

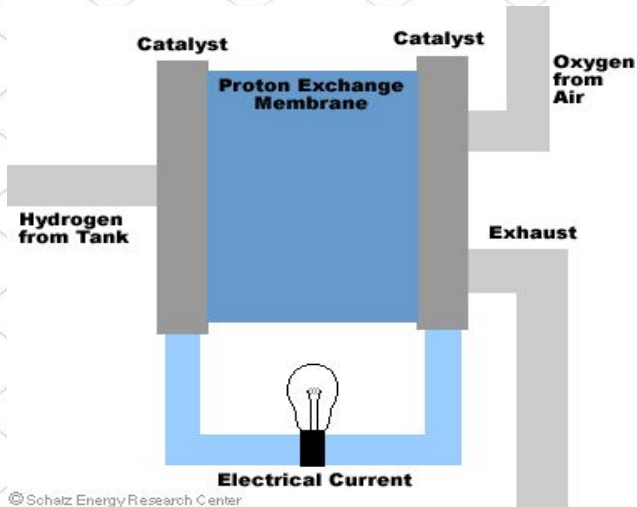
# Compressed gas vs Nonrenewable Fuel Sources

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# Topic Description

The focus of this presentation is on the use of Hydrogen as energy usage and storage.

Although Hydrogen is known for fuel cells, it may have better and more efficient uses.



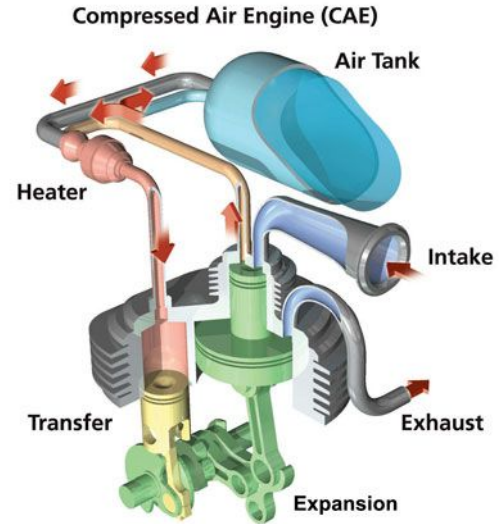
# History

Basic idea of not using gasoline or other bio-carbon fuels

Prototypes since the 1920's- Trams and Cars

Popular prototype

MDI AirPod- not commercial,  
need additional funding and  
development



Courtesy of [www.zeropollutionmotors.us](http://zeropollutionmotors.us)

<http://zeropollutionmotors.us/wordpress/wp-content/uploads/2013/12/whitepod.png>

[http://contest.techbriefs.com/images/stories/entries2013/20130306013350\\_cae1.jpg](http://contest.techbriefs.com/images/stories/entries2013/20130306013350_cae1.jpg)

# Future Research

Biggest problem-selling the idea to investors and consumers

Research needs more efficient and higher quality vehicles

Quick fill up time

Plug-in air vs. car fills itself

Problems with speeds over 40mph

Citroën-developing hybrid options



<http://blog.ca.randdriver.com/wp-content/uploads/2015/01/Citroen-Hybrid-Air-C3-prototype.jpg>

# How is this Relevant?

Compressed hydrogen fuel close to viable option

- Reduce fossil fuel dependence
- Efficient and storable

Important to everyone

- Environment
- Jobs
- Industry



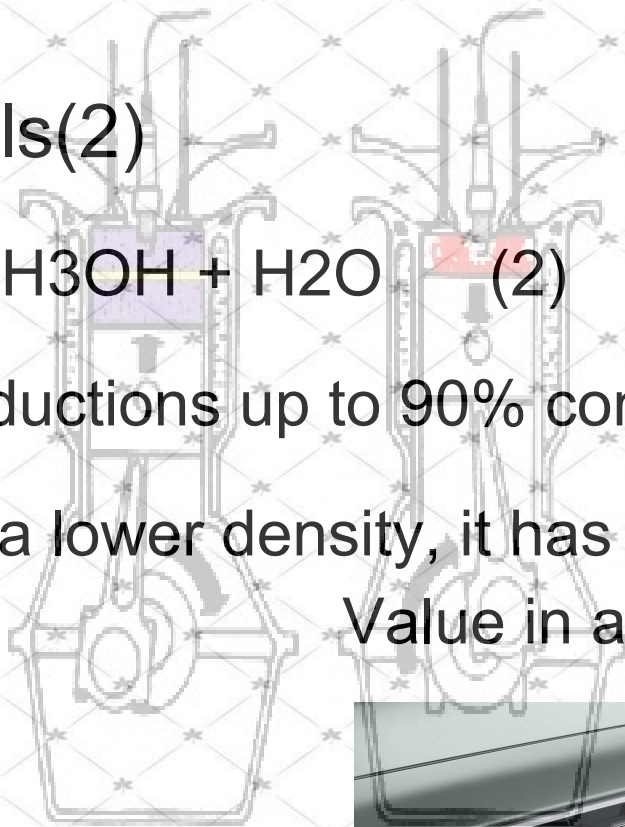
<http://st.motortrend.com/uploads/sites/10/2016/06/2017-bmw-m6-base-coupe-angular-front.png>

# Well to Wheels(2)



Greenhouse reductions up to 90% compared to gasoline!(2)

Despite having a lower density, it has a higher Lower Heating Value in a combustion engine.(2)



b) compression

c) power

■ TDC - set tappets here

■ fuel burn area  
■ force piston down

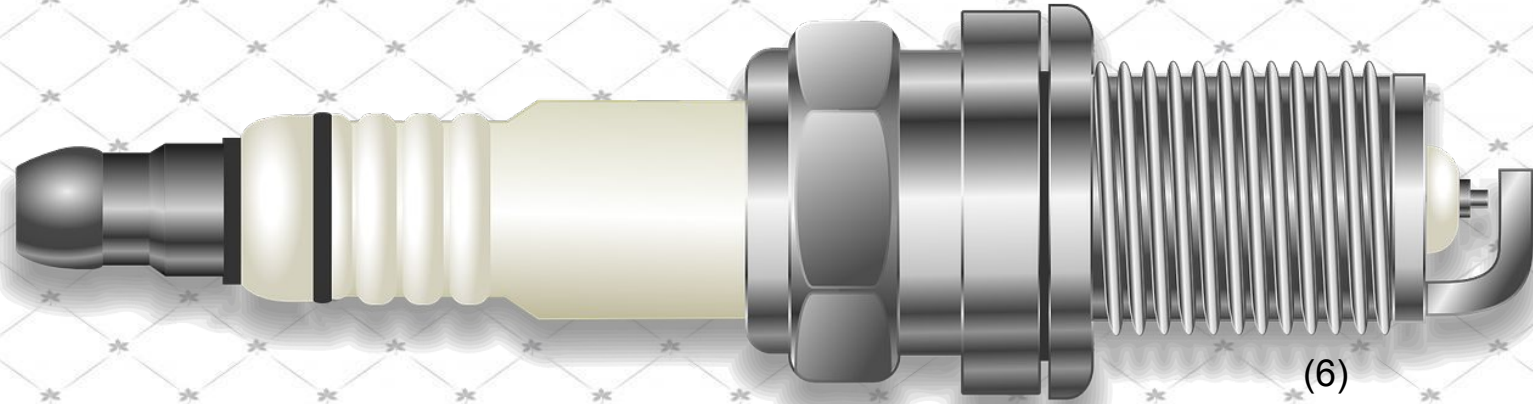


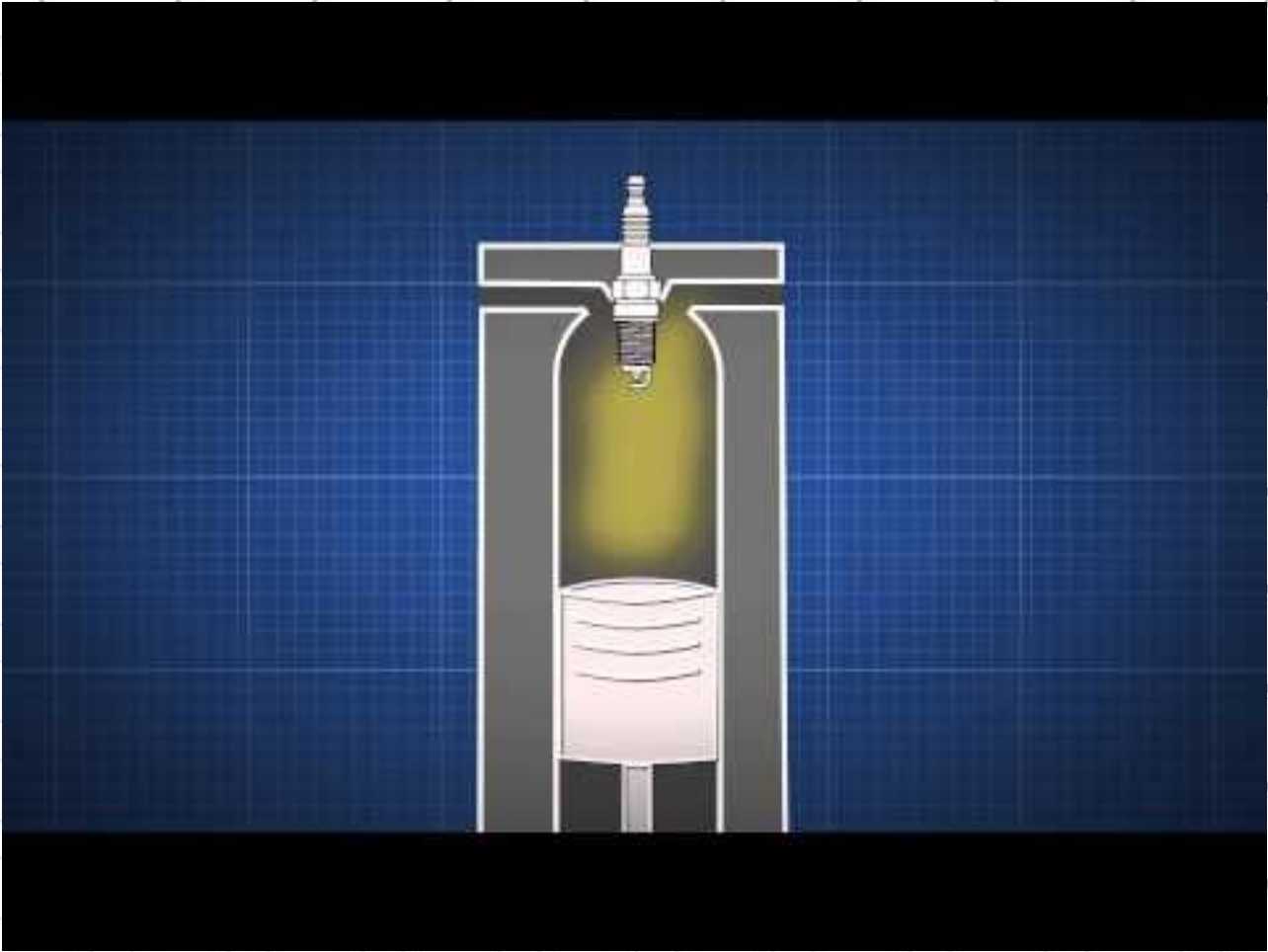
<http://www.car-brand-names.com/wp-content/uploads/2015/12/Volvo-Symbol.jpg>

# Engines of the Future

80% reduction in smoke and CO<sub>2</sub>, and a 70% reduction in NO<sub>x</sub> production was found.

Hydrogen can best be used as a spark fuel. (5)







# Closing

Hydrogen fuel cells are promising but need more research

Can be used on more permanent transportation (subway, trains, busses)

Becoming harder to convince people to switch from gasoline because of higher MPG

Hybrid vehicles are currently the most viable option on the consumer level

# Sources

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