Three-Phase Split-Source Inverter (SSI)

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Abstract

Several applications that depend on electrical DC-AC conversion sometimes need the AC output voltage to be higher than the input voltage. In case of use the traditional voltage source inverter (VSI) an additional DC-DC boosting stage is required. For this reason the single-stage DC-AC power converters are recently gaining higher attention due to their merits compared to the two-stage equivalent in terms of size, cost, weight, and complexity. They are also less complex in nature. Different impedance network converters are used in this field such as Z-source inverter (ZSI), the buck-boost voltage source inverter (BBVSI), and the Y-source inverter (YSI). In this paper another single-stage DC-AC power converter, called the split-source inverter (SSI) which has some features that is not exist in other topologies, the important one being the possibility to use the conventional modulation that used with the traditional voltage source inverter (VSI) without any modification. Here sinusoidal PWM (SPWM) and Third Harmonic Injected PWM (THPWM) are used and compared. The analysis of (SSI) has been verified by simulation. The simulation is done in MATLAB/SIMULINK.
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References


Index Terms

Computer Science

Power Systems

Keywords

Split-source inverter (SSI), SPWM, THPWM.