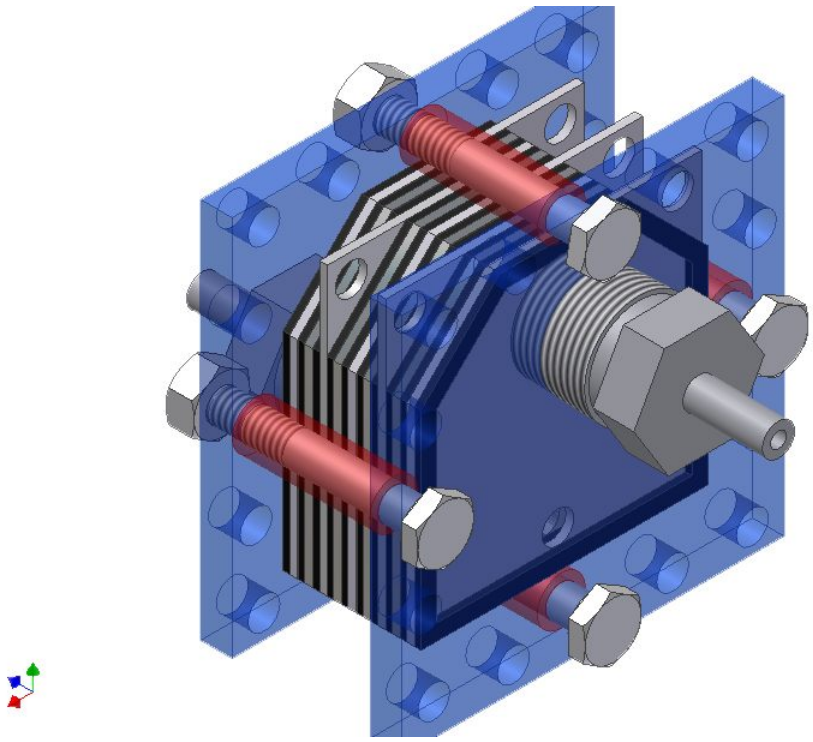


The HFE Dry Cell looks to be the most promising and efficient for use in an auto or on a small engine.
Its smaller size works better for the space limitations in newer vehicles.
It eliminates voltage leaking from the plate edges.
It cools itself using natural water circulation, and lends itself to adding a pump easily.
The refill tank is easier to control Catalyst levels, and acts as a bubbler at the same time.

The **size of plates** is dependent on room available, so you can make them as large or small as needed, square, rectangular, or any shape. The plates need 2 holes, one at the top for gas to exit, one at the bottom for water to enter. The thinner the plates the better, mine are .055 inch, 11 plates in a +NNNN-NNNN+ configuration for a total plate thickness of 0.605”

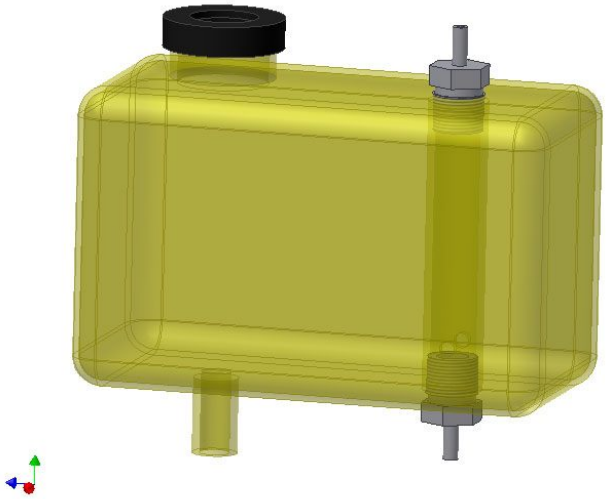
The **gaskets** need to be rubber, PVC, etc to seal the plates. An old inner tube works fairly well, and your imagination will find other usable seals. Mine are .0625 thick inner tube, for a total gasket thickness of .75”.

The **Outside Plates** which hold the unit together can be any material available, I've seen pics/videos using Acrylic and even wood. The water inlet needs to be opposite the plate water holes, and the gas outlet is opposite the plates upper gas holes. And of course the bolt holes that hold it all together, too few and it wont seal, too many and you get interference with the electrical connections. The bolt need to be insulated from contacting the plates, I used vinyl tubing, cut to the finished (compressed) size. Since the vinyl can be compressed somewhat the length isn't real critical. Mine is 1” acrylic salvaged from a hockey arena.

The **total width** of my cell is 2.355” thick, plus the bolt heads and nuts, and fittings, since I needed a rectangular unit I made it 2” x 4”, with 1/8 inch wide gaskets, leaving 1 3/4” x 3 ¾ plate surface showing, for a total surface area of 131.25 sq inches. So at about 1 watt per sq in to produce 1lpm, I'll need 132 watts, thats about 11amps, well within my alternators capability, and room for more if I need it, because production isn't where the claims are. The overall size is 4” x 6” x 3”.

The **electrical** connections can be bolted if the plates are bent slightly before clamping.
The **refill tank** can be about anything that holds water, I used an old lawn mower gas tank simply because it had a nice fill cap, and water fill tube already. I added a gas exit fitting to the top, and a gas

inlet to the bottom. The bubbler portion is made by cutting a 1 ½” pvc to fit tightly inside the tank, cut 2 holes directly opposite each other top and bottom. Drill several holes about ¾” from the bottom of the pvc for water flow. Insert into tank and glue 2 pvc to hose adapters into the ends, seal to the tank, (I used epoxy then a layer of silicone. Then screw hose to tubing adapter into the fitting, they seal with o'rings.



The water line has a **check valve** allowing water to flow to the HFE Cell, and a check valve in the gas line allowing gas to flow to the refill tank. I felt this necessary so that rapid gas production only flows in one direction. This should also help cool the unit, and help force bubbles off the plates.

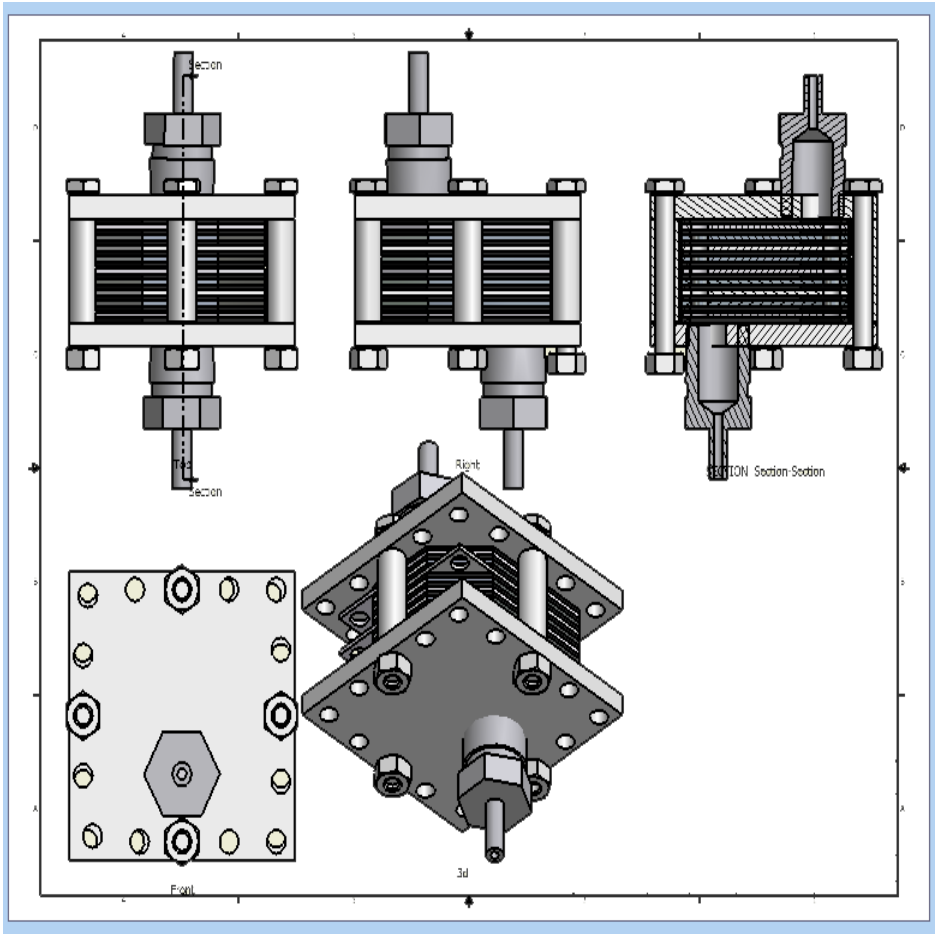
The **drawings are only a suggestion** of how to build the unit, not a design I have used. Vary the design to fit your needs, I used vertical tabs on the plates for electrical connections, and locking nuts and washers for added strength. I only show 4 bolts in use, you probably want 8-12 for even compression of the gaskets. Only compress the gaskets till leaks stop, otherwise spacing will be reduced.

My theory for **checking the unit** is simple, I'll first add plain water, check for leaks, and shorts, tighten if necessary. Change water to catalyst set low to check for shorts and get a base line output test. I'll add catalyst to the tank as needed to get production up where I want it, after mixing, it should flow to the cell increasing output and amps.

I'll add a drop of red food coloring to the tank, while the cell is in operation, this should indicate the water flow direction and speed of flow. This will also help identify any leaks that occur.

I added a **blueprint** type pic below, with a cross section view to see water and gas flow, and electric connections.

Production figures aren't available at this time, as production is slow due to funds, drill bits dont last long with stainless and there are more parts needed to date. And its one type of cell that cant be operated until its complete.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