



Essential Expertise
for Water, Energy and Air

16 million gallons of water saved 3D TRASAR® Program Provides Over \$110K Annual Savings for Luxury Hotel



Situation

A luxury hotel in Mumbai, India, was looking for a chemical treatment program that would reduce condenser tube fouling, reuse sewage treated water, and decrease energy consumption.

Background

The Renaissance Mumbai Convention Centre Hotel and Marriott Executive Apartments, a Marriott-owned property, was experiencing significant condenser tube fouling, which was resulting in an increase in both the approach temperature and the energy requirements for its 1400-ton chiller system. In fact, the fouling was so bad that the approach temperature increased an average of 7.5 degrees Celsius. In addition, the kilowatt per ton had increased to an average of 0.74 due to the fouling.

The fouling the hotel was experiencing with the condenser tubes in its cooling water system was negatively impacting the bottom line for the entire operation, according to WK

Mak, Marriott Regional Vice President, Engineering – Asia Pacific.

Program

In an effort to help this hotel achieve its operating goals, Nalco used its Optimizer software to analyze the operating data for the hotel makeup water used in the cooling system. This data led Nalco to recommend a trial of its state-of-the-art 3D TRASAR program. The program included PSO chemistry, non oxidizing biocide, oxidizing biocide and an algaecide. The recommended Nalco 3D TRASAR program was run on a trial basis from April 2008 to March 2009.

“Our relationship with the plant operators at the Renaissance hotel is based on trust and understanding. We agree that these two fundamental elements are key in achieving the goals of our customers today and in the future,” explained Avijit Mitra, Nalco Corporate Account Manager.

ENVIRONMENTAL RESULTS	eROI	ECONOMIC RESULTS
Water savings of 16 million gallons annually	 water	Annual savings of approximately \$48,000
600,000 kWh were conserved annually	 energy	Annual savings of approximately \$60,000

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The 3D TRASAR system incorporates chemistry, algorithms, hardware and software, which perform together to provide optimal control of a cooling water system. The system works proactively to prevent the formation of scale, corrosion, and equipment fouling or malfunction before it occurs. A fluorescent particle on treatment chemicals allows the system to continuously monitor and adjust chemical consumption for optimal use.

“The Nalco 3D TRASAR system will provide the Renaissance the opportunity for real-time feed and monitoring of chemicals to prevent fouling problems in the condenser tubes,” stated Sanjay Patil, Nalco Account Manager.

The 3D TRASAR program detects the upsets that precede scaling, corrosion and biofouling and then delivers the appropriate chemical response. The result is a balanced, efficient and safe cooling system. Less maintenance, no over- or under-dosing of chemicals, lower operating costs and maximum asset protection are the key deliverables.

Economic Results

During the 12-month trial, the Nalco program provided outstanding operating results for the hotel. The program addressed the customer’s concerns with

operating efficiency due to condenser tube fouling.

Specific program results of the trial program include:

- The approach temperature was decreased from an average of 7.5°C. to 4.5°C.
- The kilowatt per ton was decreased 12% from 0.74 to 0.65.
- STP water was used as the makeup water. This reduced consumption of fresh water by 15.85 million gallons (60,000 cubic meters) annually.
- Condenser tube fouling was nearly eliminated. In fact, no condenser cleaning had been required in the last 12 months. This represented an annual savings of \$2,200.
- Increased ease of operation with continuous chemical feed and monitoring.

Environmental Results

The Marriott Corporation has adopted a proactive approach to reducing environmental adversities through its operating initiatives. The Nalco program implemented at the Renaissance Hotel allowed the facility to conserve nearly 16 million gallons of water annually by reusing sewage treated water. This conservation

effort represents annual savings of over \$48,000.

In addition, approximately 600,000 kWh were conserved annually, reducing electricity expenses by nearly \$60,000.

The reduction of condenser fouling was one of the customer’s primary goals. Doing so allowed them to reduce the operation’s environmental footprint. “When a program can reduce both energy and water consumption, you know you have a winning solution,” emphasized Prem Thakur, Director of Engineering for Renaissance Mumbai, India.

The 3D TRASAR program provided a value-added solution with significant economic and environmental benefits for the Renaissance hotel.

Return on Investment

The Nalco system, labor and support cost the Renaissance Hotel approximately \$35,000. With an annual cost savings of nearly \$110,000, the return on investment is only about four months.

“Return on investment is extremely important in these economic times and will help us maximize operating efficiency while maintaining our environmental goals,” commented Chandrakant Kumat, Chief Engineer, Renaissance Mumbai, India.

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