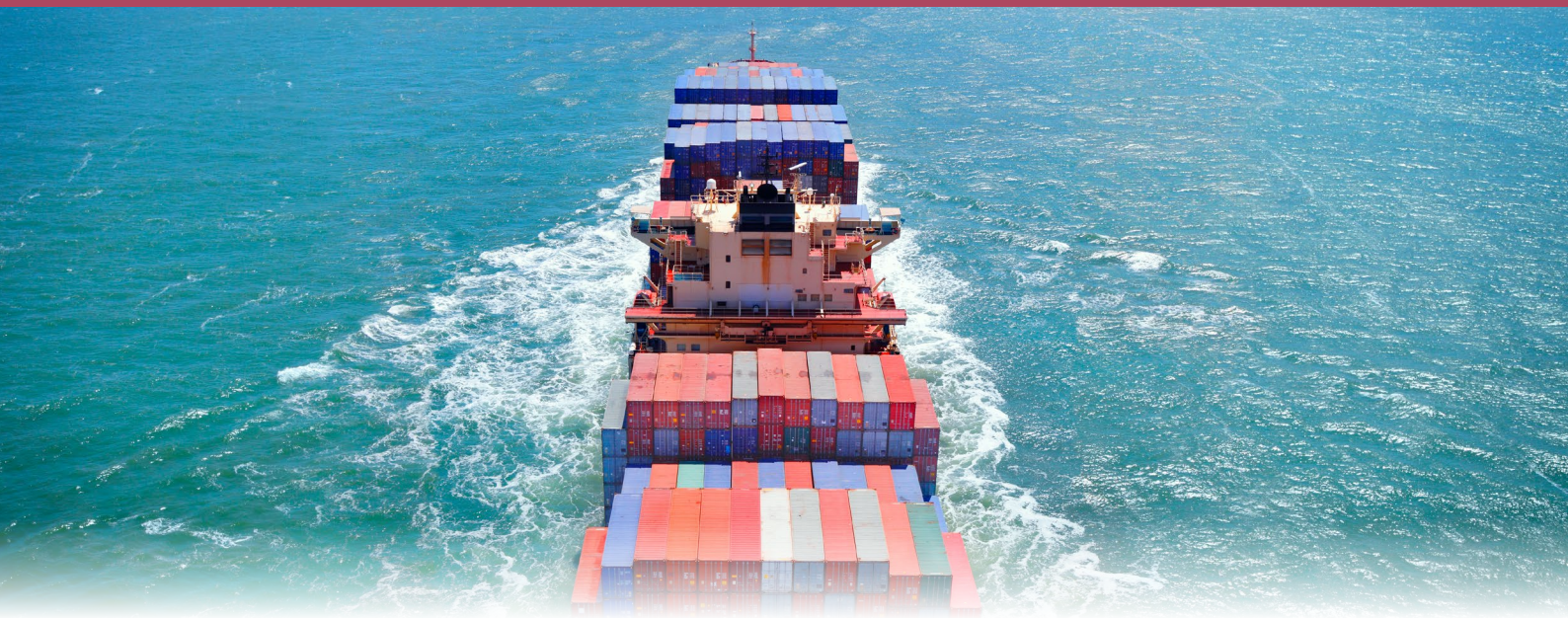


ScrubberGuard

Measuring system for Scrubber wash water monitoring



Sulphur Cap 2020

More and more goods are transported by sea on a global scale and cruise liners are also enjoying an increase in popularity. For economic reasons, many ship operators choose heavy fuel oil as a propellant. The International Maritime Organization (IMO) has issued guidelines for limiting pollutant emissions of heavy fuel oil powered ships. In order to continue operation with highly sulphurous heavy fuel oil, the ships are refitted with scrubbers.

The certified measuring system ScrubberGuard reliably and continuously measures the parameters of the scrubber wash water, such as turbidity, oil-in-water, pH and temperature in accordance with the guidelines for exhaust gas treatment systems MEPC.259 (68).



ScrubberGuard – innovation for your processes

OilGuard 2 SG / -A

Oil-in-water measurement by UV fluorescence in acc. with MEPC.259(68)

pH/temperature sensor

Measurement of pH value with a glass electrode

AquaScat 2 SG / -A

Turbidity measurement in acc. with ISO 7027/EN27027



[1] Robust, reliable and modular system

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The system's flexibility allows first and retrofit installations.

- Because of its modular design, individual fitting is possible

Plug & Measure

- Simple installation and starting of operation
- Simple verification/recalibration onboard
- No need to return the measuring instrument to the manufacturer for recalibration

Maximum of operational safety

- No drift and thus continuously correct measurements
- Early detection of problems in the operational process



[2] Integrated two-stage deaeration system and vibration decoupling

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Efficient elimination of air bubbles

- Step 1: Elimination of large air bubbles
- Step 2: Elimination of small air bubbles
- Reliable measurements even under extremely demanding operating conditions
- Maximum operational safety
- Can be extended modularly

Rack with vibration decoupling

- No reading falsification as a result of vibrations and heeling (tilting)

[3] Non-contact free-fall concept

Water passes through the AquaScat 2 SG and OilGuard 2 SG without touching the optics.

- No window fouling and hence, the measured values are not falsified

No contamination of the optics even in case of high amounts of solids and hydrocarbons.

- No cleaning device needed
- Extremely low maintenance and thus minimal maintenance costs

Measurement of turbidities of up to 4'000 FNU.

[4] Recalibration with secondary standard (optional fully automated)

Formazine is used in factory calibration for the AquaScat 2 SG, Phenantrene for the OilGuard 2 SG after assembly. The pH sensor calibration is due to anormal standard procedure with two buffer solutions. For recalibration, secondary standards are delivered with the instruments.

- Precise recalibration without the use of chemicals
- Recalibration by the customer's personnel or fully automate (optionally)
- No external additional costs for a specialist

Maximum operational safety

- Very low operating costs

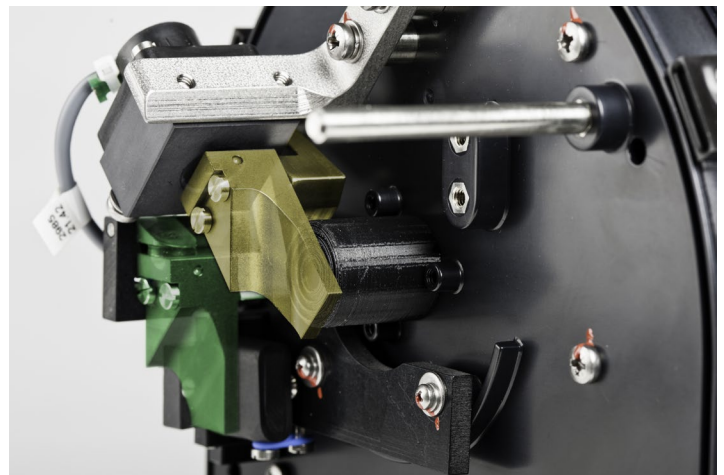
[5] Integrated control unit

The instrument is operated via a touch screen with colour display.

- Values, graphs, states or alarms can be displayed, as selected
- An internal data logger allows the visualisation of the measured data covering the past 32 days
- Extensive communication options incl. integrated web server
- A password protects against unauthorized access



[3] Non-contact free-fall concept



[4] Automated recalibration with secondary standard

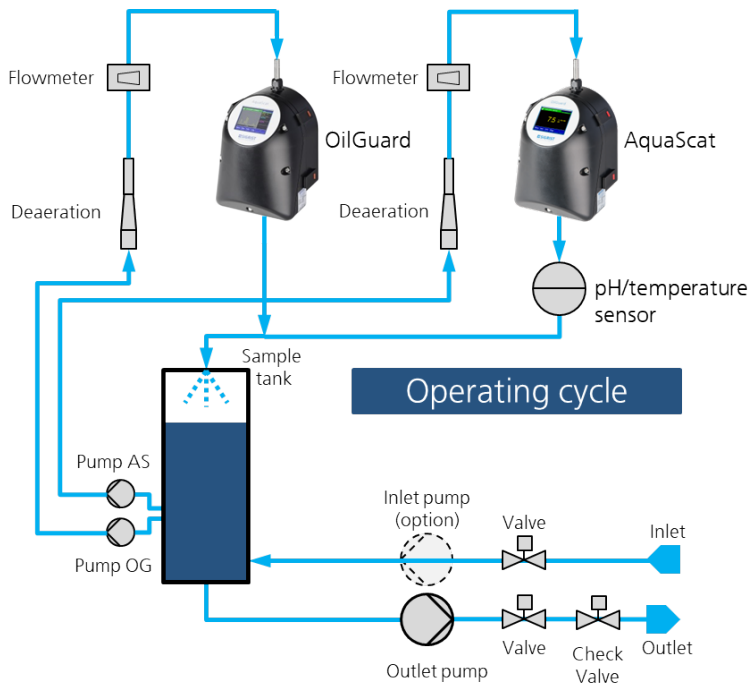
Fully automated recalibration is carried out without interrupting the water flow.



[5] Integrated control unit

ScrubberGuard – innovation for your processes

Flow diagram ScrubberGuard



DNV-GL and ClassNK Compliance (Statement of Compliance) / LR Lloyd's Register – Type Approval Certificate

- The SIGRIST ScrubberGuard fulfills the requirements of the directive MEPC.259 (68) and has been certified with the Lloyd's Register Type Approval Certificate
- More than 70 years of experience and innovation are combined in the ScrubberGuard system



photometer.com/869e

Your representative:

Applied Process Technology

Galileilaan 33J | 6716 BP Ede
Postbus 234 | 6710 BE Ede
T. +31 88 278 28 28
info@apt.nl | www.apt.nl

SIGRIST
PROCESS-PHOTOMETER

SIGRIST-PHOTOMETER AG

Hofurlistrasse 1 · CH-6373 Ennetbürgen
Tel. +41 41 624 54 54 · info@photometer.com
www.photometer.com