COOLING TOWERS

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SERVICES

COOLING TOWERS

COOLING TOWERS are constantly contaminated with **particles** coming from air or from processes that use cooling water. This dirt (sand, dust, algaes or other particles) inside the water can cause **damages** into heat exchangers or other systems, and can clog the spray nozzles of the cooling tower.

Removing this dirt is highly expensive, and it is recommended to do it from the water reservoir before water is pumped to cooling systems.

Water filtration is useful because maintains the cooling efficiency level for a longer period, reduces chemical additives costs and preserves the processes from unscheduled maintenance. In other words, water filtration **lengthens the service life** of the whole cooling system (cooling tower, heat exchangers,etc).

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Problems

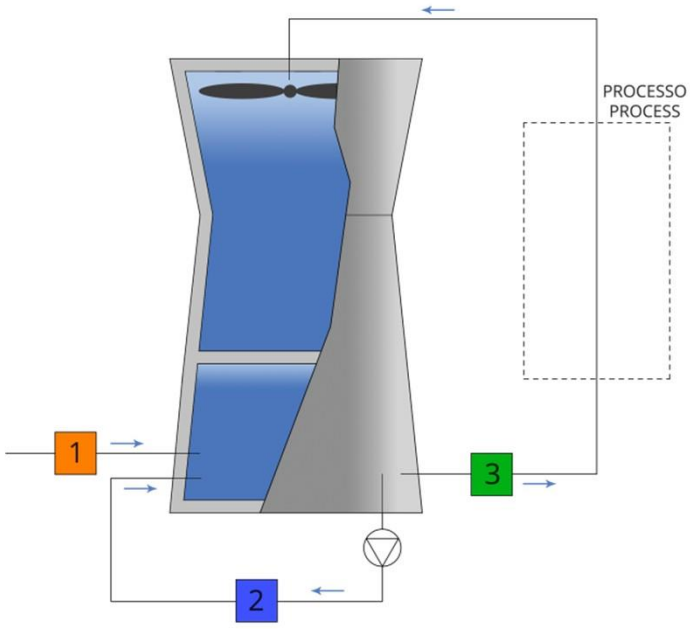
- **Makeup water** with high content of solid particles like sand, dust or microbiological organisms.
- **Storage tank water contamination** by airborne debris or by particles coming from process (dust, microbiological growths or metal scales).

Solutions

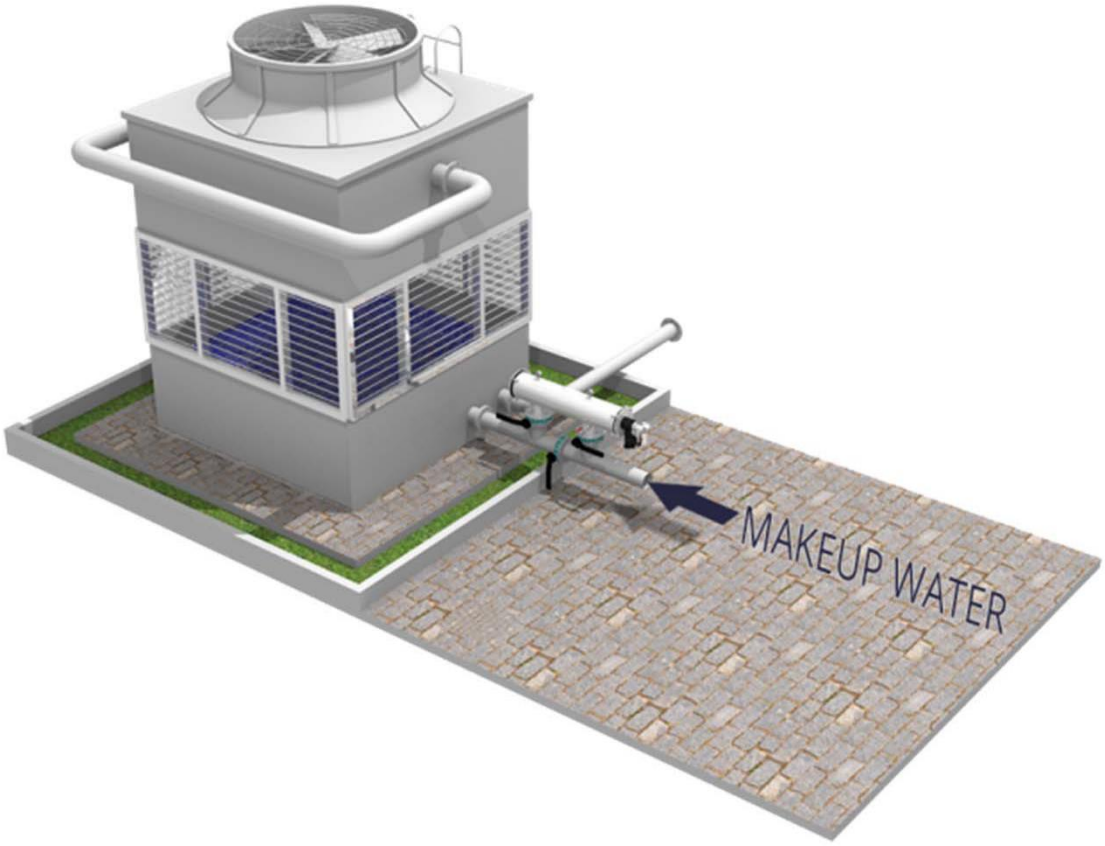
1 Makeup water filtration

2 Side stream filtration

3 Pre-process filtration



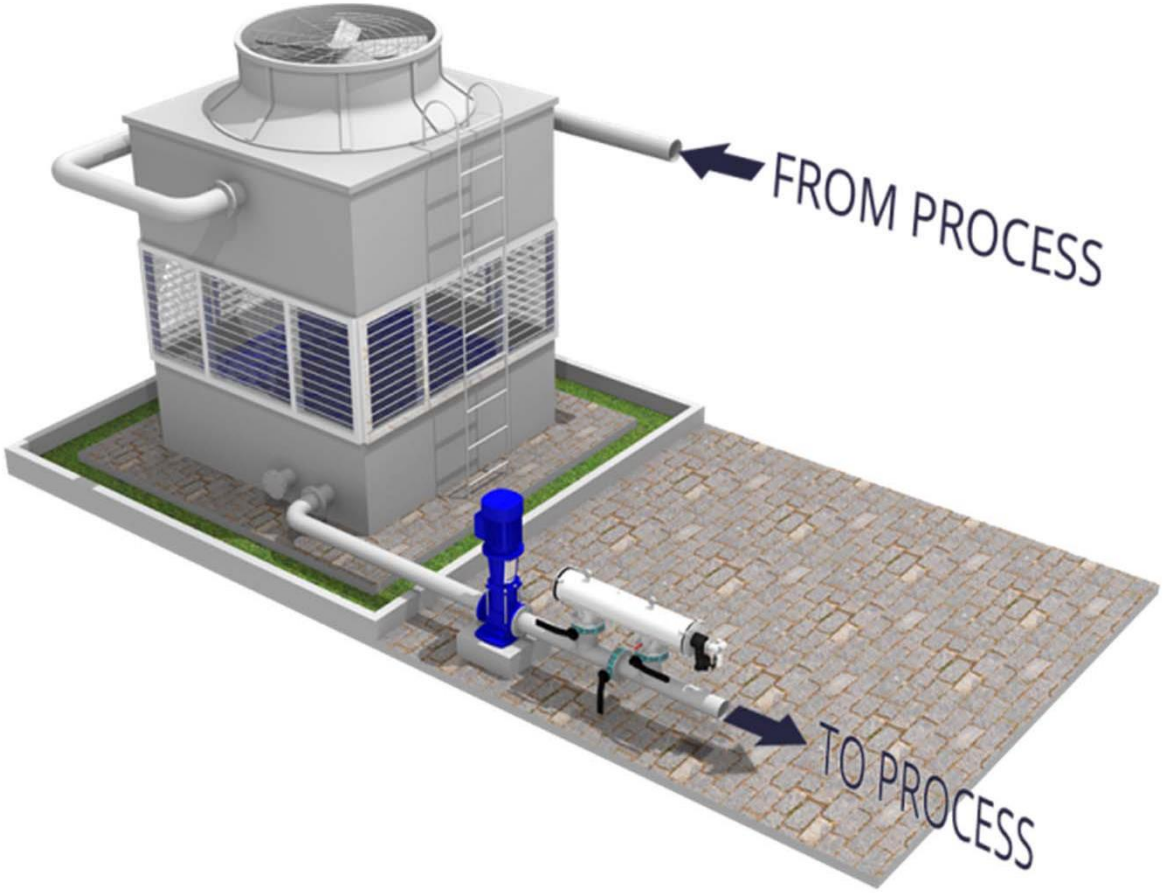
MAKEUP WATER FILTRATION



Standard flow rate 15 - 5000 m^3/h

Filtration degree 100 - 2000 µm

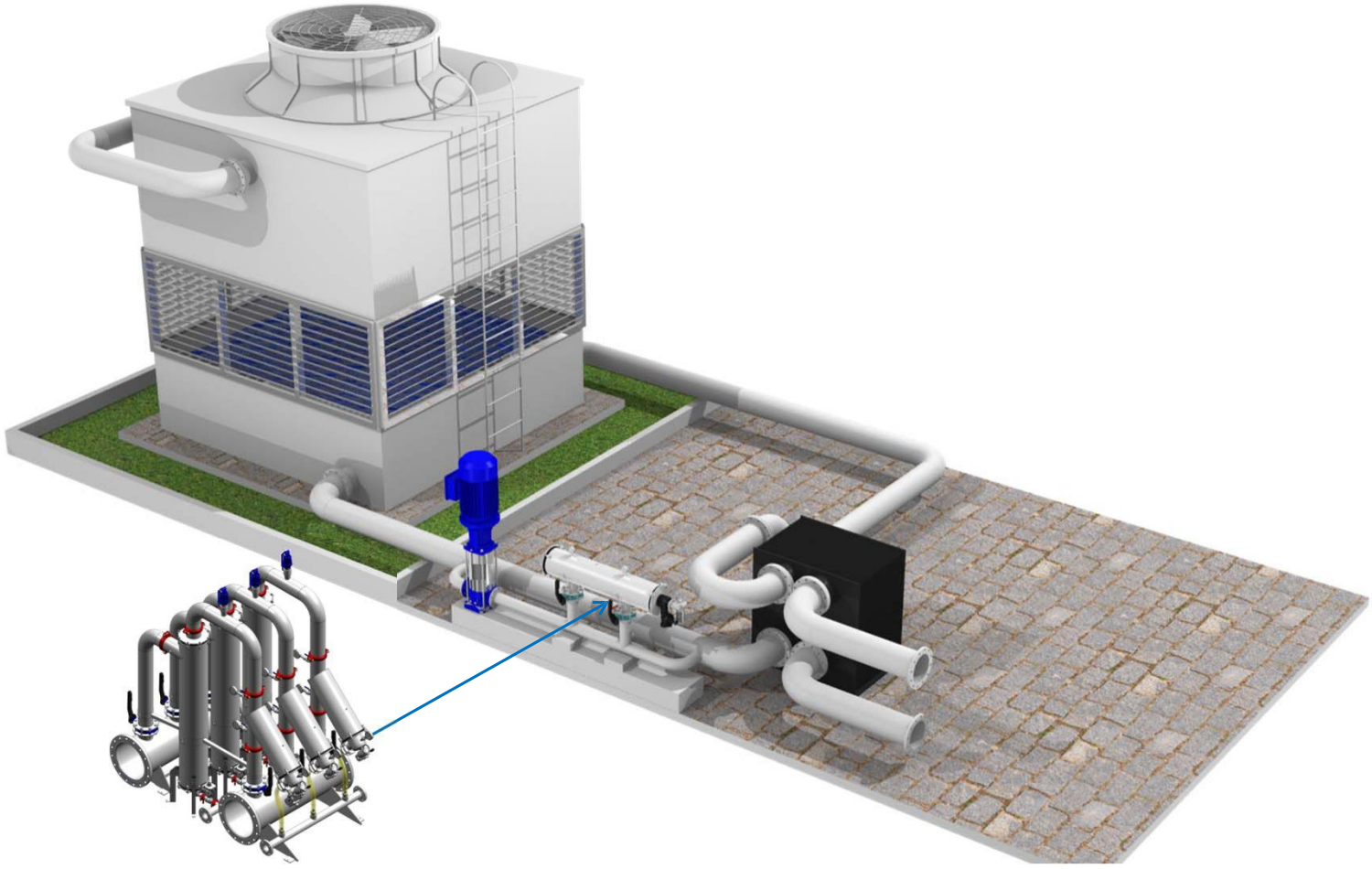
PRE-PROCESS FILTRATION



Standard flow rate 15 - 2000 m^3/h

Filtration degree 25 – 200 µm

SIDE STREAM FILTRATION



Standard flow rate 2 - 1000 m^3/h

Filtration degree 50 - 200 µm

SIDE STREAM FILTRATION

Products:

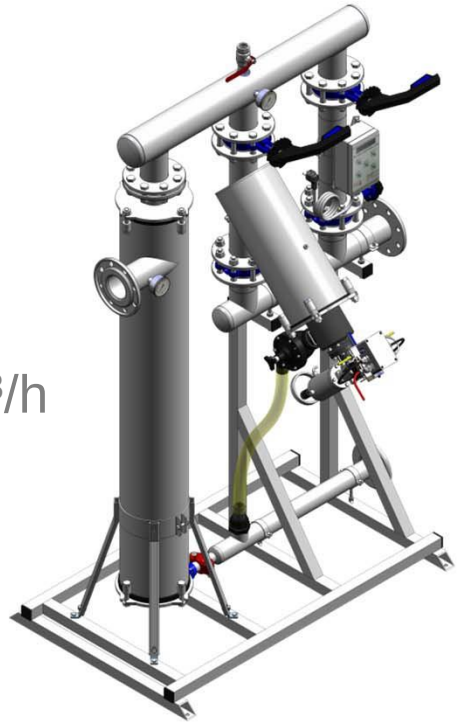
- ❑ AHC filters
- ❑ AVC filters
- ❑ AHC + AVC filtration system

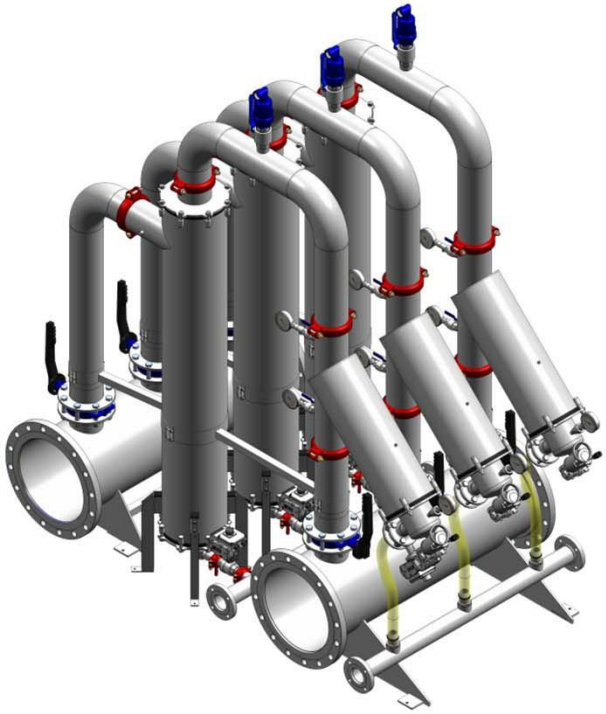
SIDE STREAM FILTRATION

AHC + AVC filtration systems

Are filtration systems composed by two filtration stages. The first stage is made by AHC filters that separate the heaviest particles, the second stage is made by AVC filters for finer filtration.

30 – 100 m³/h



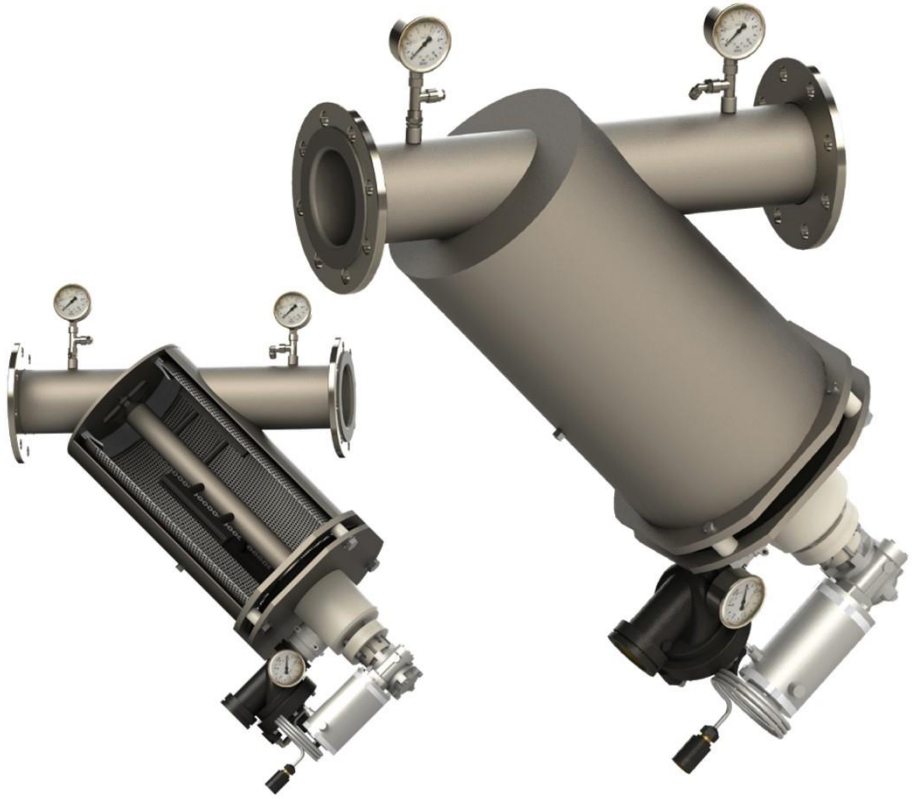


100 – 1000 m³/h

FILTERS

Our filters are made of AISI 304, AISI 316 or Duplex steel.

AHC
2000 - 50 µm



AVC
1000 - 25 µm

FILTERS

Each filter is made of:

- **HOUSING** in different building shapes, dimensions and materials.
- **FILTERING ELEMENT** with different filtration degrees and materials.
- **CLEANING GROUP** using different cleaning technologies.
- **CONTROLLER** with different power supply and control modes.

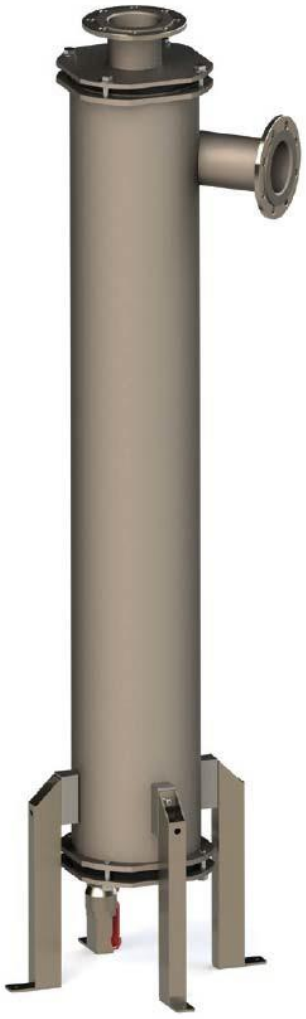
AHC

NO STOP FLOW

HLYSTZ SHAPES

The liquid-solid separator filter with High Efficiency and low and steady pressure loss:

- **High efficiency** to remove sand and heavy suspended solids
- **No interruption flow**
- **No** filtration **screen** or internal **moving parts**
- **Zero maintenance**
- **Very low water loss**



Alfa Water AHC filters are centrifugal seperator used widely in different industry especially for cooling tower.
It can remove 98% of sand and/or suspended solids size larger than 50 µm. AHC filters can support flow rates of up to 200 m^3/h (880 US gpm), with different range of inlet/outlet flanged connections between 2" and 6".
AHC filters can be integrated with automatic drain valve.

Available 2 controllers:

- **AWC Timer** (preset time, IP54)
- **AWC Basic** controller (preset time and/or manual start, IP54, 4DI, 4AI/DI, 4DO, LCD Display 1.5")

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AVC

PSML | SSML | NO STOP FLOW | Flex Pads | SHAPES (H L Y S T Z)

The automatic self-cleaning filter with high efficiency due to the continuous filtration process and the low cleaning water consumption.

- Multi-layers screens with **several filtration degrees**
- **No interruption flow** during the cleaning cycle
- **Minimum cleaning water consumption**
- Very simple and reliable cleaning mechanism with **suction scanner**

Filter Model	In/Out Conn.	Filter Area [cm²]	Max Flow rate [m³/h]
AVC 16H2	2" flg	1600	30
AVC 16H3	3" flg	1600	60
AVC 16H4	4" flg	1600	100
AVC 23H3	3" flg	2300	60
AVC 23H4	4" flg	2300	100
AVC 23H6	6" flg	2300	180
AVC 35H4	4" flg	3500	100
AVC 35H6	6" flg	3500	220
AVC 35H8	8" flg	3500	270
AVC 55H4	4" flg	5500	100
AVC 55H6	6" flg	5500	220
AVC 55H8	8" flg	5500	390

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AVC

PSML | SSML | NO STOP FLOW | Flex Pads | SHAPES (H L Y S T Z)

Filter Model	In/Out Conn.	Filter Area [cm²]	Max Flow rate [m³/h]
AVC 16L2	2" flg	1600	30
AVC 16L3	3" flg	1600	60
AVC 16L4	4" flg	1600	100
AVC 23L3	3" flg	2300	60
AVC 23L4	4" flg	2300	100
AVC 23L6	6" flg	2300	180
AVC 35L4	4" flg	3500	100
AVC 35L6	6" flg	3500	220
AVC 35L8	8" flg	3500	270
AVC 55L4	4" flg	5500	100
AVC 55L6	6" flg	5500	220
AVC 55L8	8" flg	5500	390

Filter Model	In/Out Conn.	Filter Area [cm²]	Max Flow rate [m³/h]
AVC 16Y2	2" flg	1600	30
AVC 16Y3	3" flg	1600	60
AVC 16Y4	4" flg	1600	100
AVC 23Y3	3" flg	2300	60
AVC 23Y4	4" flg	2300	100
AVC 35Y4	4" flg	3500	100
AVC 35Y6	6" flg	3500	220
AVC 55Y4	4" flg	5500	100
AVC 55Y6	6" flg	5500	220

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AVC

PSML | SSML | NO STOP FLOW | Flex Pads | SHAPES (H L Y S T Z)

Filter Model	In/Out Conn.	Filter Area [cm²]	Max Flow rate [m³/h]
AVC 81H6	6" flg	8100	220
AVC 81H8	8" flg	8100	390
AVC 81H10	10" flg	8100	600
AVC 110H8	8" flg	11000	390
AVC 110H10	10" flg	11000	600
AVC 110H12	12" flg	11000	800
AVC 198H10	10" flg	19800	600
AVC 198H12	12" flg	19800	800
AVC 198H16	16" flg	19800	1400

Filter Model	In/Out Conn.	Filter Area [cm²]	Max Flow rate [m³/h]
AVC 81L6	6" flg	8100	220
AVC 81L8	8" flg	8100	390
AVC 81L10	10" flg	8100	600
AVC 110L8	8" flg	11000	390
AVC 110L10	10" flg	11000	600
AVC 110L12	12" flg	11000	800
AVC 198L10	10" flg	19800	600
AVC 198L12	12" flg	19800	800
AVC 198L16	16" flg	19800	1400

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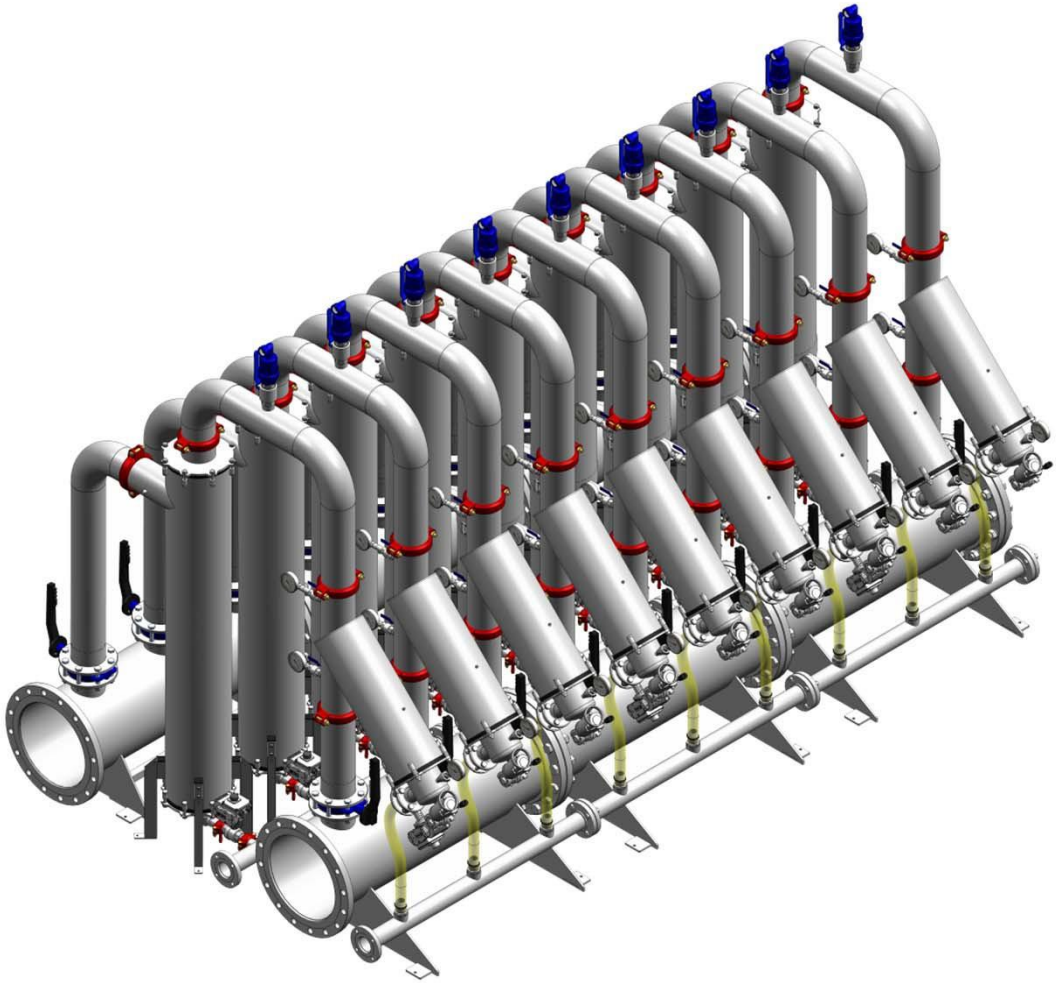
AHC + AVC SYSTEM



COOLING TOWERS – Case History

Background

The cooling towers of one of the largest steel producers in Iran and the Middle East, which produces over 2 million tons of steel had a large problem of fouling of the recirculating water due to the dust in the air and for the growth of algae in the cooling basin.

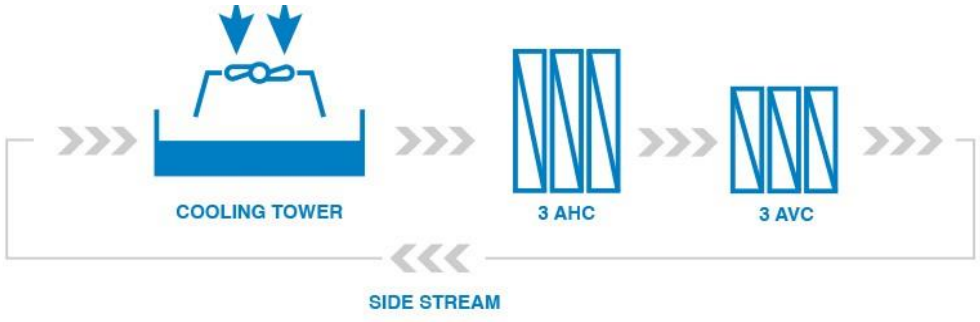
Solution

The solution has been a side stream filtration as a part of the entire flow 12,000 m³ /h recirculated in the towers. Given the large amount of fouling it was decided to operate with a filtration with 600 mc/h of flow dual-stage:

1. 1st stage with the use of filters separators, hydro-cyclones mod. AHC L6
2. 2nd stage with a 50 micron filtration security with the use of Nr.3 self-cleaning filters AVC 55 Y6

Result

With a flow rate 800m3/h, ensured a content of SST less than 5mg/l (starting from a content of the SST of about 50 mg / l).



- Location:Iran
- Application: Cooling Tower
- Flow Rate: 800m3/h (24/24 h)
- Filtration degree: 50µm
- Water source: Steel industry
- Year of revamping system: 2016

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C&S SERVICES

Website
www.alfawater.it
Head office
Via Visome, 149 – 32100 Belluno (ITALY)

Email
info@csdservices.com.au
Website
www.csdservices.com.au
Head office
Level 10, 50 St. Georges Terrace, Perth, 6000 WA

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