



**HVAC**



# **HIGH EFFICIENCY SIDE-STREAM MICROSAND FILTRATION SYSTEM**

# **VORTISAND®**





# HVAC WATER

## APPLICATION BRIEF

Water from cooling towers attracts and absorbs airborne contaminants on a continuous basis. Typically, 85% of suspended solids in chilled water and hot water loops are smaller than 5 microns. Scientific studies have shown these small particles (5 microns and less) are the adherent contaminants fouling cooling tower and heat exchangers reducing your cooling system efficiency. Bacteria, such as Legionella, also contribute to this phenomenon.

## REDUCE BIOFOULING AND SAVE SIGNIFICANTLY ON YOUR ENERGY BILL

A Vortisand filter removes suspended particles down to 0.45 micron and provides a cost effective solution to protect your water systems from fouling caused by particles smaller than 5 microns. Vortisand typically requires 3-5% of the cooling tower flow or a turnover rate of 7-12 depending on the tower location. Standard sand filters and centrifugal separators will require typically 10-30% of the cooling tower flow.

### CLOSED LOOP FILTRATION



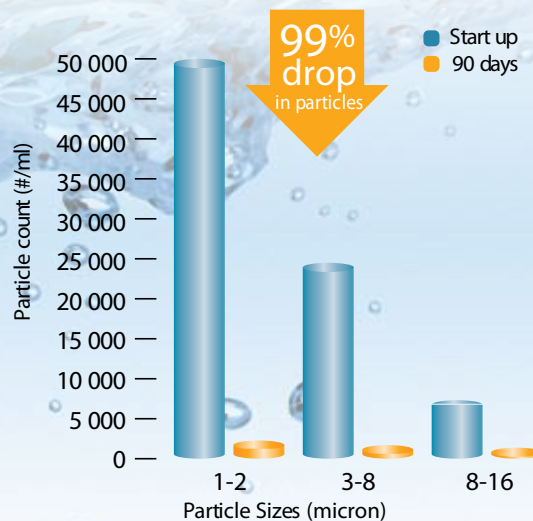
45 ppm Fe < 2 ppm

RESULTS AFTER 45 DAYS



### COOLING TOWER WATER PARTICLE

#### Count after 90 days





## WHAT IS VORTISAND ?

Vortisand is a high performance automatic backwashable sand filter filtering down to 0.45 micron, 10 to 20 times finer than other media filters. Vortisand combines sand filtration with crossflow continuous cleaning in the same vessel. The technology was design for various application such as HVAC water, process water, rain-harvesting water and more.



### SAVE ENERGY

Up to 20%

energy saving is achieved on your cooling and heating cost.



### SAVE WATER

80 to 90%

less water for backwashing compared to traditional sand filters.



### SAVE CHEMICAL

Up to 20%

Less chemical is used with our system.



### BE GREEN

LEED

Credit can be achieved with Vortisand by using less water and energy.



### FAST ROI

2 years

is the typical ROI. With minimum maintenance, Vortisand lasts a lifetime.



### EASE OF OPERATION

Automatic

Fully automated operation, maintenance reminders and friendly interface.



### CUSTOM MADE

No limits

We can build a system whatever your needs are, from small school HVAC to the largest airport, mission critical datacenter or factory.



## HOW IT WORKS

The Vortisand technology uses a tangential inlet to introduce water in the filter vessel with a kinetic energy that creates a unique swirling action.

Using this vortex effect to provide a crossflow filtration condition, the Vortisand allows the water to flow parallel to the top layer, producing a sustained cleaning action that forces the suspended solids to accumulate on the inside wall of the vessel and in the water above the media.

As a result, microsand can be used to filter out the fine particles without clogging rapidly. Thus, contaminants are trapped above the sand and are easily removed using an automatic backwash cycle, which requires less water and a shorter backwash sequence than traditional sand or multimedia filters. The end result is a technology that can remove down to sub micron levels at 4 to 5 times the flow rate of other media filters, while requiring 80 to 90 % less water for backwash.

During the filtration process, when a preset pressure differential is reached, the backwash cycle is initiated to reverse the flow through the vessel and discharge contaminants to waste line.

The filter media, just like any other media filter, is backwashable and in case of special media contamination (e.g.: oil spills) the sand can be chemically cleaned using the optisand feature which can be provided as an option.

# VORTISAND®



## SPEC SHEET MODEL

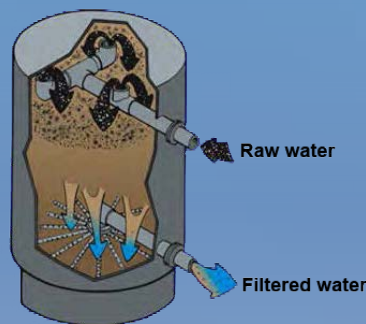
Typical filtration flowrate depends of the application, but it is usually between 1% to 5%.

Model selected	Filtration flowrate (GPM, M <sup>3</sup> /H)	Squace required	Pump motor (HP)	Inlet/outlet connections	Drain city connection	weight (LBS/KG)
AWT1-12	20/4.54	2'9"x4'6"x2'3"	0.5	1"	1"	450/204
AWT1-16	30/6.81	2'2"x 5'6"x2'6"	0.75	1.5"	1.5"	600/272
AWT1-20	50/11.4	2'7"x5'6"x3'0"	1.5	1.5"	1.5"	1000/454
AWT1-24	75/17	3'0"x5'9"x3'6"	1.5	2"	1.5"	1650/748
AWT1-30	100/22.7	3'3"x6'3"x4'0"	2	2"	1.5"	2500/1134
AWT1-36	140/31.8	3'7"x7'0"x4'6"	3	3"	2"	4100/1860
AWT1-60	375/85.2	8'0"x8'3"x6'8"	10	4"	3"	10000/4536

**FILTERS CAN BE SKID MOUNTED TO ACHIEVE ANY FLOWRATE**

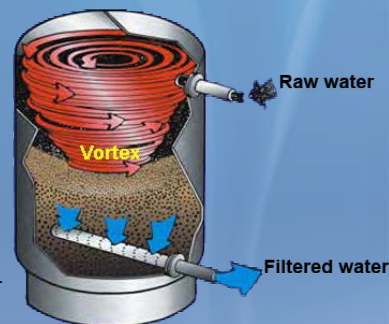
## SAND FILTRATION CONCEPTS

CONVENTIONAL FILTER



Down to 10 microns

VORTISAND FILTER



Down to 0.45 micron (nominal)



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COMPANY

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