



# Webinar on the Regional Electric Vehicle Strategy (REVS)

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**Hydrogen Fuel Cell Electric Vehicles and Systems Overview**

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## Hydrogen Vehicle Developed and Built by Mike Strizki

- Uses “H” generated from solar
- Record holder for range: 401 miles
- Top speed: 130 mph
- Zero emissions
- Presidents Award for the Environment  
2000





## Hydrogen Vehicles currently available in United States, Europe and Asia



Toyota Mirai



Toyota Mirai



Hyundai Nexo



Honda Clarity



Everyday vehicles and equipment  
that can operate on solar  
hydrogen systems....



## Golf carts

- 3 kW fuel cell stack
- 2X range of battery-only version
- reduced maintenance costs
- zero emissions



# Hydrogen Fuel Cell Motorcycle

## Zero-Emission Hydrogen Fuel Cell Electric Vehicle

# Motorcycles



The Vectrix VX-1 Electric Motorcycle



Drop-in hydrogen fuel cell booster



Fuel cell booster with storage tank and inverter

### About the Hydrogen Fuel Cell Motorcycle:

The Vectrix VX-1 is an electric vehicle originally designed to run off of rechargeable nickel hydride batteries. Hydrogen House Project has upgraded the motorcycle with a drop-in hydrogen fuel cell unit that boosts the vehicles range by 25% to 100 miles, with a top speed 70 mph. The motorcycle is a zero-emission vehicle and the drop in fuel cell unit only emits pure water!



The Vectrix VX-1 on the road

### How the Drop-in Hydrogen Fuel Cell Booster Works:

- Hydrogen is stored onboard in a replaceable nickel metal hydride low pressure storage tank
- Hydrogen is converted in a 250 watt Proton Exchange Membrane fuel cell to generate electricity
- Electricity passes through a 12 V to 120 V AC inverter is that powers the factory installed battery charger.
- The drop-in hydrogen booster extends the vehicle range 25%



Mike Strzki on the Vectrix VX-1 with a Mercedes Fuel Cell Vehicle, the Duffy Voyager Electric Speedboat and proprietary Renewable Energy Management System in the background



# Duffy Fuel Cell Electric Ferry Boat





# Fuel Cell Powered Ocean Racer





# NASA Sponsored Fuel Cell Plane

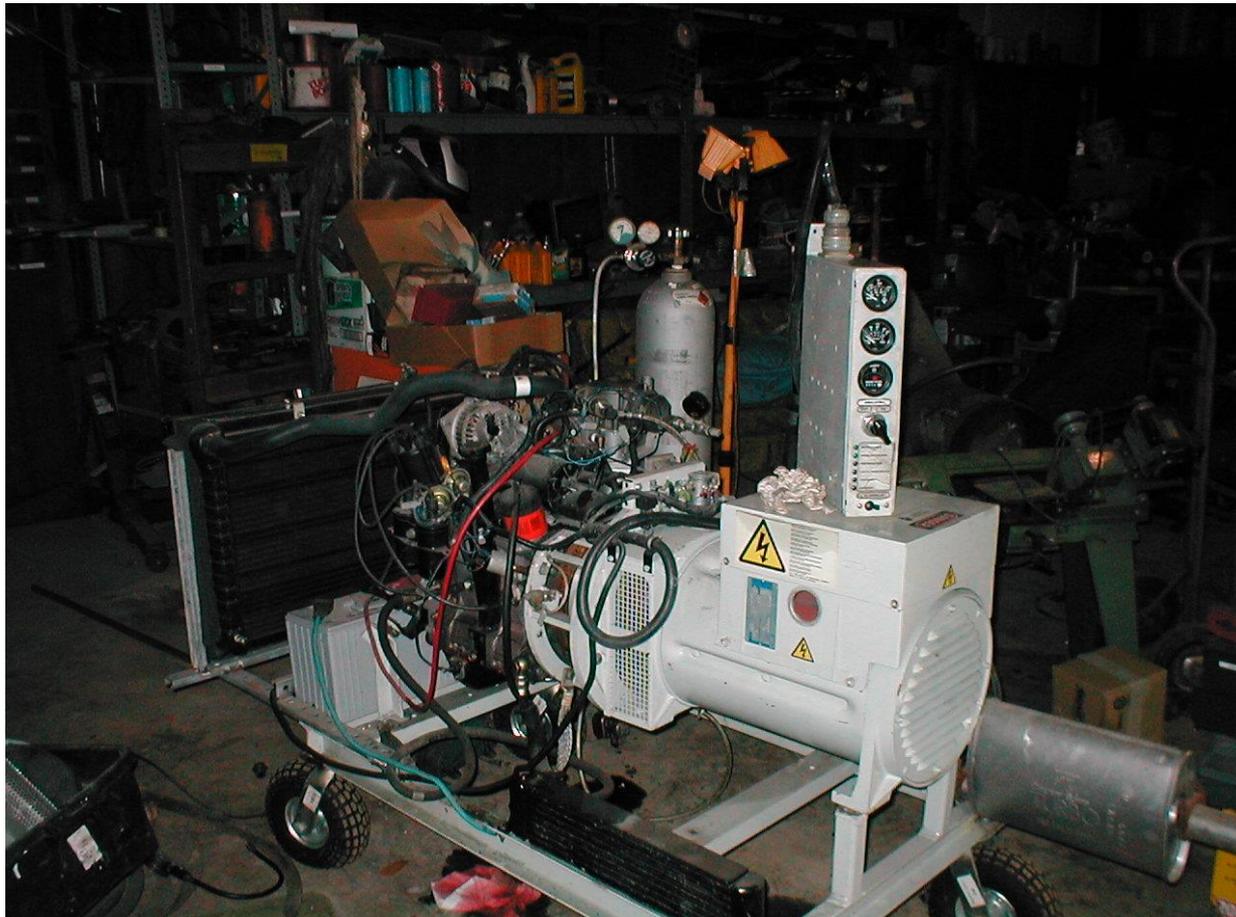


CTC, Inc.  
Public Safety Technology Center





# 30 kw Hydrogen IC engine





# HYDRA

Solar Hydrogen Powered Portable Power and Water Purification Plant



HYDRA H<sub>2</sub>O purification plant produces the highest quality water while the hydrogen generator splits water into hydrogen & oxygen; Co-Inventor & CTO Mike Strizki takes a drink of HYDRA purified water



## Lawnmower





## Hydrogen Storage and Refuel station



Hydrogen gas tanks



Portable Hydrogen re-fueling system



Hydrogen re-fueling station



## **JOULE BOX**

### **Mobile / Stationary Solar Hydrogen Power Supply System**



The Joule Box is a portable power unit which provides solar, wind, battery & hydrogen power. Can be plugged into an 110v outlet, can be configured to any size.

- Provides immediate power in emergency situations
- Extremely small footprint compared to energy produced
- Expandable to fit most power requirements
- Non-permanent installation, can be moved or relocated
- Qualifies for Federal and State tax incentive programs
- Made in the USA

#### **Power Specifications**

- 1,440 watts of electric solar power
- 100 amp hours of battery power
- 100 amp battery packs can be added for more battery power.
- 1,100 watts of hydrogen power
  - Hydrogen power is limited to the amount of stored hydrogen available



# NREL Solar Hydrogen Home Vision



Source: NREL



# First Commercial Affordable Hydrogen Home





# Grid Independent Solar Hydrogen Home Project





## Solar Hydrogen Home Power plant



14 kW PV panel array



# Hydrogen Heating



- **Model #GFH6000**
- **Green Flame Heater**
- **Hydrogen fueled**
- Save on heating costs. The **100% heating efficient** designs **requires no outside venting**, so all the heat stays in the room.
- Humidifies dry air adding to the heating and comfort effect so you use less fuel.
- Provide Easy, economical installation, with no vent or chimney required, and a built in pressure regulator, installation is an easy job\*. (\*Professional installation recommended)
- Safe and clean burning, Vent Free Gas Space Heaters are design certified by the American Gas Association and meet or exceed all government safety performance standards.
- A dual purpose safety pilot system protects against oxygen depletion and any interruption in the fuel supply. If either occurs, the gas is shut off to the burner, turning the heater off. (Note: Hydrogen will not make CO<sub>2</sub> gas and never depletes oxygen in the room due to "Oxygen to water collapse vacuum factor"
- Provides heat during power outages. No electricity required, making them ideal as back up emergency heat.
- Clean, quite odorless operation
- Easy to use top mounted controls, push button ignition. No matches required.
- Decorative safety grill and tinted glass
- Low heat 4,400 BTU's (12 Gallons per hour H<sub>2</sub>)
- High heat 6,000 BTU's (17 Gallons per hour H<sub>2</sub>)
- Heater Dimensions 21.5" H x 13.5" W x 7" D



# Hydrogen Cooking

- **The incredible moist flame of hydrogen!**
- **The hydrogen cooking revolution is here!**
- **Many people get into the hydrogen age just because of the incredible way it cooks foods!**
- **Just imagine cooking with a flame that bastes meat and vegetables in a continuous blanket of moisture. When hydrogen gas burns it produces water vapor and high heat. Steak and lobster is always moist and juicy and vegetables are cooked to perfection and do not wilt away. Many people claim that even economical cuts of meat turn out moist and tender because the incredible nature of the hot and moist hydrogen flame!**





# Battery Storage Bank







## Hydrogen Documentary

Watch Mike Strizki in the just released documentary

### ***At War with the Dinosaurs***

“A solution to fossil fuels that has long been dismissed or ignored, has proven itself to be one of the most effective – an alternative energy produced from the most abundant element in the universe.

We follow the story of hydrogen from its birth through its potential today to completely disrupt and replace fossil fuels.”

<https://atwarwiththedinosaurs.com/>



# Thank you!

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