



Tribology India Limited

Leaders in Surface Engineering



DeScalogyTM

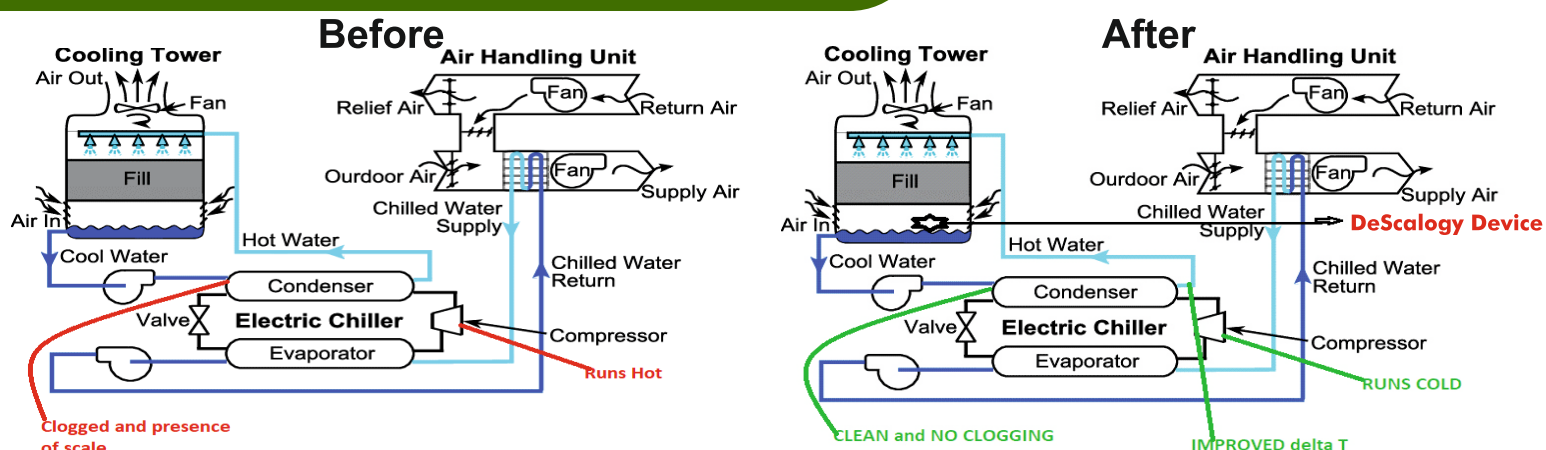
Pioneers in Magnetohydrodynamic DeScaling

Tribology India Limited, promoted by Sundaram Industries Private Limited, a TVS group company and Hydromécanique et Frottement, France, a research company, introduces a multi cycle magnetic water treatment device designed for HVAC systems to enhance efficiency.



DeScalogy, the magnetohydrodynamic (MHD) water treatment device that utilizes patented technology, is manufactured and marketed by Tribology India Limited.

Existing System Challenges



- In HVAC systems, circulatory water from cooling tower absorbs and transfers the heat from the condenser. The hot water enters the cooling tower, and the heat is dissipated to the atmosphere.
- As water is evaporated due to heat absorption, Mineral ions (Calcium & Magnesium) in the circulatory water are accumulated. Over time, the accumulation becomes concentrated, causing scales and fouling in the condenser pipe walls.
- These scales impact Condenser working efficiency, load percentage, discharge pressure and increase in oil temperature.
- The present dependence on chemical methods mitigates this issue only minimally

Descalogy – Benefits

- We have built devices to overcome these issues, are installed in HVAC and industrial cooling towers.
- Magnetic Descaling is done through **Lorentz force**, **Nucleation Changes and Cluster Modification**.



- Anti- Algae and anti-fungal treatment are done through **enhanced electrostatic repulsion** between microorganism cell walls and pipe surfaces and no foothold is available for them, alters some of the microorganism's membrane permeability and metabolic rate to **retard their reproduction**.
- The benefits of using our **DeScalogy** device are:
 - DeScaling
 - Increase in thermal conductivity of water
 - No more presence of Algae
 - Clear and transparent water



	No Exposure to MF*	Single pass Exposure to MF*	DeScalogy Technology
Algae growth in open cooling tower	Green biofilm within 4–5 days	Minimal algae in 12–15 days	No Algae for full usage lifecycle
Bacterial colony count	~10 ⁶ CFU/ml	Reduced by 60%	Reduction of 90%
Biofilm thickness on PVC coupon	~200 μ m	60 - 90 μ m	< 30 μ m, easily washed off
Scaling tendency (CaCO ₃)	Heavy, adherent	Loose powdery deposit	Loose powdery deposit

*MF – Magnetic field

DeScalogy – Value Proposition

Operations	Parameters	Operational Benefits	Financial Benefits
DeScaling	Optimum heat transfer in equipment	10 - 15% reduction in Oil Temperature	3 - 4% saving in chiller power consumption*
		5 - 10 % reduction in Discharge Pressure	2 - 3% saving in chiller power consumption*
		5% reduction in in Load	1 - 2 % saving in chiller power consumption*
Increase in thermal conductivity of water	Declustering of water molecules	Optimum delta T	2 - 3% saving in chiller power consumption
No microbial activities	Higher zeta potential retards cell reproduction	No clogging in the water cycling system	Saving in anti-algae chemicals
	Lower Bacterial colony count	No bad odour	Saving in anti-fouling chemicals
Less surface tension	Less clumping of water molecules	No more debris as they settle and don't float	Saving in water cleaning chemicals
Environment/ Ecology	Lower water draining requirement	Less makeup water	Saving in blow down water cost
	Less/ Nil harmful chemicals usage	No/ Less water management efforts	Less/ No STP charges

* - Subject to existing scaling level

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Application:

HVAC Cooling tower water Multi-cycling system

Model	DSL 210	DSL 420	DSL 630
Processing Capacity	10000 LPH	20000 LPH	30000 LPH
Suitable for	UPTO150 TR	151-350 TR	351-550 TR
Dimension			
Height	600 MM	600 MM	600 MM
Width	500 MM	800 MM	1100 MM
Length	1410 MM	1410 MM	1410 MM
Weight	120 KGS	175 KGS	250 KGS
Voltage	220 V	220 V	220 V
Frequency	50 HZ	50 HZ	50 HZ
Motor	0.5 HP/ 0.37 KW	1 HP/ 0.75 KW	2 HP/ 1.5 KW
Suction	50 MM	50 MM	80 MM
Discharge	40 MM	50 MM	80 MM

This data is for indication purpose only. May vary based on availability and requirements.

Operation mode:

Fully automatic
(with auto cut-off, manual)

Performance

Specifications :

Feed water type:

Tap water, Bore well
water or corporation water

Input water quality

(Recommended limits for make-up water):

- Maximum Total Dissolved Solids (TDS): 700 ppm
- Maximum pH: 8
- Maximum Chloride: 150 ppm
- Maximum Sulphate: 200 ppm
- Maximum Hardness as CaCO₃: 100 mg/L
- Inlet water temperature: 20–35°C

Treated water quality (Confirmation

usage water test parameters):

- **Electrical conductivity:** Less than 3000 $\mu\text{S}/\text{cm}$ @ 25°C or existing levels
- **TDS:** Less than 1500 ppm or existing levels
- **RSI:** Towards the band (6.00 to 7.00)
- **Total Hardness as CaCO₃:** Less than 200 mg/L
- **Turbidity:** Less than 5

Processing stages and components

Pre-treatment:

- **Sediment filter:**

Removes larger particles and sediments.

- **Primary treatment (main device):**

- **Magnetic Water treatment device:**

Alters the physical form of CaCO₃ from calcite to aragonite; Reduces electrical conductivity , TDS and increases thermal conductivity;
Removes algae and fungus in water

Operational requirements

Controls and Monitoring:

- **Display:** Motor On/ OFF,
Reason for OFF and remote monitoring.
- **Maintenance:**
- **Consumables:** NIL

Included Accessories

- **Tubing and fittings:**
6 M length suitable pipe for installation, valve and sediment filter
- **Manuals:**
Operator and maintenance manuals.

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