

FOR IMMEDIATE RELEASE

March 17, 2009 – This is a brief update on the progress HTC is making for the next generation of fuel-saving products.

VMU SOFTWARE UPGRADES

One of the exciting things about the VMU Series 2 is that it is a general purpose processor that can have a number of modifications to its programming. Its software evolves as new functionality is implemented in the hardware.

In the present development, there are a lot of new and improved changes being planned for the hardware of the power box. Everyone needs to understand that the VMUs and the power boxes are entirely separate components. Let's differentiate the two components, because from here on out, they will follow separate development paths. In this case, the VMU is getting a major software upgrade to prepare it for a major hardware upgrade of the power box.



IMPROVED POWER BOX FOR THE NEXT GENERATION CELL: THE M-CELL

What today is a simple "dumb" power box containing simple PWM circuits and controllable EFIE and MAPIE sensors, the next generation power box will be **radically smarter**. Since the M-Cell has created a new potential for fleet operators, the power box is getting a new brain. Not only is the M-Cell a longer-lasting hydrogen cell, it is easier to maintain for large fleets. The concept of a smart power box is that in many cases, a fleet of vehicles will require fewer and fewer **driver controlled parameters**. The owner of the vehicles can merely hire drivers who can operate any fleet vehicle... with little or no additional training and familiarity with a hydrogen fuel cell. This presents a problem for today's complex VMU and its display, both included in the standard kits made by HTC.



DRIVERS: KEEP DRIVING

The solution is to keep making the power box able to survive the conditions found under the hood of a vehicle, but to include with it an industrial processor, memory, and software, **independent** of the more user-friendly VMU that is installed near the driver. The next generation power box will not only handle the new controls needed for the M-Cell (like its temperature sensors and its pump), it will also be able to run independently of the VMU if so desired. This means a lower cost for the fleet owner initially, and it also means that fleets can continue to place maintenance tasks

in the hands of the people certified to do maintenance. Drivers will drive and add distilled water when needed. Maintenance technicians will perform routine maintenance.

The current plans for the “smart” power box include a rather basic driver interface, namely a few LEDs. The driver of the vehicle will see **Green for good**, and **Red for an error condition**. The driver will merely have to verify that the light turns green once the engine is started. He might also have to know the error code for the "add water" condition, or perhaps know it by a third error indicator, like an **amber or blue LED**. Whatever the final implementation is, **Think Simple**. This will give drivers and fleet owners a good means of communicating and understanding that the hydrogen system is either working or needs maintenance. We will let the independent dealers, installers, or in some cases the fleet’s own maintenance personnel to hook up a VMU for troubleshooting an error condition.

MAINTENANCE LEADS TO CUSTOMER SATISFACTION

Therefore, whenever an M-Cell is sold without a VMU, a maintenance strategy must be implemented. There must be someone familiar with the system who can investigate a trouble code using a VMU. This is why it is imperative that all purchasers of the M-Cell work closely with a local certified installer. Not only will a local installer be able to help a customer in need of a timely repair, there will become a valuable relationship built between the customer and dealer which will help with sales, customer satisfaction, and the reduction of costly mistakes. If a customer doesn’t have a local installer and damages his own system, it will cause a **snowball effect** of complaints, lost revenue for the customer, lost sales for dealers, and a bad rap in the industry.

This is a three-legged stool. There is a shared responsibility of the M-Cell working as advertised. It is simple:

1. HTC Guarantees the system for three years, conditional upon
2. a good installation by a certified installer, and
3. **the customer maintains the system** periodically and when an error condition is set.

So even with a 3-year warranty and a good installation, if the system is not maintained, there will not be a happy customer. Dealers must focus on these three aspects of the M-Cell to sell it, but as you can see, the third aspect is for the customer to implement.

TARGET: SAVE GAS ON ALL VEHICLES

There are a number of new features of the "smart" power box that will be disclosed at a later time. But it is sufficient to know that there are more capabilities planned for it and being tested which will likely exceed your expectations. There is always a need for improvement when it comes to small gasoline engine developments, many of which are planned for the next few months. HTC is constantly improving the ability for a dealer to install a unit on essentially any car and to have the ability to improve its fuel mileage. But obstacles persist, so work is continuing.

MONITORING PARAMETERS WITH THE VMU SERIES 2

Meanwhile, back at the maintenance facility or dealer shop, the “smart” power box can be hooked up to the VMU Series 2 as we do today. Just as before, an LCD can be used to monitor parameters being read by the power box. In fact, at the maintenance shop you might very well use a much larger display screen to watch the new display modes in which a lot of data is available on the screen simultaneously. The VMU has an RCA-style “video output” connector for any display. Here is a demonstration of 20 parameters being viewed using the VMU Series 2 with software version 4: <http://www.youtube.com/watch?v=TFKmMsJBp88>

Here is a demo of the voice capabilities of the new VMU: http://www.youtube.com/watch?v=O_yDHyxJXbE

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