The Parallel Resonant Converter

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RLC Parallel Circuit (Rejector Circuit)

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comparison between series \u0026 parallel Resonant circuits*LLC Resonant Converter with Matrix Transformer* ~~The Parallel Resonant Converter~~

The Parallel Resonant Converter. he objective of this chapter is to describe the operation of the parallel resonant converter in detail. The concepts developed in chapter 3 are used to derive closed-form solutions for the output characteristics and steady-state control characteristics, to determine operating mode boundaries, and to find peak component stresses.

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The characteristics of the parallel resonant converter are quite different from those of the series resonant converter, and from those of conventional PWM converters. The parallel topology can both step up and step down the dc voltage. Although the output characteristics are again elliptical, near resonance they exhibit a current-source characteristic.

~~The Parallel Resonant Converter~~

A Parallel loaded Resonant Converter (PRC) [1][2][3] [4] which is a subset of load resonant converters can be ... Improved Resonant Converters with a Novel Control Strategy ... Jiatian Hong, Dragan Maksimovic, Robert Erickson, and Iftikhar Khan, "Half-Cycle Control of the Parallel Resonant Converter Operated as a High Power Factor Rectifier," IEEE Applied Power Electronics Conference, 1994 ...

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~~Figure 5.26 from The Parallel Resonant Converter ...~~

Abstract:Five basic operating modes of the parallel resonant converter are analyzed. Three of the modes occur when the output filter inductor is removed and the remaining two occur when the filter inductor is large. Closed-form solutions are found for the two most important modes. Analysis results are given graphically so that the designer can use them without lengthy calculation or computer iteration.

~~Steady-state analysis and design of the parallel resonant ...~~

Firstly, the resonant power converter can be sectioned through the connection technique used in tank element. The main common three resonant circuits include a series-parallel resonant converter (SPRC), a series resonant converter (SRC), and parallel resonant converter (PRC) . The second factor lies in a quantity of the reactive elements (amount of transfer function order).

~~Resonant Power Converters | IntechOpen~~

converter (stage two), which can be divided into two categories: resonant and non-resonant converters. The non-resonant converters represent the most studied topologies for PV-interconnected systems. One of the widely used is the Boost converter [7–9].

~~Comparative Performance and Assessment Study of a Current ...~~

2. Simple frequency-domain modeling of resonant converters with the fundamental approximation 3. The series and parallel resonant converters, and zero-voltage switching 4. Design techniques: shaping the tank characteristics to achieve desired output I-V characteristics, achieve zero-voltage switching, and improve light-load ef?ciency 5.

~~Resonant Power Conversion~~

Three fundamental resonant elements – series resonance (SR), parallel resonance (PR) and notch resonance (NR) – can be found inside these resonant topologies. Each of these three resonant elements contributes different characteristics to a resonant converter.

~~Survey of Resonant Converter Topologies~~

Recently, DC/DC resonant converters have received much research interest as a result of the advancements in their applications. This increase in their industrial application has given rise to more...

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Parallel Resonant Converter. In a parallel resonant converter (PRC), The resonant capacitor (C r) is placed in parallel with the load, inevitability requiring large amounts of circulating current. This makes it difficult to use parallel resonant topologies in applications with high power density or large load variations.

~~SMPS: Resonant Converters : The Talema Group~~

A resonant converter is a type of electric power converter that contains a network of inductors and capacitors called a "resonant tank", tuned to resonate at a specific frequency. They find applications in electronics, in integrated circuits. There are multiple types of resonant converter:

~~Resonant converter - Wikipedia~~

A series resonsnt circuit is added parallel to the output circuit of the conventional converter. By utilizing the impedance characteristics of the additional circuit, the output voltage can be regulated with less conversion frequency variation than in conventional circuits. From experimental results, the conversion frequency variation necessary to keep the output voltage constant in a 0-to-100 ampere output current range was found to be only about 30% of that of conventional circuits.

~~Characteristics of a New Series Resonant Converter - IEEE ...~~

Parallel resonant converters (PRCs) have their load connected in parallel with the resonant tank capacitor C r [, , ,]. The half-bridge configuration is shown in Fig. 12.26 . SRC behaves as a current source, whereas the PRC acts as a voltage source.

~~Resonant and Soft-Switching Converters - ScienceDirect~~

Typically in ZVS converters a resonance capacitor which is placed in parallel with the semiconductor switch, is used to resonant the voltage across the switch to zero at turn-on. The two basic quasi-resonant and multiresonant topologies are shown in Figs. 7.54 and 7.55, respectively. Sign in to download full-size image Figure 7.54.

~~Zero Current Switching - an overview | ScienceDirect Topics~~

potential of resonant converters, and are producing dedicated resonant-converter-controller integrated circuits. Although many resonant-converter topologies have been investigated in the literature, it is the LCLC family of converters that has received the most attention. Particular members of the LCLC family offer signi?cantly superior

~~Methodologies for the design of LCC voltage-output ...~~

The series–parallel resonant converter (SPRC) is used as the candidate converter to which this controller design is applied but the design can be generalised to other types of resonant DC/DC converters. By using a multiple module approach, low-power modules of this resonant converter are stacked to enable operation at medium-voltage DC (MVDC).

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The converter is optimised using different design curves, and a prototype unit is developed using high frequency switches. The output voltage and power are controlled by using variable frequency and fixed frequency controls, independently.