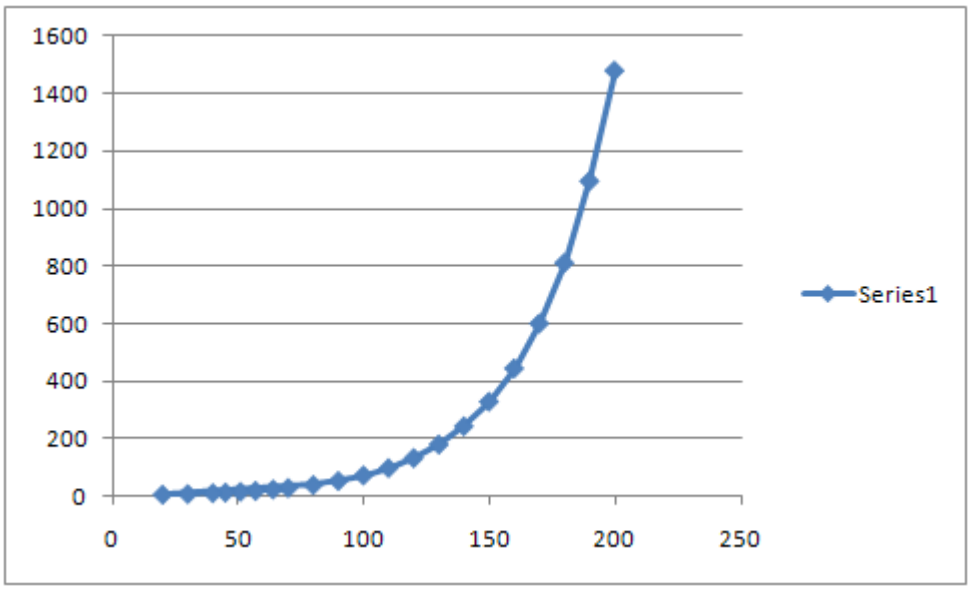
Chris's Fusion Reactor

My Latest prototype reactor

I have built a fusion reactor that creates helium from hydrogen



Predicted Reactor Characteristic

I am now getting some success.

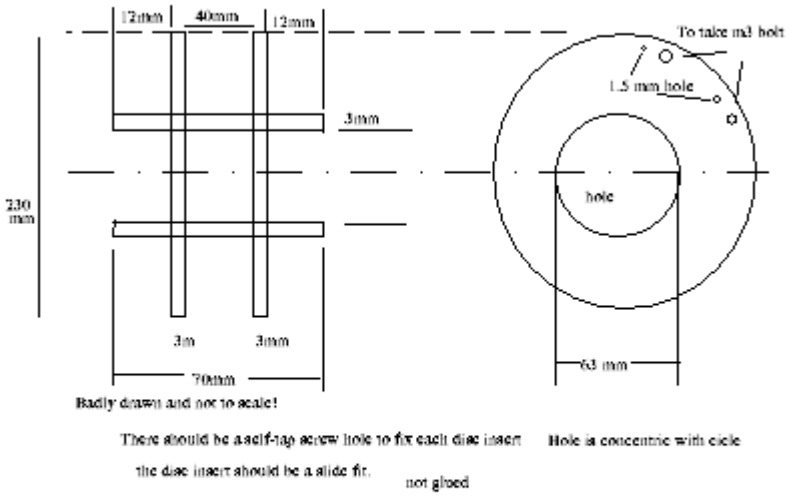
I have sent this reactor to Utrecht for testing.

Here is my design:

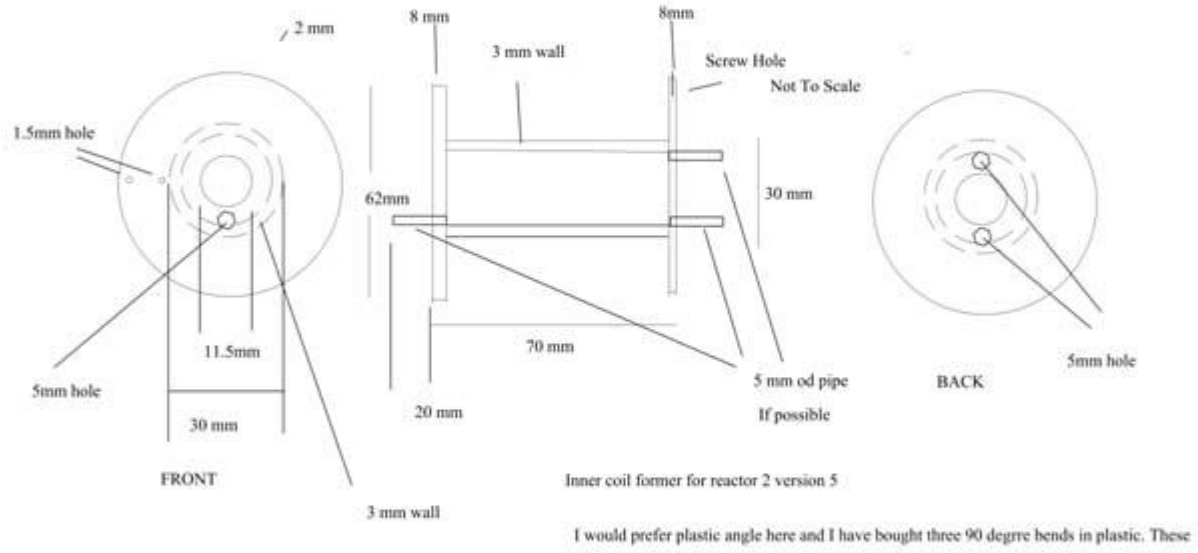
Reactor 2 v1

Reactor 2 v6 under test

http://youtu.be/EAQBZNbUzCQ



Outer Coil Former (3000T 0.9mm solderable enamelled copper wire)



Inner Coil former 22000T 0.170mm solderable enamelled copper wire

Untested reactor 2 version 6

I found evidence for radiation from my gm tube that showed a dose rate of >7.5 uSv/Hr.

The inner coil is in parallel with a capacitor of about 1.2 uF to tune the circuit to be resonant at 50Hz. This caoacitor must be selected by measuring the inductance of the resonance coil by itself and calculating the value of the capacitor to tune it to be resonant at 50 Hz. This is in parallel with a 6 volt miniature mains transformer 250:6 the 6 volt winding is in parallel with a shunt regulator that consists of triac with a1 and a2 connected across the coil and a 10K pot with the slider connected to the gate.

An 11 mm OD, 7.2mm ID milky quartz tube 140 mm long fits through the centre of the central cavity of the inner winding. Hydrogen gas fills the sealed cavity at atmospheric pressure and passes out through the single exit tube to a needle valve and to a vacuum pump. The exit of the vacuum pump is passed back to the cavity through the second port. The first port takes in fresh hydrogen.

The gas exiting the vacuum pump passes through a ceramic tube 11mm OD, 6mm ID 140 mm long that retains hydrogen but helium diffuses out of the walls of the tube and is collected by a steel can sealed round it and pumped away to be purified and sold.

The outer coil is connected to a changeover switch so one side is connected to an AC power source of about 50-100 volt 3 amp to excite the coil. The 100 mA current induced in the inner coil of 22000 T gives 2200 AT.

The hydrogen in the quartz tube is excited by a output (50KV 40KHz) of a plasma generator with electrodes sticking on the outside of the tube.

The hydrogen is ionised by the plasma generator allowing a 2200A plasma current to pass. This heats the ionised gas by Ohmic heating very quickly.

The induced alternating current in the plasma repels the inducing current in the winding causing an ion pressure of approximately 10^8 Pa.

This heat and pressure ignites deuterium nuclear fusion and the heat generated by these reactions makes the ionised gas expand against the containment pressure causing more current to flow (by le Chattilier's Principle) thus maintaining oscillations.

The changeover switch may then be thrown so the outer winding sends alternating current to the load.

As the load tends to reduce the potential generated by the inner coil the reactions increase in power to keep it at the limit set by the regulator, The regulator keeps the reactor safe. It is a constant voltage source.

The regulator only has to shunt 100mA or so.

The potential of the inner coil is about 200 v.

Now the inner coil is a dipole and the maximum lobe of the coil is around the middle in the plane of the outer winding. The potential picked up by the outer winding from the plasma current depend on the length of wire and the intercepted photon flux. It is not the turns ratio because the length per turn depends on the turn diameter.

I do not know what this is. The current capacity is the current carrying capacity of the wire (about 3 A).

The maximum power of the reaction at 6 KeV depends on the square of the ion pressure and so it is proportional to the fourth power of the plasma current. The temperature will sit at the 6KeV ion temperature as that is the maximum of the deuterium nuclear fusion reaction co-ordinate. I make it about 10^14 Watt.

Experiments show that the reaction tube temperature is lower than ambient on the outside as measured by an infrared thermometer.

As the proportion of deuterium increases and the helium level builds up the reaction rate suddenly increases and a nuclear explosion takes place. This is when the gas mixture is high in helium and low in hydrogen. That is why the helium has to be filtered out. It is super diffusive and so it is easy to separate.

The reaction zone is a tiny region near the middle of the coil along the axis.

Neutrons generated pass into the hydrogen blanket and create more deuterium. This then passes back into the reaction chamber. The Helium product is removed and more natural hydrogen is injected to keep the best mixture. Natural hydrogen contains some deuterium.

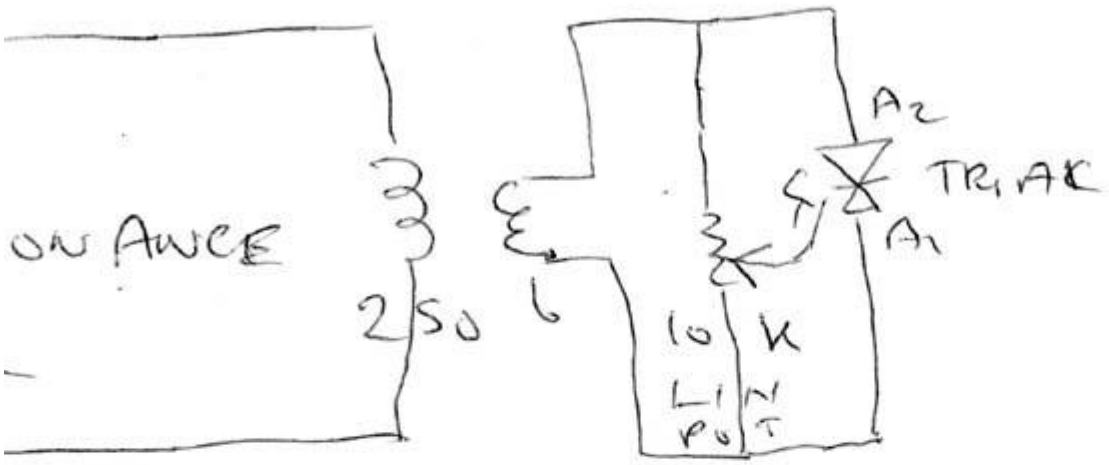
As the reactor operates the proportion of deuterium increases making for more power.

The inner coil only takes 100 mA. The output power depends on the current capacity of the outer winding and the number of turns. (i.e. mass of copper).

The Regulator

The regulator circuit is as follows:

REGULATOR



250 V : 6V

MINI MAINS TRANSFORMER

The regulator is connected across the resonance coil and when the trigger potential is reached the coil is shunted. The transformer is to present a high impedance to the resonance coil until the trigger level is reached.

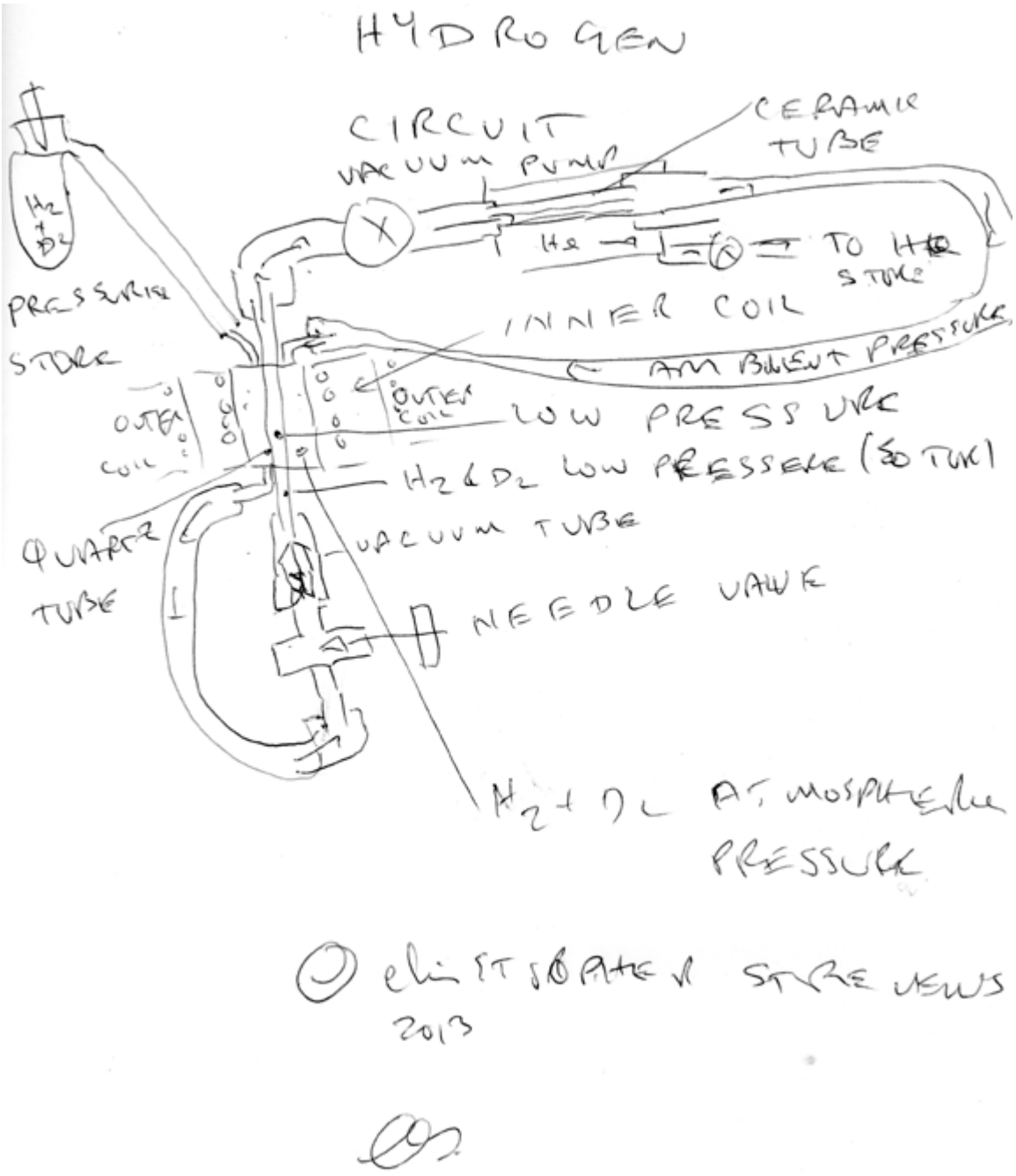
The triac has about 6 volt between a1 and a2 and the current it has to shunt is about 5 Amp. I put a shorting switch across the resonance coil to turn the reactor off. This is 250V AC at 200 ma.

The miniature mains transformer I used is 250 V: 6 V 250 mA.

Hydrogen cycle.

The hydrogen cycles and passes over the reaction tube to form a hydrogen blanket that picks up neutrons mitted by the reaction and thus creates more deuterium. The natural hydrogen (it contains some deuterium) passes through the quartz reaction tube at low pressure (50Tor) where the reaction takes place. After reaction the gas passes through a ceramic tube where the helium which is super diffusive passes through the wall and into a steel enclosure to be pumped away for storage and export. The hydrogen exits this tube depleted of the helium product of the reactant.

See below:



Hydrogen Cycle

The Needle Valve

I purchased a pneumatic needle valve for the hydrogen circuit and it works very well with the 30" vacuum I can reach.

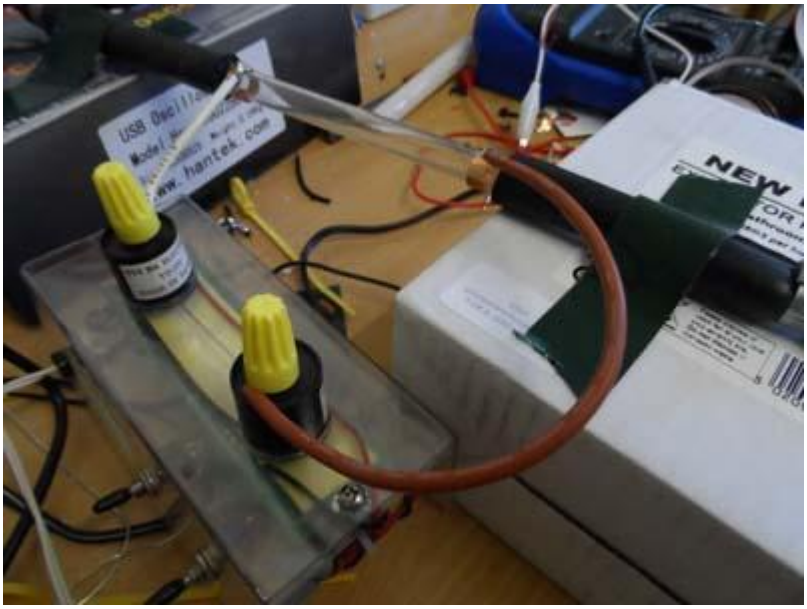
Needle Valve

The plasma generator:

In order that current will flow in the reactor chamber, the gas has to be ionised. this is done with a plasma generator with an ionisation or corona wire placed along the outside of the quartz tube capacity coupled to the gas. The earth return is a copper plate placed under the reactor unit. This is 50KV 40 KHz.

This is turned off when the ionised gas gets hot inside.

I found I could obtain a plasma with a simpler arrangement. The lighting generator that makes 40 V sparks could be connected to electrodes stuck on each end of the reaction tube and connected by high voltage insulated wire. In this way the discharge passes through the gas as it is capacity coupled to the electrodes through the gas. This only takes place when the air in the tube is pumped down to below 30" vacuum.



The plasma generator arrangement

The ionisation wire arrangement. This gives a more even distribution
and will not cause as much interference with the winding.

I have now ionised the air and the glow discharge was bright enough to see in a darkened room. It looked blue to me.

I found I could ionise the air in the reaction tube with 50KV from a "Tesla Lightning machine". I suggest therefore that the above arrangement be used to ionise the gas.

The next unit is the hydrogen generator. This is a pulsed low frequency, high voltage source, that electrolysis water. The hydrogen is captured, dried and passed into the reactor and the oxygen is released to the atmosphere.

Tap water will do, so a cup full of water will power your house for a year at about 20 KW. That is the theory.

If you want to support this enterprise which is linked to the Pegasus Yahoo Group please write to my friend Luke who deals with this side of the business (brainstorm@versatel.nl). We request $5 for each experimental unit made by anyone to reward my intellectual property right.

To buy a licence to construct one reactor

Luke is testing the reactor 2 in Utrecht.

Dr Chris,

11 Kenley Rd.,

London,

SW19 3JJ,

UK.

(company assets £0. I support it with my pension)

Dr Chris 18/06/2013