

Technical Discussion Paper 6

Global Respect Numbers - Dedications toward Net Zero

Introduction

This document assumes the reader is familiar with prior Technical Discussion papers on the Global Respect Number subject and is sufficiently concerned with global warming issues as to be interested in reading more. These papers can be found at <https://www.weld-monitor.com/weldappnotes.html>.

This paper aims to to explain a method and approach by which every human on the planet might visualise, manage and then tackle the problem of implementing GRN values, labels and currency. It means understanding some fundamental electronic engineering models, all of which are derived from Natural processes. This paper is designed to present this information in Layman's terms, so please read on. It will mean getting your head around LOGS, LC, RC circuits while visualising train travel.

LOGS

The word LOG has many meanings to many people. Logs are used to record events, time, distances etc... They are used as evidence of chronological events. A simple diary is a log. Logs can also take the form as being off-cuts of a tree or branch.

In engineering terms, Logs are used to mathematically model control loops and systems. These systems can be mechanical, fluid, software, electrical, electronic or even natural. Water flow systems are directly related to Logs. The relationship is mathematical and comes from discovery and publication of Natural Logs.

Natural Logs are taught in schools and many children never get to understand why. Ironically, Logs were first published in Log books. Later, Slide Rulers were created by which Logs could be manipulated. Then came electronic calculators, which would have required their designers to understand log based phenomenon associated with the circuitry inside.

Mathematical Logs are used to accurately model natural build ups and natural decays in just about everything on the planet, including the life cycle of a Tree, or the flow of water from a reservoir.

If you can model something, you begin to properly understand it's behavioural actions, before during and even ahead of actual behaviour !! This how NASA managed their problem of taking people to the moon and back. They knew about Logs and they used them to model the process.

If by now, you were hoping to see some pictures, then I would advise you do a little Bing or other search engine research, since avoiding pictures helps reduce electronic file sizes, which in turn saves data storage capacity and bandwidth transfer from one place to another.

Remember : Less is More

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LC Circuits

An ideal LC circuit represents a perfect perpetual motion machine. It resonates once an impulse has been applied to it. That impulse is a flow of electrons, which flow in and out of the the two components known as an Inductor and a Capacitor. No prizes for guessing which one the Capacitor is. The two parts are connected in parallel i.e. End to end.

LC circuits are used in wireless transmitters and receivers and are known as tuned circuits. The value of the Inductor and Capacitor will determine the frequency at which the circuit will resonate. As an LC receiver is tuned towards it's optimal resonant frequency, it will reach it's peak resonance. In other words, it pulls the maximum energy from the radio wave, for use by the remaining circuitry. A similar process can be used to optimise LC based antenna design. Logarithmic based mathematics can be used to model these processes very accurately.

For "perpetual motion" to occur in this instance, there must be no losses in the circuit. A loss in electronic terms is a resistance (R), measured in Ohms; the mathematical inverse of which, is known as a Seamen. Inductance is measured in Henries and Capacitance is measured in Farads

Unlike an RC circuit, which will be discussed next, a no loss LC circuit would have infinite ohms in the circuit or a Net Zero number of Siemens. By the way, neither is possible, since all LC circuits will have some resistance, which serves to dampen the maximum peak achievable. In this way, LC resonance based circuits can be tuned and dampened while also being modelled mathematically using paper, pens, Excel, mathematical CAD and Spice.

The reason for explaining resonance, is to demonstrate that an optimally tuned person, business, organisation or Government can use this understanding in their messaging and actions, since it involves an understanding of how a natural flow of electrons, back and forth like a Push me - Pull You, can be optimised.

Electronic Engineers imagine capacitors as stores of electrical energy. You fill them up, disconnect them and then they hold the stored energy while disconnected. Once reconnected, they release their energy. A charged capacitor will discharge almost instantly into a low resistance and will discharge more slowly as the resistance becomes greater. To charge a capacitor you need electrical current, which infers electrical power. If you'd like to learn more about RC circuits, simply look on Bing or Google.

Most of the time, capacitors are used for smoothing out peaks and troughs in power supply design. These have what are known as a Voltage Rails which need to be held as stable as possible. If there is a fluctuation somewhere, perhaps from a lightning strike, then the capacitors help to absorb the undesirable excess energy in order to maintain stability on the rail. In the same way, if the rail drops for any reason, say a temporary surge of demand, then the power supply rail essentially draws additional energy from the capacitor in order to maintain a stable rail. Switching based power supply rails often have what is known as switching noise or indeed, ripple. Ripple is a measure of how the power supply rail dips up and down in peaks and troughs at various frequencies. Such effects can influence things like EMC - Electro-magnetic compatability and are often a measure that is taken into account when specifying power supplies and their associated performance data. Tuned LC circuits can be used to essentially sniff out areas where ripple is highest, since ripple at higher frequencies becomes a radio transmitter.

In financial modelling, a capacitor would thus be like a Bank. It stores the good stuff - Energy.

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RC Circuits

RC circuits can be modelled using Logs or Spice or other such tools. As already mentioned, you cannot avoid resistance in any circuit. If you connect a resistance in series with a capacitor and then try to charge it, it will charge up following an exponential curve at a rate that is determined by the resistance. The final amount of charge and energy that finally reaches it's peak to fully charge the capacitor is determine by the Voltage behind the current. Voltage can be thought of as a level if impetus. High voltages can even jumps across gaps. The amount of energy transferred by a voltage level is determined by the circuit resistance.

Conversely, with a capacitor fully charged up and disconnected, the moment it becomes connected to another circuit, it will either charge or discharge through a resistance. If the voltage on the capacitor is higher than the voltage rail on the receiving circuit, then the energy will discharge from the capacitor through whatever resistance is in circuit. The time rate of discharge will depend upon the receiving circuit voltage rail and the resistance, with the process following a natural exponential log based decay curve.

If on the other hand, the receiving circuit has a higher rail voltage, then the capacitor will charge, rather than discharge, following the same predictable mathematical model.

So, we can conclude that Resistance can be used to model and Govern the rate at which capacitors can be charged and discharged. Resistors come in all shapes, sizes and colour, and managerial speaking, they can sometimes be difficult to handle or even see. Nevertheless, resistors are an essential component when it comes to controlling and modelling capacitor charge and discharge curves.

So if we now think of a resistor and anything that gets in the way of monetary flow into or out of a Bank, then financial modellers would need to understand where the resistors are and what their value is.

In the same way, in order to create a Global Currency to address Global Warming Issues using GRN's, it would mean putting all of "your money" into a single global bank, controlling it's flow in and out via other banks, acting as RC circuits that are either charging or discharging, dependant upon their relative Impetus level.

Equate these models now to the basic work place where we see Resistance to Change in all forms. The higher the resistance, the more difficult it is for a business to create an environment in which it all pulls together with maximal impetus. Given a Net Zero law put in place a few years ago, the accruing amount of action required by every single National and International private or public sector organisation that deals with the UK, it is clearly vital that impetus is maximised and resistance minimised. If we were to assume that mankind could be beyond the point of no return by 2050, then action now in determining the real GRN value of assets and liabilities, will clearly reduce the overall effort longer term. Inaction now, means much more action later.

Another interesting thing about Natural Logs and this modelling - Every single business on the planet will have exactly the same proportion of business management and and financial hurdles to overcome. All organisations face exactly the same scale of problem, which mathematically looks like an RC discharge curve.

Please start now, by simply asking all suppliers to compute a GRN value and report whether or not they are Net Zero. Explain Net Zero to staff.

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Awkward questions for RC people

1. Q. Why is there a laminated piece of paper on the internal notice board ? What did that costs us ?
2. Q. Why are you doing that ? Ans. Because we always have ? Q. So why are you doing that ?
3. Q. How exactly are you measuring that and is there a Standard for it ?

To be Frank, the list of questions regarding the efficient and intelligent use of this planet's resources is beyond comprehension.

In my humble opinion, the direction toward NET ZERO is the greatest opportunity mankind has ever had in uniting the people of the World, in one totally connected and barrier free movement. It brings the opportunity for global peace as well as innovation and impetus.

If you don't agree, then don't expect a Frank answer from me :)

Q.E.D.

Mark Aherne - 13th February 2023