

Presentation order of events for FILTERs:

03/03/2021

5 Outlines, and "Taking a Look at just a few of many Filters" (Schematics)

{ now the "Talking Points" }

1. "Reactance Considerations" (links to Explaining Reactance) >>

>> "Explaining Reactance.html" 09/21/2020
"Critical points to consider about Inductance and Capacitance"

2. "Filter_Circuit_Illustrations.html" 03/03/2021 (14 links)

The 4 Filter Configurations (Illustration – Fig #6)

{ Discuss:

1. The Bandwidth of either the High_Pass and Low-Pass Filters
2. Overlapping the LP and the HP can accomplish a BP
3. A resonant BP can be anywhere or multiples

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3. Major Discussion: (about 20 minutes) { applies also to Antena Theory }

use the "Single LC Filter for a Power Supply" (bmp)

Absorb Energy – Store Energy – Discharge Energy

A Capacitor *reacts* to an increase in voltage by absorbing energy by collecting electrons, creating an "Electrostatic-Field of Energy," as an Equilibrium of Voltage. This "Electrostaic-Field" is held in the Dialectric material.

Whereas an Inductor *reacts* to an increase in current by absorbing energy, creating an Electromagnetic-Field of Energy, as a Magnetic-Field occurs from current flow

During this process, a CEMF against the "Change of Current", which will impede an increase of current, or add to the diminishing force to keep current flowing.

The "CEMF" will reverse polarity to either impede or strengthen the current flow.

This Reaction of either a Capacitor or Inductor will vary according to the Rate of Change, which is why the "Frequency" plays such a big part.

"Rate of Change" is a Key Factor - ie "Frequencies"

"Q" (Quality Factor) = X/R

Electrical Safety:

60ma – Muscle Cramping, vs 100ma or 200ma Lethal

AC vs DC, 110VAC vs 220VAC or 440VAC, { V-FIB }

200K Ohms hand to hand vs 200 Ohms "Inner Body"

2000:1 {and effects of sweat}

Epidermis Transparent to IR

[~ 7:30 PM]

4. XL and XC vs Frequency (Chart)

Note the **point of Resonance** where $X_L = X_C$
(if this happened in a Power Supply it would cause HAVOC with the regulation)

More Inductance will be on a **higher slope** *from* DC Point
Less Inductance will be on a **lower slope** *from* DC Point

More Capacitance will **suck in** the curve, still *touching at both ends*
Less Capacitance will **bellow out** the curve, still *touching at both ends*

5. LC Filters (by Schematics)

Low-Pass & High-Pass (Parallel **vs** Series)
Band-Pass (Parallel **vs** Series)
Band-Pass-Reject "Trap" (Parallel **vs** Series)

6. A "RC Filter" can be used to construct either a HP or a LP, and can be combined to create a "Twin-T" Bandpass Filter

7. Twin-T Oscillator

"Filters.odt" - *Talking Points Guideline* 03/03/2021