

Non Implemented Case Study– Energy Conservation Measure

Measure
Surrendering the demand to the grid
Equipment
Electrical System
Industry / Sector
Paper
Year of Implementation
-
Cost Benefit Analysis
⦿ Type of Measure: No Investment
⦿ Annual Energy Savings: 500 kVA
⦿ Actual cost savings: Rs.4.95 lakh
⦿ Actual investment : Nil
⦿ Payback: Immediate
Implementation Highlights
<ul style="list-style-type: none"> ☞ The measure is very simple ☞ The plant has not implemented the measure due to: <ul style="list-style-type: none"> ⦿ The plant personnel feel that if the demand is surrendered to the grid, it may be difficult to get re-sanctioning of the demand. ⦿ Though there is no recent expansion plans the utility department anticipates increase in loads. ⦿ More plant personnel feel that the peak can occur which is more than sanction load due to sudden and simultaneous start of the plant equipment. ⦿ Since the demand requirement was originally assessed by the utility department they find the measure as fault finding measure.

Summary

Demand control and management in any industry always pays back opting for optimum demand from electricity supply company (grid).

Background

Plant has a sanctioned demand of 400 kVA and the maximum demand recorded is about 2300 kVA during the last two financial years. Most of the plant loads are continuous and the plant is operated round the clock.

Average load of the plant : 2000 kVA.

Minimum load of the plant : 1800 kVA

Maximum load of the plant : 2300 kVA

The demand charges per kVA are Rs. 110. The company has to pay to the grid at least for 75% of the sanctioned demand (billing demand) or actual if the actual demand is more than 75% of the sanctioned demand.

In this case the actual demand is very much lesser than the billing demand i.e., 3000 kVA. It was learnt that there are no plans for expansion in next two years by the plant management.

Proposal:

Considering the plant future plans and actual load conditions, it was suggested that at least 1000 KVA of demand can be surrendered to the grid. This can be done in two phases. Initially plant can surrender about 500 kVA demand and observe the plant for three –four months. After observing the no abnormality in demand other 500 kVA can be surrendered.

Techno-economics:

Existing contract demand	: 4000 kVA
Billing demand (75% of maximum demand)	: 3000 kVA
Maximum demand	: 2300 kVA
Demand charges per month	: Rs.3.63 lakh
Demand surrendering (I Phase)	: 500 kVA
New contract demand	: 3500 kVA
New billing demand	: 2625 kVA
New demand charges per month	: Rs.2.88 lakh
Annual cost savings	: Rs. 4.95 lakh
Investment required	: Marginal
Payback period	: Immediate

Principle

Most of the electricity supply companies have two par tariff. One is demand component and another is energy component. Demand and energy the tariff and the conditions vary from grid to grid.

Normally demand component is kept under different steps such as

- € Minimum payable demand (minimum charges have to be paid to the supply company whether the minimum demand is met or not). Normally minimum demand is kept either 50% or 75% of the sanctioned demand.
- € Actual demand. If the actual demand is more than the billing demand the company has to pay the actual charges based on actual demand.
- € If the demand exceeds the sanction demand, many supply companies levy penalties of charge extra over the actual charges.