In very simple terms, a Hydrocharger system consists of one or more interconnected cells (Fig 1.) filled with distilled water and a small quantity of electrolyte.(Potassium Hydroxide) When the engine is running a current is passed through electrodes in each cell to produce HHO (hydrogen and oxygen), which in turn is fed into the air intake of the engine. This is done by attaching a hose to the Hydrocharger and the air intake before the Catalytic Converter. The Hydrogen acts as a secondary fuel source, which reduces the volume of the primary fuel (petrol or diesel) that is required. At the same time the oxygen causes the primary fuel to be burned more completely. The result is a reduction in petrol/diesel consumption and a dramatic reduction in harmful emissions. (appendix A)

Hydrocharger cells are unique in appearance,(appendix C) being made of molded heat-resistant ABS plastic with a fixing bracket (fig.2 showing the front, fig.3 showing the back) and a full-height transparent water-level viewing window (1). They are cylindrical in shape and measure 800mm Height x 210mm Width. (fig.2)The dimensions can be adjusted along with the shape however the cylindrical shape is easier to install and when putting the units together encourage a flow of air to assist with the cooling of the units. The cells can be made from other materials such as glass or steel however all the components have been carefully designed to maximise the volume of hydrogen produced for a given current, whilst at the same time minimising electrode deterioration and preventing overheating. The back of the Hydrocharger has a molded fixing bracket for ease of

fitting into the vehicle. The unit has a detachable lid which allows for the cleaning and refilling of the system whilst the base is molded into the design.

The outside top of the lid (appendix D) has two holes pre-drilled they have a 6mm diameter each and are spaced at 25mm apart. This is where the electrodes (see below) are attached. The lid also has a removable brass bolt. This is used for topping up the unit with water when evaporation has occurred. The lid has a 6mm diameter barbed elbow attached to it, a 6mm hose is then attached to the elbow which is then subsequently fed into the air intake pipe on the vehicle.

The underside of the lid has a silicon seal which is glued into place to prevent any leakages. (fig 4)

The internals (Electrodes) of the Hydrocharger are made from 316 graded Stainless Steel and there are two of them one acting as an anode and the other a cathode. (appendix E) Fig.1 shows the electrode from the side view and fig.2 shows the front view These measure **175mm H x 30mm wide x 3mm Depth** other sizes and thicknesses can be used however the size stipulated has shown to produce better and more sustainable results. The 316 grade reacts better to the electrolysis process and lasts longer than other grades of steel. Other grades can be use however the longevity and sustainability of the product is less reliable. The steel electrodes are securely fastened into place with the use of stainless steel nuts and bolts as shown in appendix E. Silicon based glue is applied to the nuts and bolts to seal them and reduce the risks of leakages.

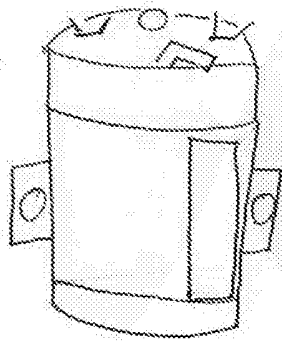
A mixture of 2.5g of Potassium Hydroxide and 800 millimeter of distilled water is added to the Hydrocharger. Tap water can be used however; if it is in an area where there are large amounts of limescale this causes a buildup of limescale on the electrodes which inhibit their performance. Other conductive substances such as Bicarbonate of soda or Sodium can be used. Extensive testing has shown that Potassium Hydroxide is more sustainable and consistent with the testing results. Potassium Hydroxide allows the water to stay cooler throughout the electrolysis process thus eliminating the possibility of the heated water using the extra amperage from the alternator. This would result in an adverse effect of more fuel being used to supplement the extra power required.

The Hydrocharger works on any 12v system and takes its power from the vehicles power source. The system uses a relay to power the unit (Appendix F). The total power the unit takes is 6 amp ensuring there is no pressure on the alternator.

Claims

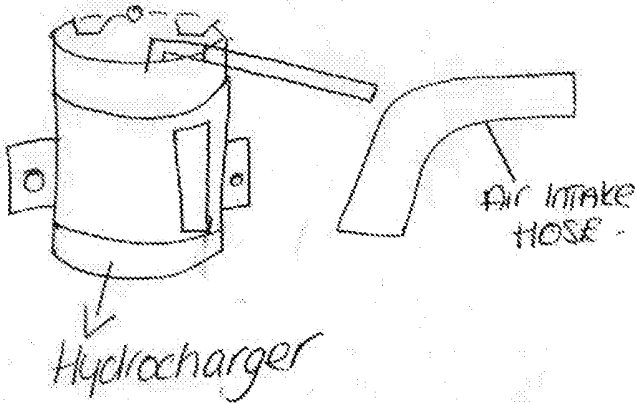
1. Hydrocharger extracts hydrogen from water through an electrolysis process.
2. The hydrogen from Hydrocharger allows fuel to have a cleaner burn, thus reducing dramatically the out put of Co2 and hydrocarbon gases.
3. The extracted hydrogen enables a cleaner burn of fuel resulting in the reduction of fuel consumption
4. Hydrocharger is a unit for which the extraction of hydrogen can take place to reduce harmful emissions and reduce fuel consumption.

Fig 1



Hydrocharger

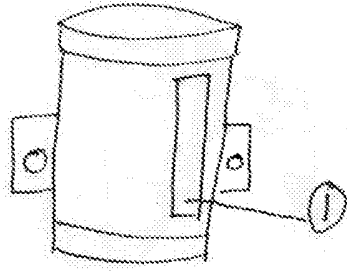
Appendix A.



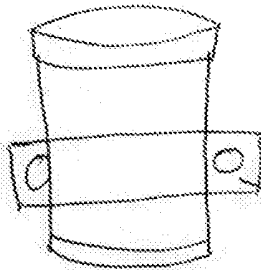
Air Intake
HOSE

Hydrocharger

Appendix C.



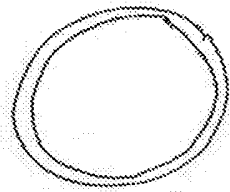
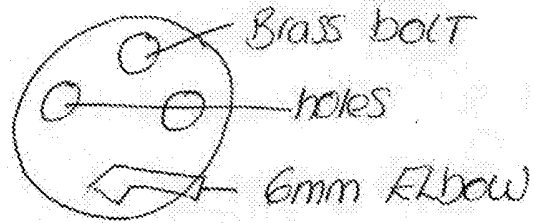
(fig 2.)



(fig 3.)

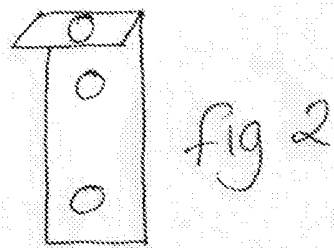
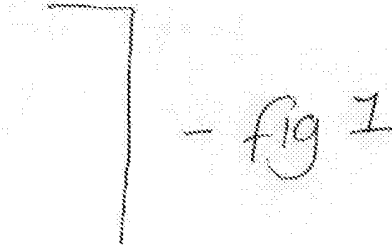
fixing bracket

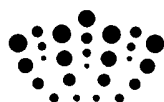
Appendix D



(fig 4)

Appendix E





Application No: GB0900319.5
Claims searched: 1-4

Examiner: Mrs Marian Lillington
Date of search: 11 May 2009

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-4	US2004/0074781 A1 (KLEIN) Figures 1-5, paragraphs [0028]-[0032]
X	1-4	WO2005/077058 A1 (HYDROGEN INOVATIONS) Figures 1-13, pages 8 and 9
X	1-4	WO98/55745 A (DALEKOS) Figures 1-6, pages 8,9 and 16
X	1-4	GB1561212 A (TALENTI) Figures 1-3, pages 2 and 3 in particular lines 115-10
X	1-4	US2005/0199509 A1 (ROSS) Figures 1-7, paragraphs [0036], [0051]-[0054]
X	1-4	US2004/0025807 A1 (JHETHAM) Figures 1-4, paragraphs [0034]-[0044]

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

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Worldwide search of patent documents classified in the following areas of the IPC

C25B; F02B; F02M

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC and selected full text databases.

International Classification:



Subclass	Subgroup	Valid From
C25B	0001/10	01/01/2006
F02D	0019/08	01/01/2006
F02M	0025/12	01/01/2006