

VEOLIA IMPLEMENTS SUSTAINABLE CORROSION INHIBITOR FOR BIOPHARMACEUTICAL MANUFACTURER

CASE STUDY | Pharmaceutical

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| Client Needs

The biopharmaceutical facility, located in Ireland, operates large-scale cooling systems critical to its manufacturing processes. The client was seeking to increase the cooling towers' cycles of concentration to save water, while simultaneously meeting strict environmental constraints. Specifically, they needed to **reduce adsorbable organic halides (AOX) and eliminate phosphate discharges from their cooling tower blowdown**, all while maintaining excellent corrosion and scale protection.

| The Solution

Veolia recommended E.C.O.Film™ EF2896/EF2897, a patented non-phosphorus scale and corrosion inhibitor. It uses Carbon-Hydrogen-Oxygen (CHO) chemistry to form an ultra-thin (<100 nm), electrically insulating passivation film at the metal-electrolyte interface, replacing traditional inorganic phosphate treatments. As a nutrient-free chemistry, it does not support biological growth. The formulation also includes a nitrogen-based copper corrosion inhibitor and a surface film formation catalyst (SFFC) to accelerate protective film development.

Designed for alkaline operation, E.C.O.Film™ reduces acid demand, lowering chemical costs and system corrosion potential. It incorporates a fluorescent tracer compatible with Veolia's TrueSense™ platform, enabling real-time monitoring and automated dosing via an online PTSA probe. This control strategy supported a safe increase in cycles of concentration from 2.7 to 4 without scale risk.

| Results

By implementing E.C.O.Film™, the client increased cooling tower cycles of concentration to 4, reducing blowdown by over 50% in comparison to 2023. The shift to a non-phosphorus program eliminated the discharged of approximately 200 kg/year of phosphate. As phosphate is a key driver of microbiological growth, this change prevents the potential formation of up 100,000 kg (100 tonnes) of wet algae per year. The resulting nutrient reduction significantly suppressed biological growth, **lowering biocide demand** and overall AOX impact. With the system's alkaline operation and improved LSI, copper corrosion rates improved from 0.2 MPY to 0.07 MPY.



Ireland

| The Client

The client is a leading biopharmaceutical manufacturer operating a state-of-the-art facility in Ireland. They have an existing relationship with Veolia and were looking to improve the sustainability and efficiency of their cooling tower operations.

Key Facts & Figures

Cycles of concentration

Cooling tower cycles of concentration increased from **2.7 to 4** without scale formation

16,614 m³/yr

of water saved, thanks to a 30% reduction in makeup and blowdown

100% elimination

of phosphate contributions from cooling tower to WWTP, removing **≈200 kg phosphate**

Copper corrosion rate

reduction of 65%, from 0.2 MPY to 0.07 MPY

AOX significantly reduced

and need for biocide minimised

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