AUTOMATIC ON-LINE BRUSHING FOR HEAT EXCHANGERS AND CONDENSERS

Energy Saving – Performance Enhancing

EQOBRUSH

Cooling tower water issues

Water that circulates over an open cooling tower with the purpose to dissipate heat via evaporation is the main cause of fouling in the condenser tubes.

- High mineral: scaling
- Algae: slime
- Dust, sand and other debris

Result:

- Fouling of the condenser tubes.
- Loss of effective heat exchange
- Increased electricity consumption

EQOBRUSH

The value of brushing

The cavemen started brushing their teeth regularly once they found out that “fresh” build-up is easy to remove, as opposed to leaving it untouched and allow scaling.

That’s exactly what the tubes of your chiller condenser need: regular brushing to clean any build-up before scaling sets in.

Regular and frequent brushing avoids scaling problems

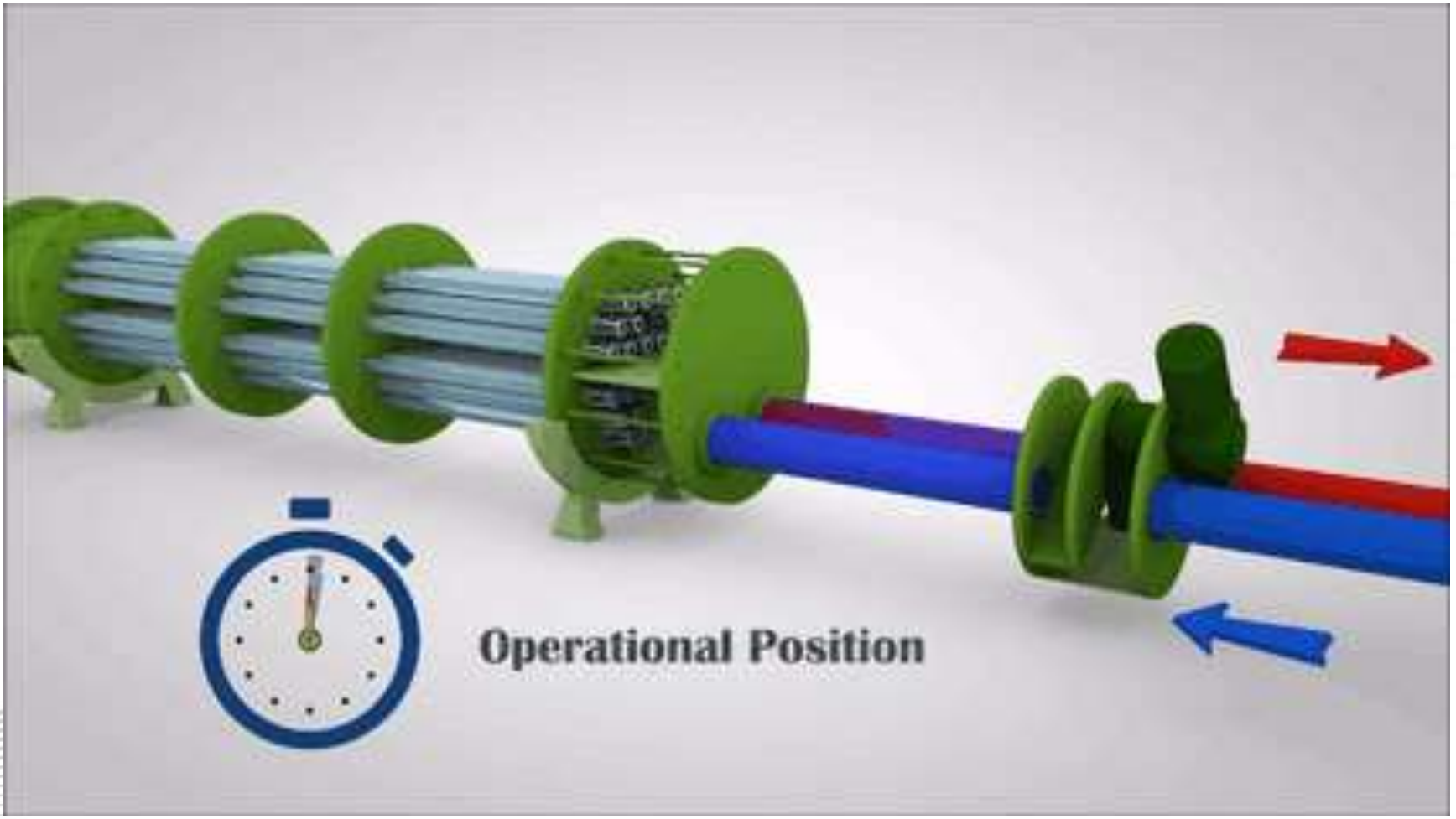
Eqobrush Chiller Condenser Cleaning

Keep chiller tubes free of fouling during operation by using the power of water.

- Water propels **brushes** through each condenser tube every 4 hours
- All fresh **fouling is removed** before it has chance to harden
- System runs automatically and independent from BMS, worry free and minimal operating cost

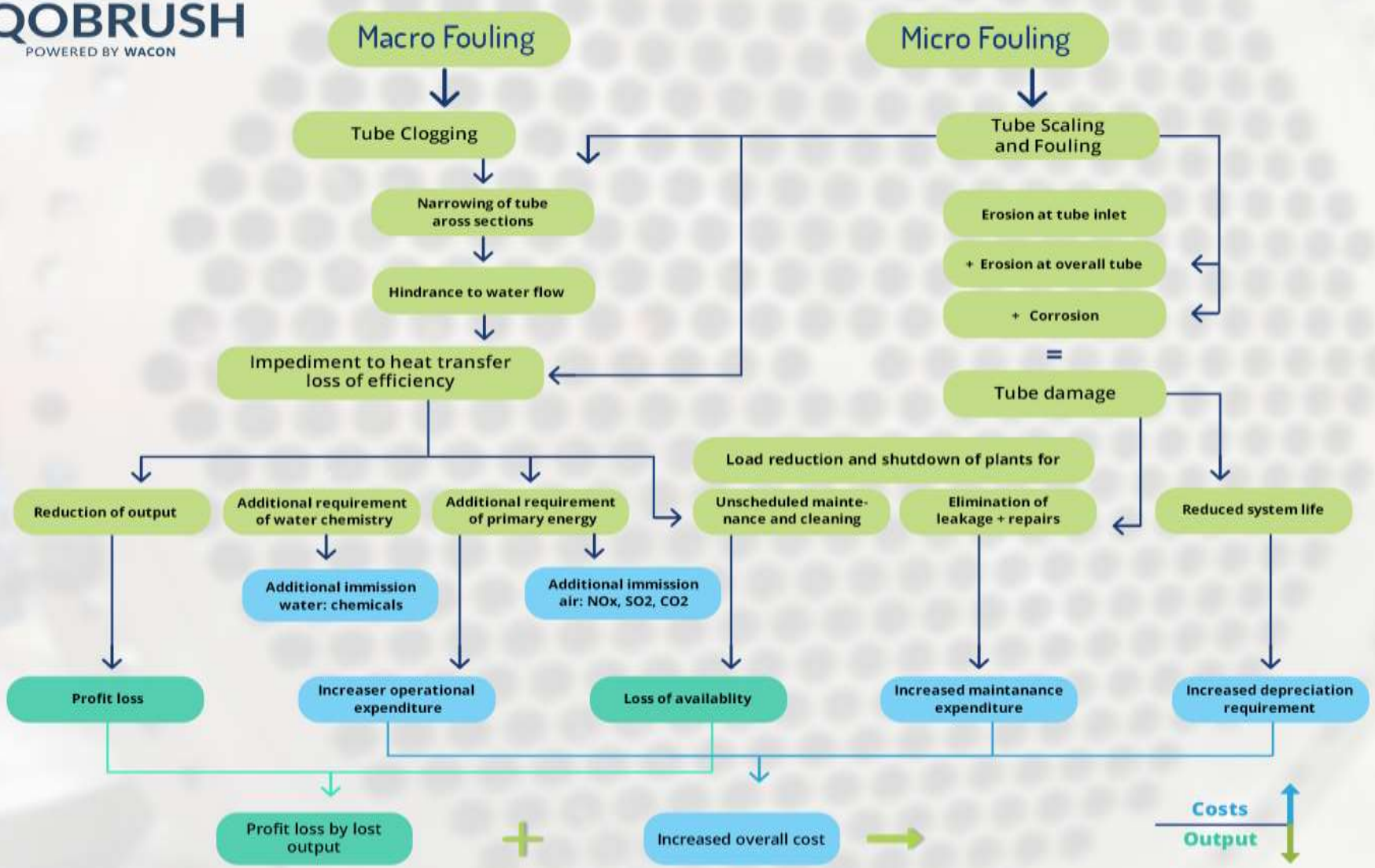
EQOBRUSH
POWERED BY WACON

Animation of system operation



Fouling and Scaling Issues In Heat Exchangers and Condensers

EQOBRUSH
POWERED BY WACON

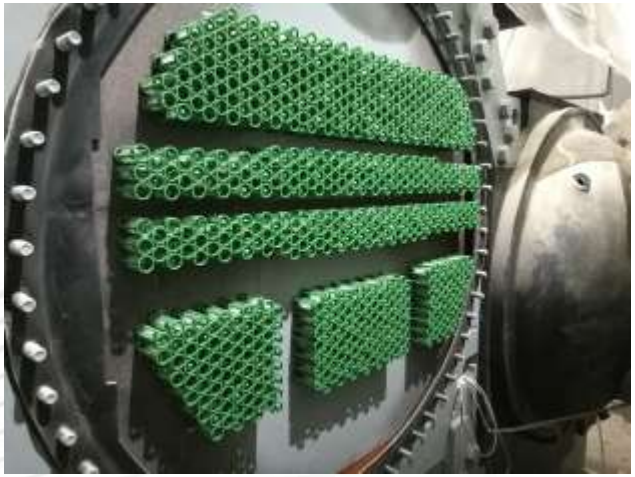


Technical
Ecologic
Economic

eqobrush.co

EQOBRUSH benefit overview

- ✓ Up to 40% Energy Savings
- ✓ Reduction of machine down-time for cleaning
- ✓ Reduction of chemicals for water treatment and periodical cleaning
- ✓ Increased production capacity
- ✓ Reduction of water consumption (higher cycle of concentration)
- ✓ Extend equipment lifespan (+20%)



EQOBRUSH
POWERED BY WACON

Fouling Impact on Energy Use in Chillers

The relation between scale build-up and the increase in power consumption is illustrated in the Fouling Factor Table.

Fouling Factor FF	Scale thickness in mm	Power increase required
0.000	0.000	0.00%
0.0001	0.03	1.1%
0.0005	0.15	5.5%
0.0010	0.30	11.0%
0.0020	0.61	22.0%
0.0030	0.91	33.0%
0.0040	1.22	44.0%

1 mm fouling → 30% power consumption increase

EQOBRUSH
POWERED BY WACON

System components – Brushes and Catch baskets

- Durable: 3-5 years
- PE, stainless steel, nylon
- Baskets cemented to tube ends
- Clip system allows brush replacement without removing baskets

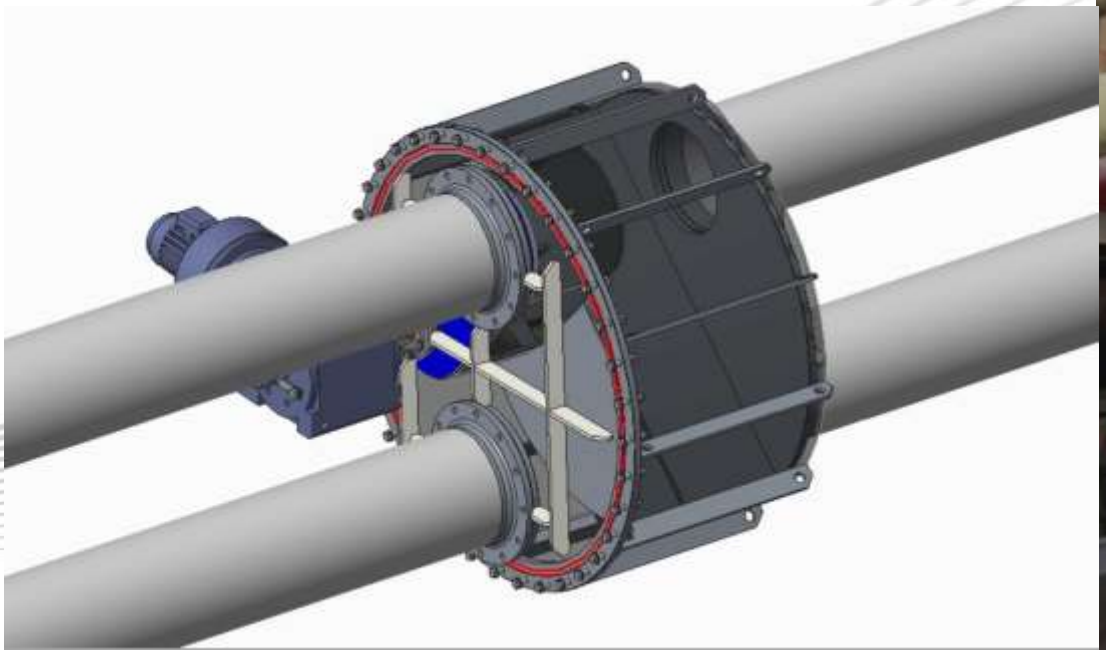
Once installed, the brushes and baskets do not narrow the flow area.

No pressure loss to the system.

EQOBRUSH
POWERED BY WACON

System components – Reversal Valves

- Zero Cross-Over*
- Variations to fit any pipe configuration
- Steel, SS304, SS316, titanium
- Pressure levels up to PN25
- Up to pipe diameter 600mm
- Pressure loss <0.05 bar

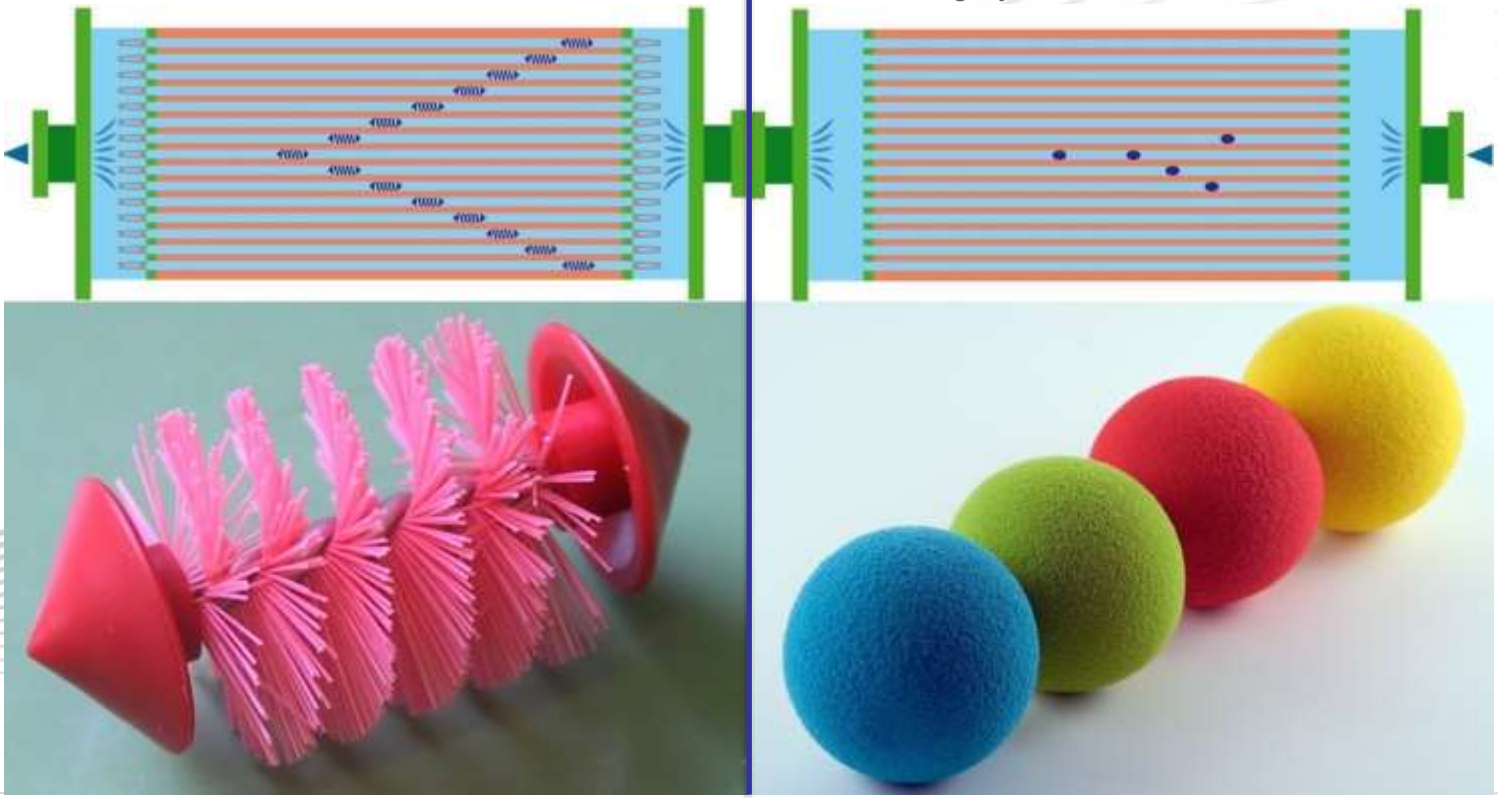


EQOBRUSH
POWERED BY WACON

Brush vs Ball cleaning

- ✓ Low system maintenance, minimal replacement cost
- ✓ All pipes get brushed on each cycle → all pipes remain clean

- ✓ Strainer to catch balls is not fully effective, balls get lost and need replacement. Requires inspections and increases operating cost
- ✓ Pipes in “slow zone” of unit (outside) get less cleaning cycles



Read more here:
https://www.watco-group.co/online-cleaning-solutions-heat-exchangers-condensers-compared/

EQOBRUSH
POWERED BY WACON


MANNESMANN
DEMAG


PHILIP MORRIS


SMARDT
GLOBAL LEADER IN HIGH EFFICIENCY OIL FREE CHILLERS
The most trusted oil free chiller manufacturer in the World


SIEMENS


BASF
The Chemical Company


steag


DAIKIN


CMI

ALSTOM


degussa.


BAYER
Bayer


RWE


Linde


Hoechst


ThyssenKrupp


DUPONT


GHH
BORSIG


bp


SULZER
ESCHER
WYSS


Landis
Gyr


EQOBRUSH
POWERED BY WACON

Thank you!