

# John Lorenzen & Rudolf Erren: Hydrogen Pioneers

By Harry Braun

The Phoenix Project is similar to a Manhattan Project or “Moonshot” effort for the USA to lead the rest of the world in a “transition of substance” to renewable energy and biological resources. Dr. James Hanson, NASA’s chief climate scientist has stated that it is critical to shift from oil and other fossil fuels within 10 years if irreparable damage to the earth’s climate is to be avoided. The Phoenix Project is a plan to do exactly that. This means there is no time for research and development. While hydrogen can be made from water with electricity generated from any solar technology, the cost of the hydrogen is directly proportional to the cost of electricity, and wind systems generate electricity for less cost than any other solar energy technology.

As such, the only way this rapid reindustrialization effort can be accomplished from an economic and technical perspective, is to mass-produce wind-powered hydrogen production systems like automobiles, and modify every existing automotive vehicle (including aircraft, trains, ships), and to use hydrogen as well as gasoline or ethanol with the flip of a switch. Because hydrogen is a carbon-free, pollution-free “universal fuel,” it can also be used in every existing power plant or gas-burning appliance, including a Coleman stove operating on a mountain-top. Such a transition could make America energy independent of not just imported oil, but all fossil fuel and nuclear fuels by 2015. This would transform America from being the world’s largest energy importer, to the world’s largest energy exporter with a pollution free fuel that is inexhaustible.

However, many people wonder how difficult this “transition of substance” will be.

## John Lorenzen



**John Lorenzen: A Wind Hydrogen Farmer**

For a remarkably insightful answer that question, go to the [PhoenixProjectFoundatin.US](http://PhoenixProjectFoundatin.US) website. There on the home page, you will find a 45-minute Phoenix Project video documentary, and after the credits, there is a copy of a 5-minute ABC News Report aired in September 21st 1990 by Peter Jennings about John Lorenzen, a small farmer in Iowa who was being highlighted as the “person of the week.” And for good reason.

John grew up on a small farm near Woodward, Iowa. His father died in the 1920s when John was in the 6th grade, so he quit school to help his mother on the family farm. But in John Lorenzen’s case, he pioneered “wind farming,” so that when the Rural Electrification Program officials showed up in the 1930s and offered to hook up Lorenzen’s farm, he said “No thanks, I have all of the electricity I need.” Indeed, Lorenzen had built his own wind machines in the workshop in his barn from spare parts. Lorenzen used batteries to store the wind-generated electricity for his lights and electrical appliances. But after the oil crisis in the 1970s, he placed the electrodes from one of his wind generators into a barrel of water in his barnyard workshop to make hydrogen, and then he -- with his 6th grade education and no one's help -- modified his pickup truck to use the hydrogen fuel. There is no better example of American innovation, and how relatively simple it is to shift to wind and other solar powered hydrogen production systems.

## Rudolf Erren



### **Rudolf Erren: Modifying Engines for Hydrogen Fuel**

Engineers in Germany and England first began investigating the use of hydrogen as an automotive fuel in the early 1900s, but one of the first and most influential engineers to modify the internal combustion engine to run on hydrogen was Rudolf Erren, who in the 1920s began modifying both Otto cycle and Diesel cycle engines to operate on hydrogen fuel. Erren was a combustion engineer who developed a fuel injection system that allowed the hydrogen to be fed directly into the cylinder, thereby eliminating the carburetor, which was poorly suited to inject a gaseous fuel. The remaining engine components were unchanged, thus the conversion cost was relatively small, and the vehicles were able to operate on either hydrogen or other hydrocarbon fuels while in operation with the flip of a switch from inside the vehicle. All major engines in use at the time were modified, including those manufactured by MAN, Daimler-Benz and Beardmore.

In World War II, the Allies captured a German submarine that used hydrogen to power both their Errenized "trackless" diesel engines and torpedoes. Conventional fuels leave tracks, which are a trail of exhaust bubbles, but when only hydrogen and oxygen were combusted in the engine, the resulting water vapor condensed into the seawater, thus no bubbles were formed that would drift to the surface for a giveaway trail. During surface operation, the submarine's diesel engines also powered an electrolyzer, which separated water into hydrogen and oxygen. These gases were then stored under pressure until needed when the submarine was diving or running submerged. The hydrogen-fueled submarine eliminated the need for large heavy batteries and electric motors needed for underwater operation. The weight and space savings allowed the submarines range to be extended by 15,000 miles and because the hull was strengthened, the vessel was able to dive deeper and faster.

Both John Lorenzen and Rudolf Erren demonstrated many decades ago how it is possible to fundamentally resolve the world's most serious energy, economic and environmental problems and have sustainable prosperity without pollution by producing hydrogen from the wind and water, and modify any existing engine and vehicle to use hydrogen as well as other hydrocarbon fuels. What they accomplished on a small scale, is the prototype of what the Phoenix Project seeks to do on a global scale for *Spaceship Earth*, while there is still time to make a difference.



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