AQUA COOL
COOLING TOWER

FANLESS INDUCED DRAUGHT WHIRLJET

THE COOL ENERGY SAVER

SAVE ENERGY... INCREASE PROFIT S

Power Saver -
Fanless.

Corrossion Free -
100% Polymer Composite...
Long Life.

Maintenance Free -
Fill Less Mistfilled Tower..
No Regular Cleaning....
No Downtime...

AQUACOOL

COMPANY PROFILE

The Cool Vision

Since its inception in 2000, **Siddhant Equipments Pvt. Ltd.** has been instrumental in offering innovative Cooling Tower Solutions to its varied domestic and international clientele in commercial as well as industrial sector.

Pioneering the Fanless Induced Draught Whirljet Non-Corrosive Cooling Tower technology, Siddhant Equipments Pvt Ltd proudly takes the credit of designing India's first 100% Polymer Composite Fanless Induced Drought Whirljet Cooling Tower.

The technology offers three crucial benefits to the user -

a) Power Saver

b) 100% Corrosion Free

c) Practically Zero Maintenance

Being seamless corrosion proof, our product is the best designed cooling tower in the industry. The product line ranges from 5 T.R. to 500 T.R. In 2003, with the intention to offer friendly solutions to end users of large plastic towers, we introduced Capsule Shaped Cooling Tower in single module capacities ranging from 500 T.R. to 1000 T.R.

Siddhant Equipments Pvt. Ltd. is blessed with the best technical specialist to work with you, according to your requirement, on cooling tower applications. We are best equipped to cater to both the commercial as well as industrial needs.

Siddhant Equipments Pvt. Ltd. enjoys a loyal clientele base due to its immaculate and robust cooling tower solutions and is eager to add your name to that esteemed list.

QUALITY & SERVICES

Long-lasting Satisfaction

The company has a modern manufacturing unit having facilities like FRD moulding shop, thermoplastic welding & fabrication shop, pattern making and test laboratory for Quality Control and raw material testing. Sidhant Enterprises is committed to providing the best value to cooling tower user and will continue to invest in our products & capability to remain the best value to customers.

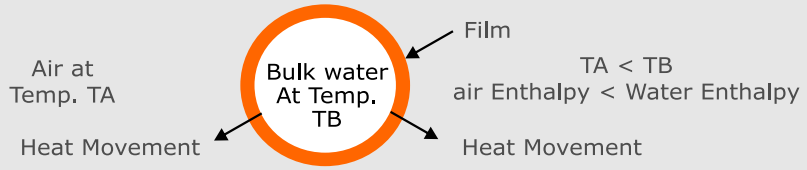
GLOBAL PRESENCE

Beyond the Horizon

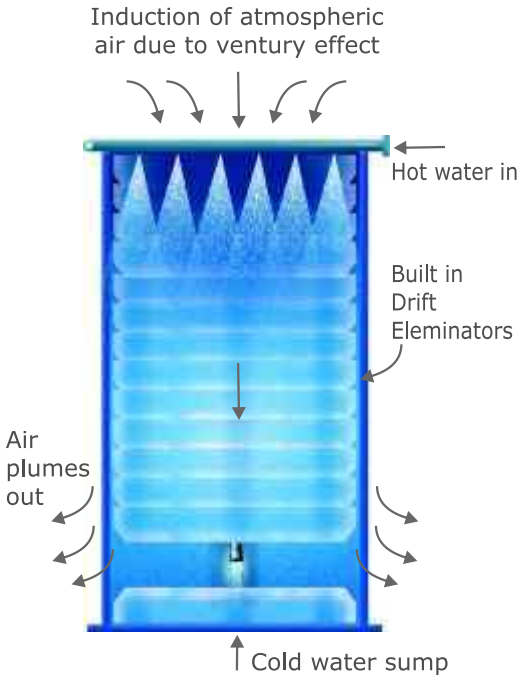
With in a short span of time since inception, SE started exporting Cooling Towers to Gulf, Middle East & African countries and today we are proud to say that we are the largest exporter of Fanless Cooling Towers from India.

WORKING PRINCIPAL OF AQUA-COOL COOLING TOWER

Our C. T. Design is based on heat transfer from water drops to the surrounding air by the transfer of sensible and latent heat. Sensible heat transfer owing to difference in temperature of water and air. Latent heat transfer owing to vaporization of small portion of water.



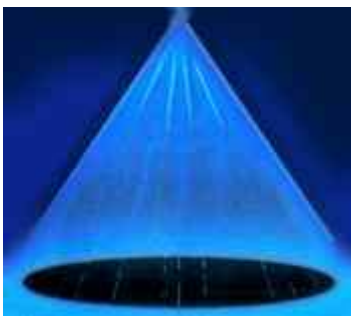
To achieve this, whirljet nozzles are used. Due to water jet partial vaccum is created on top of the tower which induces surrounding air from top to bottom, (co-current) which inturn cools the water. For better surface contact atomisation (Mist formation) of water is created.



Hollow Cone Whirljet Spray Nozzle :

Hollow Cone nozzles are best for cooling tower application, which requires good atomization of liquid (water) and quick heat transfer.

Nozzles are tangential entry type. Free passage is given to the water to form uniform hollow cone spray pattern with non-clogging characteristic.



M.O.C. : 30% Glass Filled Nylon 66/PP Range :

Pressure(kg/cm²)	Flow rate(lps)	Spray angle
0.4	0.5	70°
0.5	0.53	80°
0.6	0.58	90°

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COMPONENT DESIGN AND FEATURES

WHIRLJET SPRAY SYSTEM

Made up of thermoplastic pipes reinforced with FRP fitted with thermoplastic (GF Nylon / PP) whirljet nozzles. The nozzles are self-cleaning, hence no regular maintenance is required for cleaning. The nozzles feature a center post design that provides long service life and excellent spray pattern uniformity by precisely controlling the fluid of vertex in the nozzles whirlchamber. Carefully engineered spray system to assure maximum cooling capacity / cubic foot of tower volume. Complete utilization of tower area is achieved by locating specially designed spray nozzles in a pattern determined by test and experience to assure the most effective cooling performance.

LOUVERS

Louvers are made of moulded FRP (Fibre reinforced plastic) using isopthalic resin with neopentyl glycol gelcoat and suitable U. V. Stabilisers. The louvers have inbuilt drift-eliminators to minimise drift losses.

STRUCTURAL SUPPORTS

Vertical supports are made of moulded FRP with foundation plates also of FRP, having stiffened core for better strength and stability.

These supports with metal reinforcement can be supplied as per requirement on demand.

WHIRLJET SPRAY SYSTEM

LOUVERS

STRUCTURAL SUPPORTS

HARDWARE

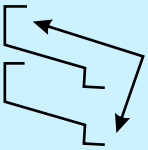
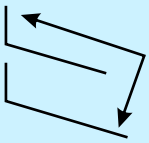
The nutbolts and washer are made of reinforced thermoplastic with main structural bolts of MS-GF Nylon. Therefore all the hardware is of high strength and corrosion free.

M.O.C. 30% Glass filled Nylon 66

Advantages :

- High tightening Torque
- Electrical & Thermal Insulators
- Corrosion Resistant
- Low Cost

COMPARISON WITH OTHER FANLESS COOLING TOWER

Aqua Cool cooling tower	Other Fanless cooling tower
1 **Circular Shape**: Air circulation is better, as ventury effect is more in circular shape. Hence better efficiency	1 **Rectangular Shape**: Air suction is inferior as Four corners of C.T. act as dead zones. Hence moderate efficiency.
2 **100% polymer composite** including structure and spray assembly, hence totally corrosion free. We use **NPG ISO Gel** coats for outer surface of C.T. body, so better weather resistance & longer life.	2 Only louvers are of FRP structure, spray assembly is of **M.S.** prone to corrosion. No use of gel coat, hence poor weather resistance and poor life
3 **Hardware**: Main structural bolts are 16mm in dia. No falling of louvers through out the life of C.T. Falling of nozzals is negligible due to correct engineering design.	3 Bolts are ¼ **inch** only. **Repeated failing of louvers.** Falling of nozzals is very high.
4 Resistance to high wind velocities is better due to circular**(aerodynamic)** shape	4 Resistance to high wind velocities is poor due to rectangular shape.
5 Superior quality of polymer Composite.	5 Inferior quality of Polymer Composite.
6 Drift losses are@0.02% due to inbuilt drift eliminators in louvers.  **DRIFT ELIMINATOR**	6 Drift losses are @ 0.2% as no drift eliminator in louvers.  **NO DRIFT ELIMINATOR**

COMPARISION BETWEEN INDUCED DRAUGHT FAN TYPE COOLING TOWER AND **AQUACOOL FANLESS** INDUCED DRAUGHT WHIRLJET COOLING TOWER

Induced Draught Fan type cooling tower	Aqua Cool Fanless Whirl jet-spray Induced Draught Cooling Tower
1 Induction of air takes with the help of a fan,i.e. electrical energy is used	1 Induction of air takes place with **venturi effect** created in the tower. The water pressure required to the venturi effect is **0.4 to 0.6 kg/cm^2**, which is normally available as residual pressure in practically all cooling water circuits.
2 Uses pump for circulation of water.	2 Uses pump for circulation of water.
3 Structured packings are used for better heat/mass transfer. The packings get clogged with dust and algae thus reducing the efficiency of cooling tower	3 **No packings** are used. Specially designed nozzles with venturi effect are used which create mist within the tower, which is superior in performance and give constant efficiency. Height of the tower is 25 to 30 % more than ID fan type tower.
4 FRP outer covering with hot dip galvanized structure and dust and algae thus reducing the efficiency of cooling tower.	4 **100% FRP** structure and body with high strength and thermoplastic hardware is totally corrosion free.
5 Drift eliminators to arrest drift loss are used.	5 **Drift eliminators** to arrest drift loss are provided in the tower.
6 Power is consumed for circulating **pump** and **ID fan.**	6 Power is consumed **only** for circulating **pump**
7 Usage of hard/contaminated water gives frequent breakdowns by clogging the structured fills and corroding the hardware including the fan motor assembly.	7 Usage of **hard/contaminated water** does not have any effect on cooling tower performance and duty.
8 Regular maintenance is required for the structured fills/packings, the sprayer assembly, the fan motor assembly and the metal structure.	8 **No maintenance** required as there are no fills, no fan motor assembly. All corrosion resistant construction. Sprayer assembly has self-cleaning antistick nozzles.
9 The capital cost + operating Cost + maintenance cost has to be incurred by installing these towers apart from the downtime loss.	9 **Only the capital cost** which is comparable to an ID fan type tower is incurred by installing these towers, The overall saving pays back for the capital cost in approximately 14 to 16 months of operating time.

AQUACOOL

SELECT LIST OF CLIENT

Name of client	States	Capacity (TR)
Process Cooling		
• Alkyl Amines Chemicals Ltd.	Maharashtra	216 x 2 nos
• Armour Polymers Ltd.	Maharashtra	36
• BNL Amonia Pvt Ltd.	Maharashtra	25
• Bajrang Extractions Pvt Ltd.	M.P.	500
• Budge Budge Refineries Ltd.	W.B.	400 x 2 nos
• Ceekay Daikin Ltd.	Maharashtra	100
• Claris Life sciences Ltd.	Gujrat	35
• D. W. Technologies	Maharashtra	40
• Eco Organics Ltd.	U.P.	100
• Gandhar Petrochemicals Ltd.	Gujrat	1000
• Gits food Products Pvt Ltd.	Maharashtra	20
• Graphite India Ltd.	Maharashtra	80
• Garg Casteels Pvt. Ltd.	Gujrat	350
• ION Exchange (Ind) Pvt. Ltd.	Gujrat	250
• Indofill Chemicals Co.	Gujrat	750 x 1 no 1000 x 1 no
• J. H. Kharawala Pvt. Ltd.	Gujrat	800 x 4 nos
• J. K. Talabot Ltd.	Maharashtra	100
• Klassic Wheels Pvt. Ltd.	Maharashtra	50
• K. S. Oils Ltd.	M.P.	1000 x 2 nos
• K. S. Oils Ltd.	Rajasthan	1000 x 1 no 400 x 2 nos 250 x 2 nos
• Legrand (India) Pvt. Ltd.	Maharashtra	30
• Metallurgical Products (I) Pvt. Ltd.	Maharashtra	200
• Madhu Silica Pvt. Ltd.	Gujrat	350
• Maven Industries Ltd.	Maharashtra	200 x 1 nos 400 x 1 no
• Nakoda Chemicals Ltd.	Hyderabad	450
• Pandesara Ind. Pvt. Ltd.	Surat	500 x 5 nos
• Smruti Organics Ltd.	Maharashtra	300
• Sona Chemicals	Maharashtra	35
• Suparshav Industries	Rajasthan	100
• Shree Precoated Steels Ltd.	Maharashtra	100 x 2 nos 2000X 1 no 1300 x 4 nos
• Shilpa Medicare Ltd.	Karnataka	400 X 1 no 800 X 1 no 1000 x 1 no
• SPIC	T. N.	4000
• Sam Industries	M. P.	600 x 2 nos
• Xpro India Ltd.	Maharashtra	700
• Xytel India Pvt. Ltd.	Maharashtra	10
Industrial Refrigeration		
• Artemis biotech Ltd.	A. P.	500
• Aquapharm Chemicals Pvt. ltd.	Maharashtra	500 x 1nos
• Champion Seals Pvt. Ltd.	Maharashtra	120
• Colourtex Industries Ltd.	Gujarat	750 x 1 no 600 x 4 nos

Name of client	States	Capacity (TR)
• Dinshaws dairy Ltd.	Maharashtra	15 x 4 nos
• Gokul Dairy Ltd.	Maharashtra	300 x 2 nos
• Mauli cold storage	Maharashtra	40
• Malek Refrigerations	Gujrat	120
• Pandesara Industries Pvt. Ltd.	Gujrat	360 x 2nos
• Prime Technologies	Maharashtra	15
• Regional Dairy Development	Maharashtra	25
• Shrikrishna Pharmaceuticals Ltd.	A. P.	500
• Shilpa Organics Pvt. Ltd.	C. G.	500
• Shilpa Medicare Ltd.	Karnataka	375 x 1 no 500 x 1 no
Effluent Evaporation		
• B. B. Chemicals	Maharashtra	
• Crystal Surfactants & Chemicals	Maharashtra	
• Jay Chemicals Ltd.	Gujrat	
D.G. Set Cooling		
• Bhavin Textiles Ltd.	Gujrat	400
• Caparo Tubes India Ltd.	Dewas	540
• Colourtex Industries Ltd.	Gujarat	500 x 1
• Gauri Spinning Mills Ltd.	Karnataka	150
• Shree Precoated Steels Ltd.	Maharashtra	1600
• Vipan Industries	Gujrat	480 x 3 nos
Induction Furnace Cooling		
• Greaves Cotton Ltd.	Maharashtra	80
• Greaves Ltd.	Maharashtra	38
• Gayatri Ispat Pvt. Ltd.	Maharashtra	350
• ISSAL	Maharashtra	60 x 2 nos
• JMT Auto Ltd.	Zarkhand	100 x 4 nos
• Kusalava International Ltd.	Karnataka	300
• Kalyani Steel Ltd.	Karnataka	1000 x 2 nos
• K. N. Engineering Works	U.P.	650 x 2 nos 950 x 4 nos
• Laxcon Steels Pvt.Ltd.	Gujrat	500
• Mukand Ltd.	Karnataka	2000 x 2 nos
• Nandan Steels & Power Ltd.	C. G.	600 x 2 nos 1000 x 2 nos
• Premier Metcast Pvt. Ltd.	U. P.	400
• Salasar Alloys & Steels Ltd.	Maharashtra	400
• Shubh Metals	U. P.	500
• VVS Alloys Ltd.	U. P.	500 x 3 nos
Oil Quenching		
• Greaves Ltd.	Maharashtra	36
• Maso Automotive Pvt. Ltd.	Maharashtra	80 x 2 nos
Comfort Air Conditioning		
• Greaves Ltd.	Maharashtra	100 x 2 nos
• Kapil Zenith	Maharashtra	100 X 2 nos 300 X 2 nos
• Shree Precoated Steels Ltd.	Maharashtra	30

Name of client	States	Capacity (TR)
Plastic Moulding		
• Gujarat Dyestuff Industries Ltd.	Gujrat	80
• Hi End Packaging (P) Ltd.	Gujrat	150
• Kelvin Plastics Pvt. Ltd.	Gujrat	25
• Mayur Wovens Pvt. Ltd.	Gujrat	80 x 2 nos
• Nirmal Plastics Pvt. Ltd.	Maharashtra	20
• Pacific Electronics Pvt. Ltd.	H. P.	30
• Parmar Industries	Maharashtra	25
• Shreejay Enterprises	Maharashtra	10
• Sunshine Container Pvt. Ltd.	Maharashtra	25

Name of client	States	Capacity (TR)
• Swiss Polyplart Pvt. Ltd.	Gujrat	100
• Verroc Engineering Pvt. Ltd.	Maharashtra	36 x 2 nos
Compresser Cooling		
• ISSAL	Maharashtra	100
• Kirloskar Oil Engines Ltd.	Maharashtra	115
• Malu Paper Mills Ltd.	Maharashtra	15
• Simplex Castings Ltd.	C. G.	250
Engine Test Bed		
• Kirloskar Oil Engines Ltd.	Maharashtra	240

SELECTION CHART- I

MODEL NO.	COOLING WATER FLOW RATE				DIA. IN mm
	MINIMUM		MAXIMUM		
	LPS	M^3/hrs.	LPS	M^3/hrs.	
AC-9	0.5	1.8	1.8	6.5	900
AC-11	1.5	5.4	3.0	10.8	1100
AC-13	2.0	7.2	3.5	12.6	1300
AC-15	3.0	12.6	5.0	18.0	1500
AC-18	4.0	14.4	9.0	32.4	1800
AC-20	6.5	23.4	12.0	43.2	2000
AC-22	7.0	25.2	14.0	50.4	2200
AC-25	12.0	43.2	20.0	72.0	2500
AC-28	15.0	54.0	23.0	82.8	2800
AC-32	18.0	64.8	30.0	108.0	3200
AC-37	21.0	75.6	36.0	130.0	3700
AC-42	32.0	115.0	52.0	187.0	4200
AC-45	40.0	144.0	60.0	216.0	4500
AC-51	46.0	165.0	72.0	260.0	5100
AC-55	50.0	180.0	83.0	300.0	5500
AC-60	58.0	210.0	97.0	350.0	6000

SELECTION CHART- II

MODEL NO.	COOLING WATER FLOW RATE				DIA. IN mm	
	MINIMUM		MAXIMUM			
	LPS	M^3/hrs.	LPS	M^3/hrs.	Length	Width
AC-4200	70	250	111	400	8200	4200
AC-4500	90	325	125	450	8500	4500
AC-5100	111	400	139	500	9100	5100

Note :

* Based on : 15 LPM (4 USGPM)/TR * Std. temperature drops of 4, 6 & 8^0c with approach of 3^0c to 4^0c
* Higher temperature drops of 10^0c to 15^0c with higher approach also possible. * 0.4 to 0.6 kg/cm^2 water pressure available at spray nozzle. * Height of C.T. will depend on end use and temp drop requirements.

Please provides following details for your requirement of Cooling Tower

1. Circulating water flow. 2. Hot water temp. 3. Required cold water temp. 4. Ambient WBT

MULTINATIONAL PRESENCE

AFRICA -
- Nigeria
- Zambia
- Keniya
- Cameroon

MIDDLE EAST -
- Oman
- U.A.E.

SOUTH EAST ASIA -
- Bangladesh
- Indonesia

C.T. APPLICATIONS

- Comfort Air conditioning
- Industrial Refrigeration
- Chemical Process cooling
- Air Compressor
- Diesel Generator Sets
- Induction Furnace
- Hydraulic Machines
- Plastic Moulding M/C
- Aluminium Die casting M/C
- Quenching Oil Cooling
- Effluent Evaporators

ENERGY SAVING PROPOSAL

As our towers works on ventury principal, by which air is induced inside the cooling tower with the help pf ventury nozzles with out the use of Fan / Motor. To achieve this effect, our towers require only 0.5 Kg. / cm2 water pressure at the inlet of spray nozzle.This pressure is always available as residual pressure in practically all cooling water circuits. Hence by replacing your existing fan type cooling towers by our towers, you can save on energy as well as recurring maintenance cost as our towers are absolutely maintenance free.

Sample (approximate) calculation is as under -

Fan HP 100 T.R. cooling tower = 7.5 (5.5 KW)
No. units / day = 5.5 x 0.75 (Power Factor) x 24 hours x 330 days
= 38,544 units

Energy Saving / year = 38,544 x 4.50 per unit
= Rs. 1,73,448/-

ONE UNIT OF ENERGY SAVED IS EQUAL TO THREE UNITS OF ENERGY GENERATED.

Note : Above calculations are based on data available with us and are inductive only.

Visit us at : www.aquacoolct.com

Manufactured & Marketed by :

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Works : S. No. 136, At & P-Wadgaon Maval, Dist.-Pune.

Our Associates :

* The specifications are subject to change without further notice for technical improvement of our products.