

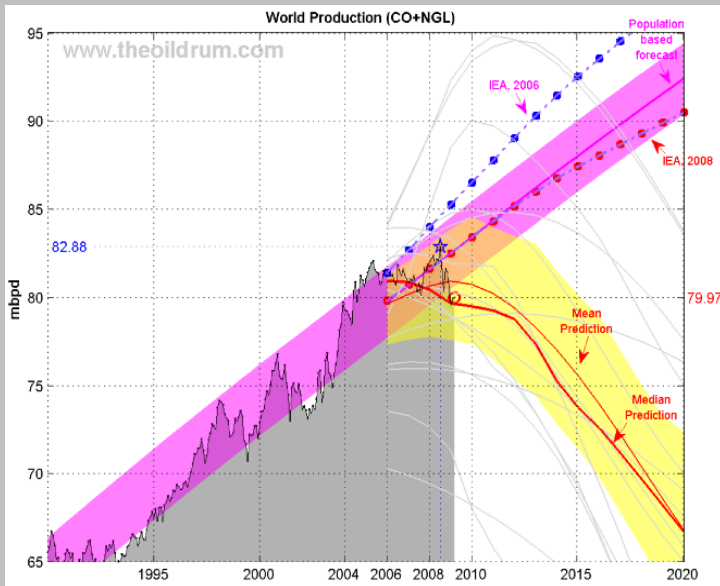
Ted Hollinger, President and CEO, Recaps 2009 Achievements

It is our goal to develop cost effective, market driven products and technologies that will provide clean-energy solutions for the world's energy needs...



The Oxx looks concerned and well he should be. Energy prices are expected to soar in the next year and emission requirements keep getting tighter. This chart from the "The Oil Drum Blog" shows an increasing demand and reduced global production leading to a severe oil shortage in

the very near future. This chart should concern you as well. The



world needs a clean renewable fuel and there are only two candidates, hydrogen (H₂) and ammonia (NH₃). Renewable hydrogen is usually taken from water by electrolysis. The cost of electrolyzers, the cost of compression and the cost of storage have kept hydrogen from wide spread use. Ammonia solves two of the problems plaguing hydrogen. The cost of compression and storage are reduced to a point of practicality. Whereas hydrogen is extracted from water ammonia is made by combining hydrogen and nitrogen. Until recently this was done by the Haber-Bosch process that took the hydrogen from natural gas. NHThree has developed a new process that makes ammonia from water, air and electricity in one step. When combined with wind or solar this will give green or renewable ammonia. Ammonia suffers another problem and that is the fact that it is not considered a fuel. The Ammonia Fuel Network was

formed to help overcome this obstacle. HEC has run engines using ammonia as the only fuel source.

Clean turn-key solutions are needed

Our customers have been telling us that they need clean turn-key systems. We are often asked about the source of hydrogen and we have to admit that electrolyzers are the best source and that we don't supply them. Now we can supply them with an ammonia tank and a complete electrical power generation system that only needs fuel and it is ready to go.

Larger Displacement higher efficient engines needed.

HEC has teamed with Eliminator Performance Products (EPP) to introduce a 572 cubic inch (9.4L) V8 engine that directly replaces the Ford 460 cubic inch (7.5L) engine. This engine block and heads are both available in cast iron or compacted graphite iron (CGI) and both are cast and machined in the USA. The engine has many of the features that were developed by EPP for racing including 4 bolt mains, priority oiling, and a full roller cam system. HEC added crank position sensing, fuel injection, Bosch throttle body and engine controls. The engine still uses all the stand Ford 460 parts such as spark plugs, oil filters, distributor, intake and exhaust manifolds, starters, SAE adapters and flywheel and the list goes on. Bigger is better for low btu fuels such as hydrogen, producer gas, and syngas. This engine is featured in the 'hotrod' on page 4.

HEC has filed several more patents and continues to increase it's Intellectual Property (IP) portfolio.

Our patent portfolio is continuously being updated, to provide us with a long-term "position of strength" in negotiating licensing agreements with competitors and partners. We believe that our work on using ammonia as a fuel are particularly important.

HEC's received it's first U.S. patent on August 12, 2008. HEC has received two additional patents this last month. We also have 15 patents pending and a large number of potential patents in the development stage. These patents relate to energy efficiency and the use of hydrogen, continued page 2.



There is no shortage of energy, only a shortage of wisdom and creativity in the methods we use to harness the energy that is all around us.

Ted Hollinger, President & CEO

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and other alternative fuels for the production of cleaner energy. I expect to see the first two patents in production by midyear 2010. We have 17 years of protection in the market we want to serve. I am very pleased with these patents they give us the 'unfair advantage' we have been seeking since the company was founded. Without the patents our competition would quickly copy our work and we would be unable to benefit very much from it. The patents, in the order they were issued, allow us to operate generators at 3600 rpm and get about twice the power from our engines, reduce friction, and increase the stroke of our engines without having to send precious time and money making molds. These patents will give us three huge advantages and allow us to increase the power of our 4+1 Genset from 250kW to 1MW which we will now try to commercialize. We are not an R&D company. We are a production company. I, along with all of the employees at HEC, appreciate your continued support as we continue to build alternative energy power solutions for the global marketplace. We can make a difference. We are part of

monia

HEC delivers first 6 engines to the Montreal and Vancouver airports

the solution.



The Clean Skies program that we launched earlier this year is beginning to payoff. We have received contracts for both the Montreal and the Vancouver airports to convert 6 baggage tractors over to run on hydrogen. Can-Am Modev R&D Inc. and the HEC Canada are preparing to run the first hydrogen fueled baggage tractor early in 2010 at the Montreal airport. The engines have been shipped and the conversion of the baggage tractors is taking place at our facility in Trois-Rivieres, Quebec, Canada. Standard gasoline fueled engines will be replaced with Oxx Power® engines outfitted with hydrogen fuel systems, Oxx Boxx™ engine controls and hydrogen storage tanks. All these vehicles will be safety certified to meet all the airport regulations for safety and emissions. A picture of the first baggage tractor to be converted is shown to the left.

HEC soon to convert irrigation system to ammonia only

The irrigation unit at TGP West in California has completed its field testing of our ammonia and propane fuel injection system with over 1300 hours of operation logged. The performance of both fuel injection systems was flawless. We are now ready to switch to an ammonia only fuel system and take advantage of an established manufacturing and distribution infrastructure that is in place for anhydrous ammonia, making it more readily available than hydrogen at this point in time. We expect the system to be ready for the beginning of the 2010 irrigation season. We are continuing the development of ammonia-fueled power products and intend to introduce ammonia fueled electrical generation systems in the 1st quarter of 2010. Ammonia (NH₃) is 'The Other Hydrogen' and like hydrogen contains no carbon. Ammonia is stored in the same type of tanks used for liquid propane. The storage of hydrogen is solved by using ammonia as the storage media and 'cracking' it to produce nitrogen and hydrogen. This is what HEC is doing. The photo on the right shows a 9.4L engine with the Bosch throttle body in the idle of the intake manifold, fuel rails and fuel injectors on either side and an ammonia cracker on the far out-



sides of the engine. This engine has ammonia gas flow from the fuel tank into the two crackers and a mixture (25%/75%) of nitrogen and hydrogen gas flows out of the crackers to the fuel rails and then is fed to engine thru a set of fuel injectors. The engine controller controls both the timing and pulse width for the fuel injectors and the timing for the spark. The software to control the engine is contained in the engine control box (Oxx Boxx). The front dampener on the engine is modified to have 36-1 teeth that are sensed magnetically and give the Oxx Boxx precise engine position information. This engine only requires am-

HEC sells 51% of HEC Canada

HEC has sold 51% of HEC Canada to Can-Am Modev R&D Inc. to allow for rapid deployment of HEC's Oxx Boxx controller and more rapid penetration into the Canadian hydrogen markets including both Hydrogen Hybrid Electric boats and airport baggage tractors. Can-Am Modev R7D Inc. has been very instrumental in getting both the Montreal and Vancouver airport projects started. HEC has been working with Claude Pepin and Can-Am Modev R&D for the last three years and we are very pleased with the results. The sale frees up some much needed cash and adds an excellent set of resources to HEC Canada. I will remain on the HEC Canada board of directors. I expect that this sale will help HEC sell more hydrogen products in Canada and overseas. The results are already beginning to show. The new Oxx Boxx Pro software and firmware are being tested in the labs at HEC Canada. Welcome aboard Claude.

HEC signs an agreement with Utopia automation and control

HEC is working with Utopia automation and control (India) to bring engine controllers to India and establish a manufacturing capability for HECs use worldwide. We are very pleased with the progress of this relationship. We feel that the combination of HEC Canada's research and development, Utopia's production and HEC's engine and systems capability give us a very competitive team. Utopia is capable of producing high volumes of engine controllers. We hope to be able to sell 10s of thousands to these units in the near future. The India market is very 'hot' right now. Utopia has sold over 300,000 gensets in the last five years. HEC has been seeking such a partner since 2005 when Tapan Bose (deceased) and I made our first trip together to India. I believe that we will sell more products in India in the next few years than in any other country. India and China are both growing very rapidly and both are trying to reduce exhaust gas emissions. HEC is in perfect position to help.

HEC ships a 250 kW 4+1 hydrogen electrical generation system to Newfoundland Labrador Hydro



HEC completed the testing of a 250 kW hydrogen fueled electrical generation system by demonstrating both automatic grid connect and stand alone capabilities. The picture below shows the system being prepared for shipment to Ramea Island. Wind power is the fastest growing electricity source in the world. During low wind conditions, hydrogen, which is produced by electrolysis when the wind is blowing, is used to power the products we have developed and are currently testing. We have designed and developed a 50kW Oxx Power® hydrogen generator system which is now being tested on a wind farm setting in Colorado, and we have designed and developed a 4 + 1™ 250kW generator system which will be used to replace a diesel powered generator on the Ramea Island wind farm. These hydrogen-powered generator systems will generate electricity which can be tied to the power grid. The redundancy in 4+1 system makes it very reliable while keeping the cost reasonable. The system also

has a very high turn down ratio. When used for stand alone systems the 4+1 automatically shutdown engines as the load on the system is reduced. This keeps the overall efficiency high because Internal combustion engines are most efficient when loaded heavily. When the load on an engine drops below 50% the efficiency drops quickly. HEC set its control strategy to keep each engine loaded at 50% or more to obtain the highest possible system efficiency. As each engine is shut down the redundancy is increased so that a 4+1 becomes a 3+2 and then a 2+3 and so on.

The future of this technology is bright. One Megawatt systems are now possible and HEC is actively quoting such systems. Paralleling 1MW systems can be done up to 10 MW. HEC has quoted several systems between 1 and 10 MW in size. This is HEC territory. All of the work we have done is incorporated in this product.

An Ammonia Cracker is developed and tested in Algona, Iowa

Ammonia is the best way to store hydrogen. If ammonia could be used as a fuel then most of the hydrogen storage problems could be eliminated. An ammonia cracker was developed to 'crack' part or all of the ammonia into hydrogen and nitrogen. The hydrogen does two very important things; it lowers the ignition energy requirement and it increases the flame velocity of the gas mixture (ammonia/hydrogen/nitrogen). The pictures below show an ammonia cracker being tested. The first picture is of the ammonia cracker with a type k thermal couple inserted from the left, a cartridge heating element inserted from the right and an ammonia source (green hose). The second picture is of the unit being tested. In this picture the ammonia is only partially cracked. Ammonia burns orange while hydrogen burns almost clear. The third picture shows the ammonia and hydrogen burning better. Note the fly on the base of the pipe. The heat from the gas was not transferred to the pipe. In the final picture we added air to show what is going to happen in an internal combustion engine. The four people involved, Mike Bowery (Eliminator Performance Products), Jason Ganley (NHThree), Norm Olson (Iowa State University) and Ted Hollinger (HEC). We later cooked hotdogs and roasted marshmallows using only ammonia as the fuel source.



Ammonia is a fuel and not just a fertilizer anymore. Ammonia contains no carbon. There are only two clean fuels; hydrogen and ammonia. HEC can supply engines and systems that are fueled by either.

The first vehicle to be fueled solely by ammonia is unveiled in Kansas City

The first vehicle to run solely on ammonia is a 1923 Model T Roadster Pickup. The engine is a 9.4L (572 in³) compacted graphite iron (CGI) fuel injected engine. The transmission is a modified Ford C6 automatic. The two ammonia crackers are placed between heads of the engine and the headers. They are initially heated by a heater that gets its power from a battery via an inverter that is shown in the lower right hand picture. The fuel comes from a double walled tank that is mounted on top of the short bed of the vehicle. It is shown in the middle picture below.

This vehicle demonstrates that ammonia can be used as a fuel and that it can be used to fuel performance vehicles such as the one shown here. The first commercial products to use this technology will be 'turn key' carbon free electrical generation systems designed to operate 24/7. HEC expects to achieve 45% efficiency with its new engines and over 40% from fuel to wire efficiency. I hope to report on our progress in the next news letter.

I believe that HEC's technology will be viewed as a major break thru worldwide. Governor Culver stated in part last year that, "We can export this technology around the planet. Iowa can help the rest of the world with its energy needs." I believe that we are fulfilling that belief. In the coming months HEC should be shipping clean burning engines and systems fueled by hydrogen or ammonia (The other hydrogen) to countries around the world. We are already working in India, Turkey, England, Germany and Canada. Israel, Finland and Brazil have all shown an interest. I expect more to come before the next news letter is written.

The Oxx lives.



About Hydrogen Engine Center, Inc.

Hydrogen Engine Center, Inc. (HEC) develops systems and processes used in the design, manufacture and distribution of alternative fuel internal combustion engines, engine controls and power generator systems. These technologies are for use by customers and partners in the industrial and power generation markets. These solutions and the engines using them are designed to run on hydrogen, ethanol, methanol, ammonia and traditional fuels. Engines and engine products are sold under the brand name Oxx Power®. HEC trades on the Bulletin Board under the symbol "HYEG.OB." Principal offices are located at 2502 E Poplar St., Algona, Iowa 50511. Visit www.hydrogenenginecenter.com or in the US dial 515-295-3178 for more information.

This press release may contain certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Investors are cautioned that such forward-looking statements involve risks and uncertainties, including without limitation, acceptance of the Company's products, increased or unforeseen levels of competition for the Company, new products and technological changes, the Company's ability to hire and retain qualified employees, the Company's dependence on third-party suppliers, the availability of capital and other risks detailed from time to time in the Company's periodic reports filed with the Securities and Exchange Commission.