56. Title: A loop power flow controller (LPFC) for DC distribution networks (DCDS)

Inventor: Prof. Sukumar Mishra, Department of Electrical Engineering

Keywords: Direct Current Distribution Systems

Domain: Power Generation & Distribution

Summary: A loop power flow controller is developed for Direct Current Distribution Systems (DCDS) for radial feeders, and meant to be used with Direct Current (DC) microgrids. This controller is developed with topology of power electronic converters comprises back-to-back connection of bi-directional converters. This arrangement in DCDS ensures reliable supply of power, in the event of fault or forced outage of any feeder section. It replaces the mechanical switches at the remote end of the feeders in power transmission, thereby facilitating smooth power flow control between feeders. It furnishes the effective control of the loading of the feeders in power transmission, by controlling the mount of circulating current ring mode. It provides a back-to-back connection of bi-directional converters as a simple and cost-effective solution for seamless interconnection of DC radial feeders.

Advantages:

- Control Strategy is simple and can be easily realized using any industrial microcontroller.
- Improved in reliability of the system.
- The LPFC operation can be easily realized using a three phase Voltage Source Converter.
- The control strategies used in the networks are simple and can be easily realized in any industrial microcontroller.
- It provides continuity of electric supply.

Applications: Power transmission

Scale of Development: A functional prototype controller is developed.

Technology Readiness Level: 4

IP Status: Indian Patent Application 201711041558