UTILIZING ALREADY COMMISSIONED STANDBY GENERATORS IN COMMERCIAL BUILDINGS TO ADDRESS POWER SHORTAGES

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Abstract

According to the most recent power demand curve of Sri Lanka, it is evident that the daytime power demand has been nearly reaching the same level as the peak demand which is usually present at night. The peak loads are mainly supplied by the hydropower plants. Thus, during periods with insufficient rainfall, supplying the peak power demand has become a major issue. This study investigates the possibility of utilizing the existing generators in commercial buildings to address power shortages in these situations. The study explored the possibility of self-generating the required power demand using private generators and the prospect of connecting generators to the national grid. Synchronization is a crucial part of this mechanism when it comes to paralleling generators or connecting generators to the national grid. Thus, the technical feasibility of connecting a generator to the national grid following presently available synchronizing techniques under distributed generation was analyzed thoroughly. The issues related to the safety methods in the power industry in Sri Lanka and the possibility of adopting a safe solution by providing useful information on preventing harmonic incidents were explored. An area was selected for data gathering and the power generation cost was calculated by categorizing generators in the sample area into three groups as small (< 220kVA), medium (220kVA < Generator < 700kVA), and large (> 700kVA) according to their kW capacity. If the unit cost of power generation of a particular generator is less than or equal to Rs.30, it was considered as a suitable generator for this project. According to the analysis medium and large-sized generators were able to maintain suitable value.

Keywords: Utilizing generators, Power shortage, Generator synchronization, Harmonics, Generation cost