

A GENERALISED APPROACH TO THE STUDY OF VOLTAGE FED INVERTERS WITH RESONATING TARGET LOADS.

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This paper presents a generalized approach to the analysis and performance determination of inverters with target loads across which resonating ac voltages (usually very under-damped) are produced. This approach specifies the inverter circuit impedance components in per unit values of the impedance value at the resonant frequency of the impedance seen by the inverter output voltage or current. This per unitization method makes all relevant impedance components and variables to be functions of the quality factor at the impedance resonant frequency. For any other inverter switching frequency between the upper and the upper and the lower limits about the resonant frequency, the normalized inverter circuit currents and voltages and the output transfer characteristics are easily determined as functions of only the circuit quality factor at resonance and the inverter operating frequency, it is demonstrated with varied topologies of inverters with target resonating loads that the generalized approach affords easy characterization and classification of these inverter types.

Keywords: inverter, quality factor, resonant frequency.

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