

Success Story

ELIMINATING MACRO-FOULING

QUATERNARY COMPOUND CONQUERS SHELLFISH

A power station in Bahrain solved a debilitating macro-fouling challenge with Gradiant's innovative quaternary compound, leading a complete eradication of the invasive species and trouble-free operations. A thorough system inspection revealed a unique approach to solving the problem through both unique chemistry and application expertise.

The Challenge

A power station in Bahrain grappled with a persistent macrofouling issue in its cooling system. Invasive aquatic species were causing substantial blockages and impairments, diminishing flow in the intake systems and efficiencies in downstream heat exchangers. Previous attempts to address the problem involved an increase in chlorine dosages. However, this approach risked compromising system performance and breaching the strict 0.2 ppm discharge limit. The electro-chlorinators also struggled to meet demand without substantial system upgrades.

The Solution

Gradiant stepped in with a nuanced solution, leveraging a more effective strategy that would bypass the species' natural chemoreceptors, evolved to sense chlorine and other toxins to prevent intake. Developing a dual program of chlorine and a specialized quaternary compound, developed with unique characteristics undetectable to the species, proved an efficient alternative. Gradiant optimized the dosage rate and frequency, ensuring the systematic elimination of macrofouling.



**CURE Chemicals
in Renewables
and Power**



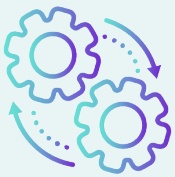
Bahrain

Location:	Bahrain
End User:	Power Generation
Application:	Cooling Systems
Solution:	Once Through Cooling
Industry:	Renewables & Power
Feedwater Source:	Seawater
CURE Chemical:	Biocide



>20X

**Return on Investment,
(factoring in time and
labor savings, safety
hazard removal, and more)**



>3 Years

**Of uninterrupted
operation**

**Zero
Unplanned
shutdowns**



25%



**Reduction in electricity
consumption for intake
pumps, exceeding
industry averages**

The Benefits

After six months of implementation, thorough visual inspections of cooling water pumps revealed a significant improvement. Pump internals were found to be clean, devoid of any macrofouling that had previously plagued the system. This not only enhanced cooling system efficiency and reliability but also eliminated the need for unplanned shutdowns for cleaning. Even during planned maintenance, the time required for cleanings dramatically decreased, resulting in substantial labor savings and a reduction in safety hazards associated with high-pressure equipment and diver interventions.

Learn More at <https://www.gradiant.com//solutions/cure-chemicals/biocides/>

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