Market activity and achievement of Wärtsilä SOx Scrubber

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November 2018

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CURRENT AND POTENTIAL EMISSION CONTROL AREAS

GLOBAL 0,5 %
SULPHUR CAP IN 2020

- The EU EEZ (Economic Exclusive Zones) will implement 0,5%S fuel requirement inside the EU zone in 2020
- As of January 1st 2016 China has enforced 3 new ECA's: Perl River Delta, Yangtze River Delta & Bohai Rim.

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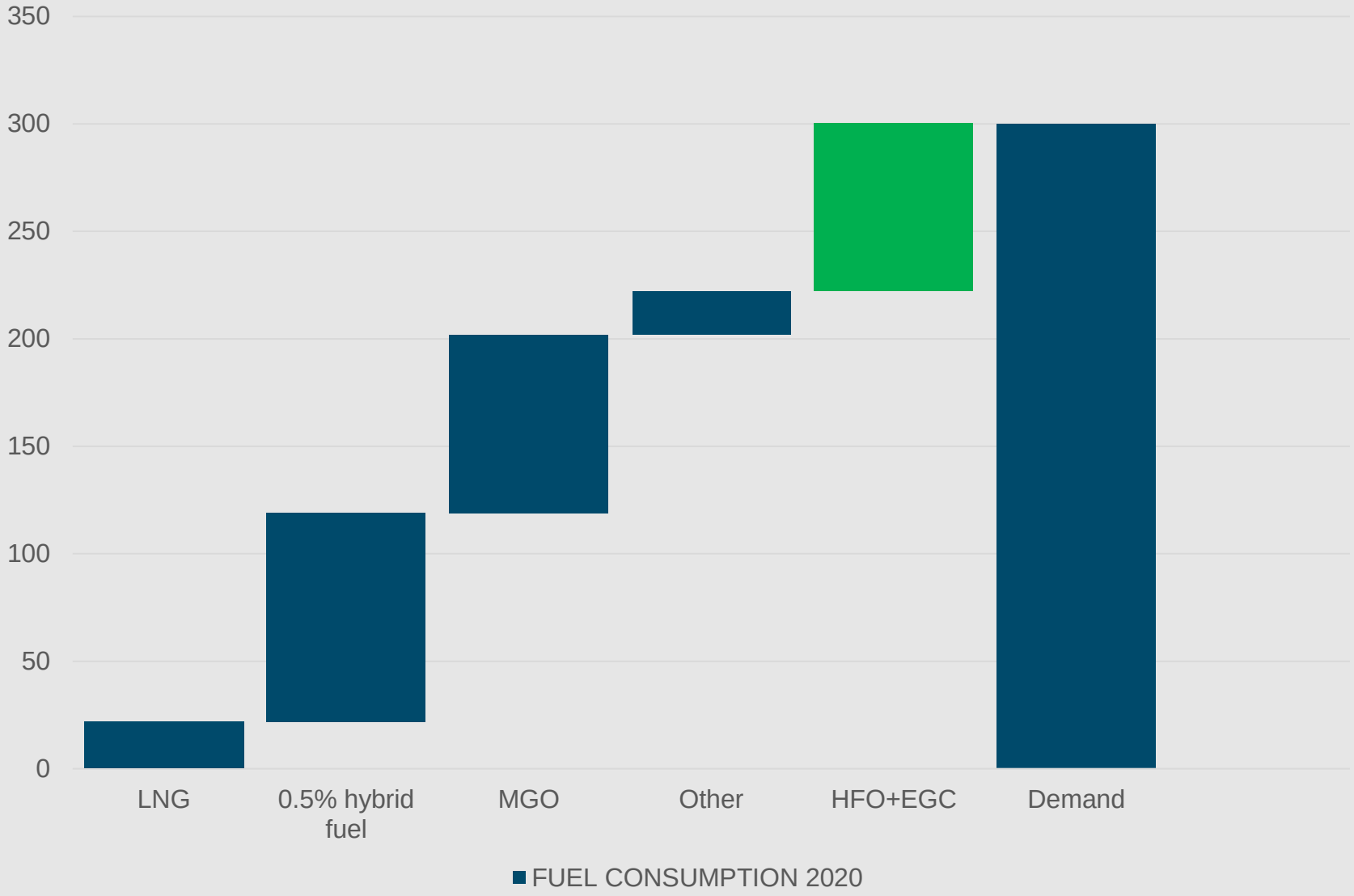
ABATEMENT TECHNOLOGY – WILL BE A PART OF THE SOLUTION



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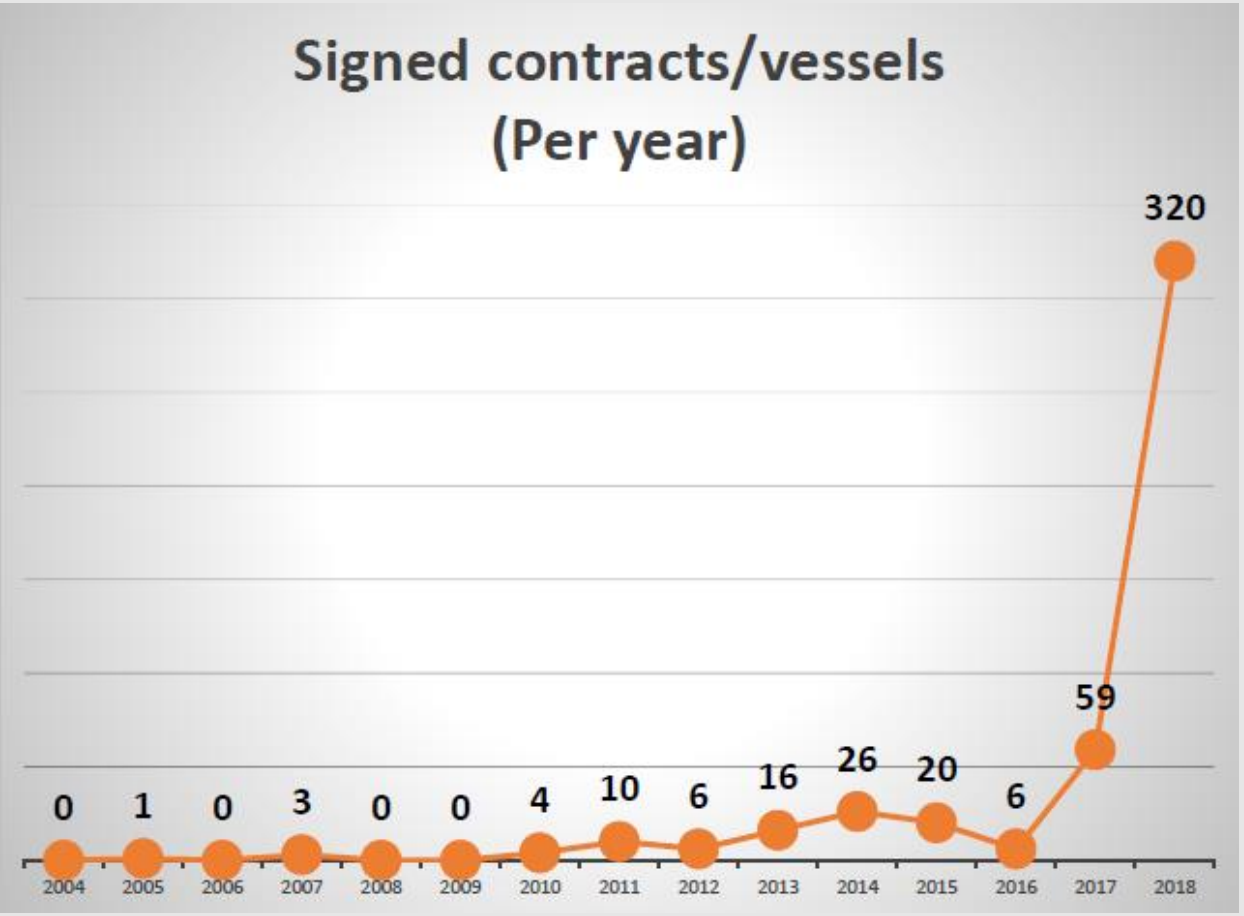
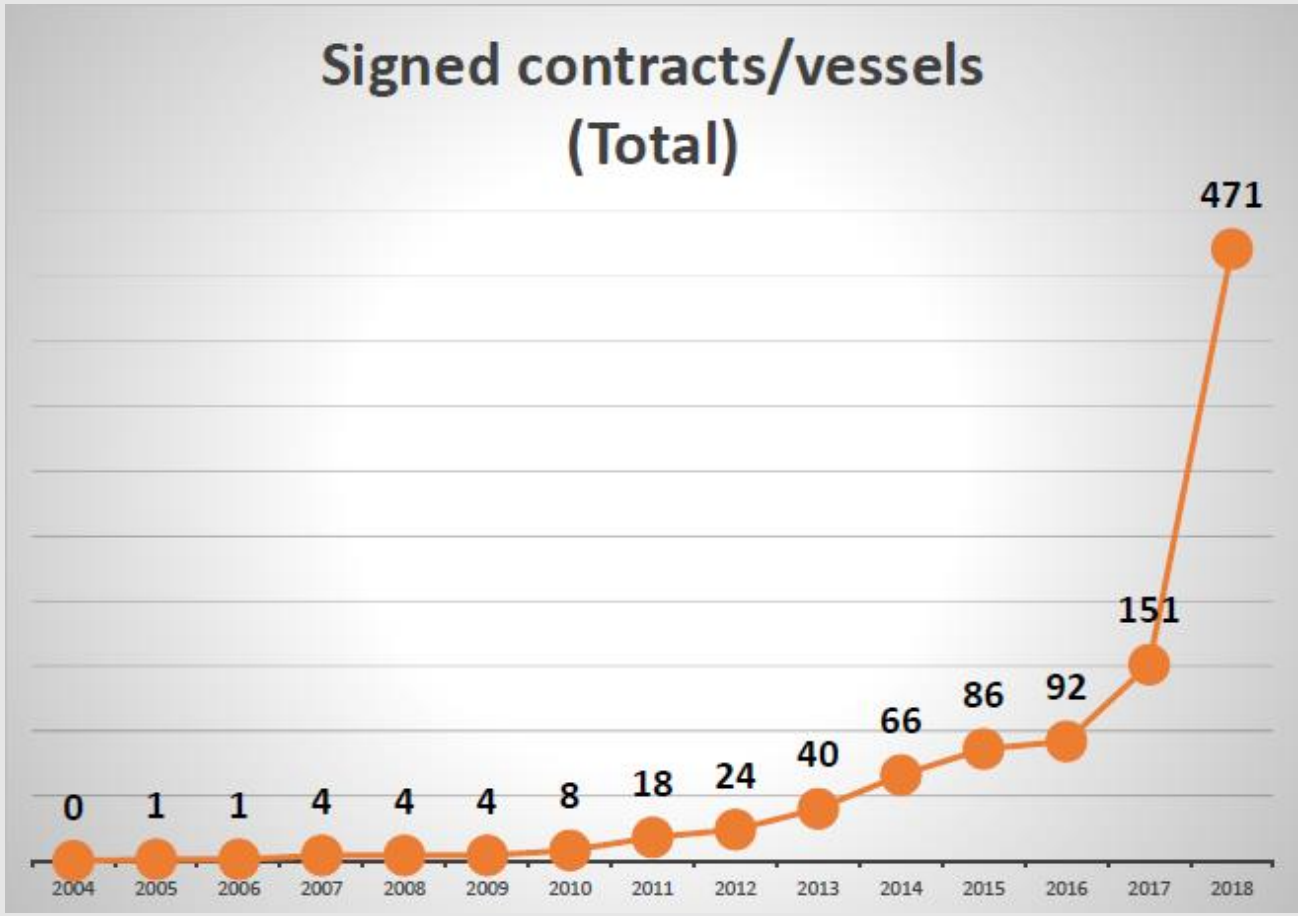
Market activity





As of Sep. 2018

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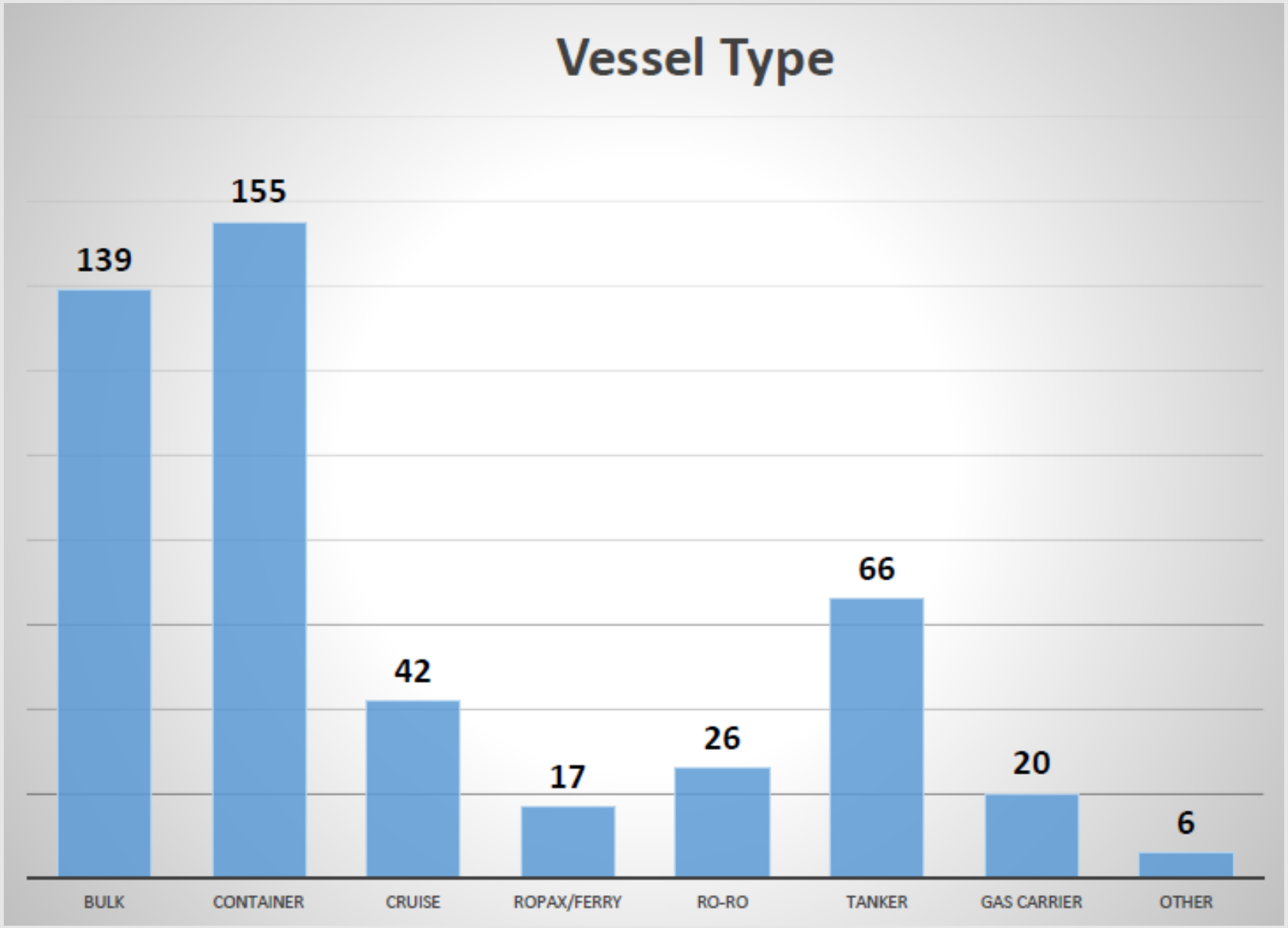
Market activity



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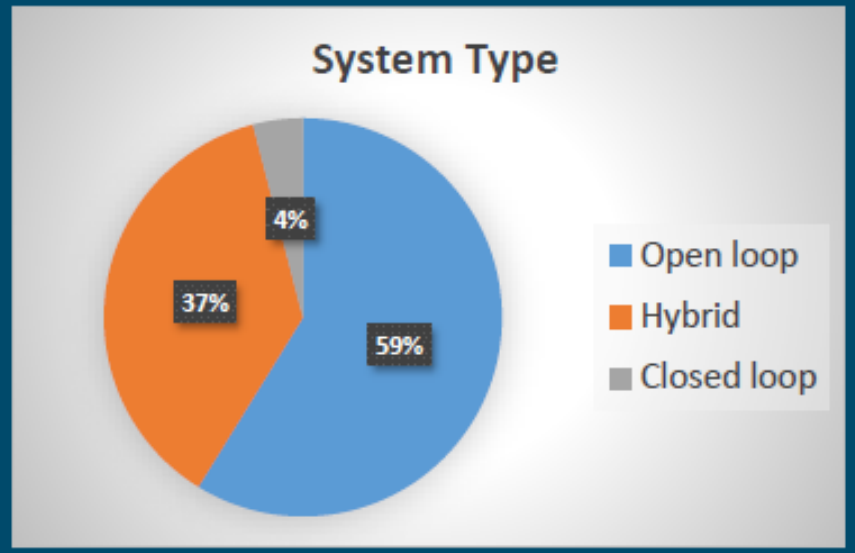
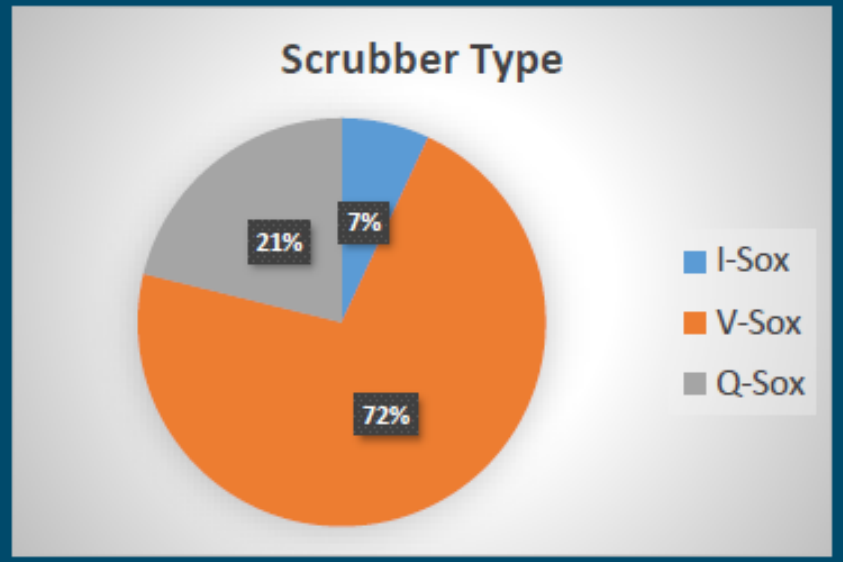
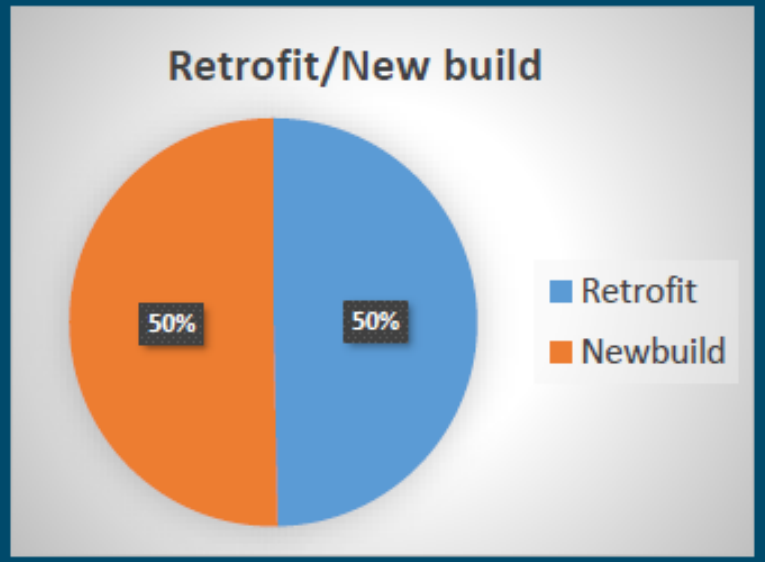
Market activity







~470 VESSELS
~620 SCRUBBERS

As of Sep. 2018

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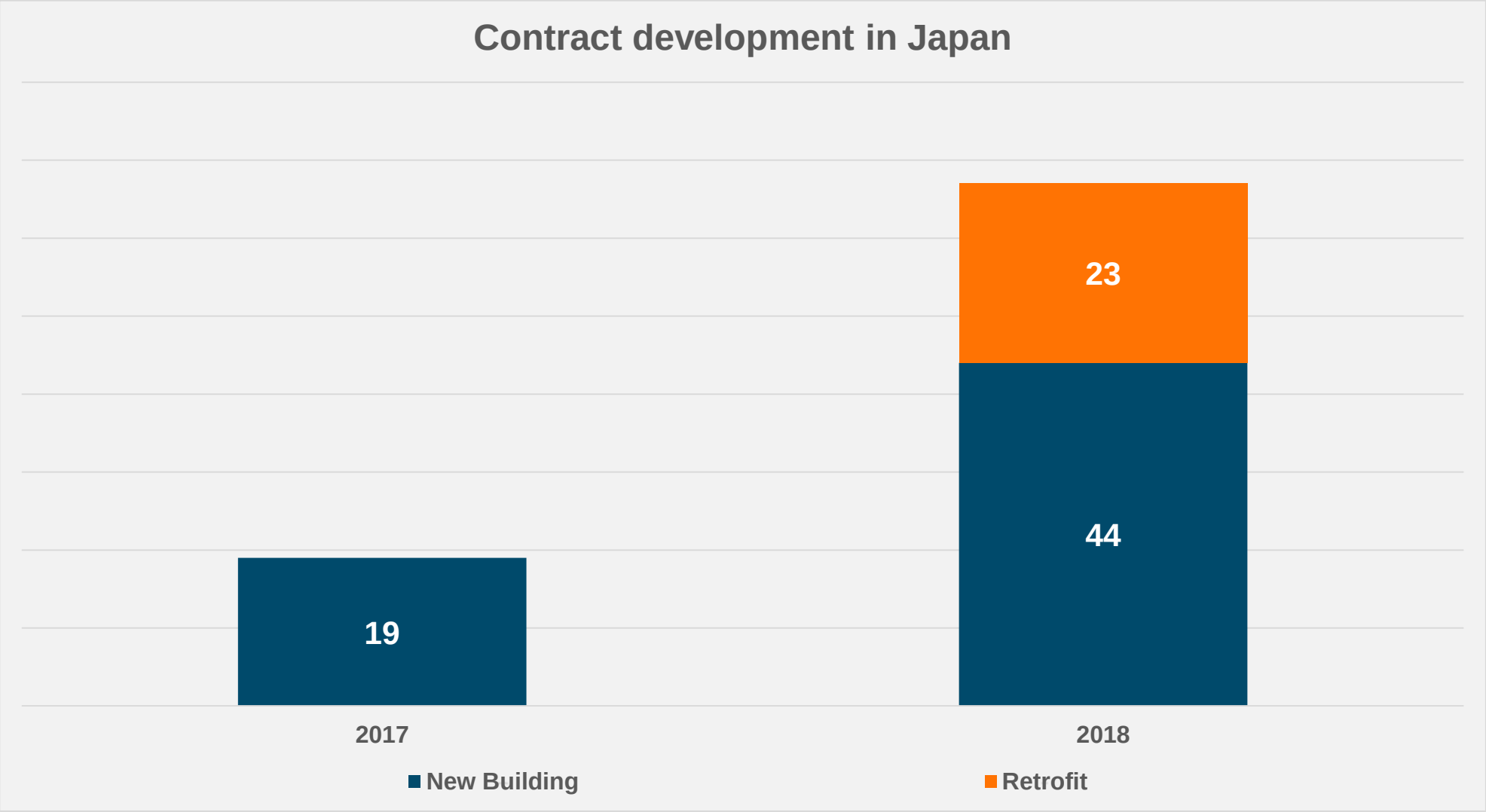
Market activity



As of Oct. 2018

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Hankyu Ferry

- 16 300 GT Ferry vessel
- 6200 DWT
- 2 x 14V31 Wärtsila engines
- Ship speed: 23.5 knots
- Passengers: 660
- Trucks: 275
- Car: 185
- 2 x 7 MW scrubber
- Hybrid I-SOx scrubber system

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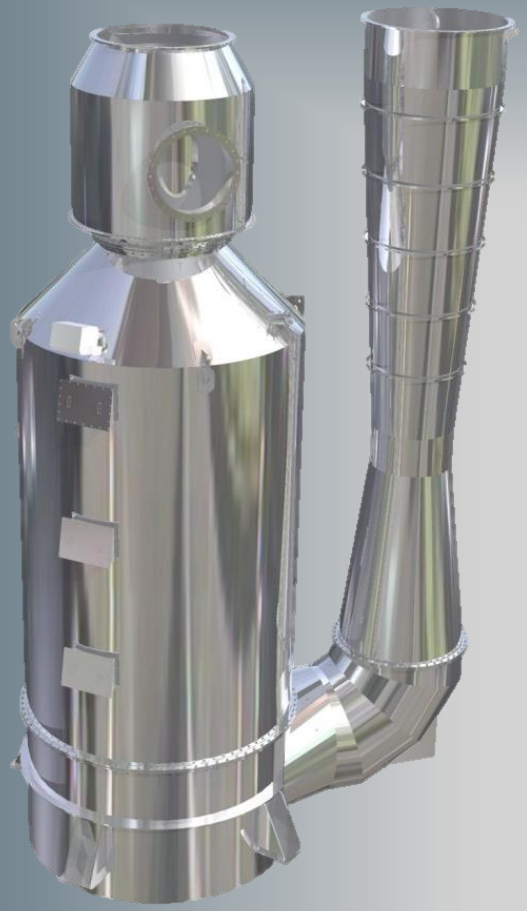
WÄRTSILÄ SOX SCRUBBER PORTFOLIO

Wärtsilä I-SOx

1 – 18MW

Wärtsilä V-SOx

1 – 20MW



Wärtsilä V-SOx multiple

1 – 35MW

Wärtsilä Q-SOx

40 – 70MW

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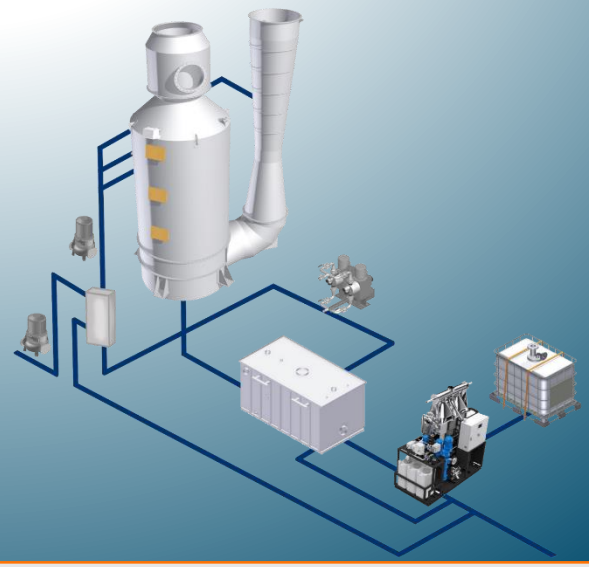
System Arrangements

Open loop

Ships operating in waters with sufficient alkalinity and no restriction on discharge water.

Closed loop

Ships operating in low alkalinity waters or operating in zero discharge zones.



Hybrid

Ships operating in all types of waters or requiring full operation flexibility.

*WTS: Water Treatment system

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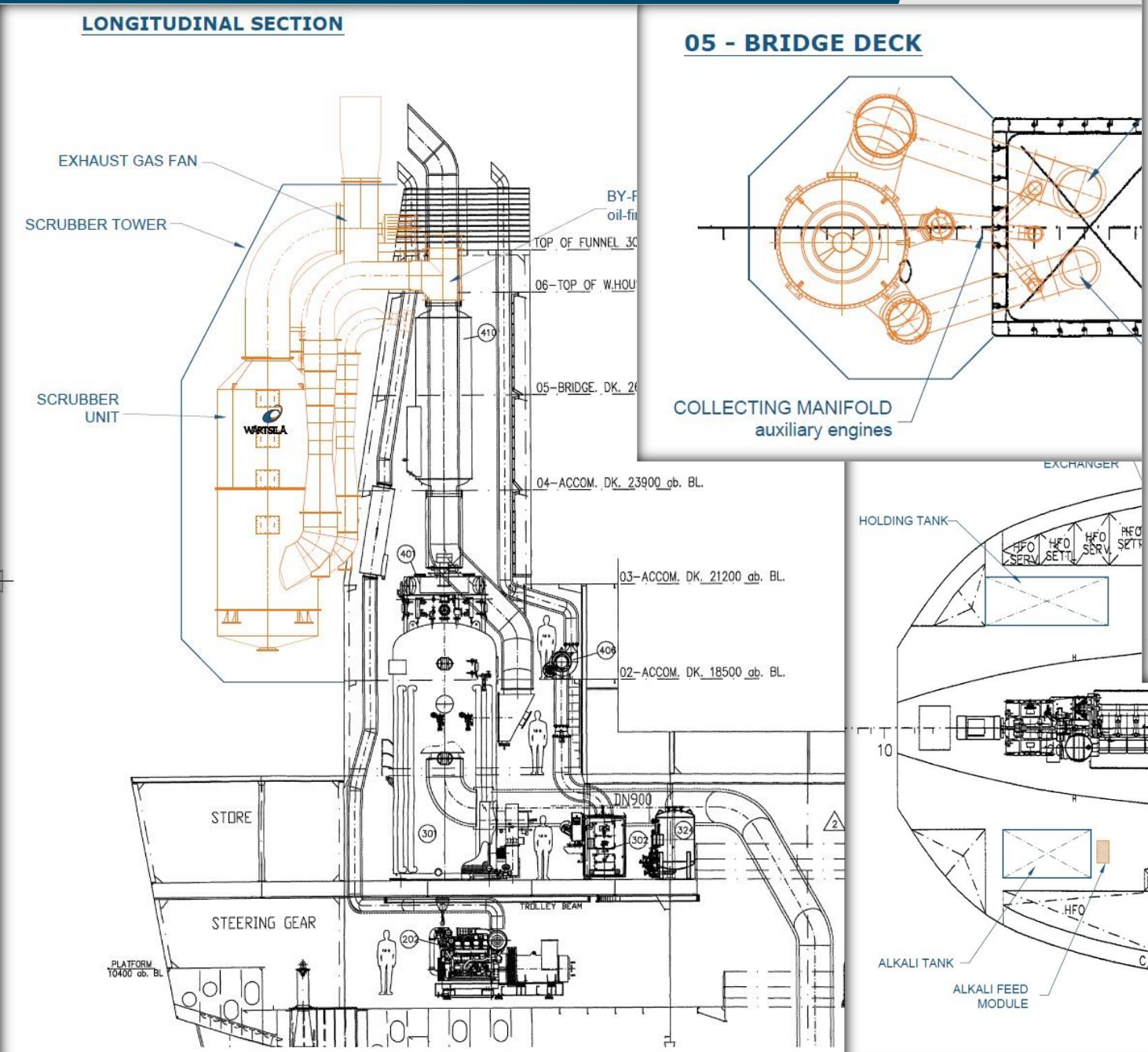
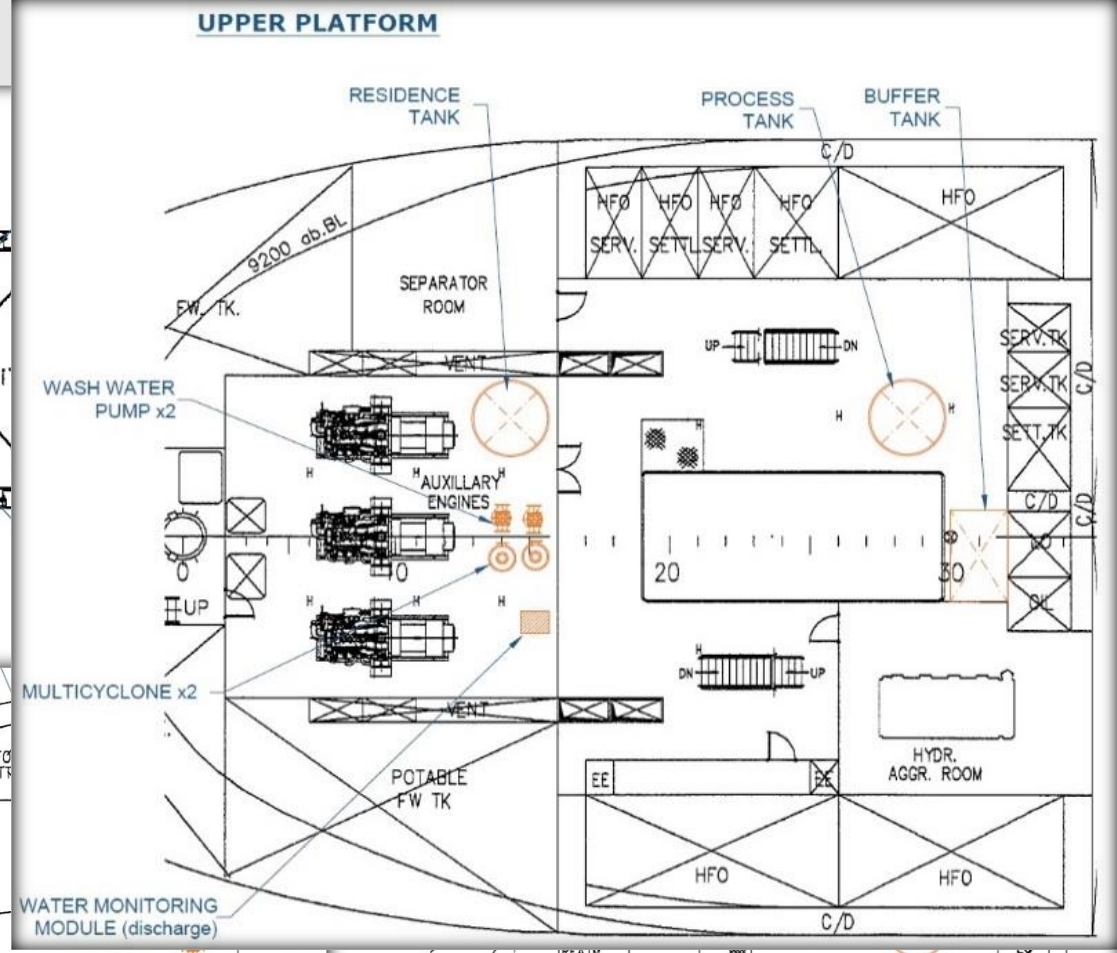
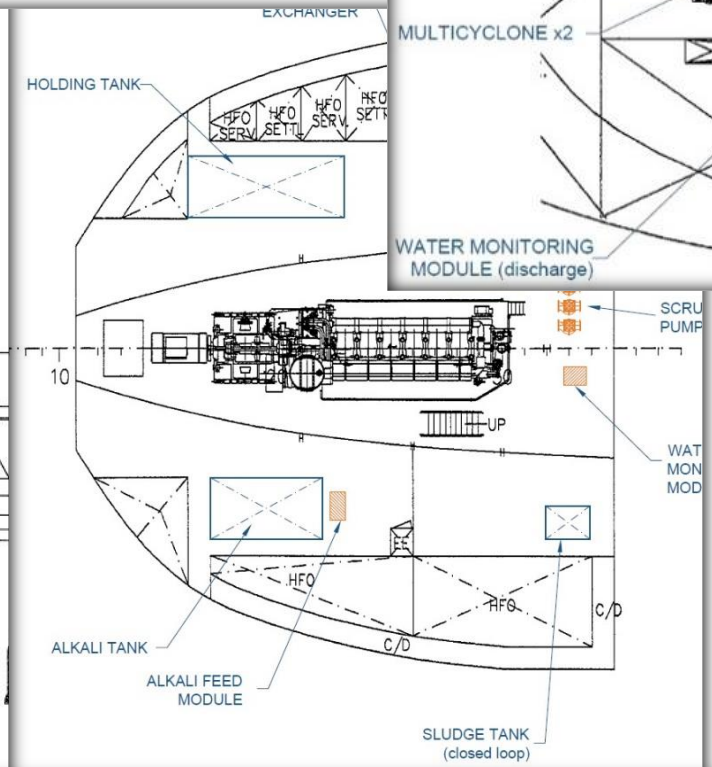
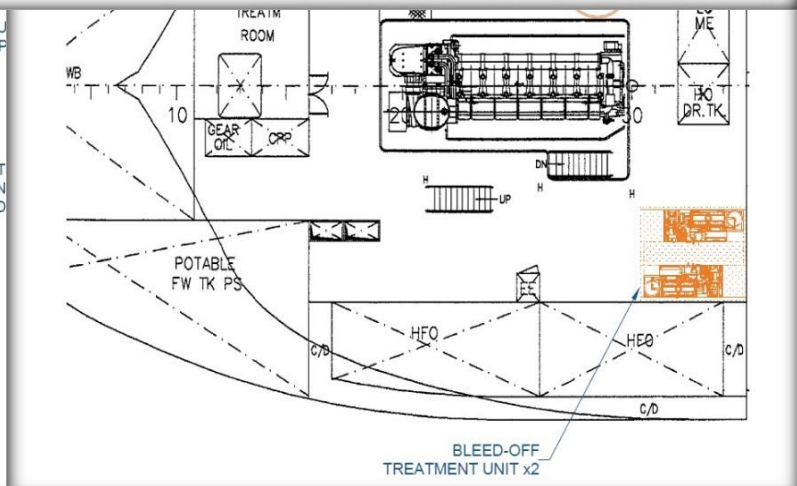
LAYOUT STUDY: 17 000 DWT TANKER – 8 MW SCRUBBER



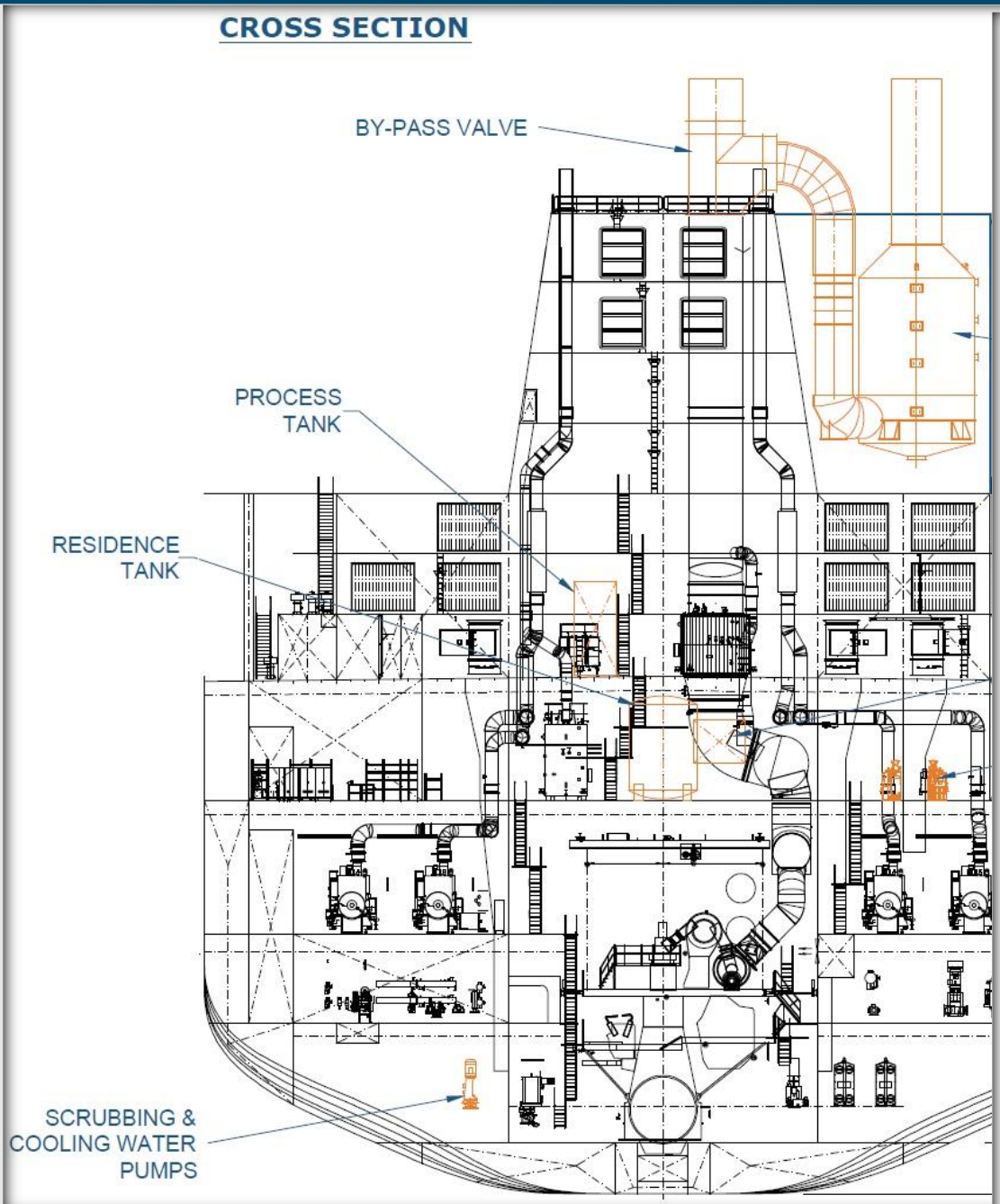




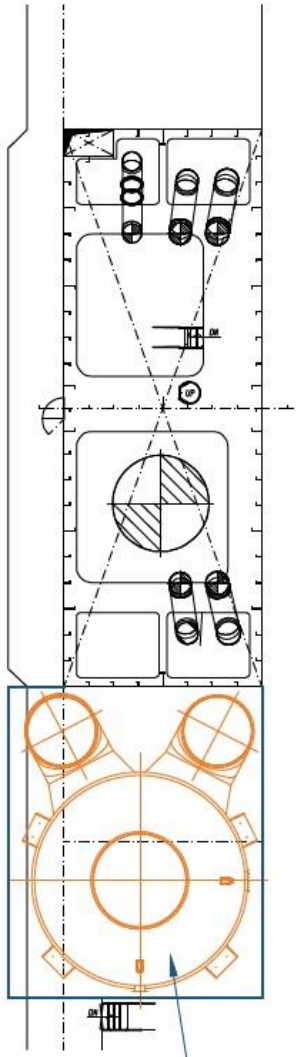


LAYOUT STUDY: 185 000 DWT CONTAINER VESSEL (13 000 TEU) – 80 MW SCRUBBER

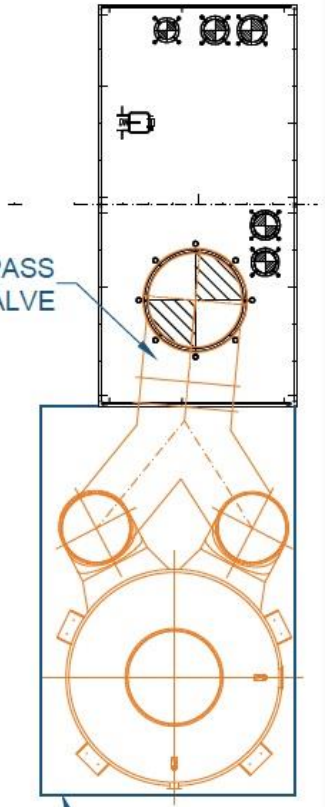
CROSS SECTION

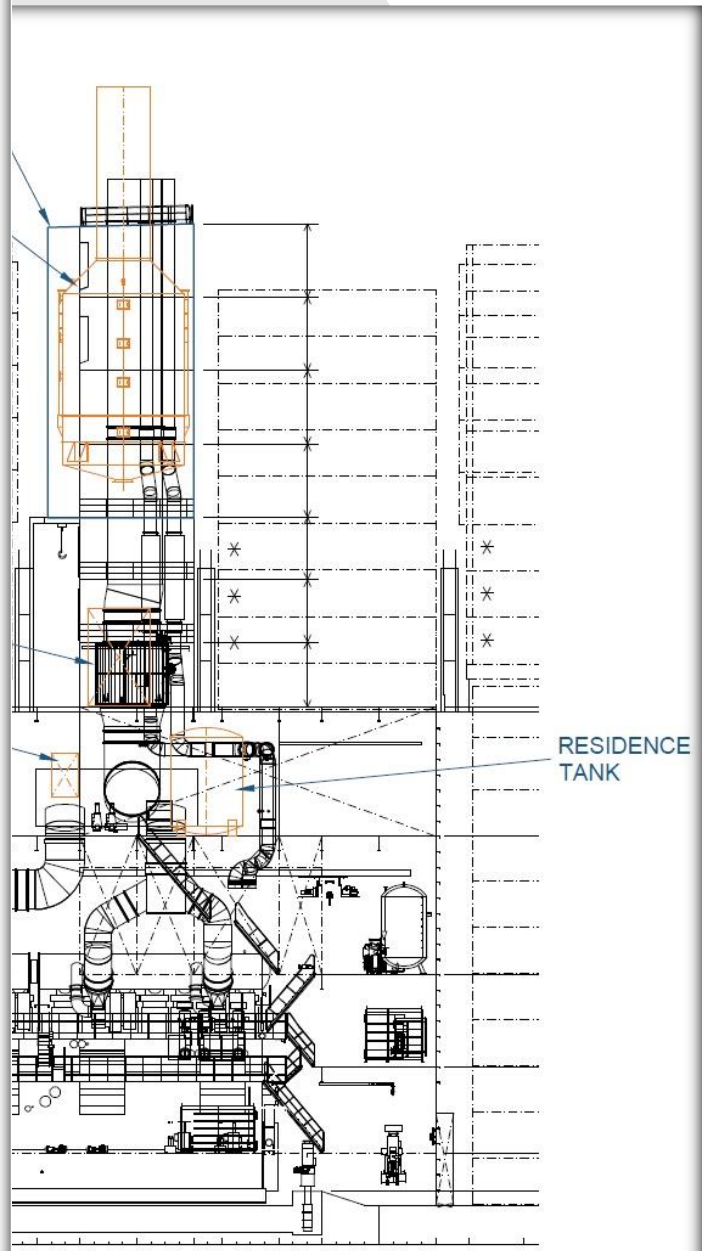


CASING TOP



FUNNEL TOP





WÄRTSILÄ SCRUBBER INSTALLATION EXAMPLES – RO/RO

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WÄRTSILÄ SCRUBBER INSTALLATION EXAMPLES – RO/PAX

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WÄRTSILÄ SCRUBBER INSTALLATION EXAMPLES – MODULAR

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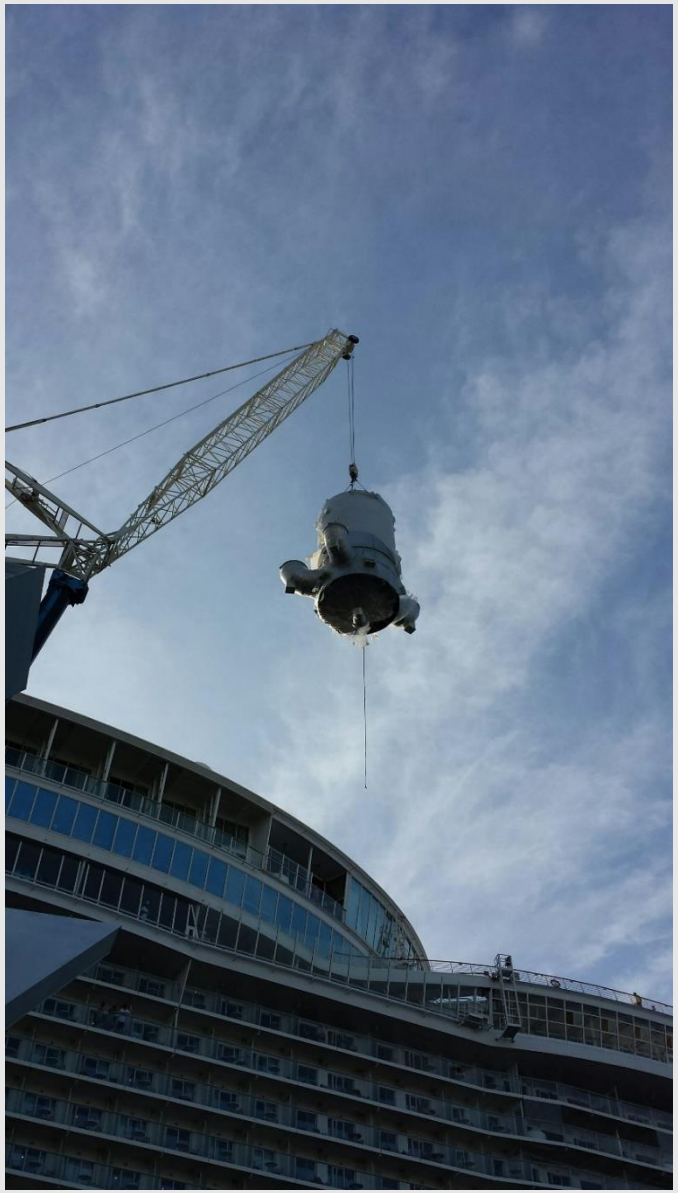
WÄRTSILÄ SCRUBBER INSTALLATION EXAMPLES – CRUISE



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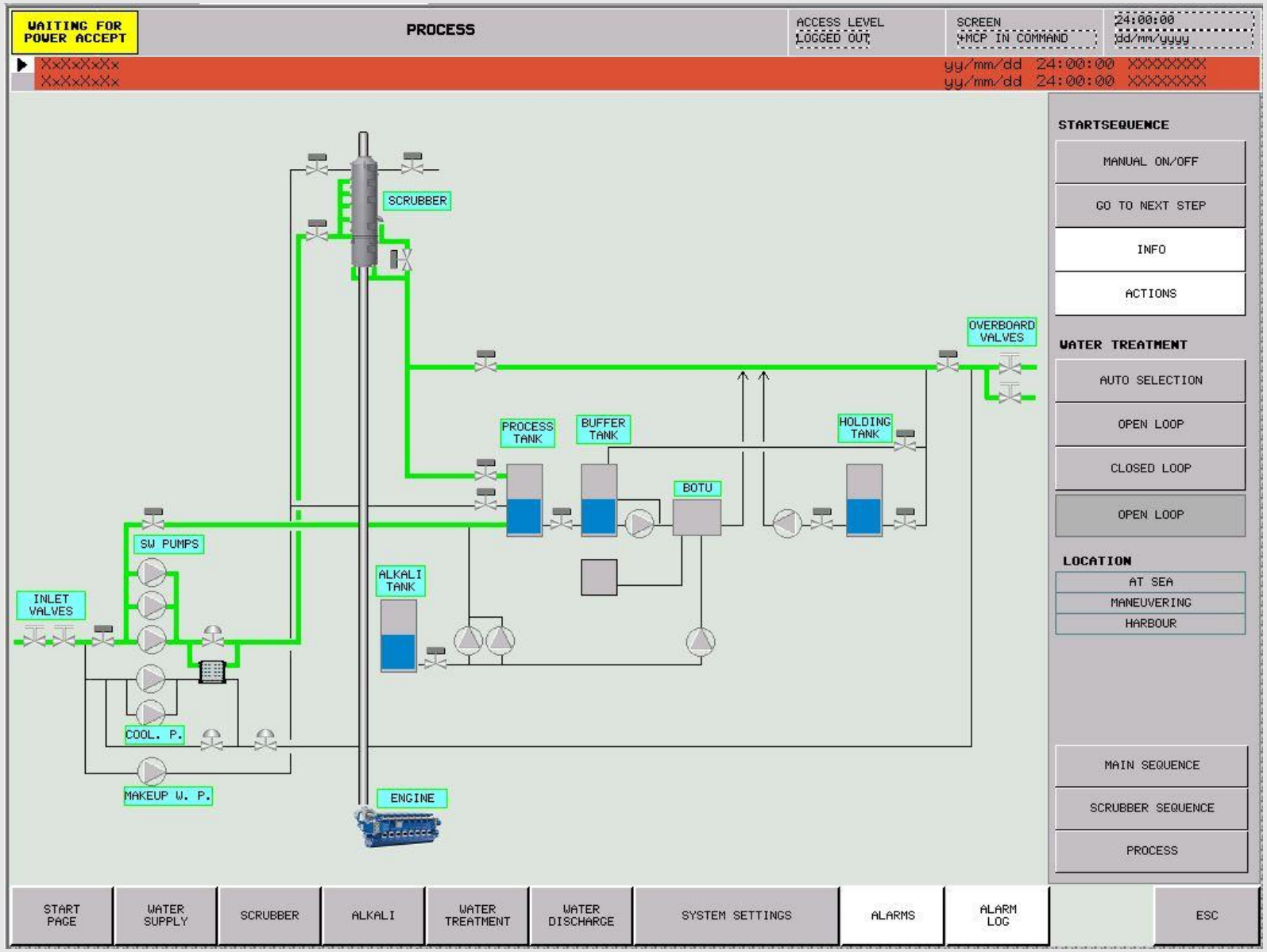
Control system



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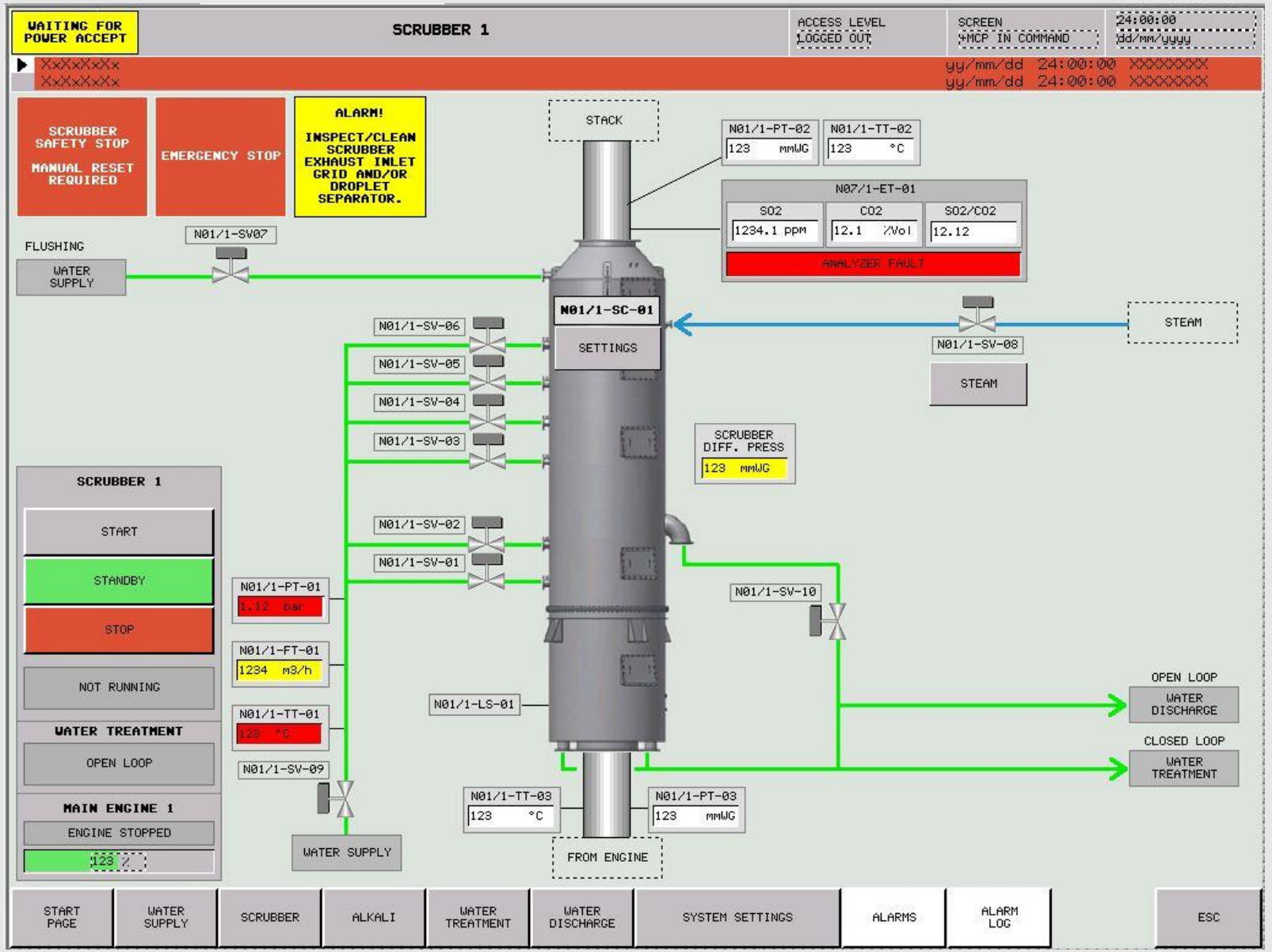
Control system



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WHERE ARE WE IN 2018?

- Scrubbers are working
- Subsystems are working
  - CEMS
  - pH discharge
  - Sludge handling
- Knowledge is spreading
  - For suppliers, customers and stakeholders alike
  - Open loop/vs closed loop water discharge
- Operational experience
- Legislation improving
  - IMO guidelines
  - Temporary non-compliance

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- Market development:
  - Global scope
  - Demand vs supply?
  - EGCS suppliers: newcomers vs establishment?
- Business case reborn:
  - Fuel prices?
  - Fuel qualities?
  - Fuel availability?
- Enforcement?
- New SECAs?

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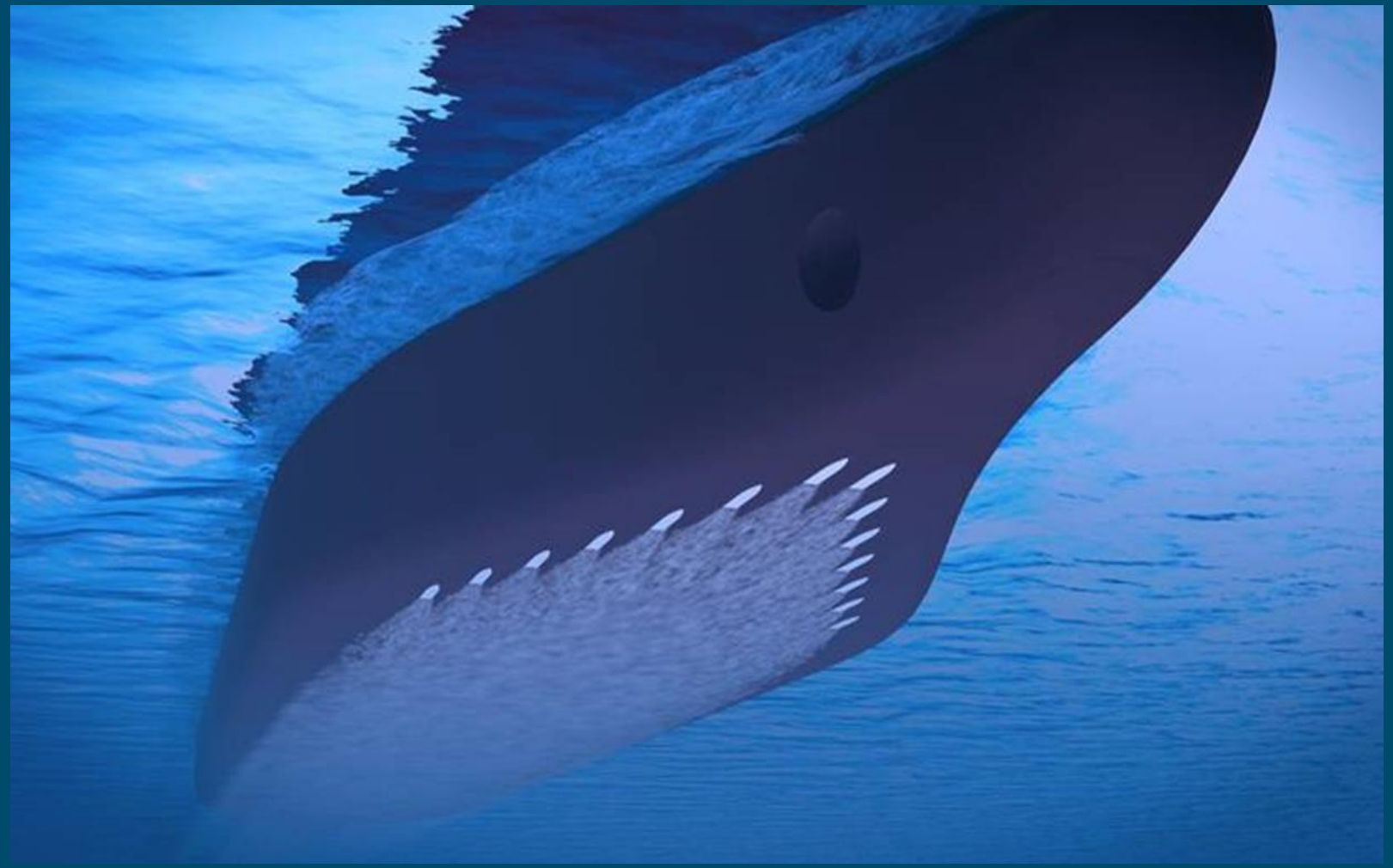
- Technology development:
  - Footprint
  - Energy consumption
  - Materials
  - Subsystems
  - Legislation
- New technologies
- Particulate matter
- LNG
- Hybrid propulsion
- GHG



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