

Design and Development of an 'Optimisation Controller' and a SCADA Based Monitoring System for Renewable Energy Management in Telecom Towers

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Abstract : Energy saving is a key sustainability focus area for the Indian telecom industry today. This is especially true in rural India where energy consumption contributes to 70 % of the total network operating cost. In urban areas, the energy cost for network operation ranges between 15-30 %. This expenditure on energy as a result of the lack of grid power availability highlights a potential barrier to telecom industry growth. As a result of this, telecom tower companies switch to diesel generators, making them the second largest consumer of diesel in India, consuming over 2.5 billion litres per annum. The growing cost of energy due to increasing diesel prices and concerns over rising greenhouse emissions have caused these companies to look at other renewable energy options. Even the TRAI (Telecom Regulation Authority of India) has issued a number of guidelines to implement Renewable Energy Technologies (RETs) in the telecom towers as part of its 'Implementation of Green Technologies in Telecom Sector' initiative. Our proposal suggests the implementation of a Programmable Logic Controller (PLC) based 'optimisation controller' that can not only efficiently utilize the energy from RETs but also help to conserve the power used in the telecom towers. When there are multiple RETs available to supply energy, this controller will pick the optimum amount of energy from each RET based on the availability and feasibility at that point of time, reducing the dependence on diesel generators. For effective maintenance of the towers, we are planing to implement a SCADA based monitoring system along with the 'optimization controller'.

Keywords : operation costs, consumption of fuel and carbon footprint, implementation of a programmable logic controller (PLC) based 'optimisation controller', efficient SCADA based monitoring system

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