Energy storage for peak shaving dhaka

Energy storage for peak shaving dhaka

Decreasing trend in solar PV price (USD/Wp).

Installed capacity (in MW) of BPDB power plant by fuel type.

Meeting time-varying demand, especially during peak periods, is a significant challenge for electric utilities. Small capacity power stations, such as gas or HFO power plants, are commonly used to mitigate the peak demand. Diesel generators are still widely used in isolated power systems to satisfy peak demand (Uddin et al., 2018). However, the cost of operation and maintenance (O& M) for these power plants is high (Chua et al., 2013). Thus, peak load shaving has become an important issue. Peak load shaving is a technique for flattening the load curve by lowering the peak load and moving it to lower load times (Nourai et al., 2008).

This study has therefore been conducted to address the high operating cost associated with fossil fuel based peaking power plants by assessing the financial feasibility of three different energy generation options to meet the peak loads. To justify whether the options are feasible or not, the levelized cost of energy from these options are compared to the cost of fossil fuel based peaking power plants.

Analyze the fuel type and LCOE of existing peaking power plants in Bangladesh

Propose the system layout for three different alternative options to meet the peak loads

Evaluate the LCOE of the proposed systems

Suggest the feasible options so that policy makers can take immediate actions

All the existing peaking power plants are fossil fuel based, except the Kaptai hydro project. The cost of energy varies by a big margin, depending on the type of fuel used, hours of use per year and overall maintenance cost (the cost breakdown can be found in Fig. 4). As per data available on the BPDB website some of the peaking power plants, used for very small hours (2% plant factor), have an energy cost of Tk. 41.60/kWh (for HFO) and Tk. 72.29/KWh (for HSD). The average energy cost of Bangladesh Power Development board (BPDB), including the IPP peaking power plants, is Tk. 17.50/kWh.

Per unit electricity greneration cost for different fuel based peaking power plants.

BPDB operates 14 peaking power units, one of which is natural gas-fired, three are HSD-fired, and the remaining ten are HFO-fired. Additionally, there are Twelve Quick Rental Power Plants (QRPP) and Nine Rental Power Plants (RPP) with a combined capacity of 1395.89 MW. Between 2014 and 2017, most QRPPs were extended for a further 3-5 years following their initial retirement phase.

Keeping in mind the technical and financial issues associated with the conventional fossil fuel based peaking power plants; we have proposed three technology options in this paper:

Contact us for free full report

Web: https://kary.com.pl/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346