

Electrical Blog No. 18 – Grid Connection

How to make grid connection of renewable energy power systems

Renewable energy power systems (e.g. photovoltaic systems, small wind turbines, biogas power generation systems) are usually installed within end-users' own premises to meet a part of the electricity needs of the premises. Due to the intermittent nature of some renewable sources such as solar energy and wind energy, storage batteries are usually required to be installed in the case of such "standalone systems" operating independent of electricity grid supply. A more desirable approach is to connect a renewable energy power generation system directly to the electrical distribution system and to supply electricity to the premises in parallel with grid supply. This is known as "grid-connection" arrangement.

To provide industry as well as the public a clear and concise technical requirements for grid-connection of their renewable energy systems, the "Technical Guidelines on Grid Connection of Renewable Energy Power Systems (2007 Edition)" which covers grid-connected renewable energy power systems of an aggregated power rating upto 1000kW is now available in EMSD website. The publication provides guidance on various technical aspects relating to grid-connection of renewable energy power systems in terms of safety, reliability, equipment protection, and power quality; as well as information on the procedures of making application to the power companies for grid-connection.

In this new edition, schematics for a number of example installations have also been provided to illustrate various practical grid-connection arrangements. A typical example for a small-scale PV system consists of PV arrays connected to three numbers of single-phase inverters, which are connected together to form a three-phase system. On the other hand, for a larger scale PV system, three-phase inverters operating in parallel can be adopted.

Other than the English version, a Chinese version of the 2007 Edition has also been published and made available to the public as well. Both documents can be downloaded from the EMSD website at: <http://www.emsd.gov.hk/emsd/eng/pee/nre.shtml>

The Electrical Blog is contributed by the Electrical Division. If you would like to know more about this topic, please contact the Division Hon Secretary, Ir Simon Chung at simon.chung@arup.com