



Final Monitoring Report

Marriotts Diplomatic Quarters - Riyadh Kingdom of Saudi Arabia

ScaleWatcher (SW) Water Treatment Report for the
dishwashers and laundry systems, 24th November 2022.



Objective

OperaKool team is aiming to **provide solution on the challenges concerning the scaling problems in Dishwasher and Laundry Area for Marriotts Hotel.** Dishwashers are typically used for washing utensils in hotel which produce steam to be used for cleaning and drying of utensils. The usual heating of water to produce steam is always accompanied with challenges that causes so much expenses to the hotel. This water heating- steam production problems are usually:

- Scaling and corrosion affecting the whole system of the steamer unit.
- Algae and bacterial challenges resulting to fouling of odour of the heated water.
- Increased power usage due to variable water parameters affecting the system.
- High maintenance which is an additional operational expenses of the hotel such as replacement and maintenance shutdown of the heating element and the whole steamer unit , periodic cleaning and application of chemical antiscalants.

The problems stated above are the main concern and objectives, this report shows how our team was able to solve them.



Overview

- Installations of SW Heavy Duty Commercial Model in the inlet 2” pipe of water line carrying water to kitchen and laundry was on 24th November, 2022. (1 set of coil with 40 loops)
- Initial status of some critical areas in the dishwasher were noted:
 - *Hard external scaling were present and affecting the said water applications.

OperaKool recommended a 100% non-usage of chemical water treatment upon full installation of the SW units in order to prove that it is a perfect alternative for the current water treatment implemented by Hotel Maintenance team.



Marriotts Diplomatic Quarters - Riyadh Kingdom of Saudi Arabia ScaleWatcher (SW) Water Treatment Report for the dishwashers and laundry systems





SW Heavy Duty Commercial Model installed in the 2" inlet pipe of the water system going to kitchen and laundry with 2 sets of coil of 25 loops separated by 20 cm distance.



Before & After results of SW on Dishwasher within 2 weeks of installation

Before treatment (24th Nov. 2022), as shown in the image, the surface is dull and rough due to the scale layers present on it



After treatment (week 1), the image clearly shows that the surface is losing scaling at some spots



Before treatment (24th Nov. 2022), as shown in the image, the surface is dull and rough due to the scale layers present on it



After treatment (week 2), the image clearly shows that the surface is losing scaling at some spots. Also some scaling pieces are fallen down on sink



Before treatment (24th Nov. 2022), as shown in the image, the surface is dull and rough due to the scale layers present on it



After treatment (Week 3), the image clearly shows that the surface is losing scaling at more spots



Before treatment (24th Nov. 2022), as shown in the image, the surface is dull and rough due to the scale layers present on it



After treatment (week 4), the image clearly shows that the surface is losing scaling at many spots and also lots of scaling pieces are removed and fallen on the sink in the background



Before treatment (24th Nov. 2022), as shown in the image, the surface is dull and rough due to the scale layers present on it



After treatment (week 5), the image clearly shows that the surface is losing scaling at major spots and the sink scaling is also removed partially



Before treatment (24th Nov. 2022), as shown in the image, the surface is dull and rough due to the scale layers present on it



After treatment (week 6), the image clearly shows that the surface is losing scaling at most of spots and also the sink in background looks pretty clean



Before treatment (24th Nov. 2022), as shown in the image, the surface is dull and rough due to the scale layers present on it



After treatment (week 7), the image clearly shows that the surface is losing scaling at most of spots and also the sink in background looks pretty clean



Scaling particles falling of the heating element after 7 weeks of Scalewatcher water treatment



Before treatment (24th Nov. 2022), as shown in the image, the surface is dull and rough due to the scale layers present on it



After treatment (4 months), the image clearly shows that the surface is losing scaling at most of spots and also the sink in background looks pretty clean



Close up of heating element and tank shown after 4 months of continuous Scalewatcher treatment.



SW treated the dishwasher as good as if it's a brand new one.

Week 0



Week 1



Week 2



Week 3



Week 4



Week 5



Week 6



Chemical test before and after of water sample

NALCO Water
An Ecolab Company

SERVICE TESTS, CONTROL LIMITS

Date Serviced: **18-Sep-22** Cooling System ID: **Op**

WATER SAMPLES Req'd

Makeup Water	Results
Make-up pH	7.78
Make-up Conductivity, us/cm	1610
Make-up TDS ,ppm	1170
Total Hardness, ppm as CaCo3 in ppm	460
Calcium Hardness, as CaCo3 in ppm	308
M-alkalinity, ppm as CaCo3	100
Chlorides, ppm as Cl	500
Free Chlorine, ppm	0.03

Control lim

The compared chemical test before and after of water sample from kitchen indicates the following:-

- pH remains stable.
- Conductivity has decreased which mean the minerals inside the water are getting inactive.
- The TDS, Total Hardness and Calcium Hardness has increased which indicates that the hardness is cutting down from previous buildups of scaling and mixing with water and drained off.

21-Dec-22 Co

WATER SAMPLES Req'd

Makeup Water	Results
Make-up pH	7.9
Make-up Conductivity, us/cm	1510
Make-up TDS ,ppm	1280
Total Hardness, ppm as CaCo3 in ppm	500
Calcium Hardness, as CaCo3 in ppm	335
M-alkalinity, ppm as CaCo3	100
Chlorides, ppm as Cl	520
Free Chlorine, ppm	0.16



Observations:

- Hard scaling that has developed through time in the dishwasher system has significantly soften.
- The maintenance team is no longer required to bring the heavy chemicals for water softening to the dishwasher.
- There is no rely of any chemicals and time needed to wash the dishwasher with and to scrub it for long to remove scale of minerals.
- The SW commercial has really worked on the dishwasher and has made to appear as brand new without the usage of chemicals.



Conclusion

- Providing an effective water treatment will ensure a significant reduction of maintenance expenses of the hotel, lesser maintenance shutdown of high invested units with longer performance period and minimal concerns on water parameters affecting any system or application.
- Achieving these results will positively increase the revenue of the hotel.
- In order to achieve and maintain the ideal water parameters with a minimal expenses, we are proposing to install an Electronic Water Treatment (EWT) - ScaleWatcher to have a 24/7 water treatment.
- ScaleWatcher is a patented technology from The Netherlands proven to provide solutions to various problems associated with water.
- It is a maintenance free, non-invasive and eco-friendly water solution that guarantees to eliminate scaling, corrosion, biofilm causing the fouling of odour and significantly lower the maintenance expenses for Hotel.



Recommendations:

- Secure a 24/7 electrical power connection for the SW Electronic Water Treatment System.
- Monitor the status of the dishwasher and check the inner surfaces of the system and compare to the records of expenses before the SW was installed.
- Check the status of the progress of conversion the red rust and the intensity of water leaking. This will heal through time by converting the red rust into its beneficial form- “Black Magnetite”.
- Installation of SW Commercial and Industrial Models for the inlet water line of main storage tank, RO system, washing machine, steamers, chillers, pumps, swimming pool and spa area to significantly reduce maintenance expenses and provide protection to extend functionality of the said high-value equipment.



ScaleWatcher(SW) Guaranteed Product Benefits:

- 24/7 water pH stability ensuring no scaling, corrosion, biofilm and algae to develop in the water; meaning a healthy water source for the users.
- Removes old scale layers and prevents further build-up of new scales.
- Improves cleaning properties of water resulting to lesser amount used resulting to savings for the company.
- Reduces or prevents algae and bacterial growth in the water line (ex. Legionella).
- Eliminates and reduces corrosion and removes rust and replaces it with a black layer called Black Magnetite.
- Zero usage of water softener and other chemical treatments (ex. Broxo Salt).
- No chemicals for descaling.
- No expensive maintenance, non-invasive system and guaranteed environmentally friendly.
- Guaranteed protection of pipeline with lesser maintenance costs and shutdown.
- Prolonged shelf life of existing system or high invested system such as water pumps, filtration and pipelines.
- Increased water pressure in the pipelines and higher water yield for the RO system.
- Cleaner status of drinking glasses, plates and cutlery with no undesirable water markings resulting to its longer usage of the company as compared before the installation of ScaleWatcher.



Benefits

–ScaleWatcher will Save

- Money
- Energy
- Water
- Time
- Safe and Environmentally Friendly



Quality Assurance on SW Mode of Action- Health Declaration Assurance Aligned to EU Standards

Health Declaration

Most natural water contains calcium and carbonate ions that form – depending on temperature and other conditions – several crystal structures like calcite and aragonite. Calcite is essential for the human body – so it should remain in the water. But it should not remain in the pipe, as this would increase maintenance costs.

Scalewatcher treatment follows this rule: It does not remove any calcium components from the water, but influences crystal formation. Calcium and Carbonate ions no longer form particles with matted structures, but smaller crystals with a rounded shape. These will no longer adhere to the pipe walls, but are flushed through the pipe by the flow of water.

The Scalewatcher electronic hard water treatment system operates with a signal cable, wound around the pipe work. It emits a weak magnetic and electric field around the inside and outside of the pipe work which affects the calcium molecule formation.

The Scalewatcher system neither adds nor removes anything from the water and there is no physical contact. **So the water quality is not changed by the Scalewatcher. It has no adverse effect on health and can be consumed in the normal way.** In the stomach, the Ca-related content is dissolved by the acidity and available for the human metabolism.

Since 1989 over 300,000 units have been sold worldwide for residential use. There has never been any suspicion that related a Scalewatcher system to health problems of consumers nor has there been any reference to health problems associated with the product from any organization either government or consumer.

Good drinking water is rare and expensive. So SW treatment will not change water quality, but will protect pipes and water related equipment and reduce maintenance costs. That's what the SW is made for.



The World Green Building Council specifies only NON-CHEMICAL water treatment such as the FMW/SW, currently registered with the US and UK Green Building Councils.





Your **SERVICE**
SPECIALIST in saving
water, money and
energy for the
Kingdom of Bahrain
and the rest of the
GCC Region



Team OperaKool #@yourservice



Testimonials of Satisfied ScaleWatcher Users Bahrain and Other Countries



Testimonies

Sharjah Electricity & Water Authority
WATER DEPARTMENT
P.O. Box : 150 Sharjah - U.A.E.
Telephone : 06 - 5671114
Telefax : 06 - 5670008



هيئة كهرباء ومياه الشارقة
إدارة المياه
ص.ب : ١٥٠ - الشارقة - ا.ع.م.
هاتف : ٥٦٧١١١٤ - ٠٦
فاكس : ٥٦٧٠٠٠٨ - ٠٦

الموضوع : إجراء تجربة على جهاز إزالة الأملاح والمعادن من أنابيب المياه بواسطة اسكيبول واتشر (Scale Watcher) الهولندي المصنع .

لقد قام مختبر المياه في الإدارة العامة للمياه بالشارقة بتركيب الجهاز في أماكن محددة لمعرفة نسبة الحديد في الماء قبل وبعد تركيب جهاز (Scale Watcher) في كل من مستشفى الأسنان بكلياته والمجمع السكني بو خاطر حيث أنه قد تم تركيب جهاز واحد في مستشفى الأسنان - كلياته وتركيب ثلاثة أجهزة في المجمع السكني بو خاطر - الشارقة (جهازين في أنابيب توصيل المياه الرئيسية وجهاز في الخزان العلوي) وقدما بإجراء التحاليل وكشفت النتائج كالتالي :

مستشفى الأسنان بكلياته

S#	PARAMETERS	DIRECT	AFTER SCALE ATCHER	DATE
1	IRON	0.733	0.005	20/07/03
2	IRON	0.494	0.008	19/09/03

المجمع السكني بو خاطر - الشارقة

S#	PARAMETERS	DIRECT	AFTER SCALE ATCHER	DATE
1	IRON	0.134		22/09/03
2	IRON	0.135	0.08	13/10/03
3	IRON	0.134	0.069	22/12/03

وهذا يوضح تأثير جهاز (Scale Watcher) في إزالة الترسبات التي تؤدي إلى تآكل مواسير التوصيل في المباني التجارية والسكنية .
هذا وقد أعطيت هذه الرسالة بناء على طلب الشركة ودون تحمل الإدارة العامة للمياه أي مسؤولية .
ملحوظة : مرفق شهادات بالنتائج .


Michael Datan
Senior Technician
Fraser Suites Seef- Bahrain
Road 2825, Block Al Seef 428, Bldg 2109
Al Seef, Kingdom of Bahrain





November 10, 2016

Recommendation for Scale Watcher

Fraser Suites Seef Bahrain is a fantastic 5-star luxury hotel ideally situated next to the Al Seef Mall. Located in the heart of Al Seef's financial and business centre, this excellent hotel offers superb accommodation in a central location for valued guests.

Providing a well maintained amenities such as the swimming pool as well as the shower area with good quality house water is a daily routine closely monitored by our Maintenance Team.

It is a monthly exhausting routine to us to bring the chemical softener on the 20th floor to regularly treat the main water tank that ensures the normal water supply of our hotel. Another perennial challenge that we encounter is the regular replacement of heating elements situated in each floor of our hotel and the scaling and corrosion that greatly affecting our pipelines and medium size RO unit.

Our challenge to overcome this water related problems was impressively solved when we tried ScaleWatcher which was introduced to us by OperaKool. There were 3 units of the said Electronic Water Treatment(EWT) were installed in our main water tank as well as to inlet pipe to our RO unit. ScaleWatcher models of IE8(after main water tank), IE4(before main water tank), and CM2(inlet pipe before RO) has clearly demonstrated to us very convincing results for the next 60 days after installation.

The cost of the 3 installed units mentioned was relatively very economical to our company as compared to the total costs of the usual water treatment expenses for the next 5 years which is approximately 40% cheaper excluding the expenses of the water heater replacement.

The usual problems and chemical water treatment is no longer being observed which is a very strong indication that this EWT is perfect alternative maintenance free solution. We noticed a significant improvement on the water pressure specially in the 7th floor where some pipe problems has been noted before installation as well as in the shower areas of each room in each floor.

This testimonial is hereby issued to support our satisfaction on the performance of ScaleWatcher.

Yours truly,


Michael Datan
Senior Technician
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The Fraser Collection
Bahrain, Bangkok, Beijing, Glasgow, Hangzhou, Hong Kong, London, Manila, Nanjing, Paris, Seoul, Shenzhen, Singapore, Sydney, Tokyo, Vancouver (2009)
Brisbane (2009), Chongqing (2011), Dubai (2009), Edinburgh (2009), Fuzhou (2010), Guangzhou (2010), Harbin (2010), Hyderabad (2010)



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January 21, 2016

RECOMMENDATION FOR SCALEWATCHER

Adhari Park is the kingdom's largest indoor and outdoor amusement park covering a total of 165,000 square meters, consisting of various built up areas, green areas along with 3 outdoor lakes.

Ever since the park began its operations in April 2008, maintaining these lakes has been a huge challenge as we had to use large quantities of chlorine and other chemicals to ensure the water remains clean and bacteria free. Unfortunately because of the increased chlorine and chemical levels the water was hazardous for our visitors.

After extensive research and searching the local market we came across Mr. Ali and he offered us a simple solution by the name of "Scalewatcher" which he said would make all our water worries go away, being highly skeptical of his claims the management decided to invest in one unit for testing purposes and to our surprise the effects were visible within a week.

The water was much cleaner, there were no algae or bacteria floating in the water and our cost of chlorine became zero. Looking at this we decided the management decided to invest in two more units and it has been over four years now and we have not had any issues with the units and in the process increasing the longevity of our pushback systems.

Not to mention excellent after sales service and support offered by Mr. Ali and his organization "Opera Kool Trading".

We recommend "Scalewatcher" to everyone and like us you can conduct your own research online to compare and help you make your decision.

Sincerely,

Khayam Ali Salem
General Manager
Adhari Park Development Co.



تاجر الشركة التطويرية عذاري، ص.ب 75707 (المنامة)
Part of Adhari Park Development Co. B.S.C. (c)



Unigate Dairies

Unigate Dairies Limited
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22nd October 1993

Mr Jeff Clark,
Etcetera Limited
Funtley Court,
Funtley Hill,
Parnham.
Hants.
PO16 7UY

Dear Jeff,

I would like to inform you as to how we are getting on with our trial of your scale watcher system on our bottle washers.

As you know we were experiencing condensation and water droplets on the glass leaving the bottle washer which was giving us high false rejects on our dairy scan bottle scanners.

I suggested that the problem could be caused by water hardness in our washer in the area of 20 - 30 ppm.

Having installed the scale watcher the problem has completely disappeared. While I am very happy with this inexpensive and simple way of overcoming our problem I still have to confirm my trial is complete by turning the system off and monitoring the return of the problem.

In the meantime many thanks for your support and I will keep you informed as and when I have some final results to report.

Yours sincerely

M. R. Allen
Engineering Manager

Registered in the United Kingdom
Company Number 367304



