

Barriers for energy Efficiency

Title:

Overlapping of energy conservation measures – energy conservation potential more than energy consumption

Section:

Lighting

Category:

Energy audit methodology

Industry:

Office lighting

Summary:

This is a case study pertaining to lighting energy audit in a electronic factory building where the audit revealed that energy saving potential is higher than the consumption.

This indicates that there was a big error in estimating the savings, which occur in, many and most of the cases due to over lapping of the measure.

Back ground:

The detailed energy was carried out in a lighting section as a part of the detailed energy audit component. The assembly section of the factory uses twin tube lights fittings for the lighting application.

The details of the lighting are

No of twin tube light fitting	:	100
Wattage of tube light	:	40 W per tube
Type of choke	:	conventional
Wattage of choke	:	15 w per choke
Total wattage of one twin tube light	:	110 W
Total wattage of the lighting section	:	11000 W
Operating hours in year	:	7000
Total energy consumption in a year	:	77000 kWh
Annual operating cost	:	Rs. 3.08 Lakh

Detailed energy audit indicated the savings realizable after the implementation of the following measures

Measure #	Measure	Savings per tube	Savings, kWh/year	Cost savings Rs.
1	Lighting voltage controller	22 W per twin tube	1694	6776

2	Electronic Choke	8 W per choke	12600	50400
3	Slim tube light	4 W per tube	5600	22400
4	Delamping 10 twin tube lights	10 twin tubes	7700	30800
5	Replacement with CFL	74 W for twin tube	51800	207200
			79394	317576

It can be seen that the annual energy saving potential estimated at Rs. 3.17 lakhs while the annual energy cost is Rs. 3.08 lakh, which is just impossible. This basically due to over lapping of the various measures.

This case surfaced out when the audit observations and finding were subjected to the thorough review.

It is very clear that the measure replacement of CFL will over lap with all the measures. i.e., when the CFL are installed then all other proposals cannot be valid. More over the measures 1 to 4 are valid only to the present system but not to the Measure # 5

Lesson learnt :

Normally such measure will happen whenever the measures are over lapped and not discounting the energy saving potential when the next measure is evaluated. This mistake normally occurs when there are measures suggested to reduce the energy consumption in the present system by both retrofits and incorporation of the latest technology. One should be very careful in evaluating such cases.