

# An AC/DC Power System Consisting of a Diode Rectifier and an Auxiliary Three-Level Converter

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## Abstract

This study proposed an AC/DC power system consisting a diode rectifier and an auxiliary three-level converter. The diode rectifier load system is powered by AC grid and distributed generators (DGs) such as photovoltaic cells and micro turbines. The auxiliary three-level converter operates as an active filter when the load system does not get enough power from DGs. When the load system get excessive energy from DGs, the auxiliary three-level converter can transfer the energy back to the AC grid. If the AC grid is in an abnormal condition, the AC/DC power system is disconnected by switch and the DC load is powered by the DGs. Once the AC grid recovers, the AC/DC power system is reconnected by switch and the DC load is powered by AC grid and DGs. Simulation and test results will be presented to validate the performances of the proposed AC/DC power system.

Keyword : Auxiliary Three-Level Converter