

H2O's Performance Audit Delivers Efficiency



Two H2O's Pepcon™ Electrochlorination System are responsible to provide biofouling control aboard CPOC platform

CPOC is an oil and gas infrastructure operated by Carigali-PTTEPI Operating Company Sdn. Bhd. in the Malaysia-Thailand Joint Development Area (MTJDA), located in the Gulf of Thailand. It comprises multiple wellhead platforms (e.g., MDA, JKA), a central processing platform (MDPP), and an FSO.

The CPOC offshore platform relies on H2O's Pepcon™ seawater electrochlorination system to generate sodium hypochlorite for biofouling control within the seawater cooling and utility systems. Maintaining proper chlorination levels is critical to prevent marine growth, scaling, and microbiological fouling in heat exchangers, piping, and process equipment.

Over time, the platform began experiencing:

- Reduced electrochlorination efficiency
- Inconsistent chlorine residual levels
- Increasing maintenance requirements
- Frequent breakdowns

These issues raised concerns about biofouling risks in seawater systems and higher operational costs.

The platform required a non-intrusive and systematic assessment that could:

- Evaluate chlorine generation efficiency
- Identify equipment or operational inefficiencies
- Benchmark performance against design capacity
- Provide practical recommendations without major equipment replacement

The goal was to restore system efficiency while minimizing disruption to offshore operations.

Approach

To address the situation, H2O, together with its local partner Turcomp, conducted a comprehensive electrochlorination (EC) performance audit. The engagement began with a one-day customer workshop and operator training session, creating a collaborative platform to review system performance, discuss operational challenges, and reinforce best practices in EC operation and maintenance. Following the workshop, H2O carried out a structured performance audit to evaluate the system's condition and identify opportunities to improve efficiency and reliability.

"H2O goes the extra mile to ensure end users can operate their EC units confidently and effectively. We truly appreciate their openness in sharing knowledge and the strong support they provide to our local team," says Dave Ng, Project Manager at Turcomp.

Key assessment areas included:

Operator Training & Pre-Audit Workshop

- Operational and maintenance training for EC system operators
- Review of current operating practices and known system issues
- Open discussion with the operations team to identify performance gaps

System Performance Evaluation

- Verification of chlorine production rate
- Analysis of current density and voltage performance
- Benchmarking of power consumption and operating efficiency



Workshop with the operators to discuss issues and share best practice

Equipment Condition Inspection

- Inspection of electrolyzer cells, electrodes & other mechanical components.
- Inspection and calibration of instruments.
- Assessment of scaling and fouling within the system
- Review of seawater feed quality affecting electrolysis performance

Operational Practices Review

- Evaluation of operating setpoints and control strategy
- Review of maintenance practices and operating logs
- Identification of improvement opportunities and action items



A system health check by H2O's qualified personnel can uncover issues and improve system efficiency on the spot.

"We bring in specialist from US who have more than a decade of experience in the field to train and share detailed operational knowledge with our customers. We don't just stop there; we go to customer platforms to perform equipment audits. Ultimately, our goal is to ensure our customers have the best possible experience operating our unit," says Sani Zulkepli, APAC Sales Manager for H2O.

Results

Following implementation of the recommended improvements, the platform achieved:

- ✓ Electrochlorination efficiency maintained in accordance with the design specifications.
- ✓ Stabilized chlorine residual levels in seawater systems
- ✓ Lower risk of marine biofouling
- ✓ Improved operational reliability

"Our team continuously seeks opportunities to maintain and enhance system reliability while optimizing operating costs. The audit proved to be extremely valuable. The H2O specialist not only identified key issues but also worked closely with our crew to improve system performance. Since the visit, we have seen a clear improvement in operational confidence and efficiency."

— Amir Zaki, Senior Electrical Engineer (CPOC-DPOR)

An **H2O LLC electrochlorination system** is an on-site generator that turns **seawater and electricity** into a disinfectant to kill marine growth. These systems are **critical components of offshore seawater utilities**.

The Key Takeaways:

- **What it does:** It stops algae, barnacles, and mussels from clogging internal piping, heat exchangers, and firewater systems on ships and offshore rigs.
- **Why it matters:** It prevents expensive **system failures** and downtime caused by "biofouling" (blockages).
- **The Big Benefit:** It is **safer and cheaper** because it creates disinfectant on-demand, eliminating the need to transport or store hazardous chemicals like chlorine gas

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