

# PWSM Logic

## Real-time produced water and sand treatment optimization system

### APPLICATIONS

- Produced water and sand treatment
- Integrated operations
- Remote and satellite production
- Operations with unstaffed platforms

### FEATURES

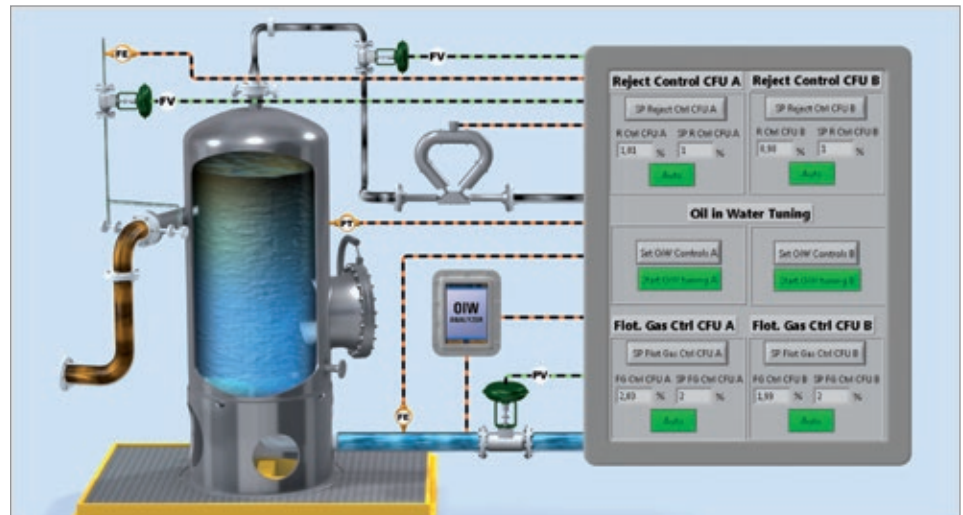
- Fully automatic tuning
- Programmable logic controller (PLC) with advanced control algorithms
- Continuous oil-in-water (OIW) monitoring capabilities
- Automatic adjustment for peak discharge
- Detailed diagnostic picture

### BENEFITS

- Ensures lowest possible OIW discharge
- Optimizes treatment and cleaning efficiency of the entire produced water system
- Decreases reject waste stream generation and flotation gas consumption
- Reduces personnel requirements and HSE risk
- Minimizes tuning errors

The PWSM Logic\* real-time produced water and sand treatment optimization system automatically assures the lowest-possible OIW volume for discharge to the sea or for reinjection. A reliable and cost-efficient alternative to manually controlled produced water and sand treatment systems, the PWSM Logic system constantly monitors all input and output of the system, including

- flotation gas
- produced water
- reject differential pressure ratio
- reject flow rates
- OIW content.



An integrated component of PWSM Logic system is the EPCON RC\* reject control system, which monitors and controls the reject stream from EPCON CFU\* compact flotation unit technology. The combination enables precise quantification and minimization of reject flow.

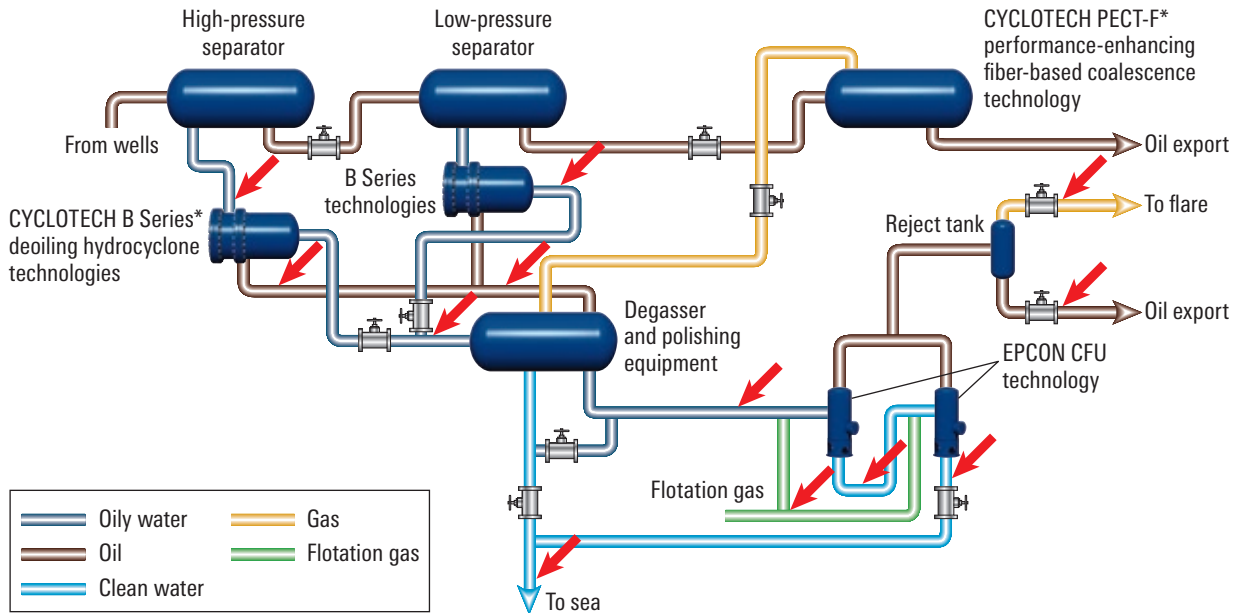
### Eliminating human error

Discharge peaks often govern the overall average OIW discharge, particularly in challenging offshore fields. The need to precisely tune produced water and sand treatment equipment to meet real-time conditions led Cameron to develop the automated PWSM Logic system for use with EPCON CFU technology. System applications have expanded to fit any Cameron produced water and sand management system, including CYCLOTECH P Series\* preseparation hydrocyclone technologies, CYCLOTECH B Series\* deoiling hydrocyclone technologies, and the EPCON Degasser\* produced water degassing vessel.

Typically, equipment used to treat produced water were manually tuned and relied on laboratory OIW analysis, visual inspection of various sample points, and manual valve setting. This approach required the best judgment of the equipment operator, which can lead to misjudgments and mistakes.

# PWSM Logic

The PWSM Logic system enhances Cameron produced water and sand treatment technologies, allowing the lowest-possible OIW discharge to the sea at any time during the operation, which is impossible with a manually tuned system. Additionally, during the frequent process upsets that occur at production facilities, the automated PWSM Logic system has shown considerably improved quality to meet discharge and reinjection requirements.



The automatic control system of the PWSM Logic real-time produced water and sand treatment optimization system removes offshore operating personnel from the tuning process, optimizing efficiency and mitigating HSE risks. Red arrows show where in the produced water and sand management system the PWSM Logic system can be implemented for monitoring and controlling operation parameters.

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