

ITM Power (ITM)

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ITM Power provides technology for producing hydrogen in an affordable manner, its current leading product is a home re-fuelling station which would fit into a garage and ITM hope to eventually sell for around £2000. The re-fuelling station would be able to provide hydrogen for household appliances (for example heating systems and cooking) as well as fuel for cars capable of running, fully or partly, off hydrogen.

ITM have developed a Ford Focus which runs off a combination of the hydrogen produced and gasoline. Although it currently only has a range of around forty miles which the company hopes this can be increased to around one hundred and outside of this range it can switch to gasoline mode. Furthermore this range would be sufficient for the average UK commute (twelve miles) and would probably be suitable for delivery fleets which are constantly stopping and starting and often spend a lot of time in cities where low emissions are considered to be important.

The re-fuelling station uses electrolysis, which takes water and electricity and extracts hydrogen, and therefore requires an electricity supply in order to produce hydrogen. This could be provided by solar or wind power but at the moment would be likely to be supplied by the national grid. ITM have suggested customers could still use the hydrogen to generate electricity despite it seeming odd to use electricity to generate hydrogen to generate electricity. Odd as it seems it may well be necessary as an intermediate stage if hydrogen is ever to be adopted in this manner.

ITM's big claim is that using their patented none platinum membrane, they are able to reduce the cost of producing hydrogen by electrolysis to the point that it is cheaper than crude oil in terms of \$ / K.W.H. generated. Existing industry standard membrane material is estimated to cost around \$500 per sq meter, ITM's membrane based around much cheaper materials such as nickel costs \$5 per sq meter. In terms of energy produced, existing electrolyzers cost about \$2000/ KWH whilst ITM's electrolyzers cost only \$164/ KWH (according to ITM).

Whilst ITM's developments are without doubt exciting, they are by no means alone in the market for home refuelling stations. Both General Motors and Honda have been producing prototype stations since early 2006 with similar objectives; to provide enough hydrogen to power a home and car. That said, no other company seems to be able to match ITM when it comes to membrane cost so assuming their patents turn out to be solid, they could (perhaps even should) become a viable competitor.

ITM are taking the concern of competition seriously and are delaying a full production launch of the electrolyser until they have satisfactory worldwide patents, particularly in China, Russia and India. They currently seem to be planning to produce the electrolyser themselves as well as granting licenses to third parties to mass produce it.