

WHOLE HOUSE



WH AMBIATOR[®] is an efficient and cost effective alternative to conventional air conditioning for Bungalows, Row Houses, Independent Villas and Farm Houses.

WH AMBIATOR[®] enabled homes or buildings will reduce the amount of power they're using for comfort cooling.

WH AMBIATOR[®] takes a few seconds to pull down the space temperature to acceptable limits, compared to any conventional air conditioning system.

WH AMBIATOR[®] tops the list as the most energy efficient and healthy cooling option in dry climates.

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A Toro **GreenTech** India
Energy Efficiency Initiative

www.torogreentech.com

WH AMBIATOR®

Some great advantages

- 60 to 70% Energy savings
 - Excellent Return On Investment
 - Lowest life cycle cost
 - Highest EER
 - Lowest connected load
 - 100% Fresh air
 - Dust and mite free air
 - No Chemical refrigerant used
 - Benign R-718 (water) refrigerant
 - No sick building syndrome
 - Low Cost Sensible cooling
 - Corrosion free Polymer heat exchangers
 - High efficiency fans
 - Low Watt Pumps
 - Integral Controls
 - Blow through design
 - VFD option
 - BMS compatible
 - Zero Ozone depletion
 - Lowest carbon foot print
 - Lowest GHG emissions
 - Carbon credit benefits
 - Eco friendly –Green Solution
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WHAT IS WH AMBIATOR®

WH AMBIATOR® is based on sound thermodynamic principals to produce cooling without using mechanical compression or chemical refrigerants besides using minimum electrical energy.

It is the only system that can cool fresh air at fraction of the cost compared to refrigerative cooling.

The system uses water as refrigerant and makes use of the latent energy of water to cool the dry fresh air. This cooled air is used as a cooling fluid to remove heat from the buildings.

It can also pre cool the air required to be further cooled using expensive refrigerative cooling and thus saving substantially, on the operating costs.

HOW DOES IT WORK

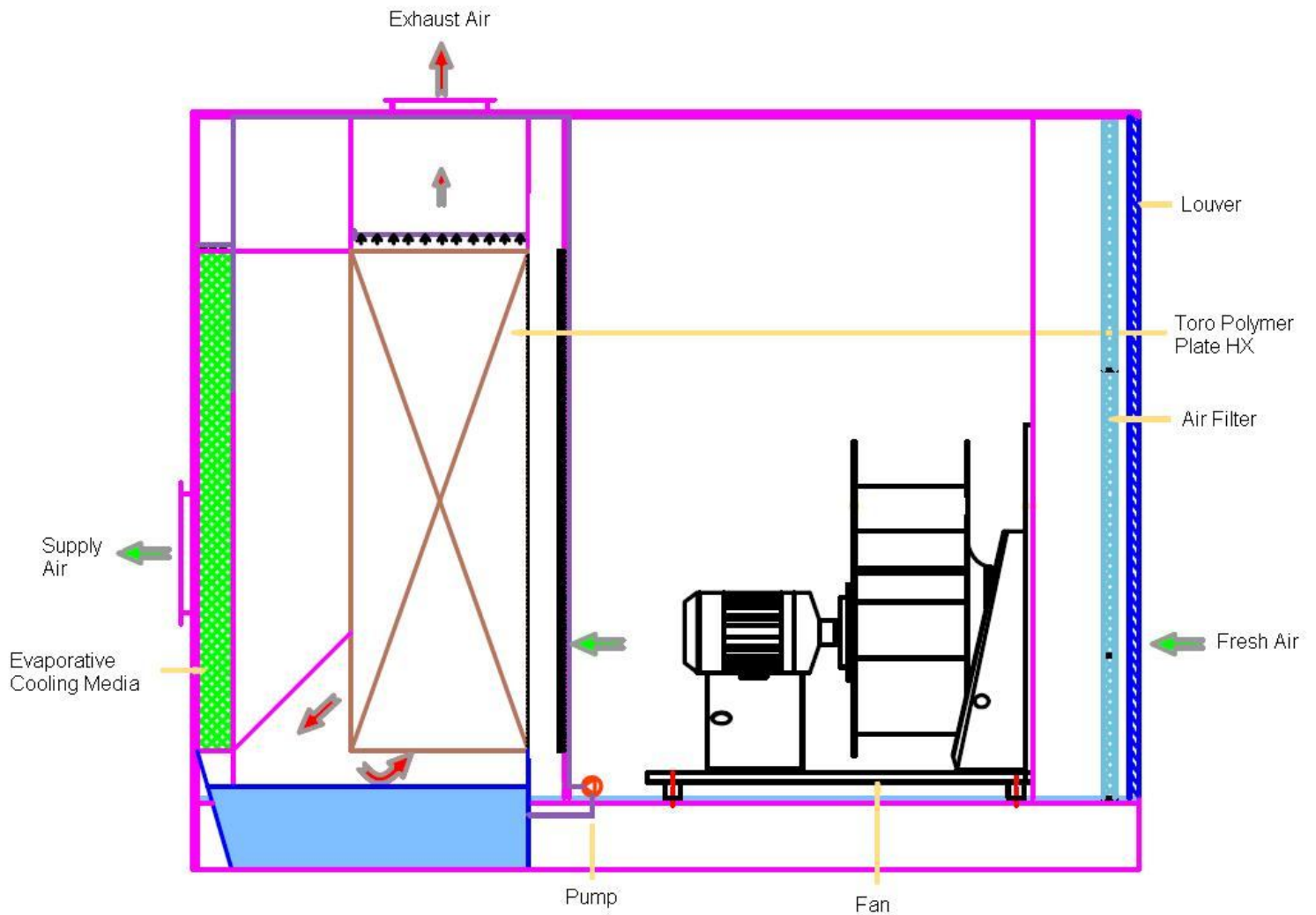
WH Ambiators are based on a combination of Indirect and Direct Evaporative Cooling (IDEC) and the systems use water as refrigerant.

A small amount of ambient air is used as a heat sink to remove heat from the supply air that is used to cool the space. In many dry or composite zones of the country, the WH Ambiators can provide better comfort than conventional air conditioners.

WH Ambiators can also be used to pre cool the air required to be further cooled using expensive refrigerative cooling and thus saving substantially, on the operating costs.

The schematic on the next page explains the general arrangement of various components that go into making a WH Ambiator.

General layout of a Whole House Ambiator



Whole House AMBIATOR[®]

A very simple comparison

DESCRIPTION	UNIT	Whole House AMBIATOR [®]	AIR CONDITIONER
CAPACITY			
CAPACITY	BTU/HR	60000	60000
AIR QTY	CFM	3000	1500
HOUSE SIZE	SFT	1200-1500	1200-1500
POWER			
CONN. LOAD	KW	2	7.5
POWER USE	IKW	1.5	7.5
SEER	BTU/WATT	30-40	8
REFRIGERANT			
COMPRESSOR	TONNE	0	5 TR
REFRIGERANT	TYPE	WATER	HCFC
REFRIGERANT	LPH/KG	40	4
PERFORMANCE			
TEMPERATURE			
AMBIENT	°C	50	35
INDOOR TEMP	°C	26	24
HUMIDITY	%	60	55
FILTRATION	MICRON	10	20
FILTER	EFFICIENCY	95%	80%
OTHER ISSUES			
VOLTAGE STAB	USE	NO	REQUIRED
MAINTENANCE	TYPE	LOW COST	EXPENSIVE
ALTERNATE ENERGY			
SOLAR	CAN USE ON	YES	NO
INVERTER	CAN USE ON	YES	NO
SMALL GENSET	CAN USE ON	YES	NO
OTHER EXPENSES			
POWER WIRING	REQUIRED	NO	YES
FALSE CELING	REQUIRED	NO	YES
FRESH AIR	COST	NIL	VERY HIGH

Salient Features

1. Tolerance to temperature

The air conditioners are rated at 35°C for capacity and get severely de-rated at higher ambient temperatures whereas the WH Ambiator[®] can function effectively even at temperatures exceeding 45°C for any length of time.

2. Life cycle Costs

WH Ambiator life cycle costs are lowest and the total owning cost may be recovered in less than two years, in most of the climates.

3. Maintenance

WH Ambiators[®] do not use any compressors or high pressure refrigerant gases. The open cycle Ambiator architecture calls for virtually Zero maintenance

4. Noise

WH Ambiators[®] use blow through fans to avoid corrosion of the fan and motor assembly. This air is blown into a honeycomb having a large surface made of noise absorbing polymer.