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A CASE STUDY: ENERGY AUDIT IN AN INDUSTRY MIDC, HINGNA, NAGPUR

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ABSTARCT: *In this research paper describe information about the industry and energy audit takes place. Total equipment and there is calculation in terms of electricity consumption (watt) of the overall calculation and hence analysis of data collected can be done by suggestion cost efficiency measure from data to improve of efficiency of appliances. Their energy use per day per month. Various information generated from organization and there activity can be documented energy conservation need into two stages. The energy audit is important role for any organization. Now days the energy conservation which normalizes the situation of energy crisis by preventing the conservation scheme take place. Now in India the energy audit important role for renewable recourses such as solar system, wind system, solar thermal power plant etc.*

KEYWORD: *Energy process management, energy conservation, estimate energy conservation,*

INTRODUCTION: now in India the energy conversion has one of the nature need installing capacity of 335.30 GW (giga watt) with any installation capacity of on 31 January 2017. The energy audit takes place path of an overall energy calculation process program .The energy measurement is a continuous process aim at the long term. That consumption take place in processing energy input utilization of energy. The output reducing cost of manufacturing.

The electricity source of energy in conservative is vary vary important goal in India. The purpose of continuous energy supplied in food manufacturing machining and service industry. The utilized power energy sources like coal, gas, nuclear, thermal, hydroelectric and renewable energy sources. In industry the electrical appliances are used. In Any industry common electric appliance are use for common purpose of light and ventilation for example LED light, fan cooler, computer, etc, The operation perform in industry drilling, boring, shaper, taper turning, facing, etc, .The machine is used in manufacturing industry, lathe, CNC turret lathe, radial drill and shaper and compressor .

LITERATURE REVIEW: When we start planning of this project and many review and research paper related to the energy audit available in the IEEE achieve research paper were study .Various paper mechanical and manufacturing engineering and best of our knowledge number of paper energy audit in different and organization however the following research paper we can identify the process and methodology to adopt for energy audit in mass production plan the type of industry is used energy audit takes place in different company but the industry generally different source adopting like renewable sources example solar panel, solar system, and wind energy.

METHODOLOGY: The following steps we are adopting to collect a data from the various steps such given as follows

- [LITRURATURE REVIEV]
- [SECTION OF ORGANIZATION]
- [DATA COLLECTION]
- [DATA ANALYSYS]
- [RACOMMENDATION]

DATA COLLECTION:IN INITIAL DATA COLLECTION exhaustive data collection was mode using different method, such as measurement , observation interview person. Following step were taken from data collection.

1.Visit the industry and different zone and mainly section the operation perform in a zone ‘A’.
2. The information is generated electric appliances and mainly difference machine process in 8 hour per day.
3. Draw a plant layout the electricity is used.

DATA ANALYSIS : In industry the collecting data was done energy consumption of electricity for per day and one month and it is calculated is different machine in zone ‘A’ . The analysis of data is used following way the evaluating of collecting data can be done.

Recommendation: The total calculation per month data analysis to observe the energy consumption in process plants the measure calculating data.

Calculation for summer:-

Sr no	Detail of appliances	No. Of machine	watt	1 hr/day	8 hr/day
1	CNC turret lathe	2	440	880	7040
2	Lathe machine	13	440	5720	45760
3	Boring machine	2	440	880	7040
4	Radial drill	3	440	1320	10560
5	Shaper machine	1	440	440	3520
6	Slotted machine	1	440	440	3520
7	Vertical drill machine	1	440	440	3520
8	Electric motor pump	1	1200	1200	1200
9	Grinder	1	440	440	3520
10	Cooler	2	350	700	5600
11	Water cooler	2	550	1100	8800
12	Computer	2	130	260	2080
13	Fan	2	40	80	640
14	Exhaust	3	100	300	2400
15	Compressor	2	2000	4000	32000
16	Water filter	1	230	230	1840
17	LED bulb	23	7	161	1288
18	Tube light	6	40	240	1920
				18831	142248

(A) Energy consumption in summer

1. The wattage on the application (W)
Total power consumption in summer= 1, 42,248 watt hour/ day
2. Multiply wattage by hour used each
=Total power consumption (wh/day) / 1000watt (1kw)
=142.248 kwh/day
3. Multiplied the no of days
there are27 working days in a month
=142.248 kwh/day *27days/month
=3,840.696 kwh/month
There are300working days in a year
=142.248 kwh/day *300days/year
=42,674.4 kwh/year

there are 300 working days in a year

=127.208 kwh/day *300days/year

=38,162.4kwh/year

there are300working days in a year
=142.248 kwh/day *300days/year
=42,674.4 kwh/year

(B) Energy consumption in winter

1. The wattage on the application (W)
Total power consumption in summer= 127208 watt hour/ day
2. Multiply wattage by hour used each
=Total power consumption (wh/day) / 1000watt (1kw)
=127.208kwh/day
3. Multiplied the no. of days
There are27 working days in a month
=127.208 kwh/day *27days/month
=3,434.616kwh/month
There are 300 working days in a year =127.208 kwh/day *300days/year
=38,162.4kwh/year
Designing solar panel for maximum watts
Utilization in summer = 18831 watt/hr ..... (1)
Dimensions of solar panel =5'*6'
In sunlight condition solar panel energy producing w/hr = 250w/hr
No of solar panel for producing =(total energy consumption in watt per hr) /(solar panel energy producing in watt per hr)=18831/250
=75.324=76 panels
No of solar panel required to producing = 76 panels

Hence prove.....
From eq 1 and 2
19000 w/hr > 18831w/hr

The number of solar panel are requited is 76 in industry

Sr no	Detail of appliances	No. Of machine	watt	Shift 1 hr/day	8 hr
1	CNC turret lathe	2	440	880	7040
2	Lathe machine	13	440	5720	45760
3	Boring machine	2	440	880	7040
4	Radial drill	3	440	1320	10560
5	Shaper machine	1	440	440	3520
6	Slotted machine	1	440	440	3520
7	Vertical drill machine	1	440	440	3520
8	Electric motor pump	1	1200	1200	1200
9	Grinder	1	440	440	3520
10	Computer	2	130	260	2080
11	Exhaust	3	100	300	2400
12	Compressor	2	2000	4000	32000
13	Water filter	1	230	230	1840
14	LED bulb	23	7	161	1288
15	Tube light	6	40	240	1920
				16951	127208

Result:- On the basis of recommendation of data analysis and observe that the total output per hour and consumption were taken .The measurement of energy conservation present working condition and same time the whole process the total input is apply for purpose of renewable energy. The cost capacity innovate renewable energy process where estimate in terms of consumption per hour .The renewable energy compare to calculate the capacity recorded time which is define as total time and environmental which is save in electric balances. The capacity cost innovates.

CONCLUSION: This paper is represented idea to eco friendly in industry by substitution, innovation solar panel, high power consumption device such as lathe machine and CNC. In this way the consumption can calculated.

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