



ERMA FIRST Powered by EPE
The Essential Ballast Solution

BALLAST WATER MANAGEMENT

ERMA FIRST BWTS

Certification

Retrofit Cases

❖ **Electrolysis:**

Disinfectant is Chlorine

- I. Full Flow systems
- II. Side stream systems

❖ **UV Disinfection:**

UV-C light inactivates the microorganisms present in the water

❖ **Chemical Injection:**

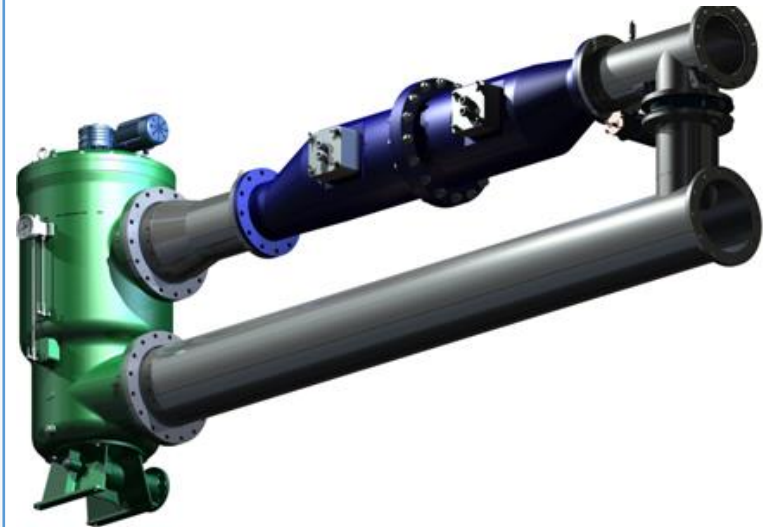


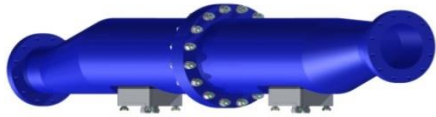
Disinfecting agent to eliminate marine organisms is injected

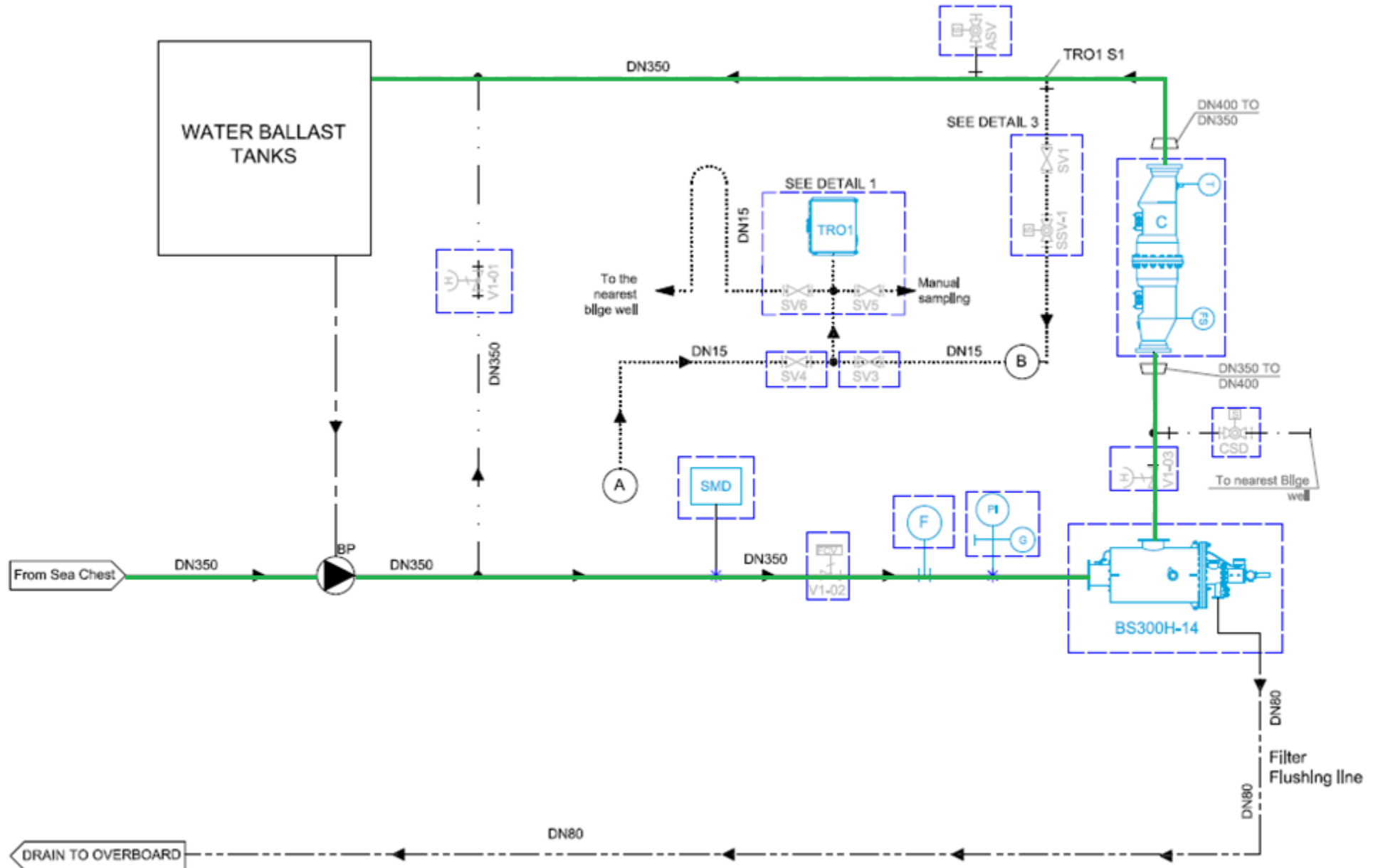
❖ **Ozone Disinfection:**

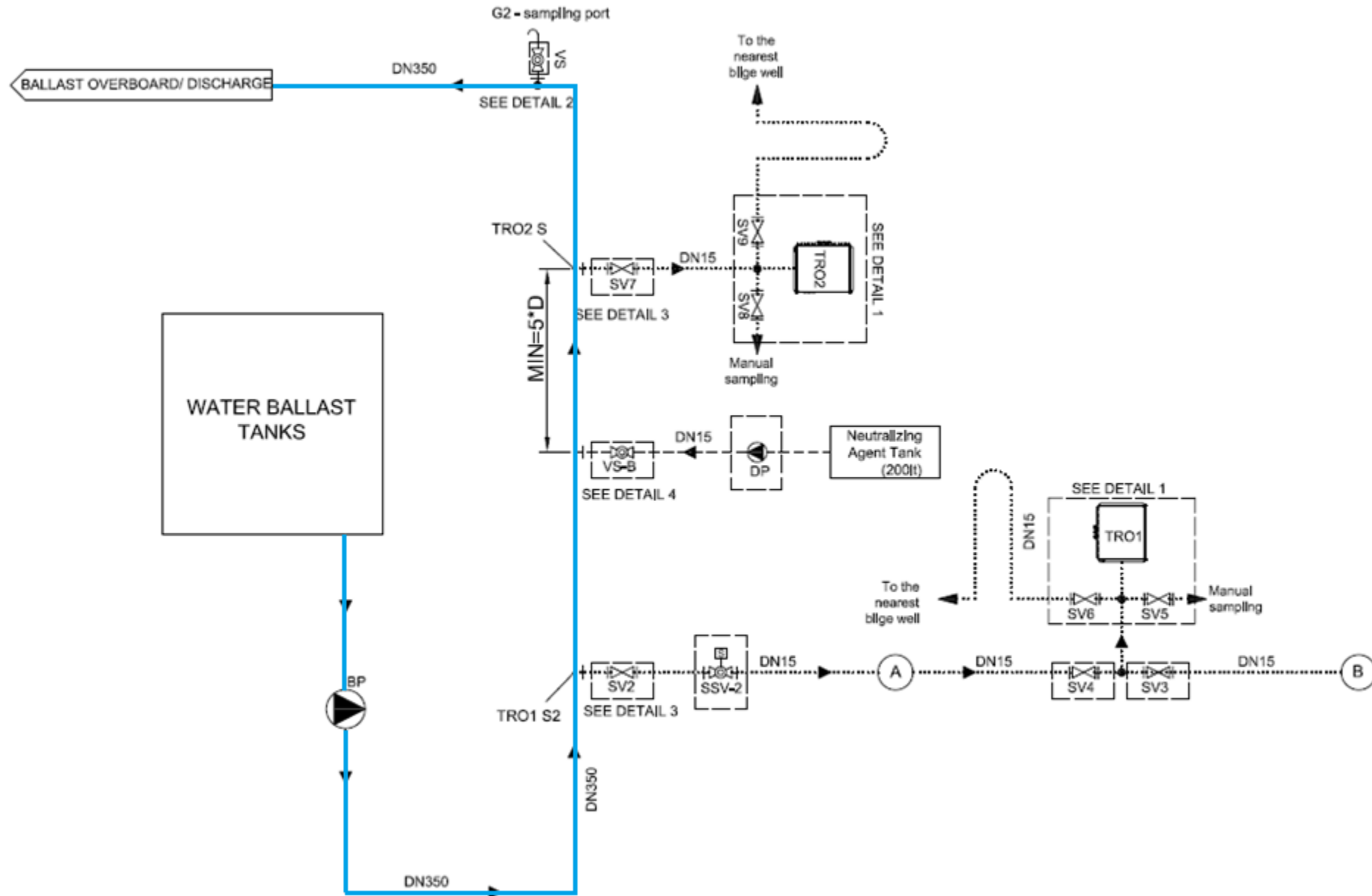
Ozone breaks down the forms of organic compounds

BALLAST WATER TREATMENT = SEPARATION + DISINFECTION

ΒΑΛΛΑΣΤ WATER TREATMENT = ΣΕΠΑΡΑΤΙΟΝ + ΔΙΣΙΝΦΕΚΤΙΟΝ

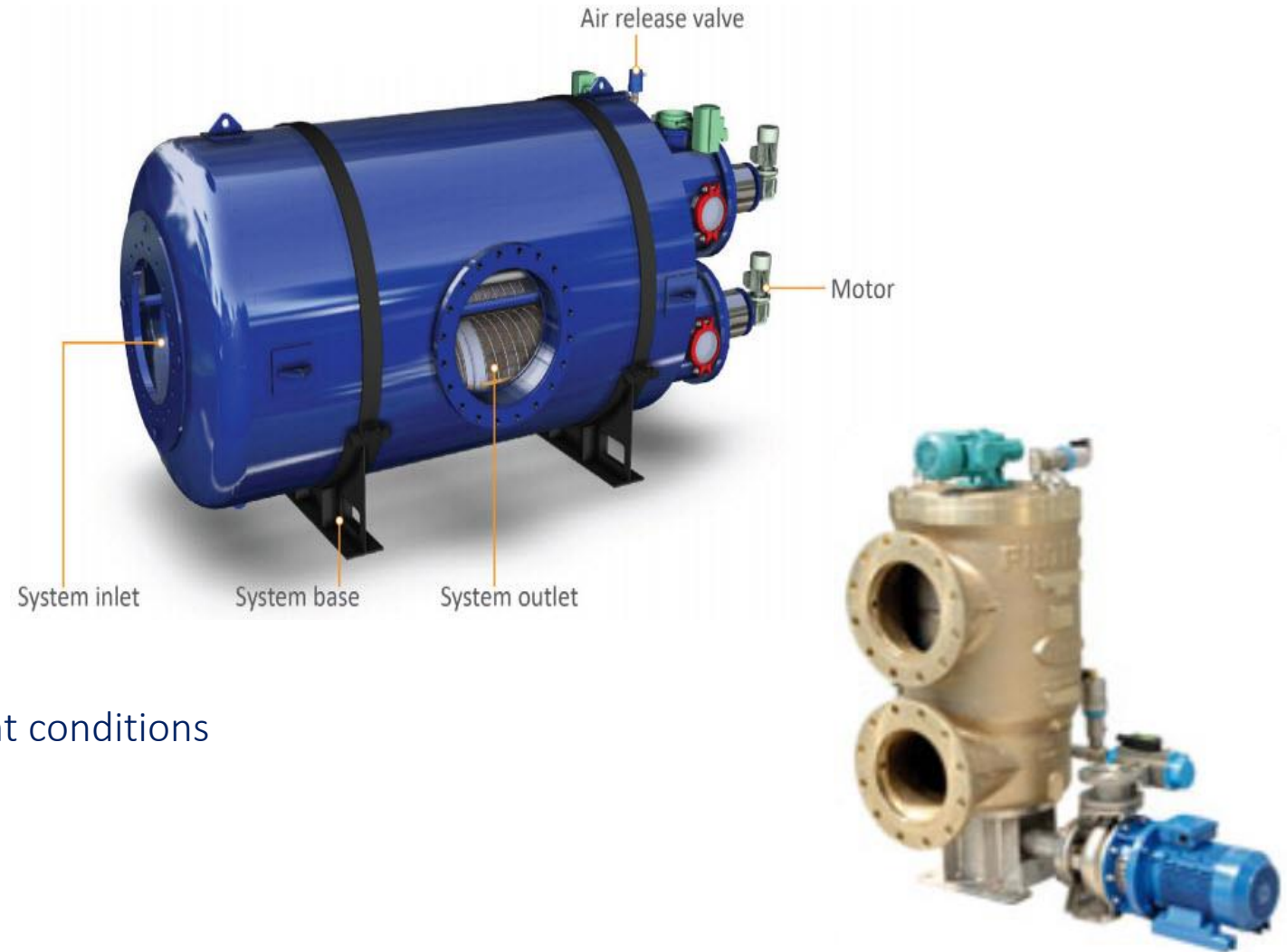
ERMA FIRST FIT BWTS	Stage		Components
	Separation	<p>Option 1 Filtersafe: 40 microns self-cleaning automatic screen filter</p> <p>Option 2 Filtrex: 40 microns self-cleaning automatic screen filter</p>	 
	Disinfection	<p>Advanced Technology Electrolysis Cells TRO Concentration 4-6 mg/L</p>	





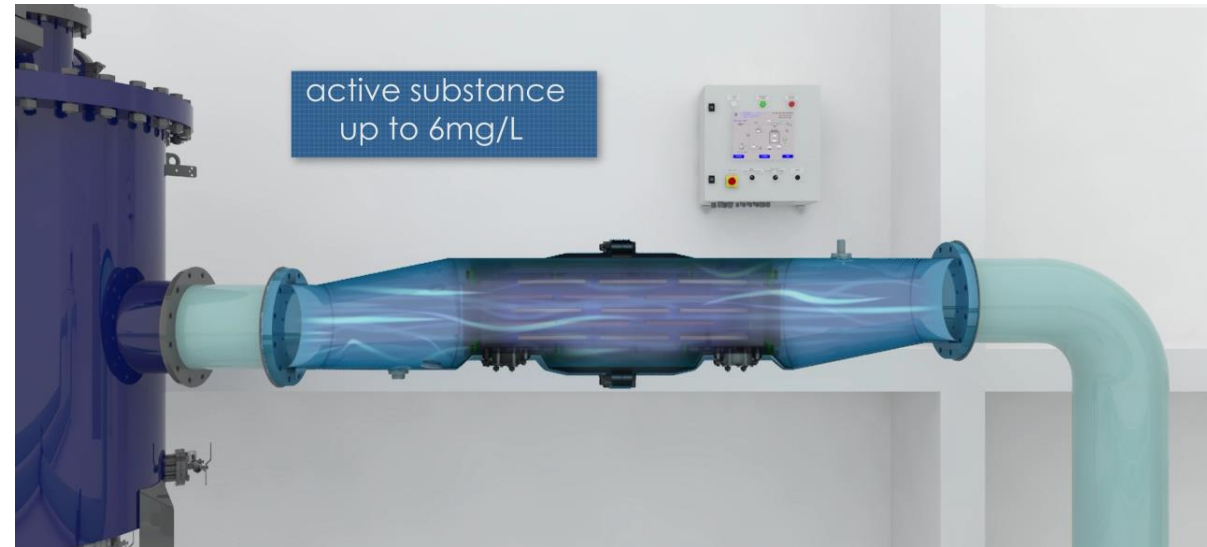
High End Filtration

- Screen: Sintered
- Screen Material: SS316 or 904L
- Filtration grade: >40 μm
- Pressure Drop: 0.05-0.5 bar
- Capacity : 50 ~ 3,740 m^3/h
- Installation position: Vertical / Horizontal
- Explosion proof type available
- Uninterrupted operation under heavy sediment conditions
- Minimum inlet pressure 0.5bar
- Automatic cleaning



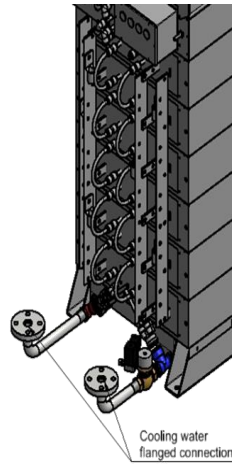
Simplicity in Service

- Full Flow Type
- Low energy consumption
- Negligible pressure loss
- Small footprint
- Vertical or horizontal installation
- No corrosion risk
- No acidic cleaning (CIP) is required
- Electrodes lifetime exceed 5000 operation hrs
- Fresh water operation according to IMO & USCG standards
- Very low Hydrogen production that requires no special handling
- Made in Sweden

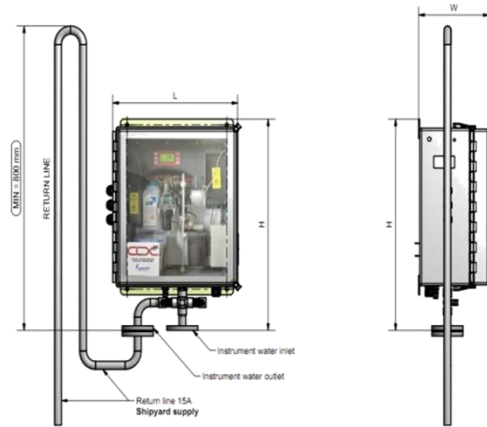


Sodium Hypochlorite (Chlorine) is produced at a max concentration of **6mg/Lit**

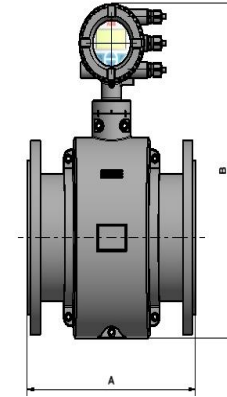
- Transformer Rectifier



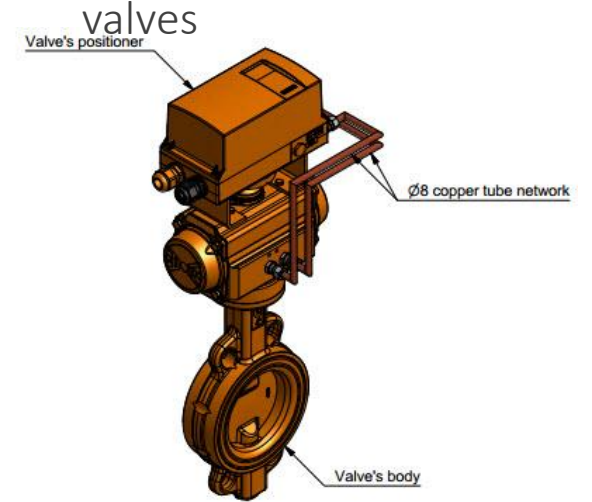
- TRO



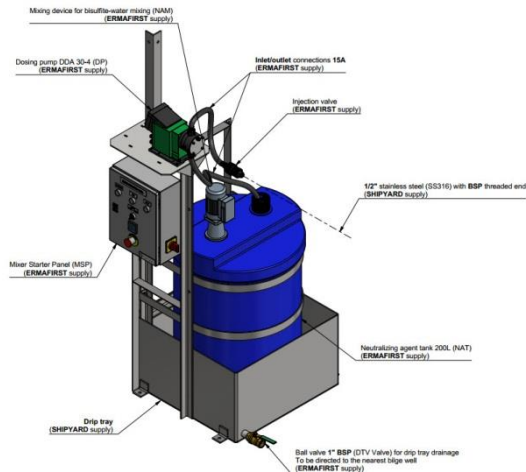
- Flow Meter



- Remotely operated valves

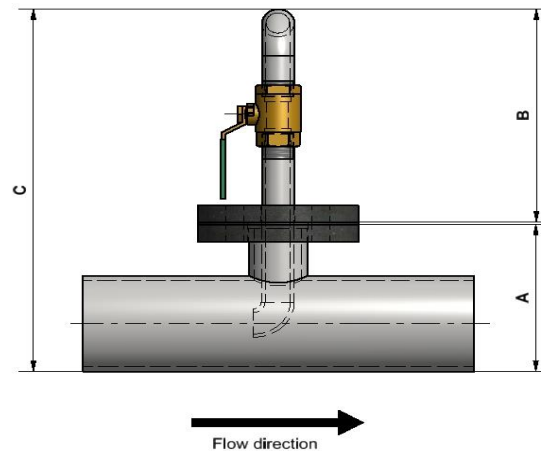


- Neutralizing agent tank and dosing pump

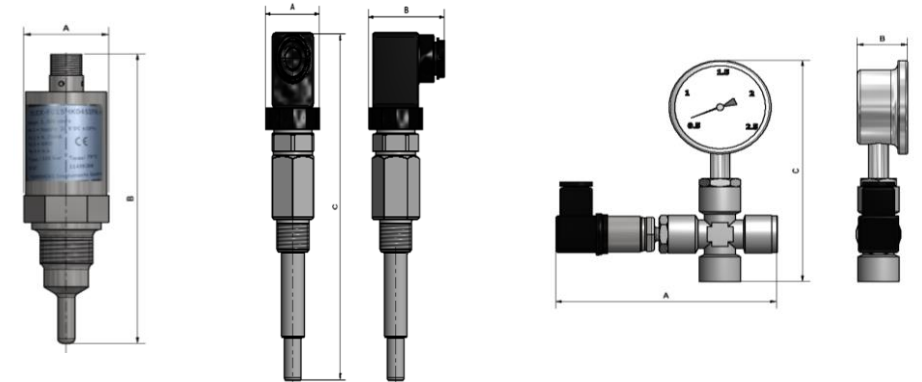


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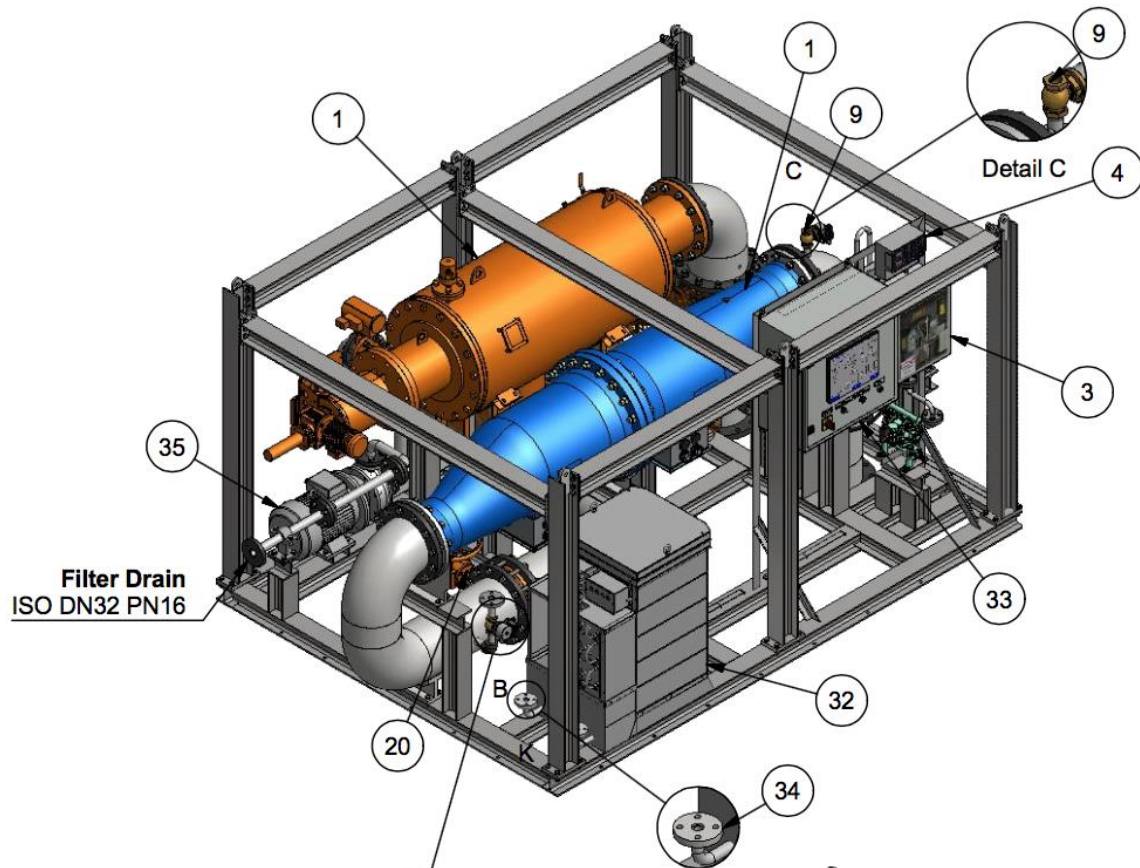
- G2 Sampling point



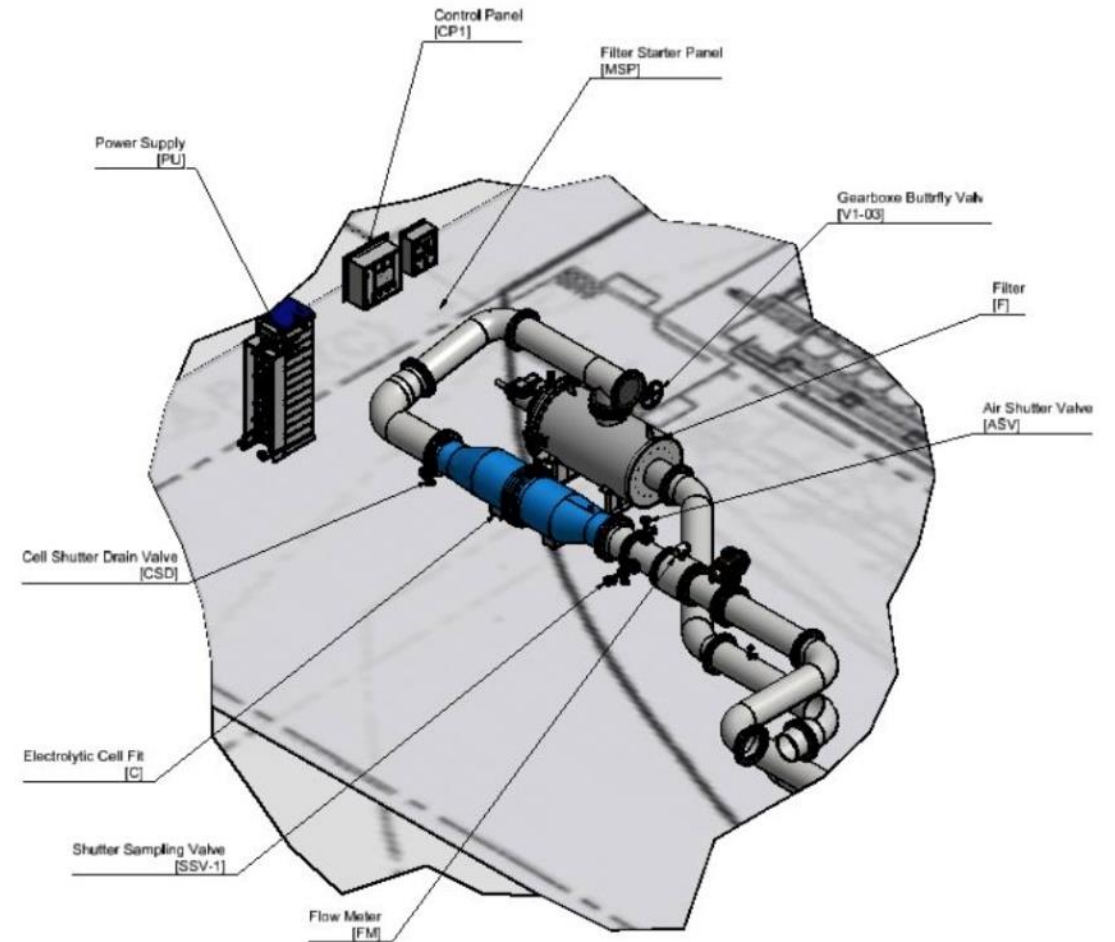
- Flow Switch / Temperature sensor / Pressure indicator



ERMA FIRST BWTS FIT (Skid)



ERMA FIRST BWTS FIT (Loose)



CERTIFICATION

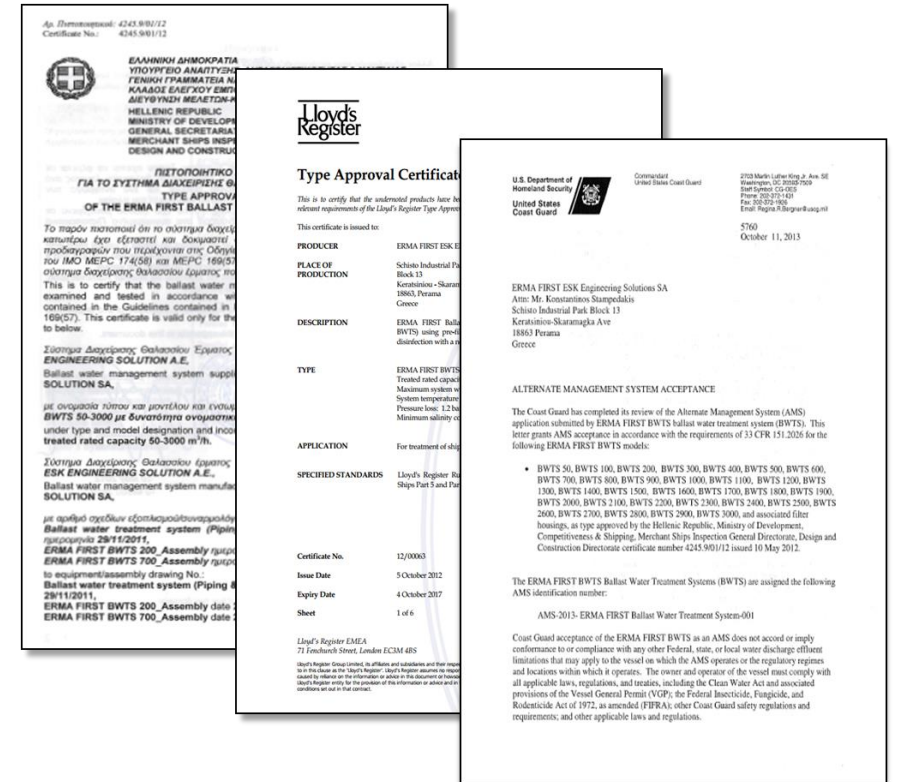
CERTIFICATION

Certification:

- Grid of Rules IMO/Class Societies
- Follow updates (USCG)
- Translate New Requirements

ERMA FIRST BWTS System holds:

- IMO Type Approval by Lloyds/Greek Maritime Administration and Liberia Maritime Administration
- USCG AMS Acceptance
- CCS & ABS class type approval in progress
- **ATEX vs IECEx** ERMA FIRST BWT Systems are in full compliance with the IECEx requirements in order to be installed in hazardous locations of U.S. flag vessels.
- USCG Type Approval : Test completed, on the way to application



Revised G8 Guideline

Existing G8 Guidelines

ETV/ USCG Final Rule

Harmonization Level

- Testing Facilities
- Testing at temperatures ranging from 0°C to 40°C
- Consecutive Testing
- System Design Limitations
- Challenge level of Total Suspended Solids (TSS)
- Definition of viability
- Bypass arrangement
- Scaling
- Self-monitoring
- Environmental test
- Installation Requirements following type approval
- Installation Survey & Commissioning Procedures

ERMA FIRST BWT Systems required **NO Changes** or any type of modification in order to start the tests for USCG Type Approval

- Overall design and systems configuration remained unchanged
 - Treatment process met all the requirements (IMO & USCG AMS)
 - Components where neither altered or replaced

#ZERO_changes_made

Summary of Reference List

Systems sold: 198 (retrofit: 46)

Tankers: 71

Bulkers: 63

Containers: 24

LPG:18

Car Carries: 7

Passenger/Yacht:8

Other:7

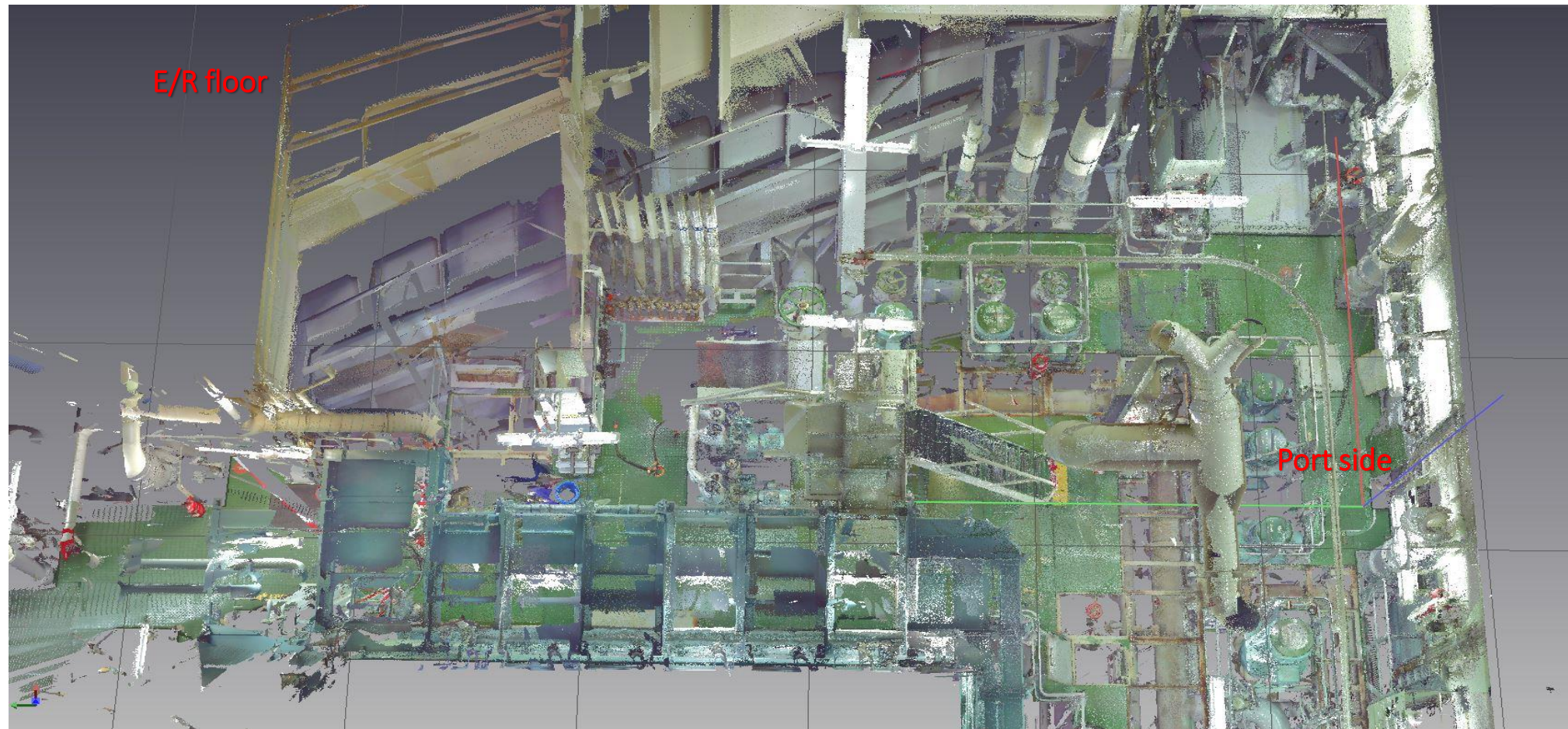
Installation Cases

Installation Cases

ENGINE ROOM ARRANGEMENT

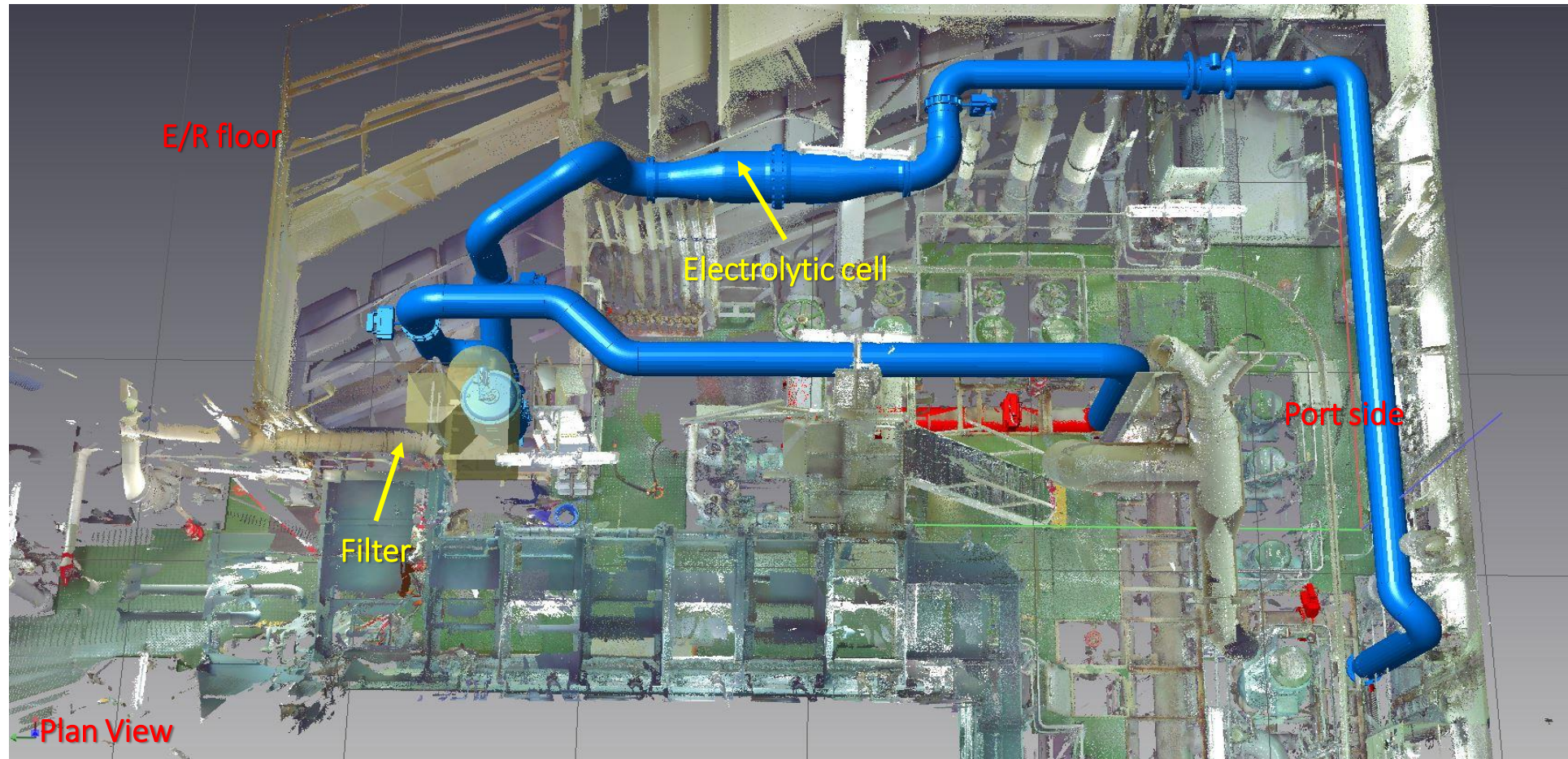


Piping & equipment arrangement in ENGINE ROOM



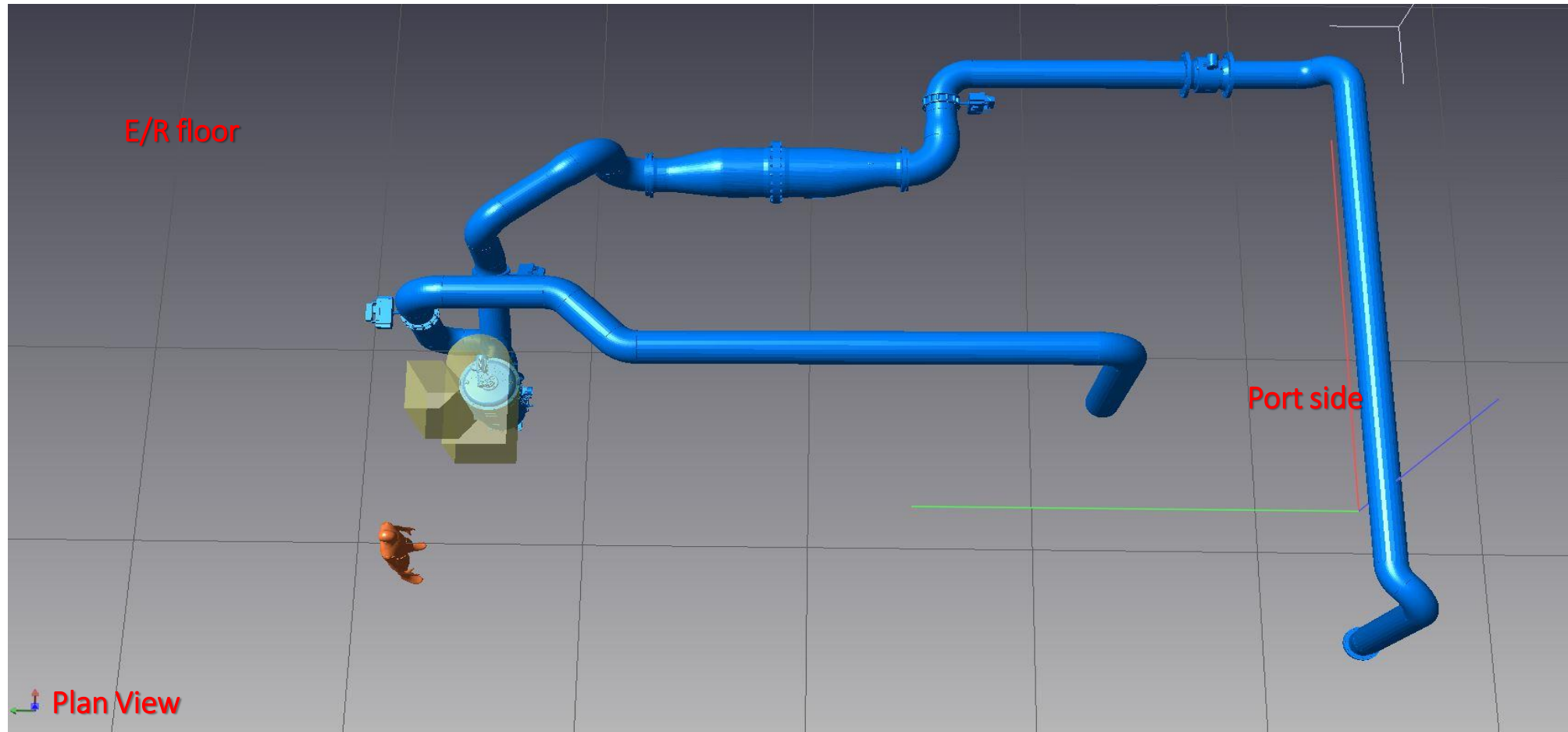
Plan View

Piping & equipment arrangement



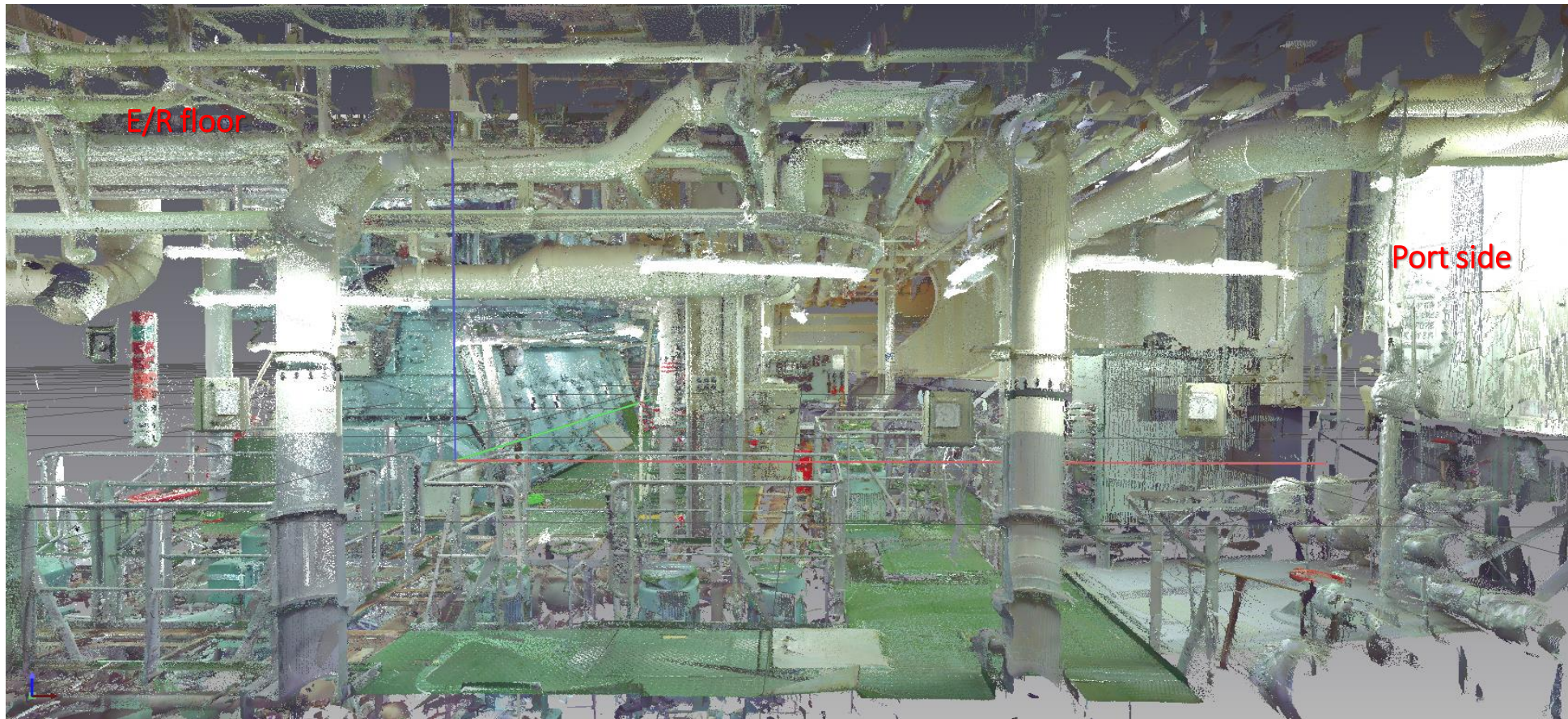
(yellow colored volume indicates required service space)

Piping & equipment arrangement



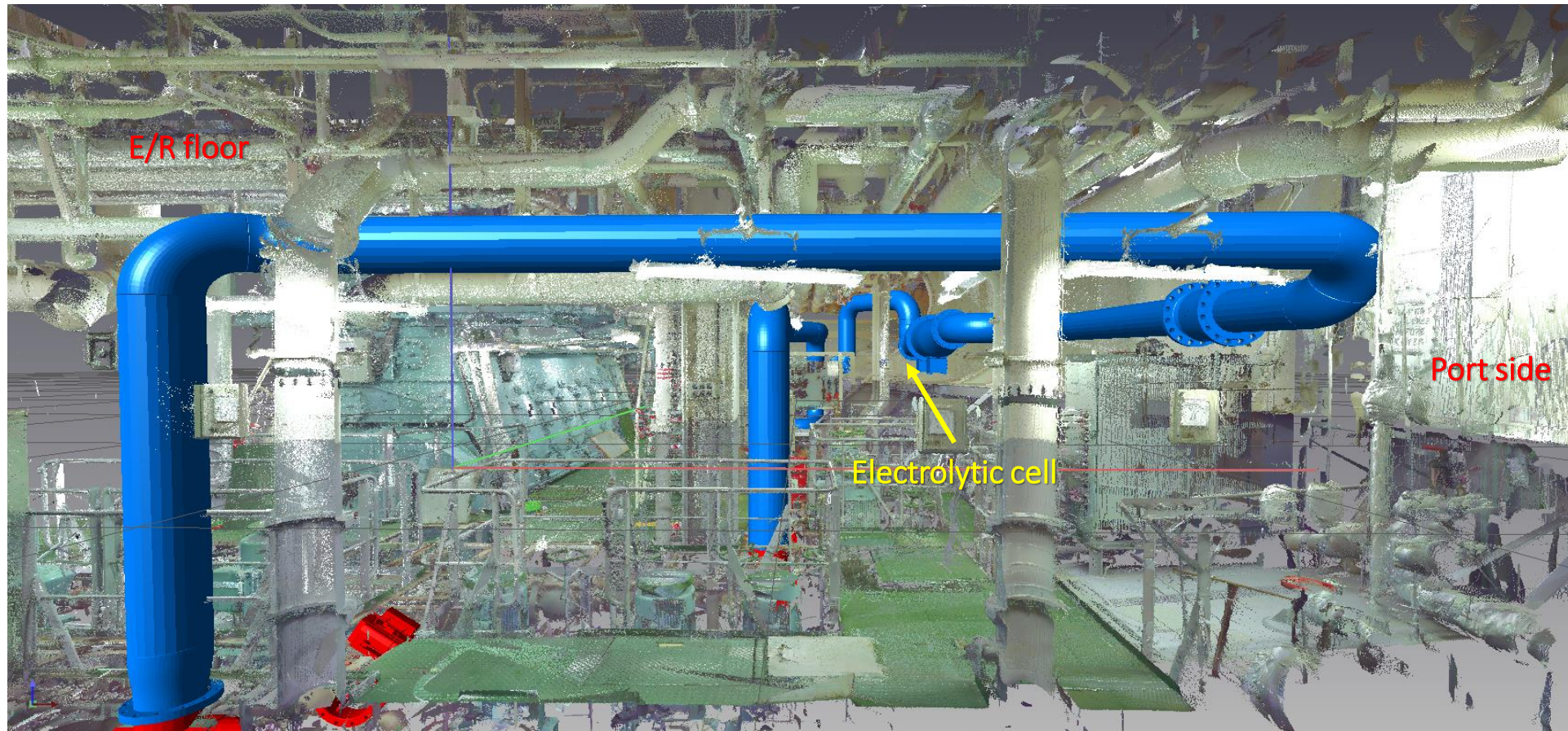
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Piping & equipment arrangement



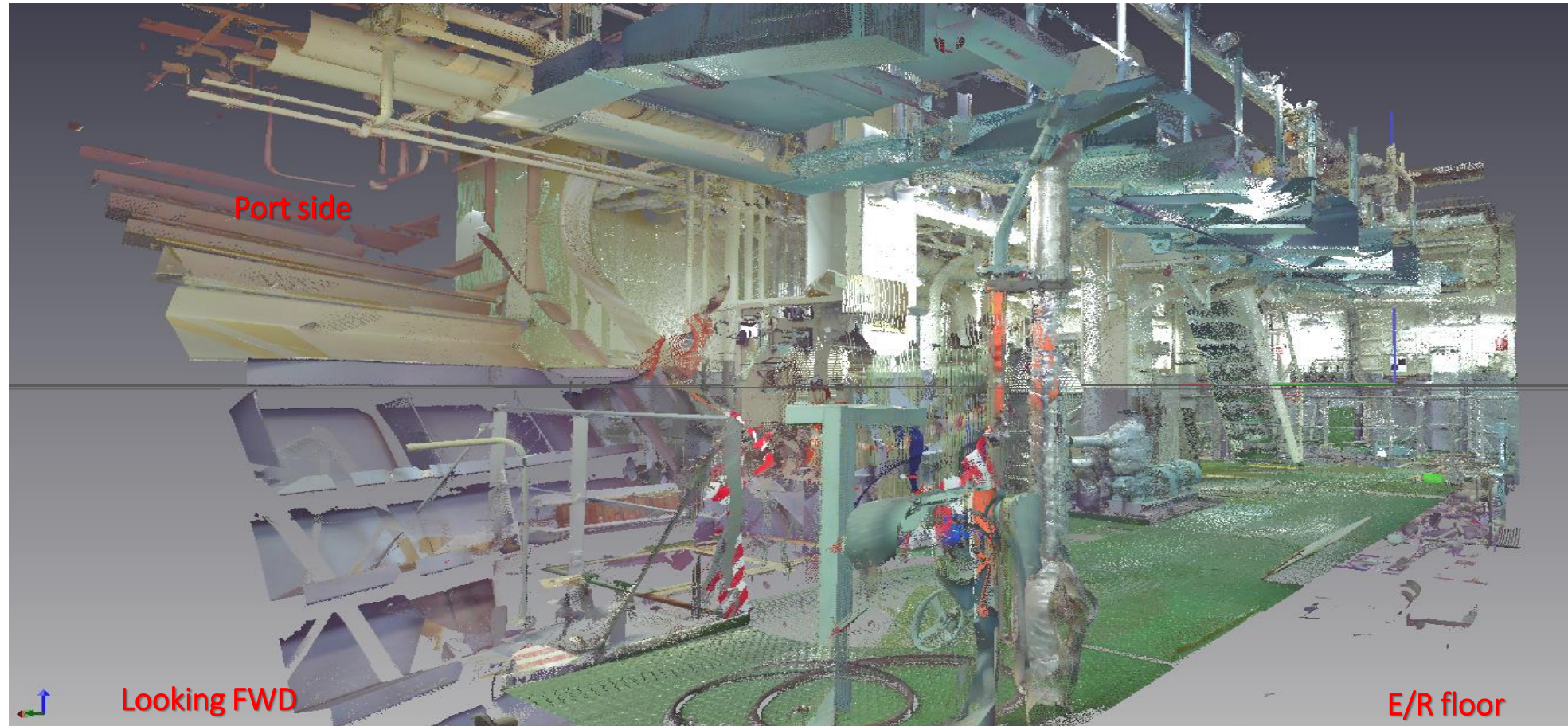
Looking Aft

Piping & equipment arrangement

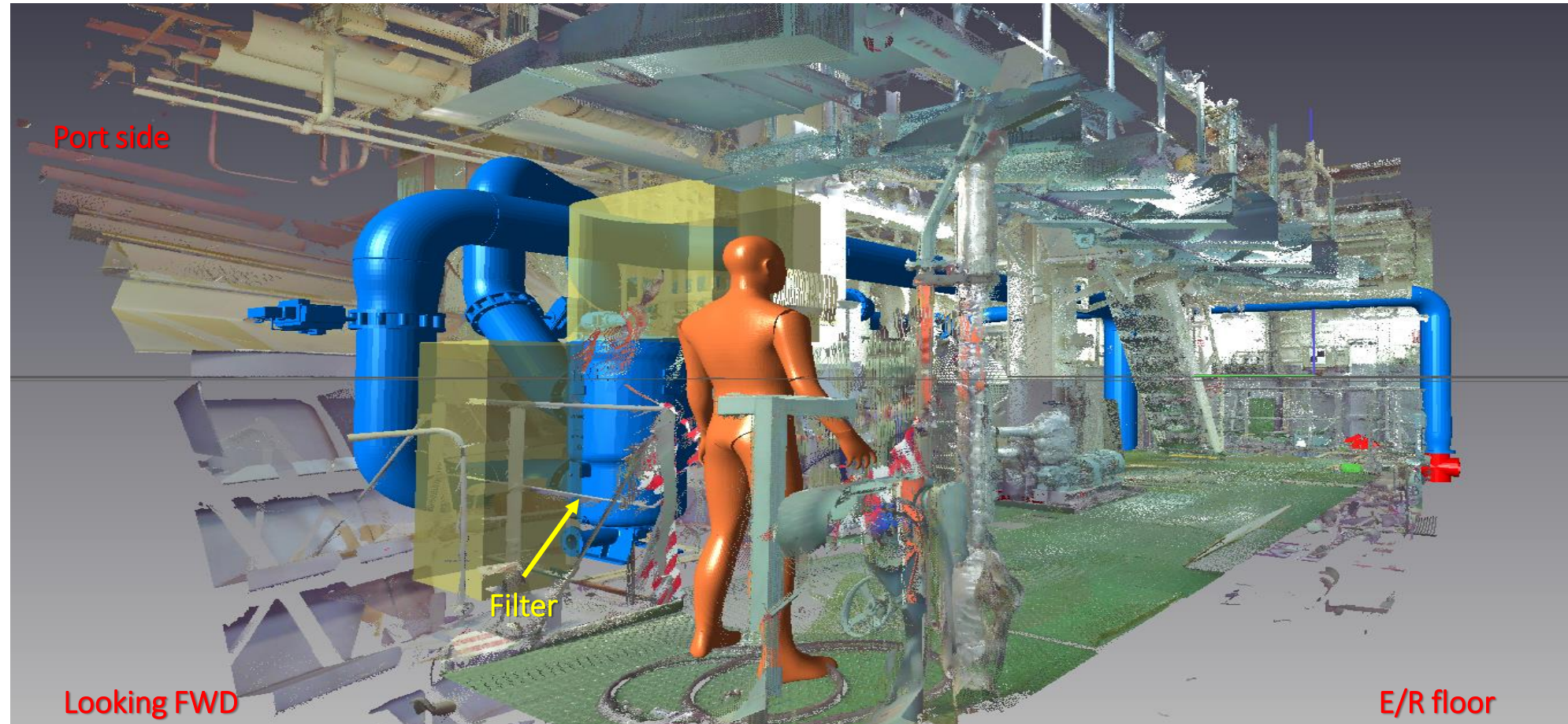


Looking Aft

Piping & equipment arrangement

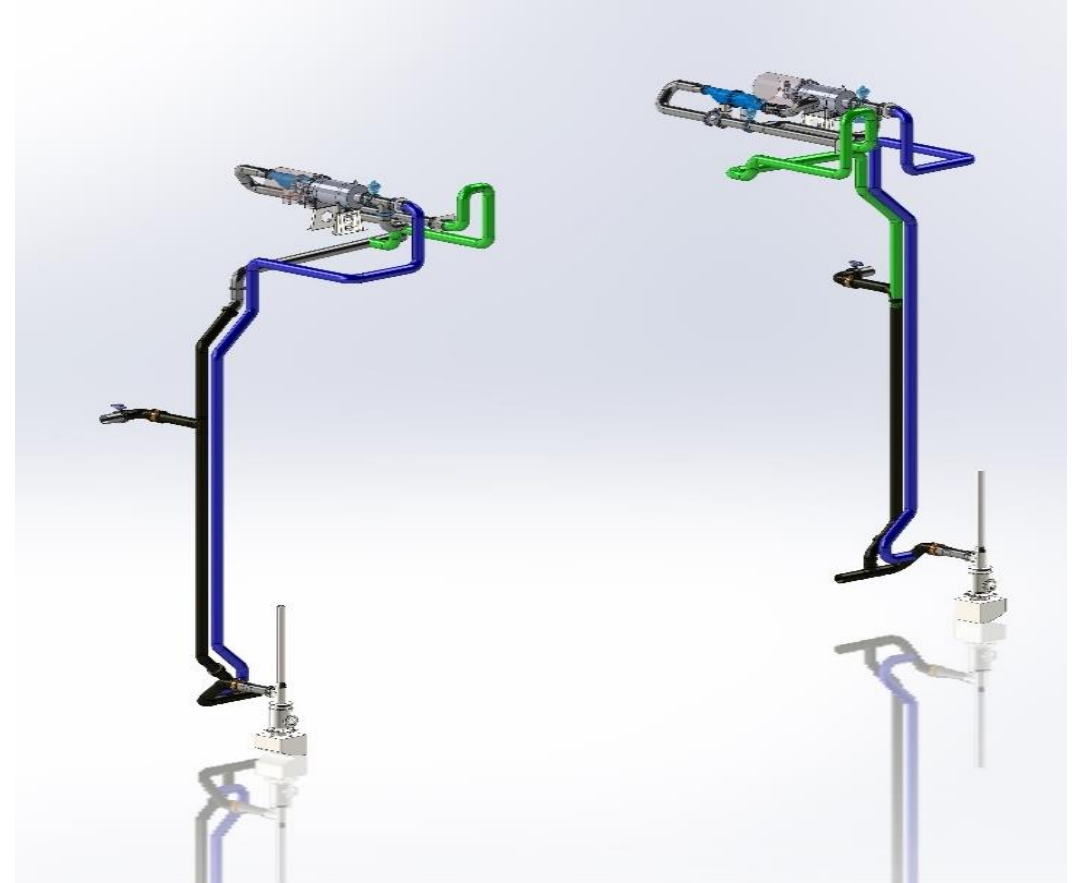
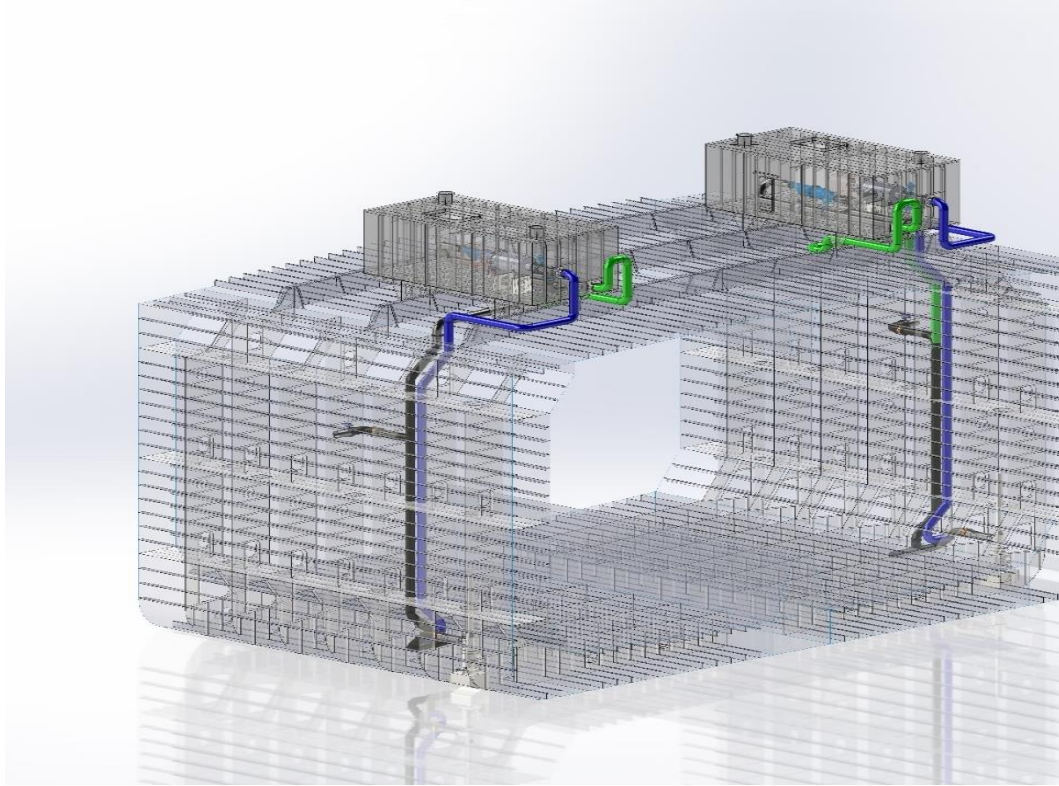


Piping & equipment arrangement

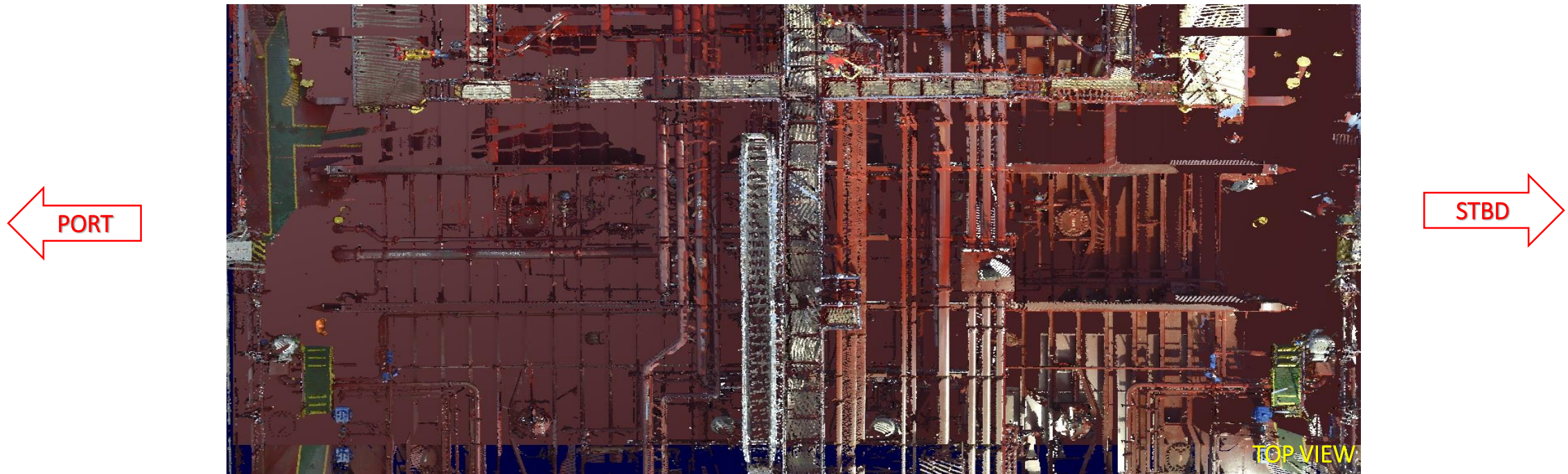


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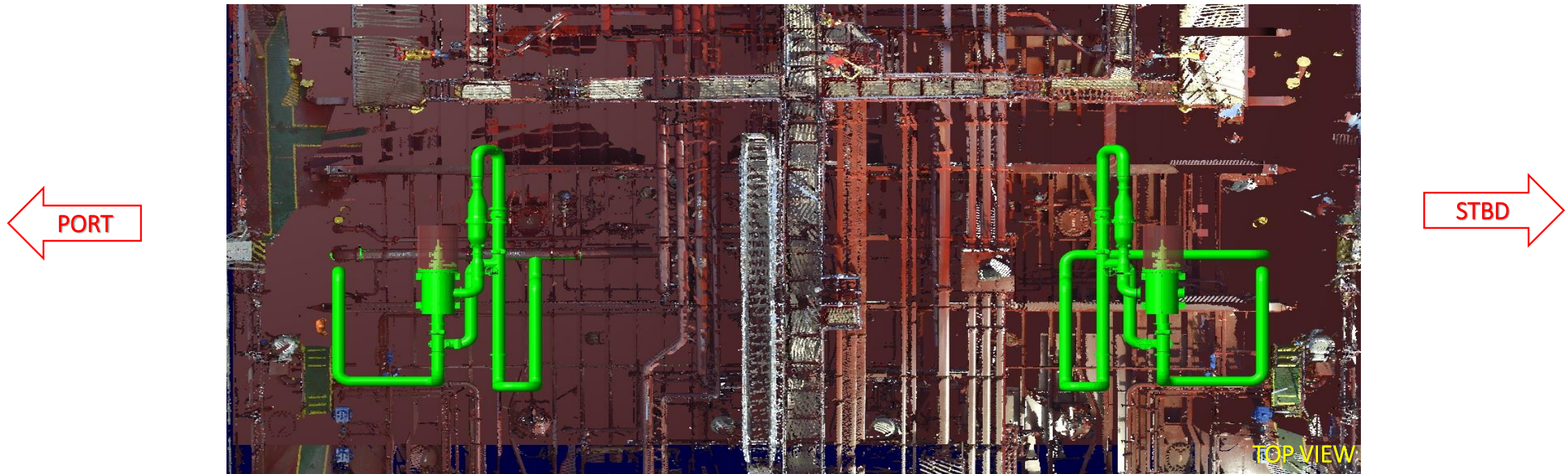
MAIN DECK – ERMA FIRST Treatment System



MAIN DECK – ERMA FIRST Treatment System on main deck

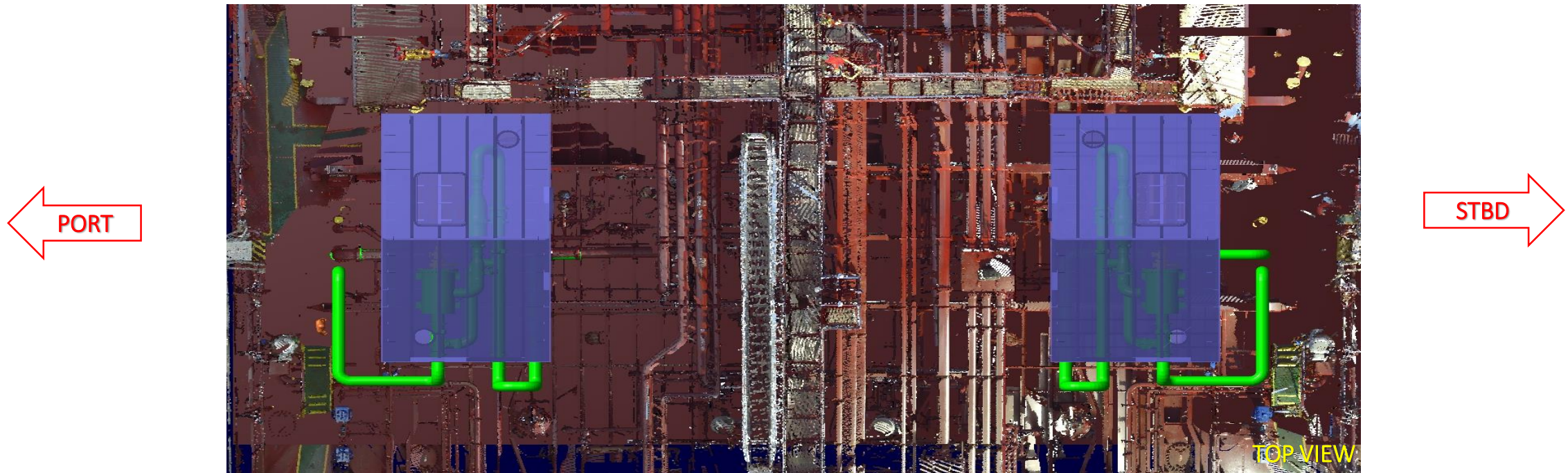


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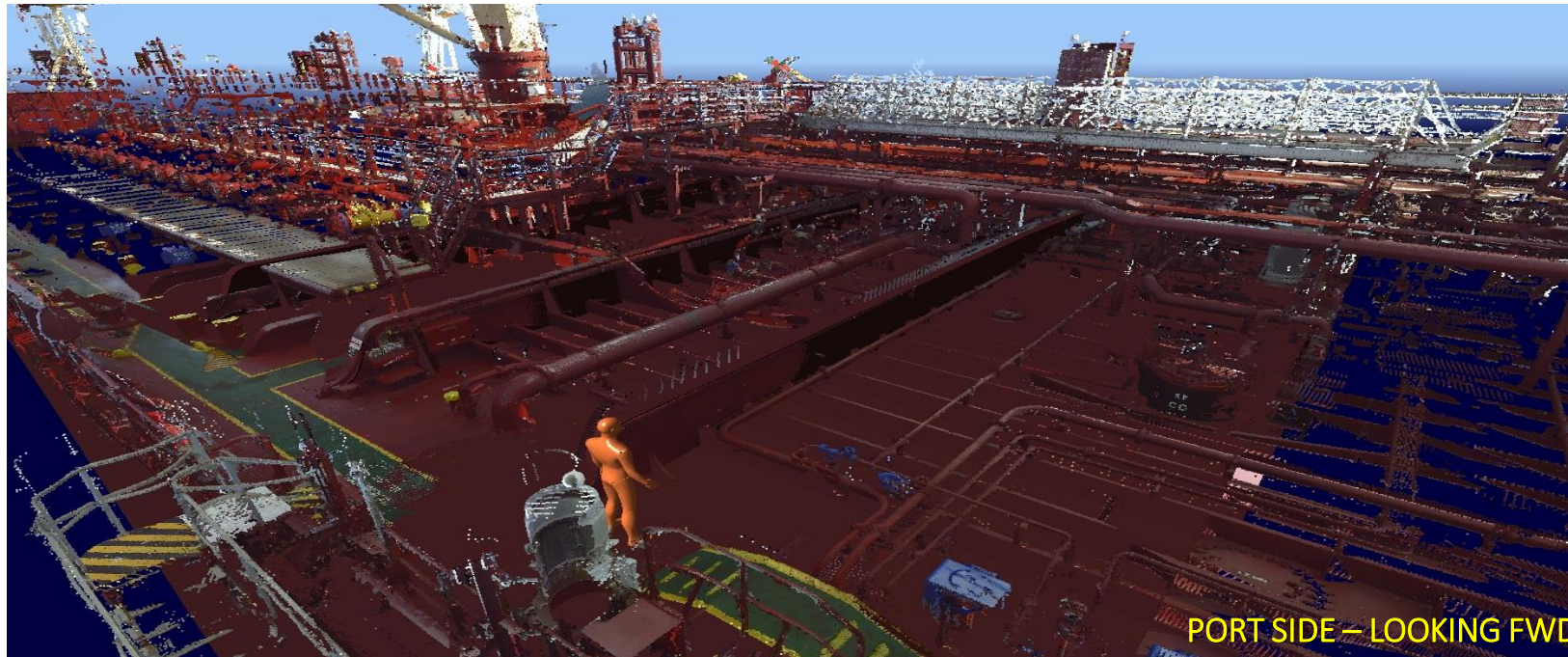


With pink color is indicated the minimum service space required

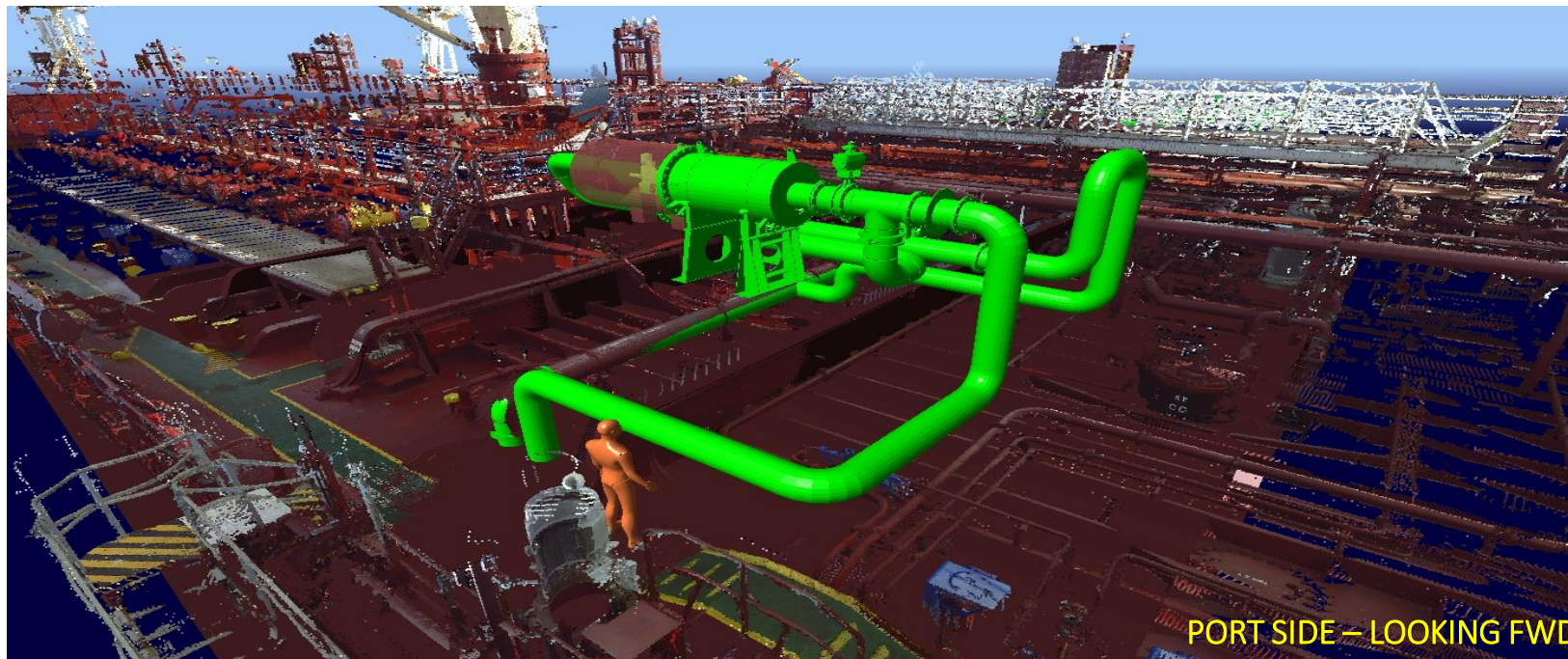
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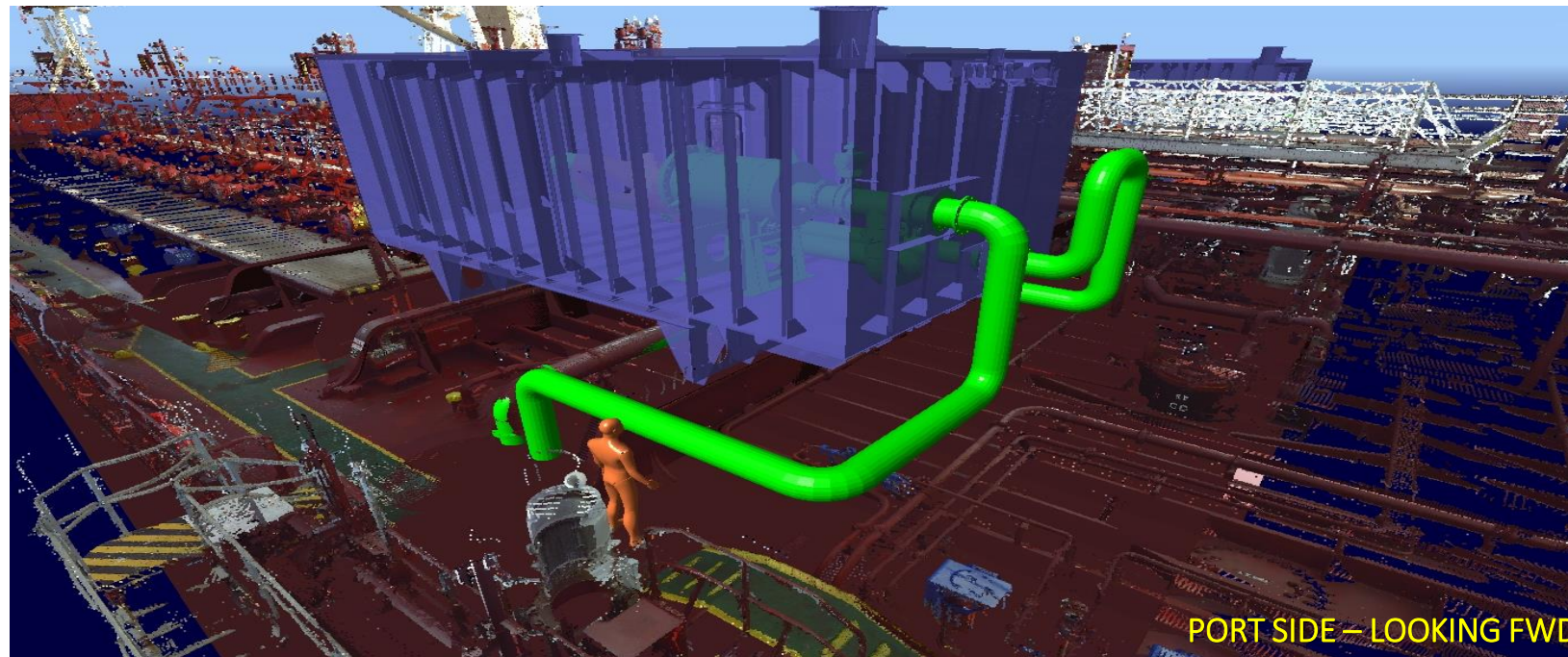


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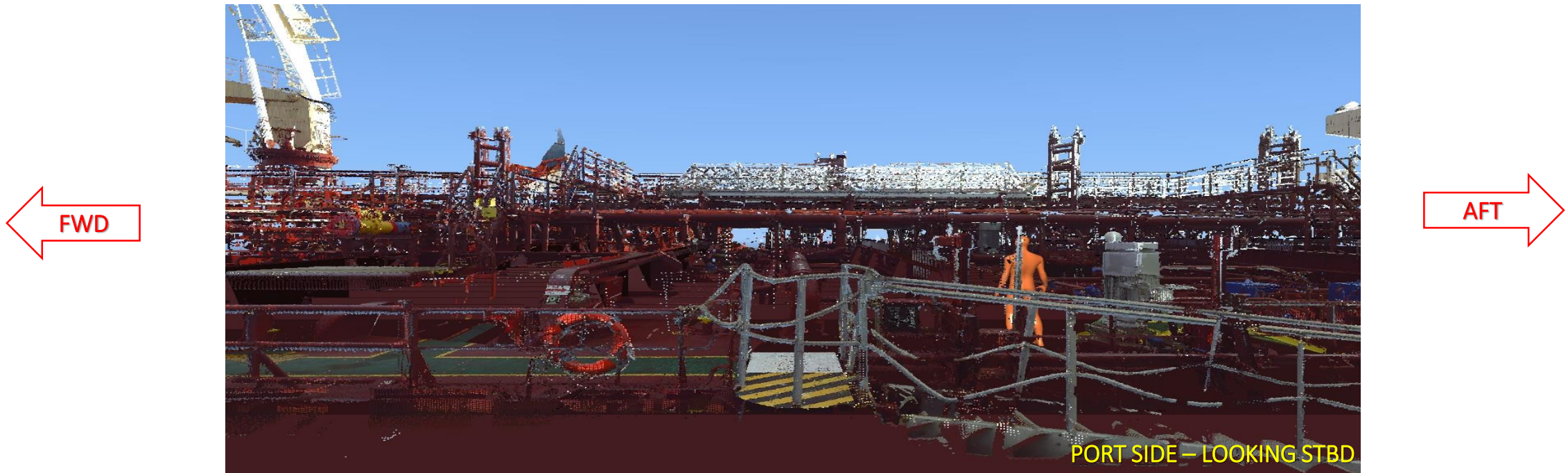


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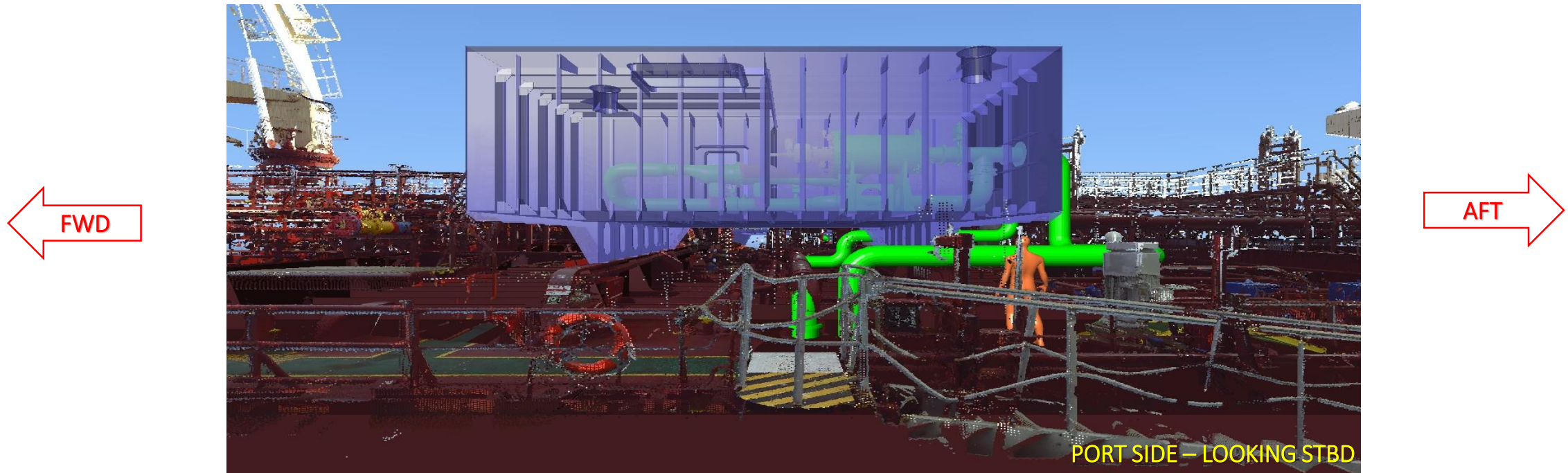


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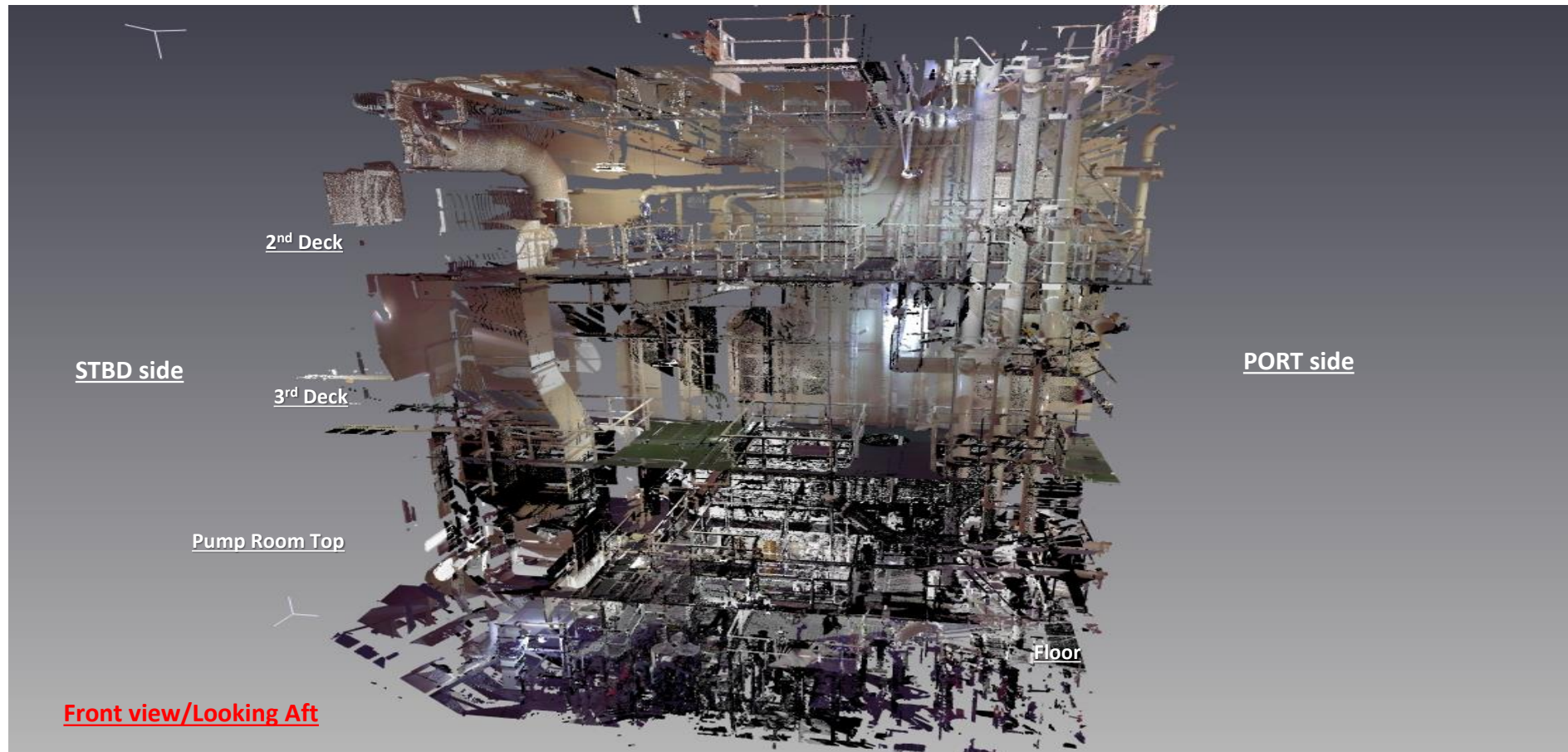


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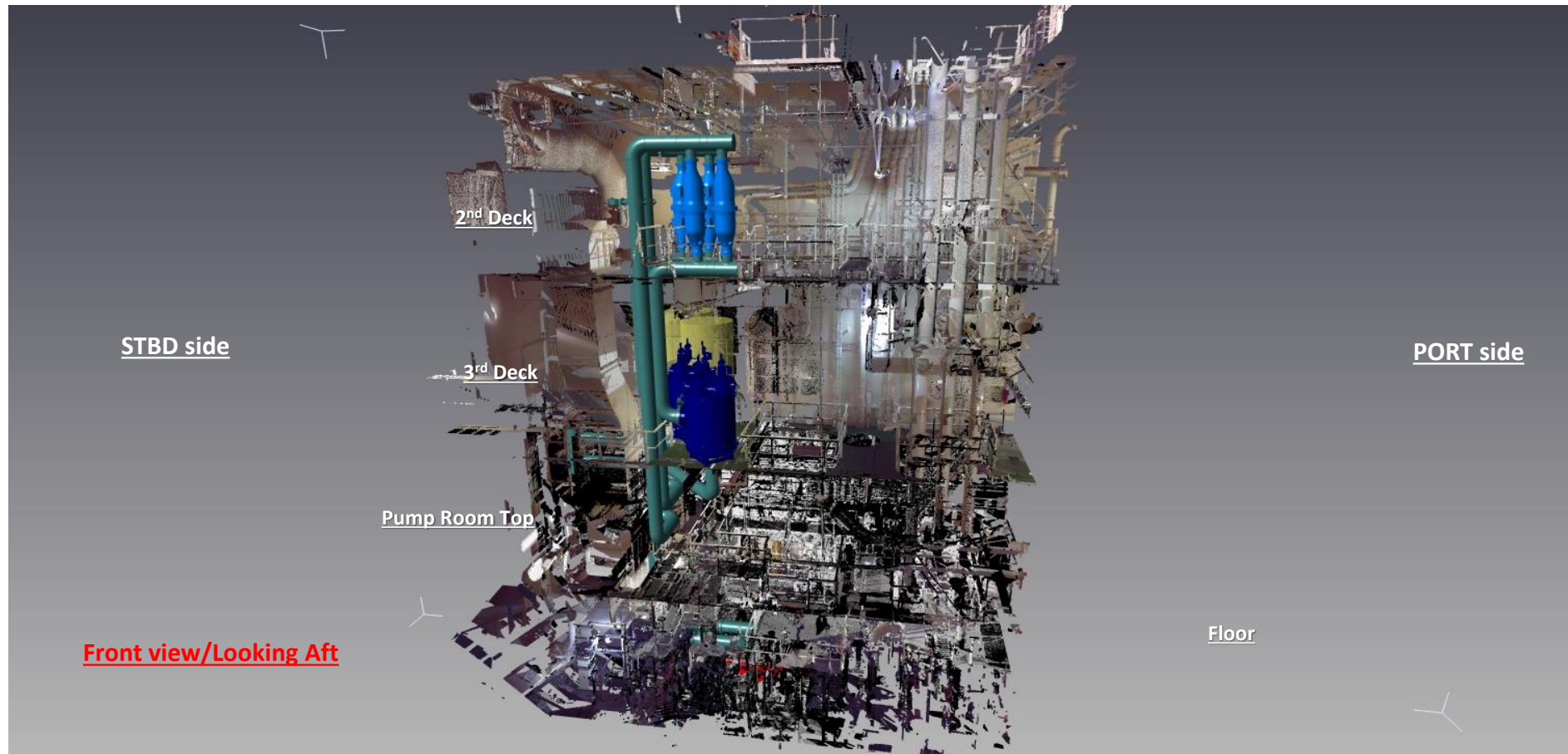
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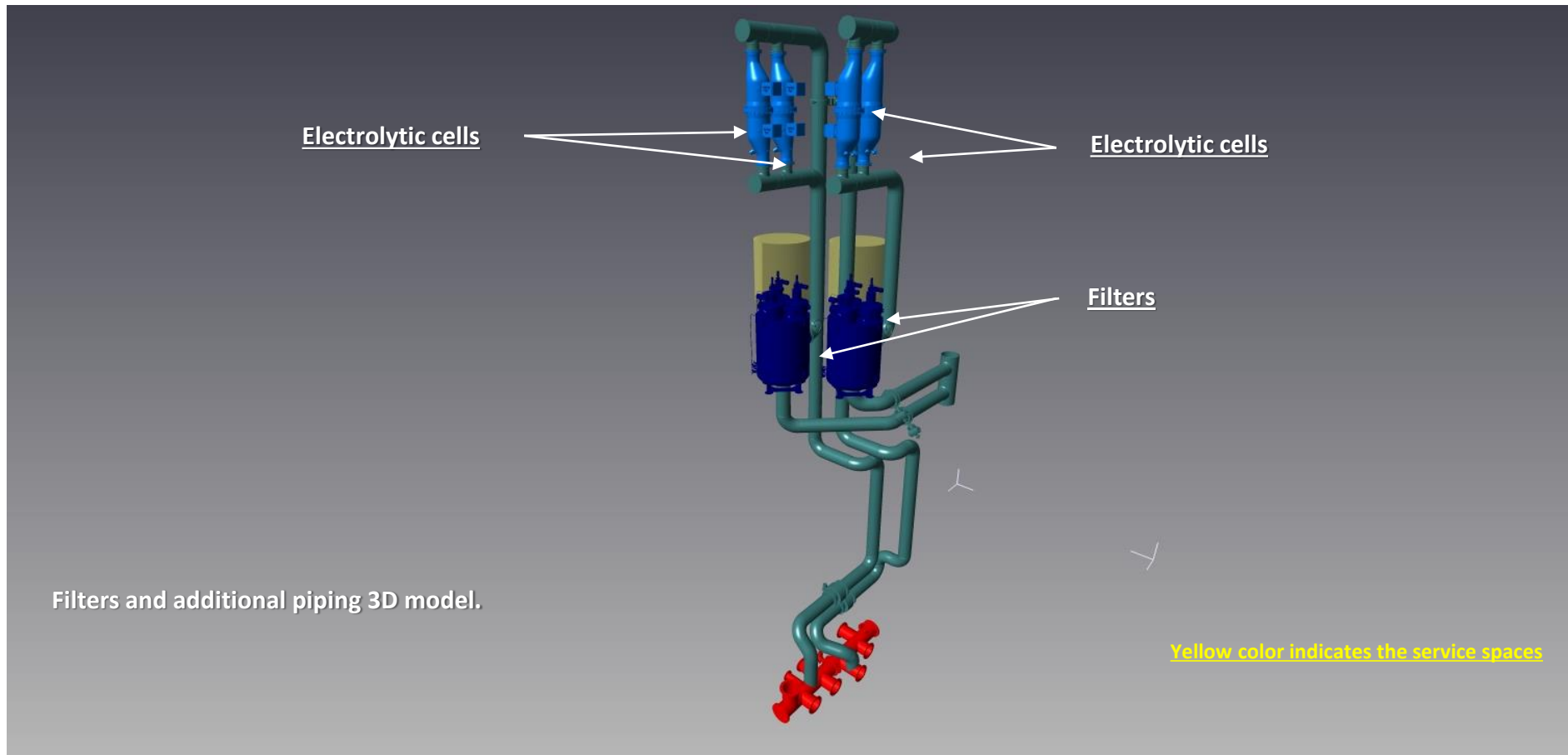
ERMA FIRST FIT PUMP ROOM INSTALLATION



ERMA FIRST FIT PUMP ROOM INSTALLATION



3D Model ERMA FIRST FIT Pump Room Installation



Local Stations for Preliminary Inspection & Service

- Japan
- Korea
- China
- Philippines
- Singapore
- India (Sri Lanka)
- Dubai
- Denmark (Scandinavia)
- Greece
- Houston U.S.
- Tampa U.S
- Spain
- Netherlands
- Romania (Black Sea)
- Germany
- Lithuania (Baltic)



Thank you for your kind attention

