

KL UNIVERSITY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DATE	: 5-02-2016
TIME	: 5:30 P.M to 7:30PM
EVENT	: Staff Colloquium
TOPIC	: Integration of bidirectional inverter with buck/boostconverter for DC Distribution systems
VENUE	: E105, K L University
ORGANISED	: Power Electronics Research Group, E.E.E Dept.
FACULTY INCHARGE	: G.Mamatha

EVENT DESCRIPTION:

“**Staff Colloquium**” is an activity organized by Dept. Of E.E.E of K L University on 5-02-2016 from 5.30 P.M to 7:30 P.M. The Seminar is given by Mr.M.Srikanth, Asst.Professor, Department of Electrical Engineering, KL-University. The topic of the Seminar is “**Integration of Bidirectional Inverter with Buck/boost converter for DC Distribution systems**”. In order to contribute to the Power Electronics Research group mission, Seminar is organized in EEE Department to bring awareness among the faculty, E.E.E department of K L University regarding the Different Power Electronics Research Areas.

SEMINAR IN BRIEF:

Demand for electrical power has become one of the major challenges faced by the developing countries. Considering the relatively low per capita power consumption, there is a constant need for power capacity addition and technological up gradation whereas renewable energy systems have proved to be good alternative sources for energy. Many types of renewable energy sources, such as photovoltaic (PV), wind, tidal, and geothermal energy, have attracted a lot of attention over the past decade. Among these natural resources, the PV energy is a main and appropriate renewable energy for low-voltage dc distribution systems, owing to the merits of clean, quiet, pollution free, and abundant. In the dc-distribution applications, a power system, including renewable distributed generators (DGs), loads and a bidirectional inverter is used.

The boost converter is operated in by-pass mode, when the PV-array voltage is higher than the dc-link voltage, and the inverter will function as an MPPT. However, since the characteristics of PV arrays are different from each other, the inverter operated in by-pass mode cannot track each individual maximum power point accurately, and the inverter suffers from as high-voltage stress as the open voltage of the arrays. To release this limitation, an MPPT topology, which combines buck and boost converters is proposed in this study, in which the control algorithm for tracking maximum power points is based on a perturbation and observation method. The MPPT will switch operation modes between Buck and Boost when the output voltage of a PV array is close to the dc-bus voltage. The designed controller can switch control laws to achieve smooth mode transition and fulfill online configuration check for the MPPTs, which can be either separate or in parallel connection, to draw the maximum power from the PV arrays more effectively. Additionally, a uniform current control scheme is introduced to the controller to equally distribute the PV-array output current to the two MPPTs in parallel operation.

PHOTOS:



Asst.Prof.M.Srikanth delivered a Seminar on “Integration of Bidirectional Inverter with Buck/boost converter for DC Distribution systems ”