WIDEBAND RF EXCITED ELECTROSTATICLLY BIASED ELECTROLYZER

Ronald R. Stiffler[1]
[1]**Senior Scientist, Stiffler Scientific, Humble, Texas, USA**
DrStiffler@embarqmail.com

***Abstract*---**This paper is a preliminary overview of research by Dr. Stiffler in the area of Hydrogen and Oxygen Electrolysis from Water (H_2O) using a Spatial Energy Coherence [1] Exciter [2] providing an Electrostatic Field around and through the electrolyte inducing a self generated bias voltage on the electrodes.

I Introduction

This paper describes an Electrolyzer [3] powered from an Electrostatic Charge [4] generated by a Wideband Bifurcation Oscillator [2,5] with a bandwidth of over 400MHz producing an Electrostatic Field [4].

The Electrostatic Charge [4] is capacitive coupled to an electrolyte of distilled water, which may contain additives to enhance the overall electrolysis efficiency along with two or more pairs of carbon electrodes that obtain a positive and negative voltage potential from a Spatial Converter [7].

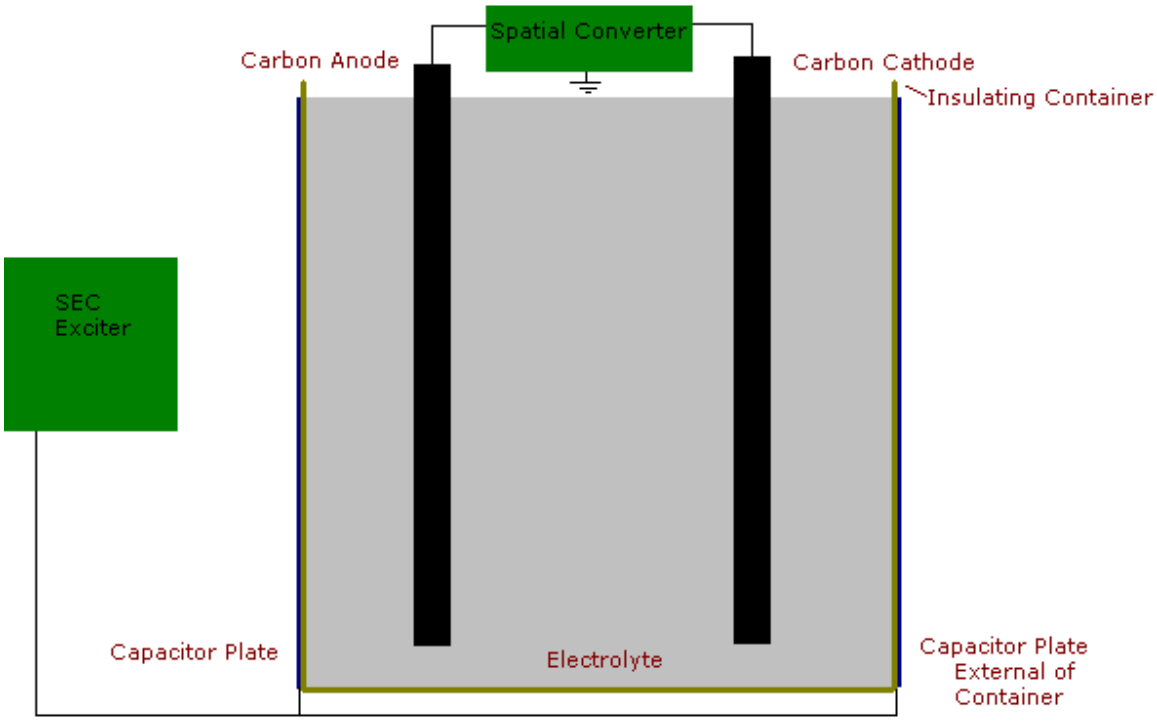
The Electrolyzer [3] is highly efficient due to the low electrode voltages used, which are just above what is termed the Thermal Neutral [6] potential and isolation from the Exciter [2] provided by the capacitive coupling and the developed electrostatic charge.

Rel. 1.0 6-2009

II The Electrolysis Cell Construction

A basic Electrolysis Cell configuration is shown in the following image.

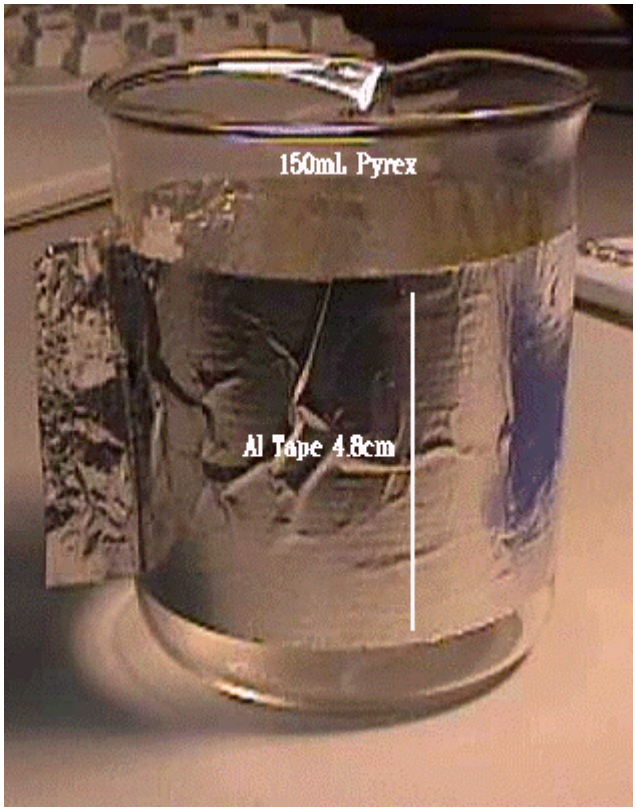
Fig: 1



The excitation for the electrolysis cell is produced by a standard SEC [1] Exciter [2] with the exception that the signal from the exciter is capacitive coupled into the electrolyte and electrodes.

The following picture is of a 150mL Pyrex lab beaker that has 4.8cm Aluminum tape wrapped around its outside. This small container and ¼" Carbon Rods works well for small-scale lab study of a UEE cell.

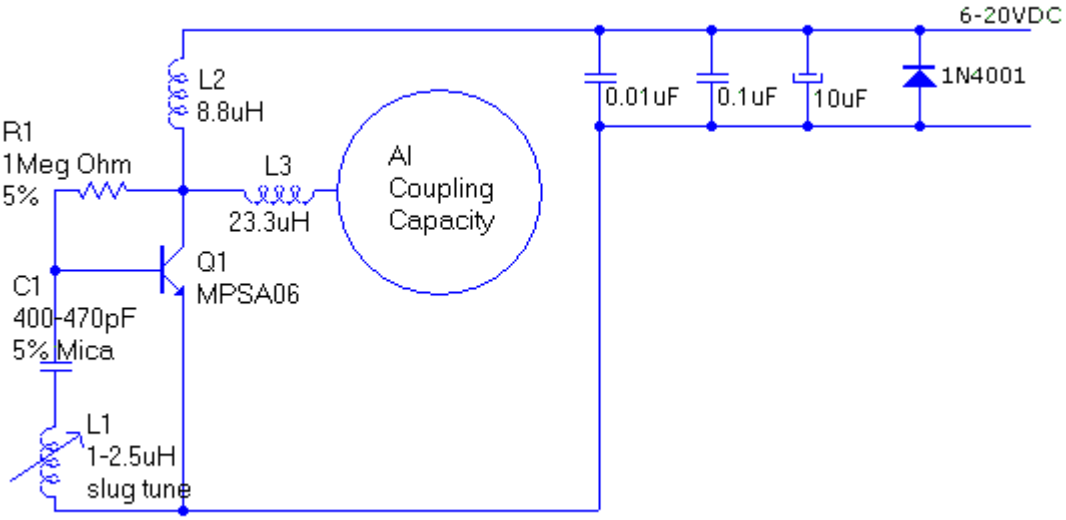
Fig: 2



It should be noted that the electrolyzer described in this paper is of the Common Duct type. Testing of the cell was not conducted using a Dual Duct cell. This cell design is for the production of immediate use gas. The gas evolved from this type of cell should never be stored because of the Oxygen content and its explosive potential.

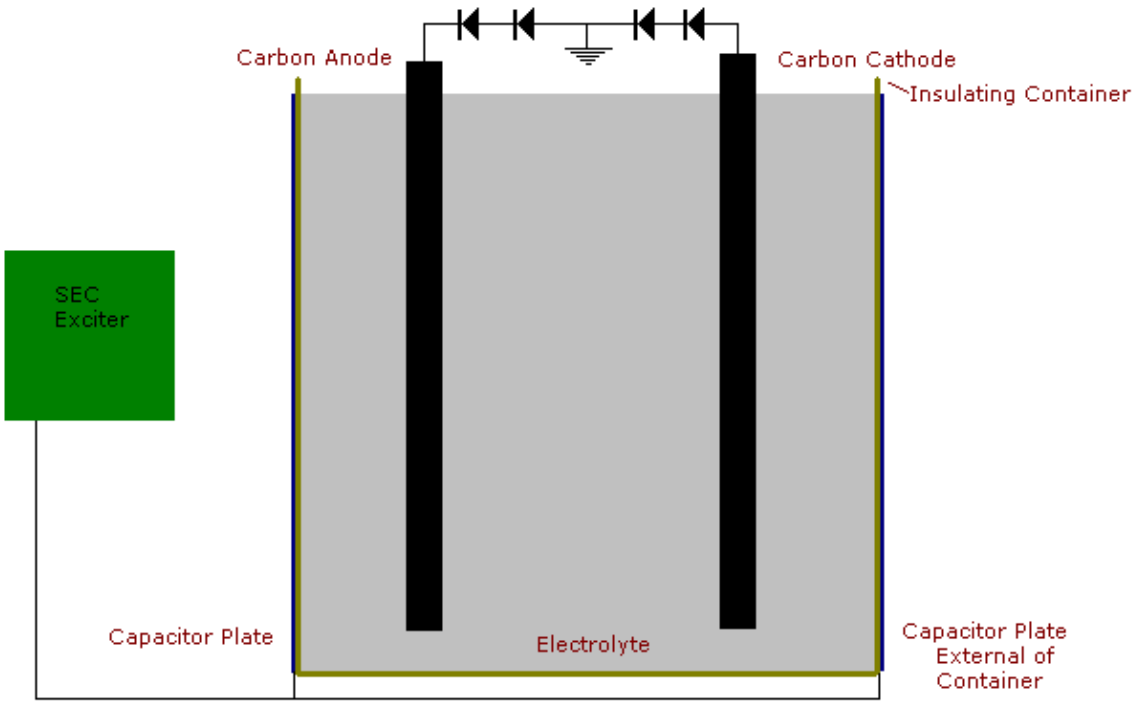
The following circuit diagram is a basic SEC [1] Exciter [2] showing how it is coupled to the electrolyte.

Fig: 3



The Spatial Converter [7] using four (4) 1N4148 Diodes [9] configured in an Avramenko Plug [8] is shown in the following diagram and the diodes are the Spatial Converter shown in box form in Fig: 1.

Fig: 4



Two diodes are on each side of the common earth ground and each diode has a forward voltage drop of ~0.6 volts. Two diodes therefore give a drop of ~1.2 volts when measured from the ground connection to the electrode. The polarity of the diodes are so arranged that one electrode is biased as a cathode and the other as the anode. The voltage as measured between the anode and cathode is therefore the sum of each pair of diodes and is ~1.2 * 2 =2.4 volts.

The diodes that were used have junction capacity of ~ 4pF and are ideally suited for the wide bandwidth generated by the Exciter [2]. Other diodes such as the UF4007 were tested for their effectiveness but were found to be highly inefficient. This high inefficiency was attributed to the higher junction capacities.

Adding a diode to each side of the Spatial Converter will increase the voltage on each electrode by ~0.6 volts (diode count must match for each electrode), but in doing this the efficiency of the cell begins to decline as a result of exceeding the Thermal Neutral [6] potential.

The electrodes are Carbon and-approximately 6.25mm in diameter, although larger and smaller sizes may be used. Other electrode compositions such as Stainless Steel, Platinum and Titanium can be used to lesser efficiency than pure carbon.

Increasing Cell Output

The configuration of the electro statically biased cell is not conducive to the addition of more than one electrode to each voltage leg of the Spatial Converter, this is easily overcome by the addition of multiple electrode sets, each set being support by its own Spatial Converter diodes. As many sets as required may be placed within an individual cell and allowed by the available inner cell space.

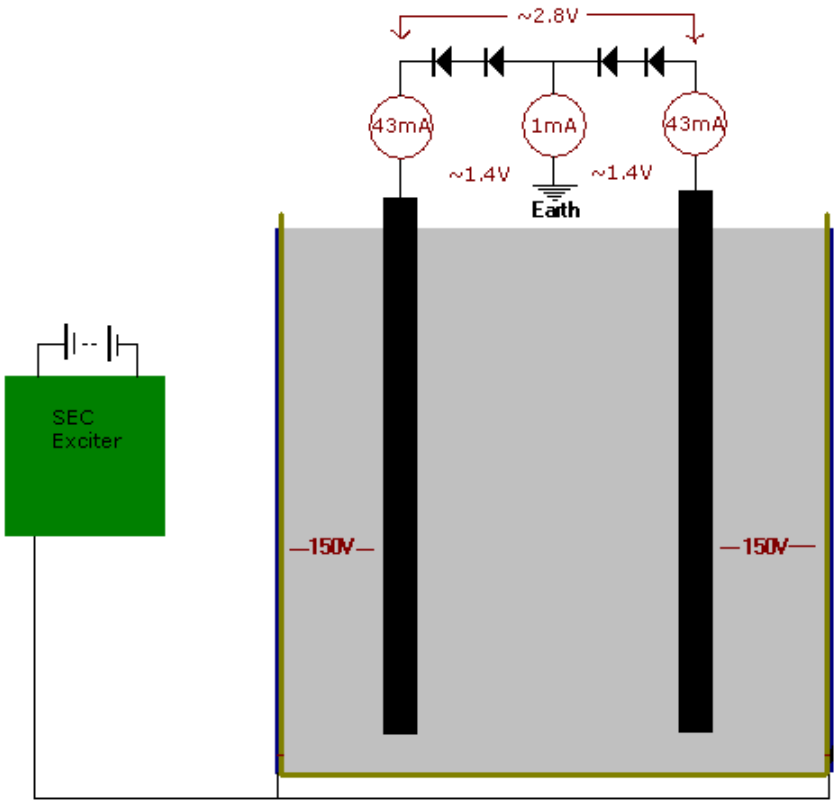
Electrode Spacing

Electrodes of a particular set (anode and cathode) should have spacing between the electrodes of 5.5mm to 10mm.

Electrostatic Bias Field

The electrostatic field supplied by the SEC [1] Exciter [2] can be calculated by multiplying the inner diameter of the cell in millimeters by 30 which will yield the minimum required static field voltage; for a cell with an inner diameter of 5cm we would arrive at 30 x 5 = 150 volts. Higher electrostatic fields do not increase the output of the cell; rather the cell output is a combined function of the electrostatic field and the number of diodes in the Spatial Converter, combined with the separation distance between the electrodes.

Fig: 5



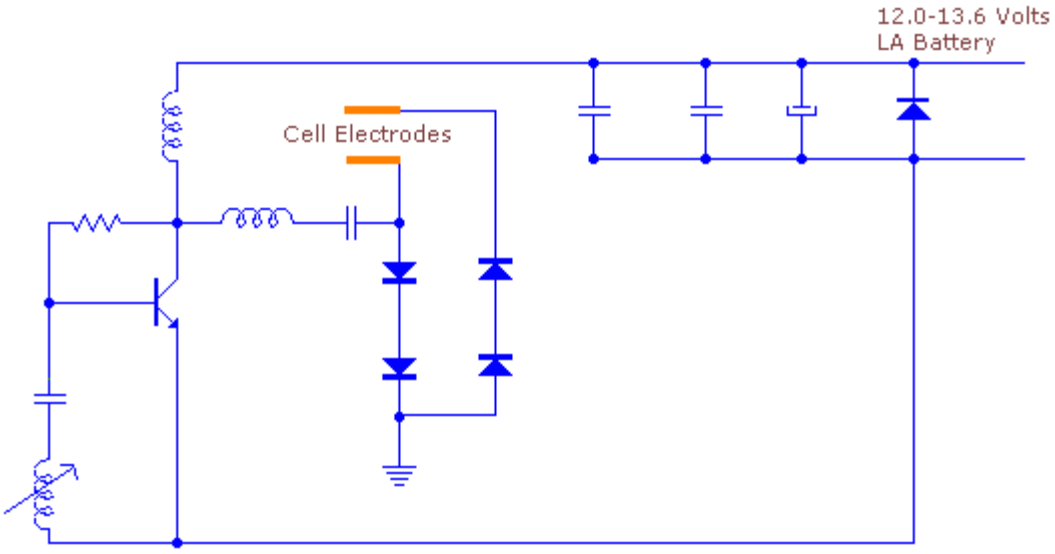
Cell Efficiency

A test cell with two electrodes biased with an electrostatic field of 150 volts and a electrode spacing of 10mm has provided an overall efficiency of ~96% +/- 2% at the optimal tuning point of the Exciter [2].

Calculations for cell efficiency are based upon evolved gas using a factor of ~2.7 Watts per Liter and divide by the input energy to the Exciter [2].

During the research a variation was tested and found to be quite promising although it was not pursued at the time. The circuit for this variation is shown the following diagram.

Fig: 6



As seen in Fig: 6, the Exciter [2] is coupled directly to one electrode off of L3C2 and the other electrode is connected to earth ground through two diodes.

III Conclusions

The approach to electrolysis using a SEC [1] Exciter [2] as shown in this paper needs extensive research to fully understand the fundamentals of its operation.

A number of very interesting artifacts were seen during the initial research and one of intense interest is that of the evolved gases ‘bubble size’. It appears that the breakup of the Hydrogen and Oxygen does not represent current understanding in that very little Oxygen is evolved. There appears to be an excess of Hydrogen and the bubbles are plentiful, but are extremely small.

The bubble size may result from the UWB [2] excitation, as may be the case of the lack of evolved Oxygen.

This approach to electrolysis, which appears to be highly efficient, low in energy requirement and may be capable of providing excess Hydrogen, must be explored in depth as an alternative energy source.

References

[1] Spatial Energy Coherence or SEC, A theory developed by Dr. Ronald Stiffler on the Coherence of energy from the Energy Lattice and utilizing it as an Alternative Energy Source.

[2] A SEC Exciter is low power Ultra Wideband Oscillator conceived and designed by Dr. Ronald. R. Stiffler that is able to exhibit Spatial Coherence.

[3] Electrolyzer, http://en.wikipedia.org/wiki/Electrolysis.

[4] Electrostatic Charge, http://encyclopedia.farlex.com/electrostatic+charge and http://en.wikipedia.org/wiki/Electric_charge

[5] Google Books (bifurcation oscillator) http://books.google.com/books?id=T9CkIb7-4m0C&pg=PA337&lpg=PA337&dq=bifurcation+oscillator&source=bl&ots=2KC-VjSsUk&sig=H0ZHgHLXtt_ZFdjEOSCllRW_K7s&hl=en&ei=AZYVSqraEoTS8wTk6aHHAg&sa=X&oi=book_result&ct=result&resnum=9

Bifurcations in Colpitts Oscillator, http://www.gmmaggio.com/publications/journals/2003/ijbc_2003.pdf

[6] Thermal Neutral, Google Books - http://books.google.com/books?id=h7uceF_om9EC&pg=PA74&lpg=PA74&dq=electrolysis+Thermal+Neutral&source=bl&ots=Vc7HOsuuvH&sig=arxtoBRV3kwRbbWdVTRZkuiOkO0&hl=en&ei=oZoVSq73OJig8wSf1d3HAg&sa=X&oi=book_result&ct=result&resnum=1

Springerlink - http://www.springerlink.com/content/v713t860j131l243/

[7] Spatial Converter. A Spatial Converter is composed of two or more (balanced set) of High Frequency Diodes configured for the generation and application of voltage to an Electrolysis Cell when connected to an Earth Ground System and excited by a SEC [1] Exciter [2].

[8] S. V. Avramenko , titled "The Measuring of Conduction Current That is Stimulated by Polarization Current", published in the 'Journal of Russian Physical Society, No# 2, 1991'. Also see Single Wire Power Transmission http://www.alternativkanalen.com/s-wire.htm

[9] Vishay Semiconductors. Part# 1N4148/1N4448

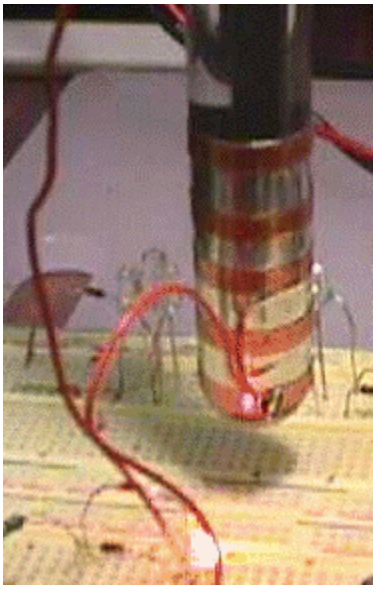
Rel. 1.0 6-2009

APPENDIX

The following images are taken from ongoing single electrode electrolysis where there is only one electrode present in the electrolyte. The second electrode is a grid external of the cell and is excited by a special set of RF Frequencies from a Second Generation SEC [1] Exciter [2].

SE: 1 shows one of the first single electrode cells. A single Carbon electrode is immersed in the electrolyte and the RF excitation is applied to the metal mounted on the outside of the test tube.

SE: 1

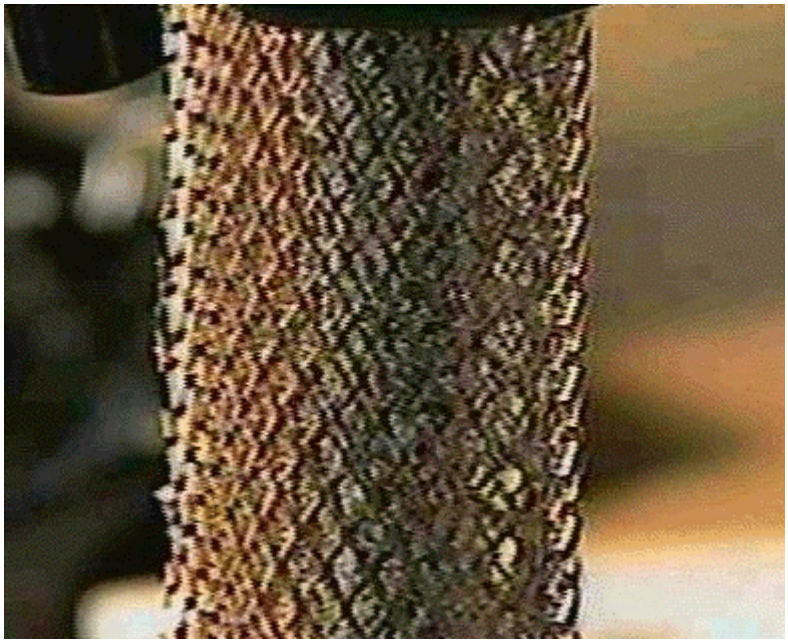


The following image show gas bubbles being generated on the surface of the single carbon rod immersed in the electrolyte.

SE: 2

The image in SE: 3 shows a copper grid wrapped around the test tube containing the cell. The carbon rod can be seen with the gas bubbles through the screen. It is easily seen that there is a large gas volume being released.

SE: 3



The last image is taken from a cell using a metallic cell electrode on the inside of the cell. The mass of collected gas bubbles is seen at the top of the electrolyte.

SE: 4