January 21, 2016

To Whom so Ever it may Concern

The team from **M/S Naviya Techno solution** approached us for energy saving "**Synthetic Catalyst named ICECOLD** " in our Emerson Precision Air Conditioners.

We selected below units, because we wanted to test the product on a unit which runs 24x7 and load is mostly constant (TR). The details are as per below -

A) Unit specification & details:

a. Location & Application : Kolkata, Network Cooling Room
b. No & Type of Unit : 2 # 17TR Air Cooled Precision AC
c. No of circuits : 2 # with 1 Compressor each circuit
d. Compressor : ZR 108 Copeland, Hermetically sealed
e. Operation : 24X7 Load sharing basis

B) Testing period :

B.1) Energy Meter readings :
Pre Installation : Sept 07th to 10th 2015
Installation date : September 10th 2015 at 13:30
Post installation : Sept 10th to Oct 06th 2015

B.2) Through HOBO data loggers :-
Pre Installation : 1440 minutes ie from Sept 07th to 10th 2015
Installation date : September 10th 2015 at 13:30
Post installation : 21660 minutes ie from Sept 10th to Sept 21st and Oct 01st to 6th 2015.
IceCOLD injection : Unit no PAC 2

C) **Methodology** : Followings two methods were adopted for power savings analysis :-

C.1) Through Energy Meter : We adopted one of the robust and as per International Industry standards for 24X7 applications. One energy meter was installed with PAC 2 unit and another with both units.

Energy Meter readings	Start reading (PAC 2) units	Close reading (PAC 2) Units	Unit /Day (PAC 2)
Pre-Installation	92620	93784	388
Post installation	93718	102771	348.2
Savings per day			39.8
Total power saving			**11.40%**

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Temperature Correction factors:

Description	Unit	Ambient temperature	Return Air temperature
Pre Installation (Average)	°C	28.6	25.0
Post Installation (Average)	°C	27.0	24.0
Difference	°C	1.6	1.0
Average efficiency changes (From Compressor rating chart)	%/°C	-2.5%	3.7%
Sub Total Changes	%	-4.0%	3.8%
Effective total changes	%	-0.2%	

Total Energy Saving = 11.2%

C.2 Readings Through our Hobo Data loggers: They took the readings of Supply, return and Ambient air temperature along with compressor ampere for every 1 minute duration get the accurate readings as per below :-

Sr No	Description	Unit	Pre Installation	Post Installation
1	Reading duration	Minute	1.0	1.0
2	Average Supply air temp	°C	19.4	18.8
3	Average Return air temp	°C	25.0	24.0
4	Average amp	Amps	29.5	26.0
5	Average Ambient temp	°C	28.6	27.0

Total Power savings -

Ampere Changes pre and post installation : 11.7%
Effective total changes (After temperature correction) : 11.5%

Saving of 11% + on our unit consumption, as derived from the readings taken with energy meter installed is really very encouraging . We firmly believe and endorse the saving capability of this product.

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