

# Zero Emissions Fuel Cell Backgrounder

According to a recent US Dept of Energy quote... **'Fuel Cells have the potential to replace [ICE] Internal Combustion Engines in vehicles, provide power in both stationary and portable power applications, because they are energy-efficient, clean, and fuel-flexible' .....** unquote

Zero Emissions Fuel Cells are the answer to a zero-carbon footprint, and smog-free world. They produce clean, electrical power, emit zero air pollution, with the only by-product being water. Clean, pure water. Fuel Cells are 3-4 times more efficient than solar & wind generation, without killing all the birds, cleaning all those mirrors, 24/7. Fuel Cells were first used by NASA over 50 years ago to provide power/oxygen/water for our astronauts in space, and they are still running.

## Water as Fuel

Power generators consume massive quantities of Oil/Gas/Coal and produce vast amounts of CO/CO<sub>2</sub>/NOX etc into our pristine atmosphere, which is becoming uninhabitable. The smartest, most efficient way of eliminating the above smog/carbon problem, is to simply use a 'carbon-free' fuel source – hydrogen – it forms two-out-of-three atoms in water – the third atom is oxygen – which we breathe - its beautiful in its simplicity - water is everywhere – 75% of planet earth is ocean.

Water or H<sub>2</sub>O is two atoms of hydrogen, one atom of oxygen ... we breathe oxygen, drink water. Its does not get any simpler than that - ..... <http://www.icausainc.com/zev.html>

## Electrolysis of Water

Our Zero Emission Power Modules can be used anywhere in the world – for hospital roof-top emergency power, data centres, police, military, to power trucks, buses, and cars, to running entire shopping centres, business parks, leafy-green residential neighborhoods. Even peaking-power when grid loads are very high, and Primary Power Provider – with or without a grid.

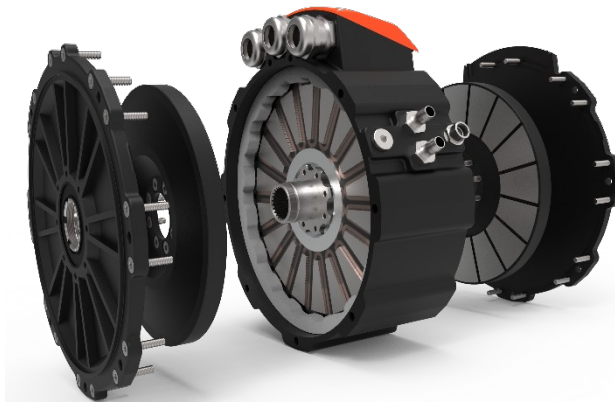
Your typical ICE [Internal Combustion Engine] is 25% energy efficient. In combined heat and power (CHP) systems, heat produced by the fuel cell is captured and put to use, efficiency of the fuel cell system goes to up to 85–90% - used to heat/cool buildings, hospitals, residences, ships. Because fuel cells have no moving parts and do not involve combustion, in ideal conditions they can achieve 99.9%reliability, which equates to less than one minute of downtime every six years. Now add a simple hydrogen generator to make your own fuel - kiss all those oil/gas//utility costs + exorbitant taxes goodbye. Our process consists of splitting water into hydrogen and oxygen via our bespoke PEM electrolysis. It really is an absolute no-brainer as ICA is not beholden unto any single discipline or system, ICA can select the most efficient system/solution for the client's needs, be it PEM or SOFC. ICA will custom design, build, fund the very best possible solution wherever the client requires clean, efficient power, with a zero-carbon-footprint

zero combustion = zero air pollution  
zero moving parts = 99.9% reliability  
water as fuel = abundant, cheap fuel supply  
very light weight = high power density

The future is now .... Compact Fusion Reactor [CFR] ..... <http://www.icausainc.com/power.html>



Modular Stack bi-rotor, axial 300HP Electric Motor



150kw Modular Fuel Cell Stack

Previous model

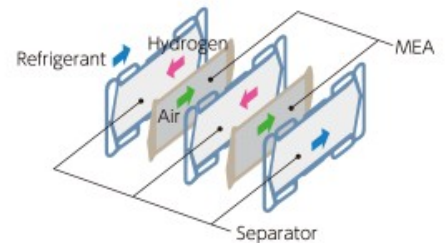


33% smaller

Clarity Fuel Cell



Cell structure



Honda's unique 2-cell cooling structure



**6MW Fuel Cell Stack – replace 6x Caterpillar V12 Diesel engines**

