Open source volks-electrolyzer 1.0

Project: Volks-Electrolyzer.

Description: The Volks-Electrolyzer is the basis of green hydrogen energy storage and use.

Keywordsr	Diy hydrogen Generator
Lizenz	Deed - Attribution-ShareAlike 4.0 International - Creative Commons
Status	active
Stage	Working prototype, publication and many improvements

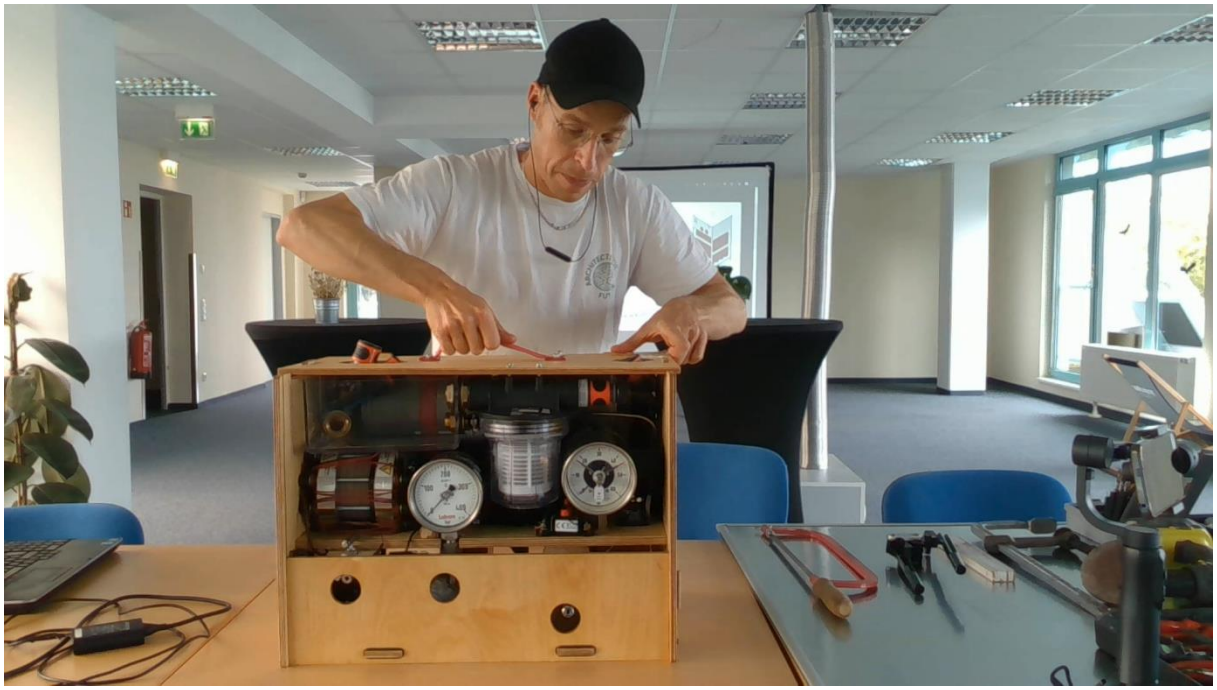
Energy is a necessity. It should be possible for everyone to have access to sustainable energy. This is a manual to build an electrolyzer to store solar energy through hydrogen on the entire planet. Electrolysis of water is a simple process. The only difficulty is the membrane separating oxygen from hydrogen.

Do not try to store energy in browns gas or HHO. It is highly dangerous and should not be compressed at all nor be used in quantities.

This open-source hydrogen generator has been tested and is safe to use. We are not liable for you to change the apparatus by using other components. It is not recommended to use products from China.

Introduction

This electrolyzer can store enough energy for an efficient household. The pure hydrogen gas is compressed within the integrated compressor. The driving power comes from an air compressor which makes the densification of hydrogen very safe and equally energy intense.



Uses of hydrogen

Hydrogen can be used in any fossil fuel application by little modification. Thow it is worth mentioning that the amount of fossil energy we consume millennial is not replaceable by hydrogen. Therefor a wiser use of energy is recommended.

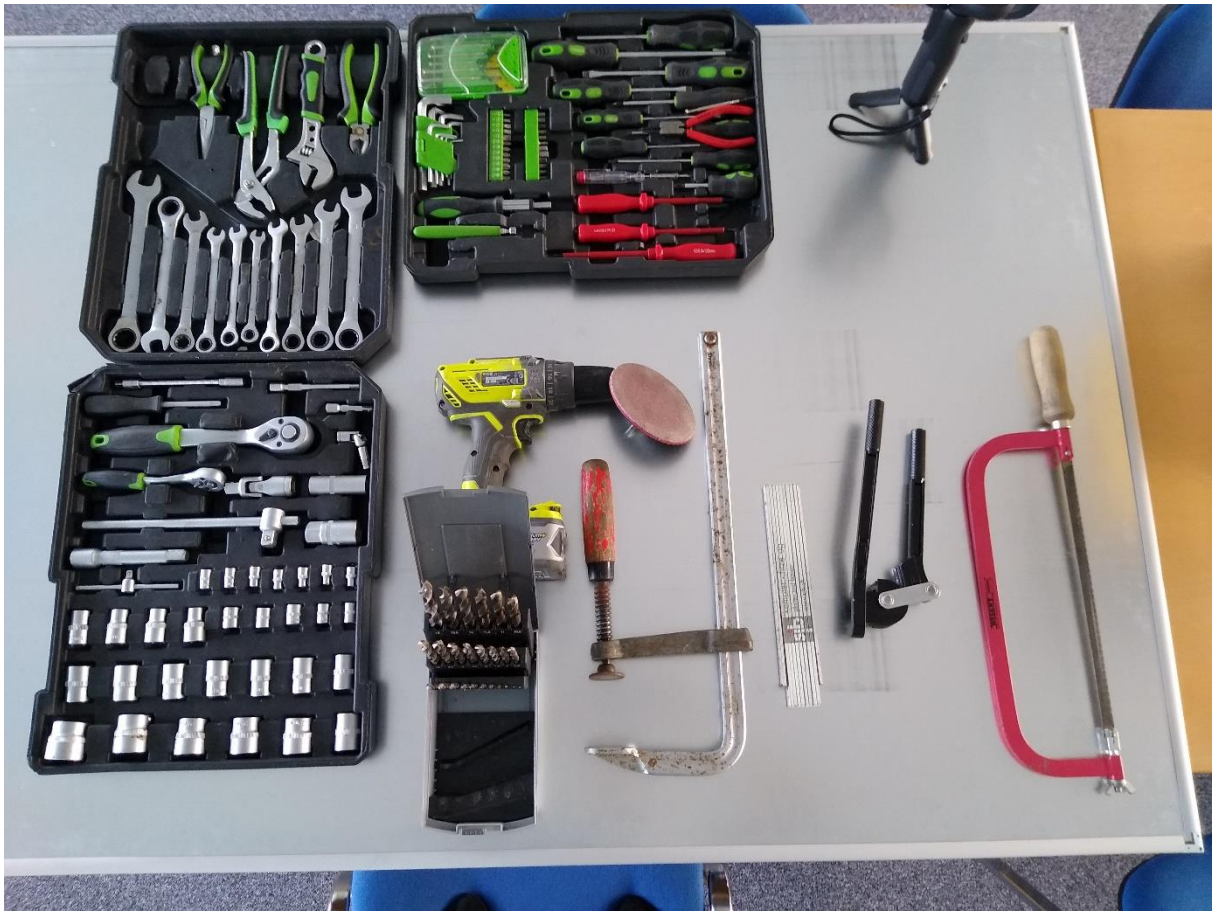
Hydrogen for fuel cells

- Hydrogen for camping gas
- Hydrogen for cooking
- Hydrogen for heating
- Hydrogen for catalytic combustion
- Hydrogen for glass melts
- Hydrogen for glass blowing
- Hydrogen for hydrogen burners
- Hydrogen for metal processing
- Hydrogen forging
- Hydrogen for locksmiths
- Hydrogen for welding
- Hydrogen for heat treatment
- Hydrogen as an inert gas component

- Hydrogen for cutting
- **Hydrogen for cutting torches**
- Hydrogen as fuel
- green hydrogen for cooking fat
- green hydrogen food industry
- green hydrogen for sugar alcohol
- Green hydrogen propellant
- Packing gas green hydrogen
- green hydrogen as **balloon gas (hydrogen blimp)**
- green hydrogen for the private hydrogen filling station
- green hydrogen for sale
- green hydrogen as seasonal storage
- Hydrogen storage without batteries
- green hydrogen to produce ammonia
- green hydrogen as fuel gas for quartz glass processing
- Rocket fuel, fuel for hydrogen vehicles
- Carrier gas in gas chromatographs
- the hydrogen filling station for the home
- green hydrogen to harden vegetable fat

Tools you need

Normally do it yourself tools will do for the beginning



The pipe bender will be an addition such as hydrogen snooper.

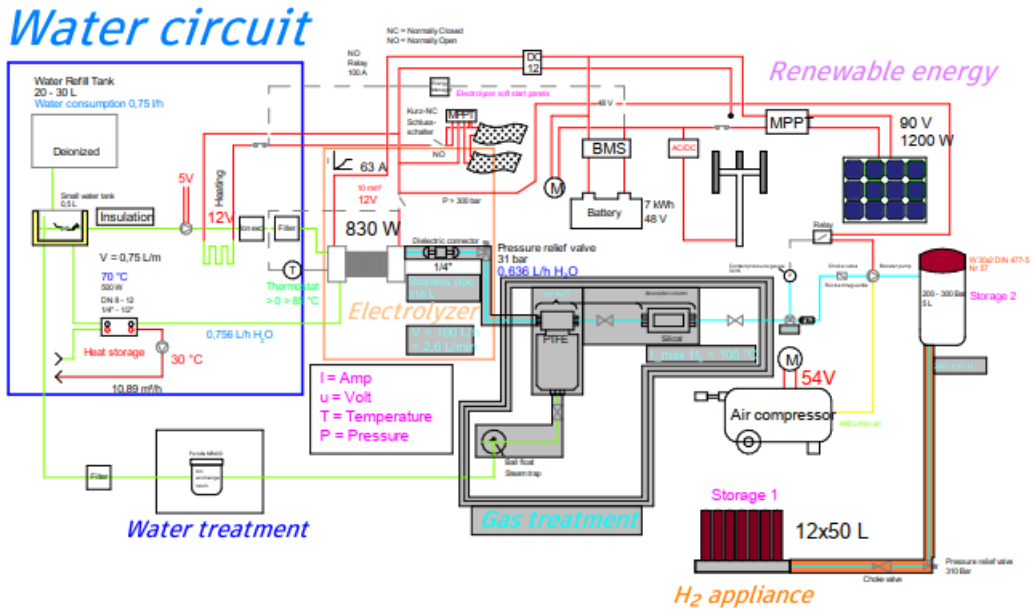
You need this to leak test the piping system. This tool will be a big expense such as the water conductivity sensor. Thus, it could be useful to share them in the community, because it is only needed for setting up.

How does the volks-electrolyzer 1.0 work

To build an electrolyzer at home you need to understand the concept.

A hydrogen filling station consists of the following topics

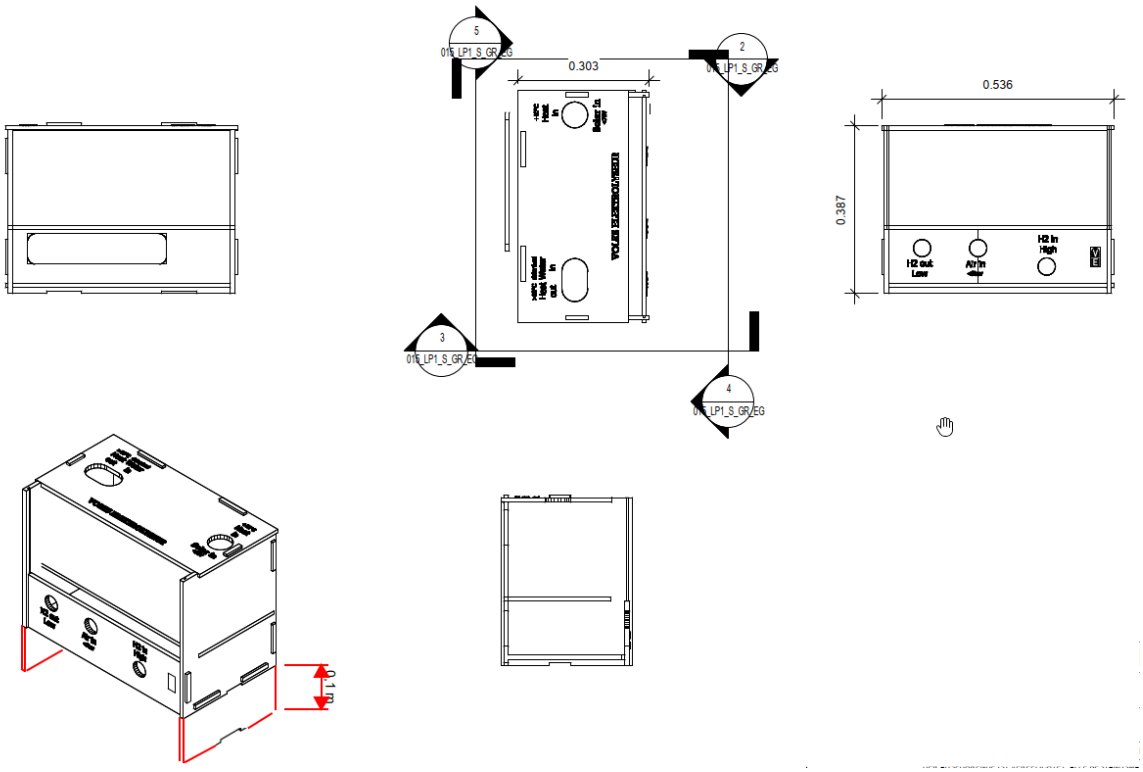
1. Water treatment
2. Electrolysis
3. Gas treatment
4. Compression
5. Safety and management.



Above that stand the renewable energies and the hydrogen appliances

Machine housing for the open source electrolyzer

You need a minimum space of 303 *490*536. The inner housing is 50 mm less. It is suggested to leave 100 mm underneath if you want to stack it. In case wood is used a coat t of oil is recommended.



Calculations

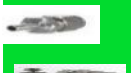
The electrolyzer can store up to 4200 kWh lower heating value as hydrogen. It has an efficiency of 58 % depending on the runtime. Wasted heat can be used at a temperature of 70 °C. For your hydrogen consumer you can estimate 1 kg of hydrogen every 3 days.

H2 Flow Rate(NL/hr)		160
kWh/h	0,48	
efficiency kWh hydrogen/ kWh electricity	0,58	
kWh/d	11,52	
kWh/a max	4204,8	
m³/h	48	
kg/d		0,35
kg/h		0,01
€/h with 12,5 €/kg		0,18

Electrolyzer components

Many electrolyzer components are not available to private persons. You might have to go through an Institution like University or some kind of business. Also be aware that single pieces are much more expensive than bunch purchases. The list of components is not complete because there are bits and pieces changing a lot due to sellers' fluctuations.

Use online translators if names are still German. If the amount is 0 it is optional. Amount can be pieces meters or regular buying units.

Electrolyser component	Picture	Amount
Heating Cable		0
Heating cable regulated Heizband Silikon		5
Cable		1
Fuse 60 A		1
Druckschalter / Pressure switch Kontaktmanometer		1
Pressure switch full bottles		0
Pressure Switch cable		1
Condensate Separator		0
Demister, Koaleszenzabscheider und Absorptionstrockner		1
deionizer 10"		1
Cooling pipe, Kühlwasserschlauch di 8,5 da 15mm		1
Filter Mischbettharz 5 "		1
Demineralization - Mixed Bed 5l		1
Elektrolyzer 830 Watt		1
Elektrolyzer 3050 Watt		0
Schwanenhals Decksdurchführung		0
Handpump		0
4 Bottle 5 l		0
Gasflaschen 10l		0
Gas Flasche 2l		1
MDLE 32-D-H2 Booster / Compressor		1
Gas Cooler Spiralrohrkühler		0
g3/4 winkel		2
Schlauchschellen		10
Water seperator Wasserabscheider		1
Reduzierung 8M auf 1/4" CR 8M-4 Reduzierverschraubung, gerade, metrische Klemmringverschraubung, zölliger Rohrstutzen mit Einstich, Edelstahl		4
Reduzierung 8mm 1/4"		1
dielectric connection		1
check valve / Rückschlagventil 400 bar		1
steel pipe 1/4 in. OD x 0.035 350 bar ad 6,3mm id ca 5		6
steel pipe 8mm 8S 2m		2
handrohrbieger		1

Fitting G1/4" to cutting ring 1/4"		5
t fitting 1/4"		9
l fitting 8mm		5
L fitting 6 mm		2
Kreuz Verschraubung		0
l fitting g1/4 1/4"		4
G3/8 Air intake adapter Booster to Pressurized Air connector		1
Druckminderer Befüllarmatur		1
2-Wege Niederdruck-Kugelhahn einstellbar 40bar		2
Eck-Nadelventil (5000 PSI)		6
3 Way valve / Drei wege Ventil		1
Adapter NPT G1/4		1
relief valve / Überströmventil 40 bar		1
Spring Kit Ersatzfeder		1
Reduzierverschraubung 3/8 auf 1/4 für Schlauch		1
Flaschenadapter DIN 477 57		1
Flaschenadapter DIN 477 1 W 21,8 lh auf 1/4" IG		2
Verschluss-Stopfen End Cap IC-P-N14-4i		1
fitting for Pressure sensor G 1/4" AG (mit Elastomerdichtung)		2
Druckschalter / Pressure switsh Kontaktmanometer		1
Manometer Adapter		2
Pressure gage full bottles Manometer		1
Pressure Switch cable		1
Condensate Separator		0
Demister, Koaleszenzabscheider und Absorptionstrockner		1
deionizer 10"		1
Filter Mischbettharz 5 "		1
Demineralization - Mixed Bed 5l		1
Einschraubverschraubungen ab Lager die mit einem Außengewinde nach W28.8K. Einschraubverschraubung 8mm W28,8 AG CMC8M-W28.8K		0
Einschraubverschraubungen ab Lager die mit einem Außengewinde nach W28.8K. Einschraubverschraubung 8mm W28,8 AG CMC8M-W28.8K		0
Gas Flasche 2l		2
48 V Compressor 12 Bar		0
300 Bar DLE 15–1		0
54V Compressor Dewalt		0

Druckluftschlauch 10 bar schnellkupplung / presurized Air connector	1
Druckluftkupplung Weiblich	2
54 Battery	1
12V Compressor	0
Float Valve /Schwimmerventil	0
Pipe insulation / Rohrdämmung	1
circulation pump 5 V	3
Orion-Tr DC-DC Charger Isolated remote cable	1
Orion-Tr 48/12-20A (240W) DC-DC-Wandler, galv. Isoliert	0
Victron BlueSolar MPPT 100/20 (48V-20A)	1
SHUNT 500A/50MV 45 X 28 X 120	0
100 A Relais	2
cable connector Flachstteckhülsen und sockel	1
Stromregler, variable current	
DC/DC Wandler 24/12 1000W	0
Case / Gerätegehäuse Werkhaus	1
	88

Links and Literature

Frequently asked Questions	https://v-electrolyzer.de/en/
Videos	https://www.youtube.com/watch?v=8mAEVSIzF6s&list=PLoEhs6n8cwhaN2j8t28qEvaV3ncKcEJSc