



PERSISTENT
December 31, 2010

Testimonial

This is to certify that 78 Ultra Violet Germicidal Irradiation (UVGI) systems called "Watmizer" have been installed in 17 Air Handling Units (AHU's) of our HVAC System, serving the work halls, conference rooms and cafeteria at our Bhageerath establishment at Pune in March 2010.

Prior to the installation of Watmizers in March 2010, regular weekly cleaning of cooling coils was initiated in September 2008 and prior to that there was unscheduled cleaning of cooling coils. Energy meters were installed to monitor KWH consumption for the AC system and data was presented as average daily KWH consumption for each month. It has therefore, been possible to measure the KWH saving by Watmizers as compared to 'no cleaning' in 2008-09 and 'weekly cleaning' in 2009-10 for corresponding months. The data reported in the enclosed table has been collected by our own maintenance staff at Bhageerath. The details of the measurements are tabulated in Annexure A.

- Until November 2010, the average savings in electric power consumption of HVAC System was **8.3 %** over the corresponding period of previous year, when there was weekly cleaning of the cooling coils.
- The average electric Power Savings was **25.8 %** over 2008-09 when there was no regular cleaning of the cooling coils & an optimized HVAC operation.

Furthermore the cleaning of cooling coils & drain pan has been discontinued since the installation of Watmizer's and the cooling coils were found to free from growth of fungi & molds resulting in reduction of maintenance cost as well.

The Indoor Air Quality has also improved considerably resulting in freshness in the Indoor Air of the enclosures. The test results are tabulated below.

	Before Watmizer Installation	After Watmizer Installation	
Test Plate	Initial CFU	After 35 Days CFU	% Reduction
WH - 1	42	25	40
WH - 2	47	21	56
WH - 3	41	27	34
Return Air	71	42	41

Colony Forming Units (CFU) represents the bacteria count in air

We are pleased with the performance of the Watmizer System and have no hesitation in recommending this product to anyone who may be looking for similar application.

Thanking You

For Persistent Systems Ltd


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Annexure A								
Comparison of Average Daily HVAC Energy Consumption (KWH) for FY 2008-09 to 2010-11								
Measurement Protocol								
S.No.	Month	FY 2008-09	FY 2009-10	FY 2010-11	Energy Saving by WATMIZER			
		Coil cleaning	Coil cleaning	Coil cleaning	FY 2010-11 over 2008-09		FY 2010-11 over 2009-10	
		none	regular, weekly	none	KWH	%	KWH	%
				Watmizer installed				
1	April	2593	2108	1991	602	23.2	117	5.9
2	May	3041	2231	2069	972	32	162	7.3
3	June	2795	2287	1958	837	30	329	14.4
4	July	2200	1893	1774	426	19.4	119	15.9
5	August	1885	1667	1493	392	20.8	174	10.4
6	September		1863	1635			228	12.2
7	October		1810	1716			94	5.2
8	November		1573	1520			53	3.4
9	December							
10	January							
11	February							
12	March							
	Total	12514	15432	14156	3229	25.80%	1276	8.30%
	Av. Daily	2502.8	1929	1769.5	645.8	25.80%	159.5	8.30%

NOTES:

- 1). Regular cooling coil cleaning was initiated in Sept 2008 therefore the energy consumption data without coil cleaning was not available from September 2008.
- 2). With regular weekly coil cleaning from Sept 2008 onwards , average daily energy consumption from September to March period (7 Months) for 2008 – 09 and 2009 -10 were 1561 and 1585 KWHr respectively. The difference is 1.5 % indicating reliability and consistency of the energy consumption data.

Pune dated 31.12 .2010

For Persistent Systems Ltd

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