



# Vulcan Test Program

For Commercial and Industrial Applications

## Free 3 Months Tests

- ✓ Hotels & Resorts
- ✓ Pools & Spas
- ✓ Restaurants
- ✓ Sport Clubs
- ✓ Condominiums
- ✓ Schools
- ✓ Universities
- ✓ Office Buildings
- ✓ Shopping Centers
- ✓ Supermarkets
- ✓ Agriculture
- ✓ Farming
- ✓ Hospitals
- ✓ Factories
- ✓ Cooling Towers
- ✓ Heat Exchangers



Made in Germany





# Test now commercial Vulcan units for free

Especially in commercial and industrial applications your clients would like to install Vulcan first as a test. CWT now supports you with free Vulcan test units for your optimized cash flow.

## 1 Order up to 5 free Vulcan test units

You can order your free test units (Vulcan S10 up to Vulcan S250) now. Your test units will not be billed to you immediately.



## 2 Install Vulcan at your clients testing site

Support your client during the test, so he can understand the benefits and savings of Vulcan.

Test period up to 3 months



## 3 Test is successful



If your client is satisfied with the Vulcan results, we will issue an invoice to you for this test unit only.

## Test is not successful



If your client is not satisfied with the Vulcan results, you can either send the unit back to us OR get new impulse bands for free to use the unit for a new test.



↓ On the next pages you see some samples of Vulcan test reports. ↓



INTERCONTINENTAL®  
HOTELS & RESORTS



## Installation Details

**Location:** InterContinental Kunming ★★★★★  
[www.ihg.com/intercontinental](http://www.ihg.com/intercontinental)

**Model:** Vulcan S10

**Area:** The water main of the kitchen

**Purpose:** Gently solve the scaling problems of the entire kitchen water system: the reduced water volume, the increased water pressure, the clogging of the dishwasher outlet, the scaling of the steamer, the low heating efficiency, the increased maintenance and the reduced overall efficiency.



The untreated steamer



The scale was in flakes and could not be drained out of the steamer's drain hole. To test the effectiveness of the Vulcan system, no cleaning process was carried out before installing the Vulcan S10.

The steamer after using Vulcan S10 for 2 months



The scale has been completely turned into powder, so there is no need to open it for cleaning, just by operating the regular drainage function, it can keep the hot water tank clean and free of scale. Due to the good results, the cooperation will also be carried out in the hotel's hot water supply system and central air conditioning system.



## 4-Year Field Tested of Vulcan for the Cooling Tower at Supermal Karawaci (SMK)



### Installation details

<b>Model</b>	S500
<b>Tested field</b>	Supermal Karawaci, Tangerang, Indonesia
<b>Operating times</b>	This large mall operates 7 days a week from 9:30 to 21:30, 365 days of the year
<b>Tested location</b>	One of 7 cooling towers servicing the mall's water cooled package air-conditioning systems. The cooling tower selected is a 408TR system containing 45 m <sup>3</sup> water volume with a water flow rate of 318 m <sup>3</sup> /h in an open circuit system.
<b>Testing period</b>	February 2014 - February 2018 (4 Years)
<b>Installed by</b>	PT Biosolutions Indonesia



Vulcan S500 was located inside aluminum box and installed on a cooling tower main pipe.

### Inspections during the 4 years: 10 times



**First Inspection: March 4, 2014.**

The heat exchanger tube plates were removed to reveal the inside surface of the copper tubes. Since these tubes had recently been manually cleaned, virtually no scale was present, as is on this photo.



**Last inspection: February 12, 2018 at the end of the 4-year trial**

The inside surfaces of the copper tubes show zero additional scale formation after 4 years in the test period.

**The photographs show that the refrigeration condenser tubes, from the beginning to the end of the trial period, were "as clean as new".**

Please note that for 4 years of 365 days continuous operation, there has been:

- No chemical water treatment.
- No bleed off of waste water.
- No cleaning of condenser tubes.
- No water treatment specialists employed.
- Copper tubes in the condensers stay very clean – without scale.
- No cleaning of the cooling tower inside surfaces.

### Summary of Benefits:

- Large savings on **chemicals**. The complete elimination of chemicals in this cooling tower operation during the field test supports the fact that Vulcan is "eco friendly" and would meet the Leeds and Green Mark Building Criteria required for "Green Building" designation anywhere in the world. Enjoy the benefits of a world class, **sustainable and "Green" Cooling Tower!**
- Huge savings on **blow down** water consumption. Significant energy and water savings due to clean condenser tubes and no need for water blow downs below electric conductivity 10,000 µS/cm levels with the electronic cooling tower water treatment system – representing alone a saving of virtually all previously wasted water due to blow downs.
- Savings on **payroll** – no operational stoppages required for condenser cleaning, less testing and fewer inspections needed.
- Savings on **supervision** – engineers appreciate the "set and forget" of this automatic water treatment system. Frequency of inspections and laboratory expenses for cooling tower water testing are reduced due to the safety and reliability of the electronic systems.
- Scale formation was eliminated. Refrigeration compressors operated at peak efficiency due to no scale in the condensers.
- Rust prevention in iron pipes is an added benefit of the Vulcan system.

## Installation details

Model: Vulcan 5000

Location: Coca-Cola Factory  
Marrakech, Morocco

Area: the water inlet of the water recycling room

Pipe: 2", stainless steel pipe

## After Vulcan installation:

1. Two weeks after Vulcan was installed, lots of scale deposits had disappeared in the pipe.
2. 48 hours after Vulcan was installed, the filter still stays clean.
3. Less maintenance.



The Coca-Cola factory in Marrakech, Morocco



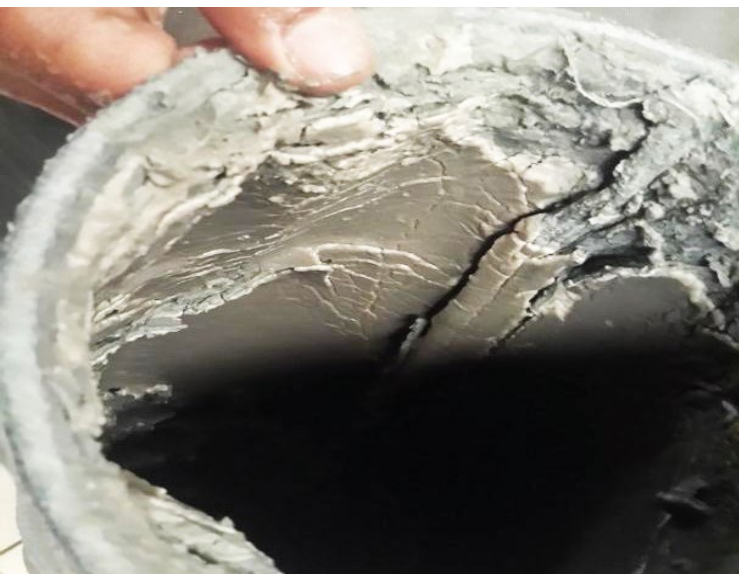
Before Vulcan installation: the pipe was full of scale deposits.



**2 weeks** after Vulcan was installed, scale had been softer and fallen out.



Vulcan 5000 was installed on the water inlet of the water recycling room.



Without Vulcan, the filter was quickly stuck by scale deposits, and it had to be changed every 48 hours.



**48 hours** after Vulcan was installed, the filter still stays clean.




# Vulcan Test Report



## Installation Details

Location: Chrysler transmission plant  
in Kokomo, Indiana  
www.chrysler.com

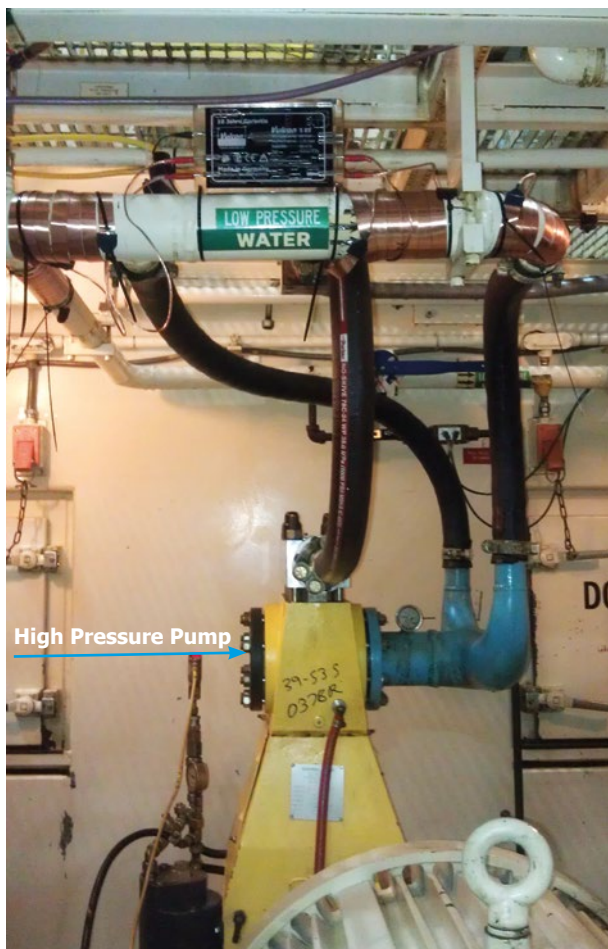
Area: High pressure wash station

Model:  36 x Vulcan S25

Installed by: Salt-Free Water Systems LLC

## Annual Cost Savings

High pressure DeBurr/Washer: 100 gpm @  
1000 psi water & soluble oil. The annual cost  
savings = **\$15,000 per Machine/Year**



## Vulcan Effect

Chrysler has had the S25 installed on the high pressure wash station for 3 weeks.

**Before** the Vulcan was installed, there would be a **12mm calcium buildup** in the nozzle by this time and they would exchange it with one that had been acid cleaned.

The maintenance man held the cleaned one in one hand & the one he had just removed, in the other hand. He was showing them to an engineer and held out the cleaned nozzle and said he was going to install it on the wash station - The engineer said "Why would you install the dirty nozzle instead of the clean one!" Everyone was amazed - 35 more Vulcan S25 were ordered after this test.

## Screen and nozzle from high pressure deburr machine indiana transmission plant

After 3 weeks normal conditions



After 3 weeks with Vulcan S25 installed



Vulcan S25 was installed on the high pressure wash station in the Chrysler ITP 2 plant.

Vulcan results: S25 has been installed for 3 weeks.



# Vulcan Test Report



SWAROVSKI

## Installation Details

Location: Marigot Vietnam LLC  
(A company of Swarovski Group)  
www.swarovski.com

Area: - Cooling towers  
- Process water  
- Water supply

Model: 6 x Vulcan 5000  
1 x Vulcan S10  
3 x Vulcan S25  
2 x Vulcan S100  
2 x Vulcan S500

Installed by: Chuc Hien Dat

## Before Vulcan

1. Cooling towers: chemical dosing was necessary.
2. Process water pipes: cleaned every 3 months by chemical.

## Vulcan Effect

1. Cooling tower and chiller system: after Vulcan S500 has been installed for 1 year, the condenser approach temperature <math>< 2^\circ</math>.
2. Cooling tower: after installing Vulcan, we still keep the chemical dosing system and check the water monthly. We reduce chemicals every month. After 6 months with Vulcan, the chemicals have been greatly reduced more than 80%.
3. Process water pipes: no need to clean every 3 months. The client has never cleaned by far with Vulcan.



S500 for the chiller



Impulse bands covered by pipe insulation



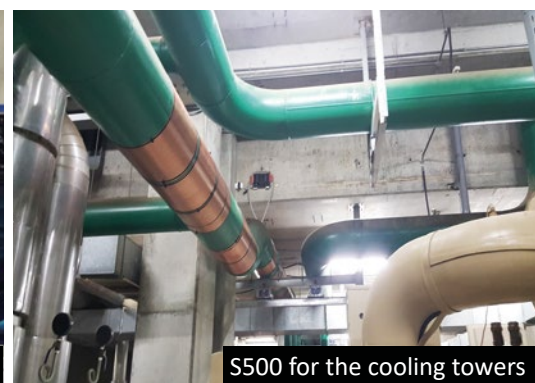
S10 for the process water pipe



S25 and S100 for the water supply



V5000 for the process water pipes



S500 for the cooling towers

## SWAROVSKI

is a crystal producer headquartered in Austria. Swarovski has been a family-owned business since it was founded in 1895 by Daniel Swarovski.

## Marigot Vietnam LLC

is part of the Swarovski Crystal Business, which represents the largest area of business for the Swarovski Group. Marigot Vietnam LLC manufactures jewelry and fashion accessories.





# Vulcan Test Report

## Installation Details:

**Location:** TopTex Morocco

**Model:** Vulcan S250

**Area:** 4" stainless steel pipe.  
Hot water return pipe to the heat exchanger.

**Installer:** STE ETCT INDUSTRIE



## STE ETCT INDUSTRIE:

We decided to make a test in the factory TopTex Maroc to convince the customer to the result of the Vulcan system.

The objective was to see the change on the old limescale in the chosen pipe.

We installed the Vulcan S250 before the hot water return pipe to the exchanger for cooling.



Vulcan S250 installation

## Vulcan Testing Period:

The trial period was 2 to 3 weeks, but after the installation we noticed that the water does not spend all the time in the pipe, just at the time of the emptying of the machines (Estimation: water goes through the pipe 5 hours out of 24 hours of work).

So we increased the duration up to 4 weeks (with a simple calculation: 4 weeks of installation on this pipe = 5 days of treatment). So the results obtained after 4 weeks of installation is just 5 days of treatment.

Due to the results we have seen after 4 weeks, we decided to extend the test to 3 weeks to clean the pipes more and have more results.

Now you will find two pipe checks (1st check after 4 weeks of using Vulcan and 2nd check after 7 weeks of using Vulcan).

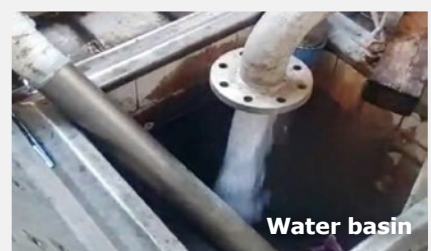
## Vulcan results after 4 weeks:

After 4 weeks of installation we checked the pipe chosen for the test and we found results more than expected, we found that the limescale began to clean itself even after 5 days of treatment, given the state of the limescale, it takes more than 1 year for cleaning.

*The test was realized with one of our new partner in the boilers and industrial maintenance.*



## Vulcan results after 7 weeks:



Water basin



Scale from the water basin



## Installation details

Location: Jizhong District Heating Company  
 Model/Area: **1 x S500** installed in the heat exchange station  
 (The primary water temperature of the equipment is 65 °C, the secondary water temperature is 45 °C)  
**1 x S250** installed in domestic hot water system  
 (The primary water temperature of the equipment is 80 °C, the secondary water temperature is 60 °C)  
 Testing time: 4 months in total, one winter (November to March)  
 Problem: The water source is groundwater, and the plate heat exchanger was scaled badly.  
 Installed by: Beijing Vulcan Water

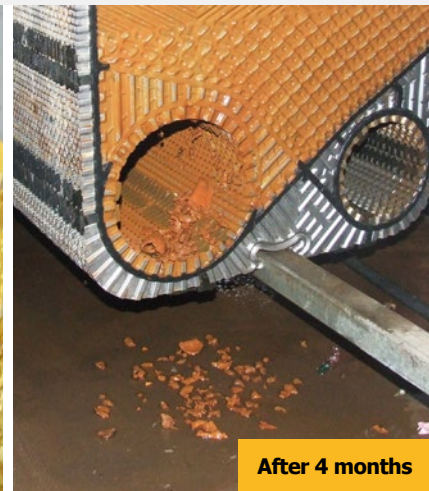
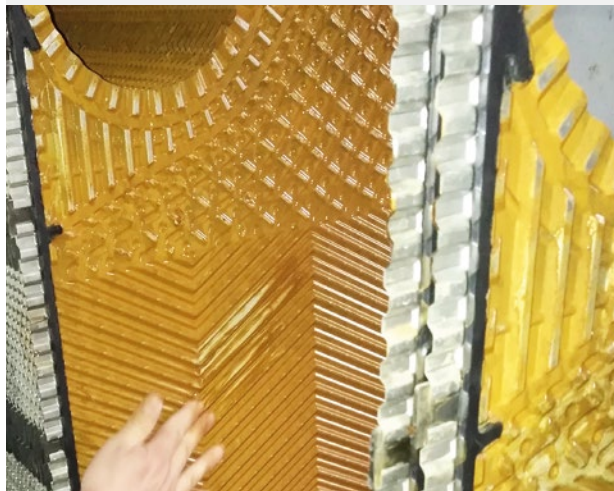
## Jizhong District Heating Company



Jizhong Energy Group is based on "central heating" as its main business and integrates energy to develop centralized heating industries. Jizhong District Heating Company, as its subsidiary company, founded in 2010, provides safe and stable heating.



### The heat exchange station — Vulcan effect on the plate heat exchanger



After 4 months

Vulcan S500 was installed in the heat exchange station.

The water is underground well water. Vulcan S500 was installed after cleaning the plate heat exchanger. After 4 months, no white scale was seen, only yellow rust was left. Although there were still substances in the plate heat exchanger, they had been softened.

### The domestic hot water system — Vulcan effect on the plate heat exchanger



white scale

Before



The white scale has disappeared.



After 4 months

Without Vulcan S250, the plate heat exchanger was scaled badly, and it was almost blocked every month, must be cleaned manually. The scale was hard, could not be removed by hands.

We stopped using any additional chemicals to treat the water. After installing Vulcan S250 for 4 months, the effect was very clear. Although there were still substances in the plate heat exchanger, they had been softened and could be easily removed by hands. There are no more white scales, only yellow-brown impurities left.