

Hydrogen Today



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Hydrogen – It's not about the future anymore.

Show Me the Hydrogen



Air Liquide LH2 storage tank under construction near Las Vegas

Air Liquide USA is building a \$150 million, 30 ton per day liquid hydrogen plant in N. Las Vegas, Nevada. The primary market is fuel cell vehicles in California. Production will be enough to fuel 40,000 cars. FirstElement Fuel will be a major customer. California plans to have about 160 hydrogen stations by 2027. A Nevada site was chosen over California because permitting was easier and energy was cheaper.

Hydrogen will be produced by reforming natural gas, some of which will be renewable natural gas to meet California regulations. The plant should be running by 2022. Air Liquide is also building a 20 MW, 3000 ton per year hydro-powered electrolyzer plant in Becancon, Quebec which will help develop the fuel cell car market in the NW United States. <https://industry.airliquide.us/National-Hydrogen-Day-2020>

“Quotations”

“In the middle of difficulty lies opportunity” A. Einstein

“Life is tough, but it's tougher when you're stupid” John Wayne

“Find a way or make one.” Hannibal, when told by his generals in 218 BC that it was impossible to for his troops to cross the Alps to invade northern Italy.

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**** SAFETY FIRST ****

American Hydrogen Association Mission

Develop solar hydrogen technologies that will eliminate economic, environmental and energy hardships caused by burning one million years accumulation of fossil fuels every year *and*

Educate scientists, entrepreneurs and experimenters, parents and educators, CEO's, legislators, utilities, the media and farmers how to use solar hydrogen to create sustainable prosperity without pollution.

Some AHA Grassroots Principles

Safety First.

Everyone is a student and a teacher.

Believe no one (without data), especially your mother.

Never trust anyone wearing a necktie.

Try it and see.

Use what you've got.

90% of your decisions will be wrong because of bad or inadequate information.

Recycle everything.

If you're not making 10 mistakes a day, you're not learning.

Always have someone proofread your work.

In new situations, keep your eyes open and your mouth shut.

Growing old is not for sissies.

A team of two can do the work of three.

Editorial

CV19 hasn't changed my life very much. Since I'm retired, I'm used to working from home. The AHA has been using online cross-country video conferencing since 2012. I was taught how to properly wash my hands in kindergarten. A face mask makes me feel like I'm being strangled and I now go to the grocery once a month instead of every week. But a lot of things are different – lives lost, jobs lost, homes lost, hope & trust lost and widespread hunger if not real starvation.

It is time for Heroes. We don't mean million dollar rock stars. Heroes are the exhausted doctors & nurses, first responders and school teachers “just doing their job.” Heroes are the truck drivers, store clerks and farm workers who keep us fed. A Hero can be you. Millions of people need new ways to make a living. We need to make things again. If you don't see hundreds of new opportunities around you, then get off Twitter for a while.

I spent all the 115 degree summer days working on the Hydrogen Safety Handbook. It still needs a little more polishing. Although our Maricopa workshop is almost ready, we'll have to hold classes online and that adds time-consuming levels of difficulty with scripts, lighting, audio recording and editing.

On December 17th, the AHA was 31 years old. One of the goals back then was to “Make hydrogen a household word” and going into 2021 the household word is still “Hindenburg.” It's going to take some Hydrogen Heroes to change that.

“I must study politics and war, that our sons may have the liberty to study mathematics and philosophy...in order to give their children the right to study painting, poetry and music.” John Adams, 2nd President of the United States

A New Year Rising at Maricopa AHA Headquarters



Hydrogen Events

Hydrogen Online Workshop, March 25, 2021. 24 continuous hours. Interactive talks with international hydrogen experts from industry, universities and government.
Free ticket at <https://www.hydrogen-online-workshop.com/>

World Hydrogen Technologies Conference / f-cell+HFC, Montreal (Digital). June 20-24, 2021. 180 speakers. Registration opens Feb. 1st. <https://www.whtc2021.org/>

Hydrogen on the Internet

Nikola Motor is hiring for their Coolidge, AZ fuel cell semi-truck factory. Interviews will be held on Saturday, January 16th in Coolidge. <https://www.careers.com/nikola-corporation/nikola-coolidge-manufacturing-meet-greet-saturday-january-16th?ls=Web>

<https://scholar.google.com/> A search for hydrogen produces 4,270,000 hits.

How I Discovered Hydrogen

By Jim Chatterley PE
Consultant for Sustainability
Orem, UT

While living near Geneva, Switzerland during 2010, I was reading books and European news releases about the “Peak Oil” predictions on how the Europeans were concerned about running out of gasoline and diesel for transportation. The Europeans are very passionate about their high performance cars!! Some of the engineer’s solutions involved generating hydrogen gas using electrolysis. The hydrogen gas would be introduced into the air intake of the internal combustion engine on demand. The innovators were suggesting 40% increase in car mileage.

As my interest and research expanded, I read Roy McAlister’s book “The Solar Hydrogen Civilization” - directing me to join the American Hydrogen Association.

The Rest of the Hydrogen Story

Jr. Lieutenant Boris Shelisch

For 29 months, the German Army of the North besieged the city of Leningrad, Russia known now as St. Petersburg. Although the city never surrendered, one million people died from starvation or shelling.

Thirty-two year-old Jr. Lt. Boris Isaakovitch Shelisch was in charge of hydrogen barrage balloons that floated a couple thousand meters over the city to prevent German aircraft from targeted bombing. Balloon observers could also spot German troop activity. About once a month the balloons would have to be lowered to replenish leaked hydrogen. The balloon winches were mounted on 1 ½ ton trucks and these trucks ran on gasoline.

When the gasoline ran out, Shelisch tried using elevators motors, but then electricity was cut off. They tried manpower. Even ten men were not enough to handle the balloons and he had 5-girl crews. One day in 1941, Shelisch recalled the words in Jules Verne's 1875 novel *The Mysterious Island* that hydrogen from water would be the fuel of the future. He was given permission to try and convert ICE's to hydrogen. His first attempts resulted in a tank explosion and two burned balloons. He was successful after making some flashback arrestors out of a pile of used fire extinguishers. As soon as he demonstrated his technology worked, Shelisch was ordered to convert 200 engines in 10 days, which was accomplished by working around the clock.

Boris Shelisch passed away on March 1, 1980 at 71 years of age.



Hydrogen University

Fake News – Trust No One

Although the expression ‘fake news’ has recently become popular, the telling of lies and half-truths goes back to Adam and Eve. The AHA is frequently contacted by people selling hydrogen technology or requesting evaluations. Since fake news can cost you money, or at worst your life, we’ll take a look at some red flags that can help you make up your own mind.

Who are they?

If they hide their address or telephone number, they may be hiding something else, too. One HHO website showed a steel warehouse with their name Photo Shopped on it, but the address on Google map turned out to be a \$125 a month trailer park. A business address at a residence or UPS store may be legitimate, but they are not big time. Reverse address or telephone lookup on White Pages are not very helpful anymore because they want you to pay for the information. Is the company registered with their state corporate commission, secretary of state or trademark office? Do they have a presence on LinkedIn, Facebook, Twitter or YouTube?

Do they know whereof they speak?

We’ve been informed that platinum comes only from asteroids. One fellow thought it was a swell idea to mount a windmill on his car so he could drive around without paying for gasoline anymore. Check Google Patents for any patents. A lot of claimants for HHO Miles Per Gallon improvements proved they had no idea how to measure MPG.

The Snow Job.

The snow job is relatively easy to spot. They’ll overload you with pages of irrelevant information to prove their technology. Statements that hydrogen is the most abundant element in the universe or that the Japanese are doing it have no relation at all to their claims. If they refer to other resources, check those out and don’t take for granted that they are valid. Some have used our reputation by quoting AHA President Roy McAlister out of context. Several have posted they are AHA Board members and one even falsely claimed to be my assistant *Hydrogen Today* editor.

Prove it.

Several times, after listening to lengthy pitches on some technology, I’ve been told all they need is \$2 million to get into production. I guess that’s the price of a condo in the Bahamas. Almost every time we ask for some data, we never hear from them again. We appreciate trade secrets, but inventors have gone so far as telling us that they will be assassinated if they revealed anything about their disruptive technology.

Hydrogen education is one of the AHA’s primary missions. We call it Truth with a capital T. Con men are excellent convincers, so triple check all the facts. If it’s too good to be true....

Books & Publications

Handbook of Hydrogen Energy. Sherif, Goswami, et al (editors), 2015. CRC Press, 1040 pages.

Usually I think of a handbook as an encyclopedic general coverage of a wide area. The Handbook of Hydrogen Energy has 39 articles (by 64 contributors plus 9 appendices of hydrogen properties). Rather than a basic textbook, the editors call it a resource for graduate students. My 1978 high school chemistry class was enough to follow the science. Articles list hundreds of references if you really want to dig in to it. Sections include:

Hydrogen production from

Hydrocarbons

Electrolysis

Photochemical reactions

Nuclear power

Storage

Hydrides

Magnetic liquefaction

Internal combustion engines

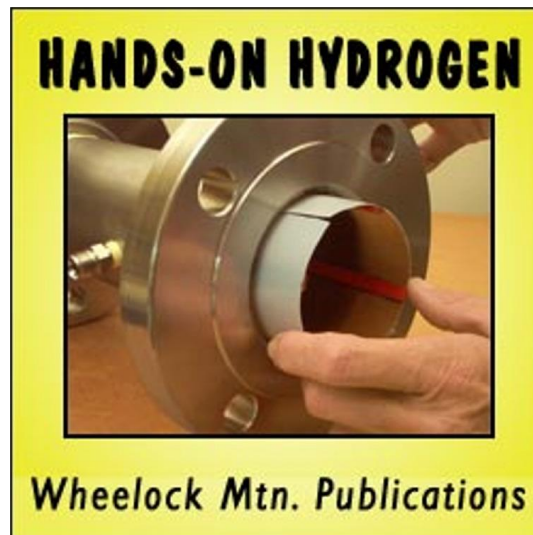
Codes & Safety, hydrogen sensors

Thanks

- **Ted Pfeiff** – Industrial arts teacher, traveler and experimenter. Thanks for everything.
- Jim C. – *Hydrogen Today* story.
- Claude C. – HQ door installations
- Bill C. – HQ roof repairs.
- Warren H.– Tubing bender, 19' timbers, Honda All Terrain Cycle, roof shingles, garden seats, gas welding set and the kitchen sink.
- Dave H. – Van repairs, HQ surveying and drone videos.



Maricopa companion



Books for Do-It-Yourself Experimenters

By Phillip Hurley

- Build Your Own Fuel Cells....\$16.95
- Build A Solar Hydrogen Fuel Cell System....\$16.95
- Practical Hydrogen Systems: An Experimenter's Guide....\$22.95
- Build Your Own Solar Panel....\$14.95
- Solar II....\$16.95
- Solar Supercapacitor Applications....\$11.95
- The Battery Builder's Guide....\$20.95

These are easy-to-follow directions for building your own hydrogen hardware. Hurley even gives you part numbers and throughout he stresses safety lessons.

Books are available in paperback on Amazon:

https://www.amazon.com/Phillip-Hurley/e/B001K8XF3K/ref=sr_tc_2_0?qid=1545928563&sr=1-2-ent

AHA Membership Form

Name _____

Address _____

City _____ State _____ Zip _____ Country _____

Telephone _____ email _____

- Regular Membership- \$39.00/year (New members receive a free copy of Roy McAlister's "Solar Hydrogen Civilization").
- Student, Military & Senior (55 and over) Membership- \$25.00/year
- Sustaining Membership- \$100.00/year (autographed book and H2 bookmark)
- Life Membership- \$1000
- Corporation/Institutional Membership- \$1000/year
- "Solar Hydrogen Civilization" book only - \$24.95 postpaid.
- Email *Hydrogen Today* only
- "Hilda Hydro - Girls Go Green" - \$8.95 postpaid

Mail to: American Hydrogen Association
P.O. Box 4205
Mesa, AZ 85211
USA

Or go to: <http://clean-air.org/store.html>

Join the AHA and use our services to learn how every community can achieve sustainable
Prosperity Without Pollution.

AHA publishes *Hydrogen Today* to help educate the public about new developments in renewable energy and the science and people behind them. Join us in making a better world. You can help too by writing for *Hydrogen Today*. Tell others about your grassroots alternative energy projects, either scientific or social. Review a book, product, service or event. A picture is still worth a thousand words. The range should be approximately 300-1000 words. Mail to the above address or to the *Hydrogen Today* editor at editor@clean-air.org Thanks.