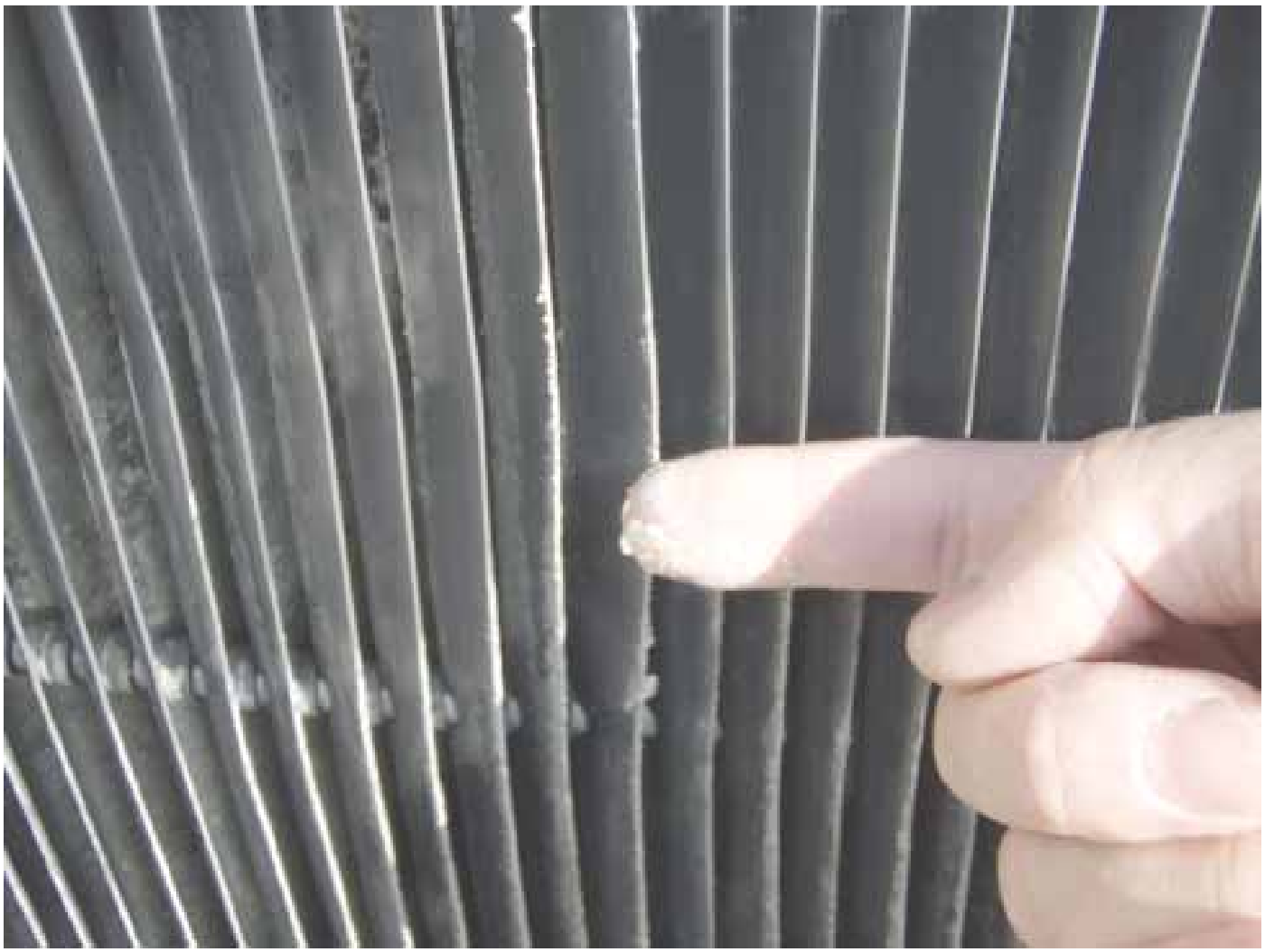
Vulcan in Cooling Towers

Text report



Factory of a pharmaceutical company

Test report on Vulcans (pulsed water treatment systems) installed as a preventive measure against scale buildups causing faulty of the cooling towers

February 24, 2007

Tested field: Factory of a pharmaceutical company

Installation sites: Cooling towers on the rooftop of the second building

2-1 cooling tower **A**: Makeup water piping size is 50A.

2-2 cooling tower **B**: Makeup water piping size is 50A.

1 cooling tower **C**: Makeup water piping size is 50A and circulating piping size is 80A.

Model installed:

Vulcan S25

(water treatment capacity: 25 m3/hour)

Date installed:

For the cooling towers **A, B**, and **C**: July 22, 2006

For the cooling tower **C**: October 6, 2006

Vulcan installed on the makeup water piping (50A)

Used for the cooling towers **A, B**, and **C**

Vulcan installed on the circulating piping (80A)

Used for the cooling towers **C**

Objectives:

1 To prevent scale buildups on the cooling towers.

2 To reduce chemicals used for water treatment
(measure for complying with ISO 14001)

3 To save the energy cost by preventing the deterioration of the heat exchange effectiveness

Verification of the effectiveness:

After installation of the Vulcans, the statuses of the cooling towers A, B, and C were inspected without using any water treatment chemicals. Even after elapse of approximately six months, almost no scale buildups were observed inside the refrigerators and the heat exchanger tubes, and no water pollution warning was displayed. (Usually, without water treatment chemicals, the water quality is deteriorated and water pollution warning is displayed.) Silica adhered on the cooling towers was easily removed with a finger touch. With these results, the effectiveness of the installation of the Vulcans could be confirmed.

Remarks (Summary)

The water treatment system, Vulcan, has the following features: (For details, refer to the brochure attached.)

Vulcan changes only the crystal structure of scales without changing the quality of water. Therefore, nothing is added or reduced to or from the ingredients of water. The water through Vulcan is soft and has an increased permeability. Vulcan makes city water to drinking water and can be used as better cooling water.

(*) The effectiveness of the water treatment in the water supply line will last for 48 hours and for approximately 2 km in distance.

Major features include:

- Prevents buildups of rusts and scales
- Makes cleaning in the kitchen and bathroom much easier (toilets, showers, tiles, joints, etc.)
- Drastically reduces the clogging due to oil balls
- Eliminates the necessity of strong chemicals for removing scales.
- Eliminates the necessity of additives.
- Does not change the water quality.
- Prevents the clogging at the time of drainage

2.1 Cooling tower A
2.2 Cooling tower B

1 Cooling tower C

Developments after installation of the Vulcan

Adhesion of silica six month after the installation of the Vulcan

(Zoomed)

Water is hosed.

After the hosing

Silica is not removed by hosing, but can be pealed off with a nail.

Silica is removed by simply hosing the water. (The remaining silica is pealed off with a touch of a finger.)

(*) The installation of the Vulcan in the circulation line seems to create the status equivalent to the cooling tower C.

Water quality tests on the cooling tower C	
Quality tests of three types of water approximately six months after the installation of the Vulcan:	(1) Makeup water (2) Circulating water (3) Makeup water (raw water)

(*) Refer to the attached test report.