MESAN

Cooling Tower Filtration Systems

Legionella Risk Management

Improved Productivity and Lower Maintenance Cost

Energy Saving Solutions

OEM Sole Distributor

VAF™ filtration systems

an EVOQUA brand

Cooling Tower Filtration Systems

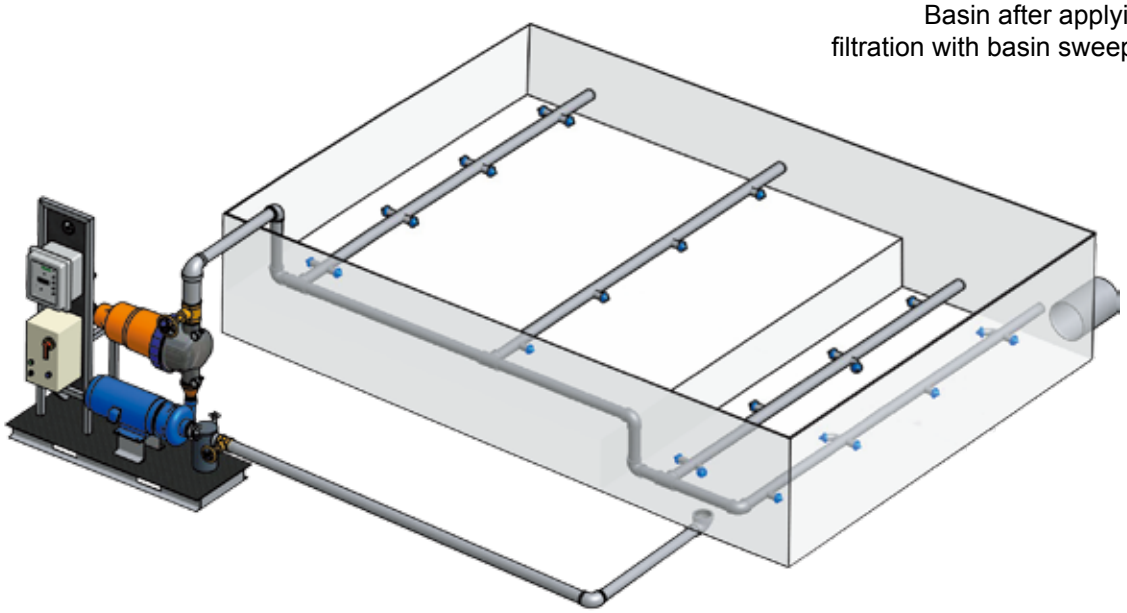
Microbial reduction in cooling towers is paramount in regulatory climate. Improving the water quality in the cooling loop is a simple, cost effective method of realizing efficiency gains.

Mesan offers pre-installed basin sweeping piping system for our cooling towers to work with VAF™ filtration systems to reduce Legionella contamination of building water systems and make water treatment more effective.

Cooling Tower Filtration Benefits

- Improves energy costs ~ 10%
- Significantly reduces buildup of habitat and food source for Legionella
- Reduces chemical costs ~ 14%
- Reduces maintenance costs ~ 80%
- Increases system life

Basin after applying
filtration with basin sweeper system



Basin sweeper system increases
water circulation for efficient filtration

No filtration

Basin clean after 1 year filtration

Common Difficulties

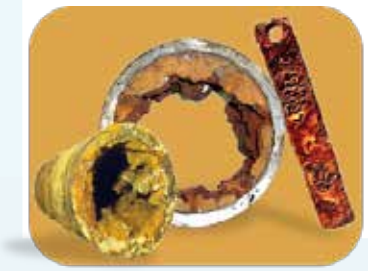
Legionnaires' Disease

- Serious form of pneumonia which can be fatal
- Legionellosis is caused by the bacteria Legionella
- Humans can ONLY be infected through the respiratory system by inhaling very small droplets (mist) of infected water in the range of 1 to 5 microns (droplet size)

Major Legionella Outbreaks	
1976	First identification due to an outbreak in Philadelphia, 221 people sick
1985	Stafford District Hospital UK, 175 people sick
1999	Netherlands, 200 people sick, source was traced to a whirl pool and humidifier
2000	Melbourne Aquarium, 125 people sick
Legionella Cases	
United States of America	10,000-50,000 cases annually (United States Department of Labour)
	Costing $100-321 million annually (Centres of Disease Control and Prevention)
Australia	~300 cases annually, much more stringent regulation concerning cooling towers

Scaling

Scale is caused by the precipitation of mineral particles especially calcium carbonate in water to form a hard deposit on heating transfer surfaces. The formation of scale greatly affects cooling tower performance and increases maintenance cost. 0.25 mm scaling or fouling will result in 10% reduction of heat transfer efficiency.
(ASHRAE 2000 Systems and Equipment Handbook)

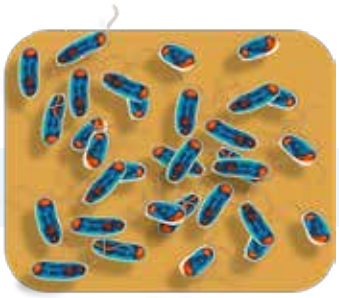


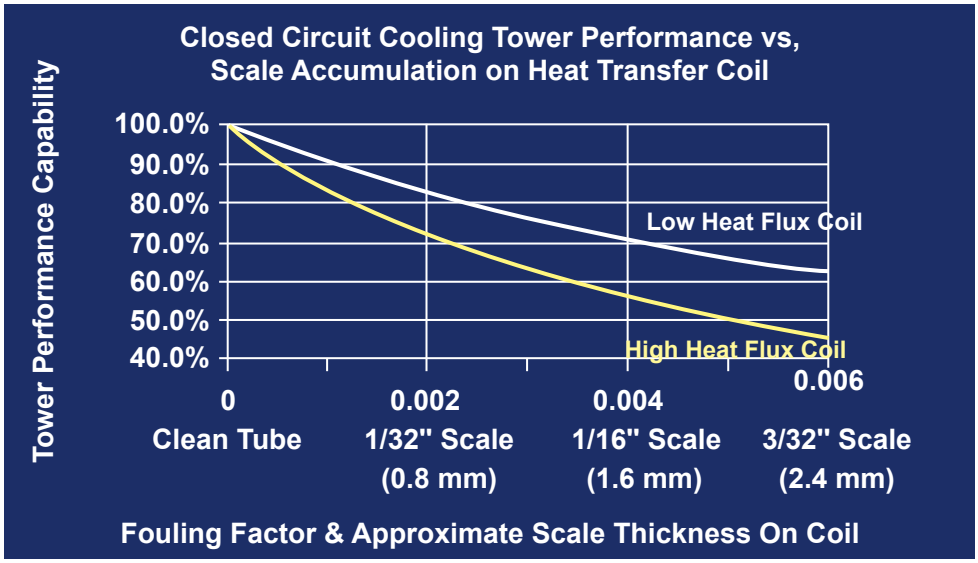
Corrosion

Deposits from corrosion also form blockage of pipes which reduce normal water flow, foul heat exchange surfaces, and reduce cooling tower performance.

Bacteria

Cooling tower basins are good habitats for microbiological organisms. Apart from accelerating the corrosion process and reducing system life, biological activities also contribute to health problems such as Legionnaires' disease.





"Cooling tower operation and maintenance for improved energy efficiency"
– CTI / ASHRAE 2004

LCS-Series Centrifugal Separator

The LCS-Series Centrifugal Separator skid provides a low cost solution for side-stream Cooling Tower separation of solids from water. When used in conjunction with tthe VAF™ turbulator eductor nozzle system, a side stream system can provide an efficient method for keeping tower basins clean without interrupting the facilities processes.

Significantly reduce maintenance costs, energy costs, chemical usage and most important, reduce the consumption of what is quickly becoming our most valuable natural resource: water. Backed by Evoqua's decades of filtration experience, the LCS Separator skid provides performance and reliability at a cost effective price.

LCS-Series Standard features include basic painted steel skid, VHS separator, isolation valve and manual purge valve. Options include auto purge and bag recovery vessel. Also available with or without pump and pump control.

Tower Tonnage	Flow Rate		Model		Pump
	gpm	m^3/hr	no pump	with pump	HP/kW
300	100	23	LCS100	LCS100-3	3 / 2.2
400	150	34	LCS150	LCS150-5	5 / 3.7
500	200	45	LCS200	LCS200-7.5	7.5 / 5.6
1000	300	68	LCS300	LCS300-10	10 / 7.5
1800	500	114	LCS500	LCS500-20	20 / 14.9

* wattages may vary depending on pump selection.

Centrifugal Separators

How it works

Evoqua's VAF™ brand Hydrocyclone Separators are effective in removing suspended particles from any flow stream of water where the specific gravity (density) of the particle(s) is heavier than the fluid it is in; the more significant the difference in gravity between the water and the particle, the greater the efficiency of the removal process.

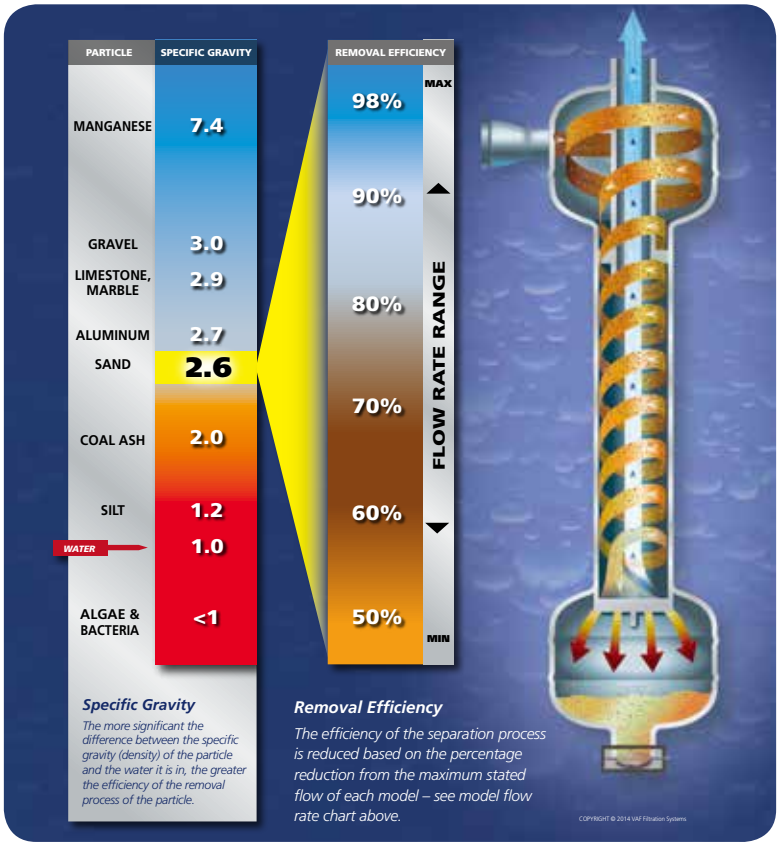
Depending on the specific gravity of the particle and the viscosity of the flow stream, very small and denser particles can be removed.

NOTE: Particulate removal can be enhanced if multiple passes of the stream can be achieved.

Limitation of current separators

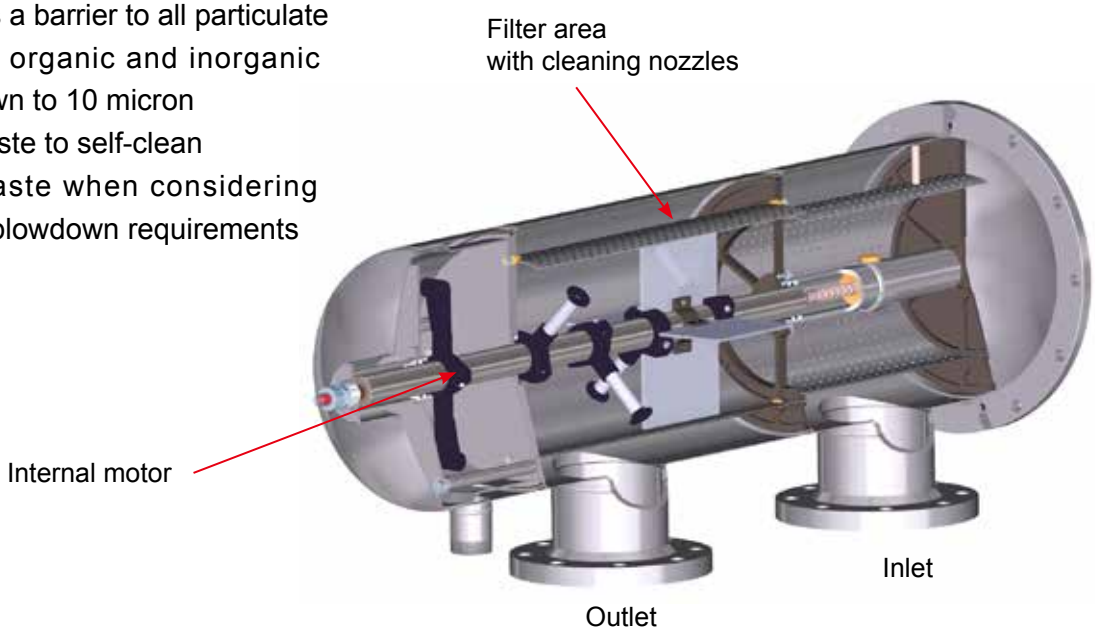
Removes 90% of suspended solid particles larger than 70 micron and have specific gravity greater than 2.6.

- Particulate must be heavier than water
- Organics are not removed
- Silts are mostly not removed



Self-Cleaning Screen Filters

- Screens act as a barrier to all particulate
- Remove both organic and inorganic particulate down to 10 micron
- Least flush waste to self-clean
- Zero flush waste when considering cooling tower blowdown requirements



Screen Filter

V-1000 Specifications

Materials	
Filter body	• 6" - 8" inlet/outlet, 316 SS
Screens	• 316L SS sintered **
Flanges	• AWWA Class D **
Seals	• nitrile, viton, silicone **
Filtration Range	• 10 to 1500 micron **
Flow Range	• 14 to 374 m^3/hr (60 to 1647 gpm) per filter *
Max Pressure	• 10 bar (150 psi) **
Min Pressure	• 2 bar (30 psi) **
Max Temp	• 80° C (176° F) **
Flush Cycle	• 12 to 15 seconds
Controller	• MicroFlush™ control system - up to 4 filters

* Varies depending on micron level.

** Other options are available on request.

V-200P Specifications

Materials	
Filter body	• 3" NPT inlet/outlet • 3" BSP inlet/outlet • 3" Grooved inlet/outlet • Glass reinforced nylon
Screens	• 316L SS sintered **
Screen Area	• 1129 cm^2 (175 in^2)
Filtration Range	• 10 to 1500 micron **
Flow Range	• 7 to 50 m^3/hr per filter (30 to 220 gpm per filter)
Max Pressure	• 8 bar (120 psi) **
Min Pressure	• 2 bar (30 psi) **
Max Temp	• 40° C (104° F) **
Flush Cycle	• 10 to 15 seconds
Control Options	• MicroFlush control system - up to 4 filters

Seawater compatible models available.

Recipient of WaterInnovation Award and International IA New Product Award

** Other options are available on request.

V-200ST Specifications

Materials	
Filter body	• 3" flange inlet/outlet • 316 L stainless steel **
Screens	• 316L SS sintered **
Screen Area	• 1129 cm^2 (175 in^2)
Filtration Range	• 10 to 1500 micron **
Flow Range	• 7 to 50 m^3/hr per filter (30 to 220 gpm per filter)
Max Pressure	• 10 bar (150 psi) **
Min Pressure	• 2 bar (30 psi) **
Max Temp	• 80° C (176° F) **
Flush Cycle	• 10 to 15 seconds
Control Options	• MicroFlush control system- up to 4 filters

Seawater compatible models available.

** Other options are available on request.

Major Features of VAF™ Automatic Screen Filtration

- Remove particulate down to 10 micron targeting on Legionella
- Patented+ drive mechanism for cleaning nozzles without motors
- Multiple towers cleaned with one system (X™ System)

+ Patented in some countries

Multiple basin agitation system

Simple installation with small footprint

LCF-Series Automatic Self-Cleaning Filter Skid

LCF-Series Standard features include: basic painted steel skid, V-200P automatic filter, isolation valve, MF4 control and diaphragm flush valve. Optional bag recovery vessel may also be added. Also available with or without pump and pump control.

Tower Tonnage	Skid Flow Rate		Model		Pump
	gpm	m^3/hr	no pump	with pump	HP/kW
300	50	11	LCF200	LCF200-5	5 / 3.7
500	100	23	LCF200	LCF200-5X	5 / 3.7
700	150	34	LCF200	LCF200-7.5	7.5 / 5.6

* wattages may vary depending on pump selection.

CTF-Series Automatic Self-Cleaning Filter Skid

CTF-Series Standard features include: upgraded epoxy coated steel railed skid, V-Series™ automatic filter, isolation valves, inlet strainer, and MF4 control. Optional bag recovery vessel may also be added. Also available with or without pump and pump control.

Tower Tonnage	Skid Flow Rate		Model		Pump
	gpm	m^3/hr	no pump	with pump	HP/kW
500	100	23	CTF200	CTF200-5X	5 / 3.7
700	150	34	CTF250	CTF250-7.5	7.5 / 5.6
1000	300	68	CTF500	CTF500-15	15 / 11
2300	700	159	CTF1000	CTF1000-30	30 / 22
3500	1100	250	CTF1500	CTF1500-50	50 / 37

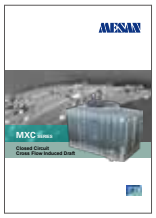
* wattages may vary depending on pump selection.

CTI Series


MXH


MXL


MFD


MXC


MCC

GB Series


MSX-R


MST-1000


MST-3000


MST-7100/7200


MST-2000


MKT

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About Mesan

Founded in Hong Kong in 1972, MESAN is a pioneer cooling tower manufacturer in the green movement. MESAN delivers environmentally-conscious and cost effective cooling to the industrial, refrigeration and HVAC markets. From plume-abatement, energy efficiency, noise reduction to water filtration system, we offer sustainable cooling solutions for green builders.

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