



Client : MUSCAT PHARMACY, MUSCAT, SULTANATE OF OMAN
Equipment : 24 TR DAIKIN PACKAGED AC ROOF TOP UNIT
Refrigerant : R- 22. MO



KWH METER



CLAMP ON CTS

ENERGY SAVINGS REPORT OF 24 TR DAIKIN AC PACKAGED UNIT – MUSCAT PHARMACY, MUSCAT

I) PRE & POST MAXR 100 installation data.

PRE MAXR 100 INSTALLATION DATA										
Sr. No	Date	Time		Total Running Hours	Temperature IN Deg C		KWH meter reading		Total KWH	Average KWH/ Hour
		From	To		Amb	Inside	Start	End		
1	03-04-2016	11.30		27	27	24	2.695		315.693	11.69233333
	04-04-2016		14.30					318.388		
POST MAXR 100 INSTALLATION DATA										
2	19-06-2016	10.30		25	34.27	25	2066.48		258.79	10.3516
	20-06-2016		11.30					2325.27		

Note: MAXR100 installed on 4/4/2016 @ 3.15 PM

II) SUMMARY OF THE PRE AND POST MAXR 100 INSTALLATION DATA

Sr. No	Parameters	Pre	Post	Difference
1	Total Running hours	27	25	
2	Total Energy Consumption in KWH	315.693	258.79	
3	Average Power Consumption/ hour in KWH	11.692333	10.3516	1.340733333
4	Average Ambient Temperature in Deg C	27	34.27	7.27
5	Average temperature inside in Deg C	25	25	

III) Conclusion:

Energy Savings with MAXR 100 IN %

Improvement in average Power consumption /Hour in KWH	1.340733333
Improvement in average Power consumption /Hour in KWH (%)	11.4667731

IV) Actual Energy Savings Considering the change in average Ambient Temperatures post MAXR100 installation period.

- For calculating the actual savings we need to consider the change in ambient temperatures of pre data period with the post data period, which is 7.27 Deg C. Any increase in the ambient temperature will affect the energy consumption of the AC unit. Hence for calculating the actual savings we need to consider COP- Coefficient of Performance principle which is most commonly used method.
- COP- is the ratio of heat removed from a system to the energy required to remove the heat. The theoretical maximum is equal to the coldest temperatures of the refrigerant divided by the difference between its coldest and hottest temperatures are expressed in Kelvins. Even the perfect system decreases efficiency with increased outside temperatures, dropping about 2% per Deg C.

- Considering 7.27 Deg C increase in the ambient Temperatures for the post MAXR 100 installation period the energy consumption has increased by 14.54% during the period.

Considering the above we have calculated the actual energy consumption during the post MAXR100 installation period.

- Total Energy consumption in KWH : 258.79 Kwh
- Increase in Energy consumption due to rise in ambient temperature in % : 14.54 %
- Actual Energy Consumption in KWH : $(258.79 \times 14.54)/100 = 37.6280$ KWH

$$258.79 - 37.6280 = 221.162 \text{ kWh}$$

- Actual average Energy Consumption / Hour on kWh : $221.162/25 = 8.8464$ kWh/Hour
- Actual % of Energy Savings with MAXR100 in % : $(11.6923 - 8.8464) = 2.8459$ Kwh/ Hour

$$(2.8459/11.6923) \times 100 = \mathbf{24.3399 \%}$$