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17/ENG02/062
Computer Engineering
Electrical Circuit Theory

Assignment

Parallel Resonance Circuit: Parallel resonance occurs when the supply frequency creates zero phase difference between the supply voltage and current producing a resistive circuit

In many ways a parallel resonance circuit is exactly the same as the series resonance circuit. Both are 3-element networks that contain two reactive components making them a second-order circuit, both are influenced by variations

in the supply frequency and both have a frequency point where their two reactive components cancel each other out influencing the characteristics of the circuit. Both circuits have a resonant frequency point.

The difference this time however, is that a parallel resonance circuit is influenced by the currents flowing through each parallel branch within the parallel LC tank circuit. A tank circuit is a parallel combination of L and C that is used in filter networks to either select or reject AC frequencies.

Series Resonance Circuit: Resonance occurs in a series circuit when the

supply frequency causes the voltages across L and C to be equal and opposite in phase

In a series RLC circuit there becomes a frequency point were the inductive reactance of the inductor becomes equal in value to the capacitive reactance of the capacitor. In other words, XL = XC. The point at which this occurs is called the Resonant Frequency point, (fr) of the circuit, and as we are analysing a series RLC circuit this resonance frequency produces a Series Resonance.

Series Resonance circuits are one of the most important circuits used

electrical and electronic circuits. They can be found in various forms such as in AC mains filters, noise filters and also in radio and television tuning circuits producing a very selective tuning circuit for the receiving of the different frequency channels.