

Abstract

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Passive L and LCL filter design method for grid-connected inverters

The increased demand for grid-connected inverters for connection of renewable energy sources raises the issue of harmonics injected to the grid. Such inverters must comply with the standards specification of current harmonics injected to the grid. Such regulations can be maintained using passive filters connected between the inverter and grid. Design of such filters is a challenging problem when considering factors for the filter design such as inverter specifications and ratings. This paper proposes a trial-and-error based algorithm to obtain viable L and LCL filter parameters which comply with standards requirements and inverter ratings. Filter parameters are studied and the IEEE-1547 standard is adopted for the algorithm decision making. The result is a various combination of filter parameters that can be used which all satisfy the required criteria. By means of simulation the resulting parameters are evaluated.