



OGGS

National Institute
of Oceanography
and Applied
Geophysics

ERVO meeting 2021

The second life of the RRS Ernest Shackleton ...
the RV Laura Bassi becomes a multipurpose
research polar ship

Riccardo Codiglia

..... a brief recent history

- Build and named as «Polar Queen» in 1995
- Owned by POLAR QUEEN LIMITED and operated by BAS from 1999 to April 2019 as «Ernest Shackleton»
- Owned by POLAR SHIP INVEST till May 2019
- Acquired by OGS on May 2019 and renamed «Laura Bassi»

- 2019/2020 XXXV Antarctic Expedition for PNRA (2 legs)
- 2020 December, obtaining the «Polar Ship Certificate» according with Polar Code regulation (Category A, PC 5)
- 2021 January XXXVI Antarctic Expedition for PNRA

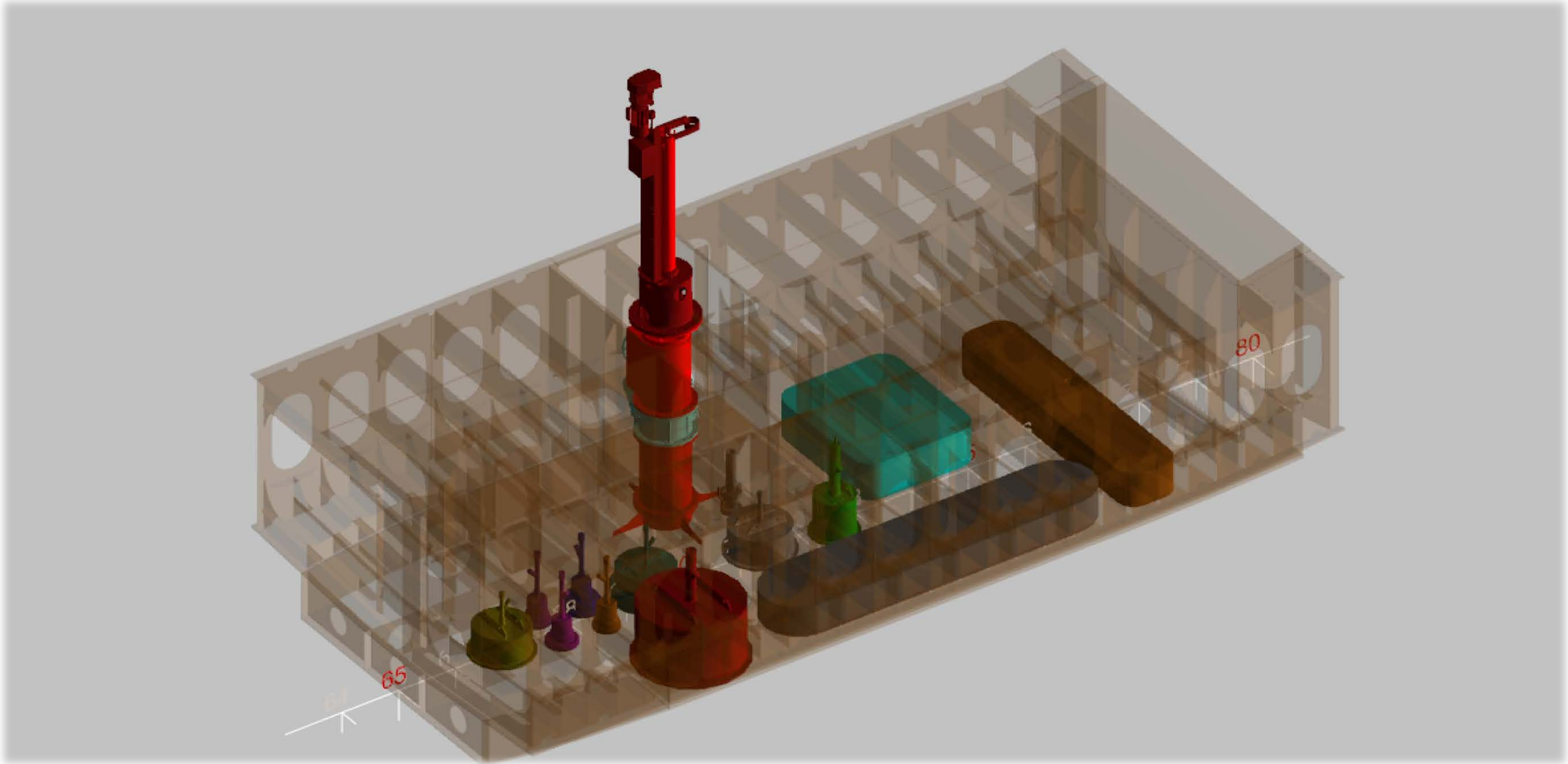
- From March to June 2021 the first main «scientific» refitting

..... *The scientific refitting, hull mounted acoustic system*

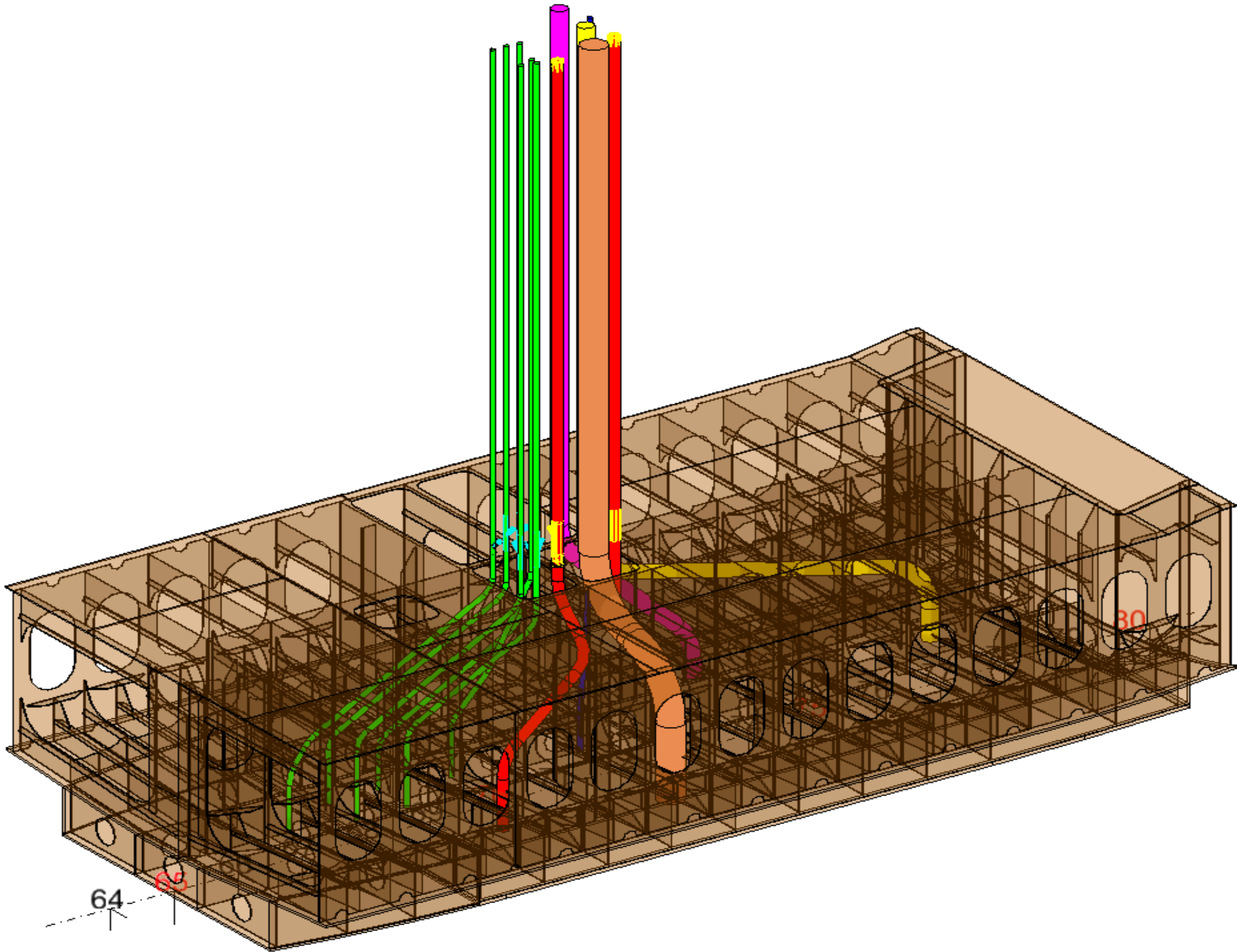
- Multibeam Echo Sounder for deep sea – Kongsberg EM304 1x2 with ice Window.
- Multibeam Echo Sounder for shallow water – Kongsberg EM2040C MKII on EM16 mounting
- Sub Bottom Profiler for deep sea – Kongsberg Topas PS18 with ice window
- High precision scientific echosounder with multi-frequencies – Kongsberg EK80 (with n. 6 transducers on hull, 18kHz, 38 kHz, 70 kHz, 120 kHz, 200 kHz, 333 kHz)
- acoustic doppler current profiler at 150 kHz – Kongsberg ADCP 150 KHz
- acoustic doppler current profiler at 38 kHz – Kongsberg ADCP 38 KHz
- speed sensor – Kongsberg SVS, SVP
- 2 catch monitoring hydrophones – Kongsberg PI32 Trawl hydrophone
- integrated system of orientation, trim and position – Kongsberg Seapath 380 with MRU5 and DGNSS receiver.

- Single Beam full ocean deep – Simrad EA600 (repositioned)

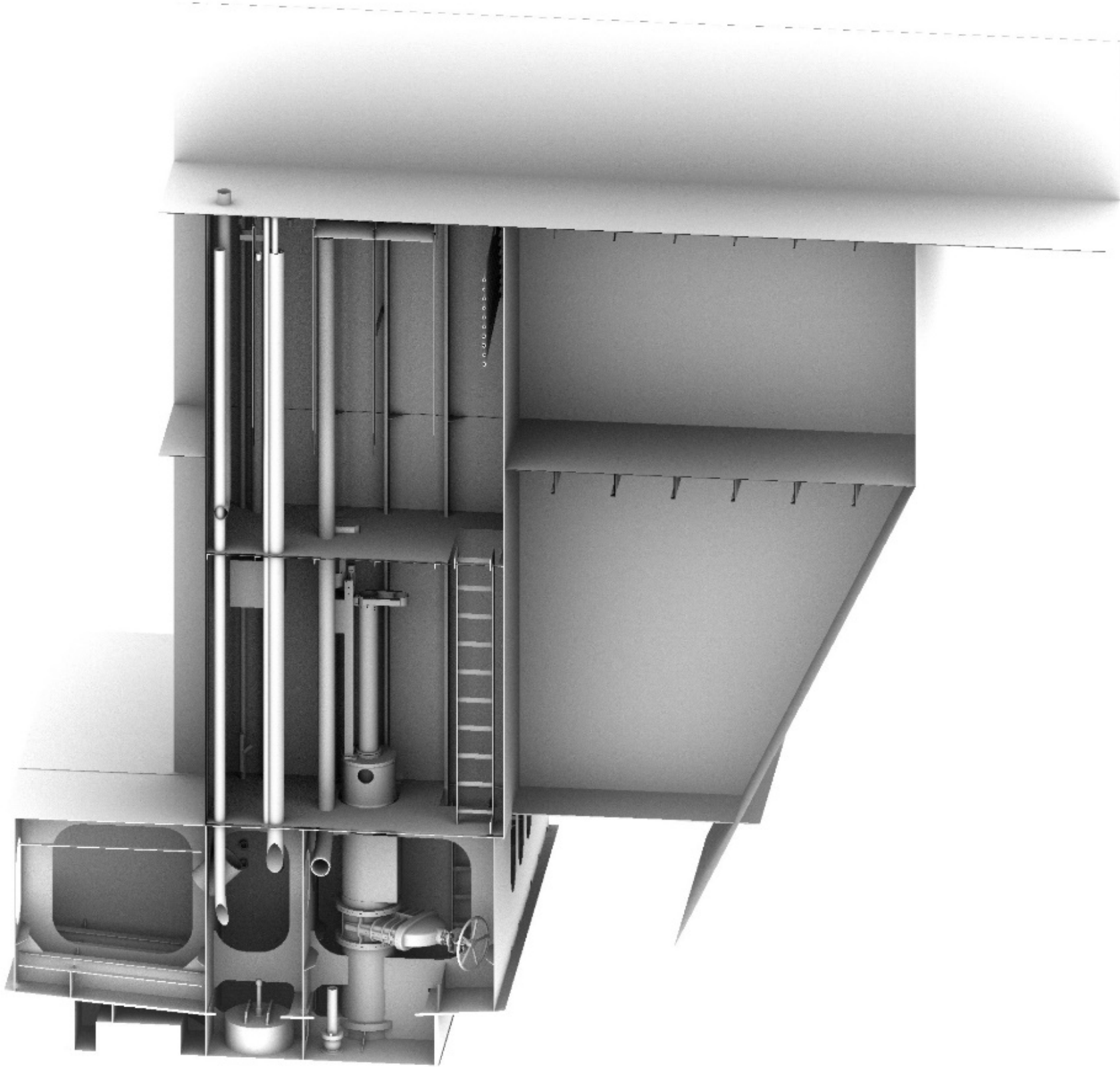
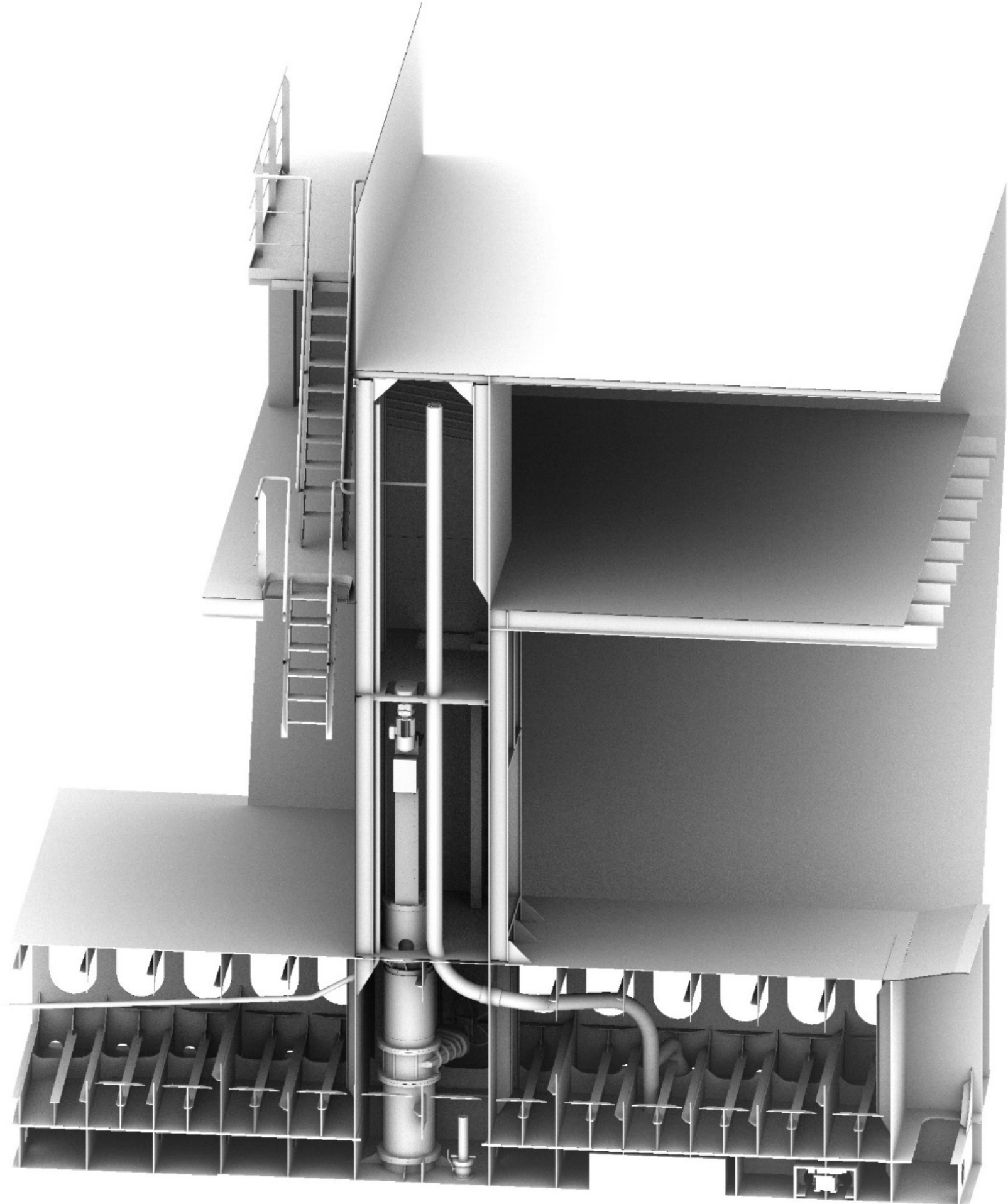
Hull mounted acoustic system – the new block



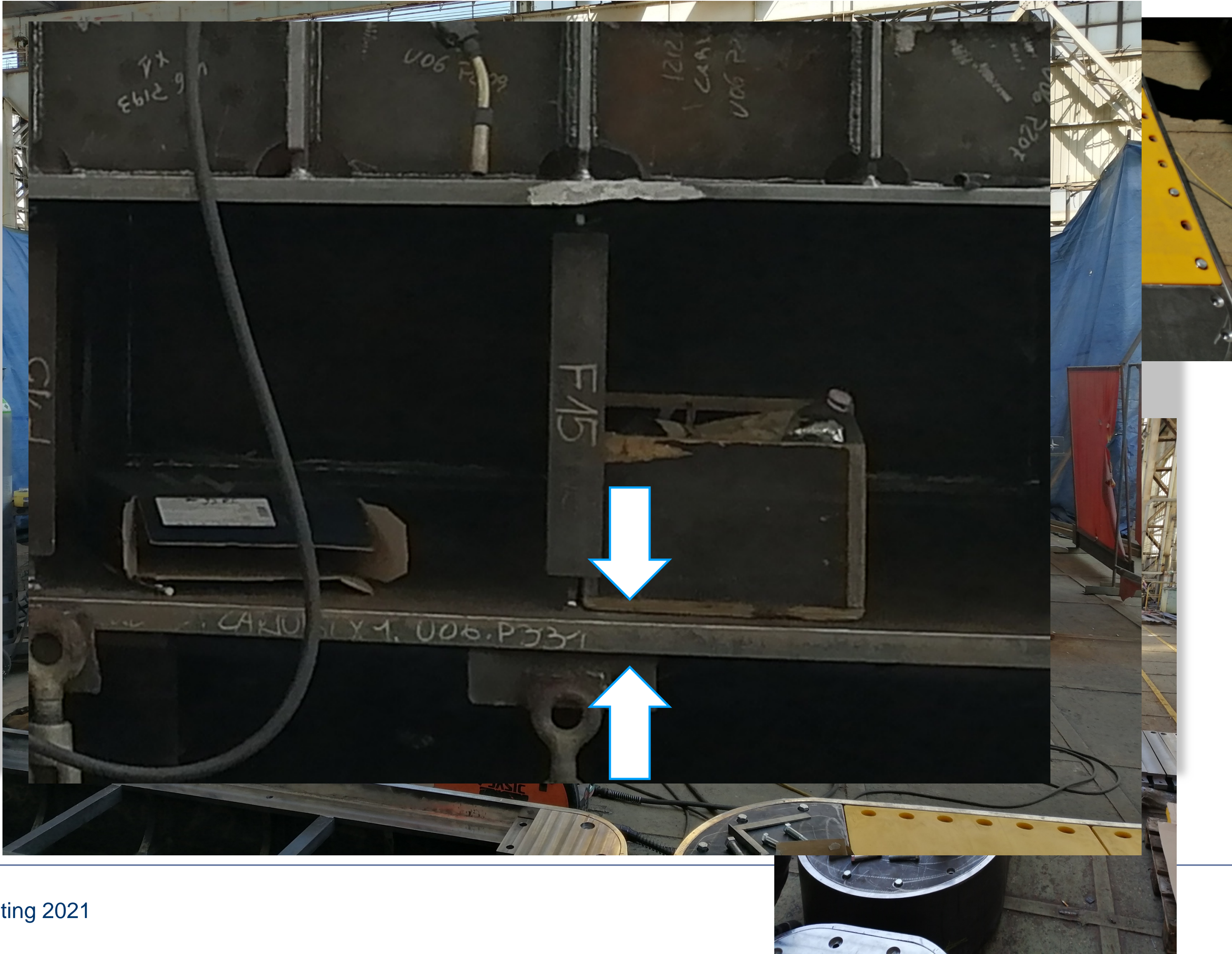
Hull mounted acoustic system – the piping routing (through the structure)



Hull mounted acoustic system – 3D preliminary study



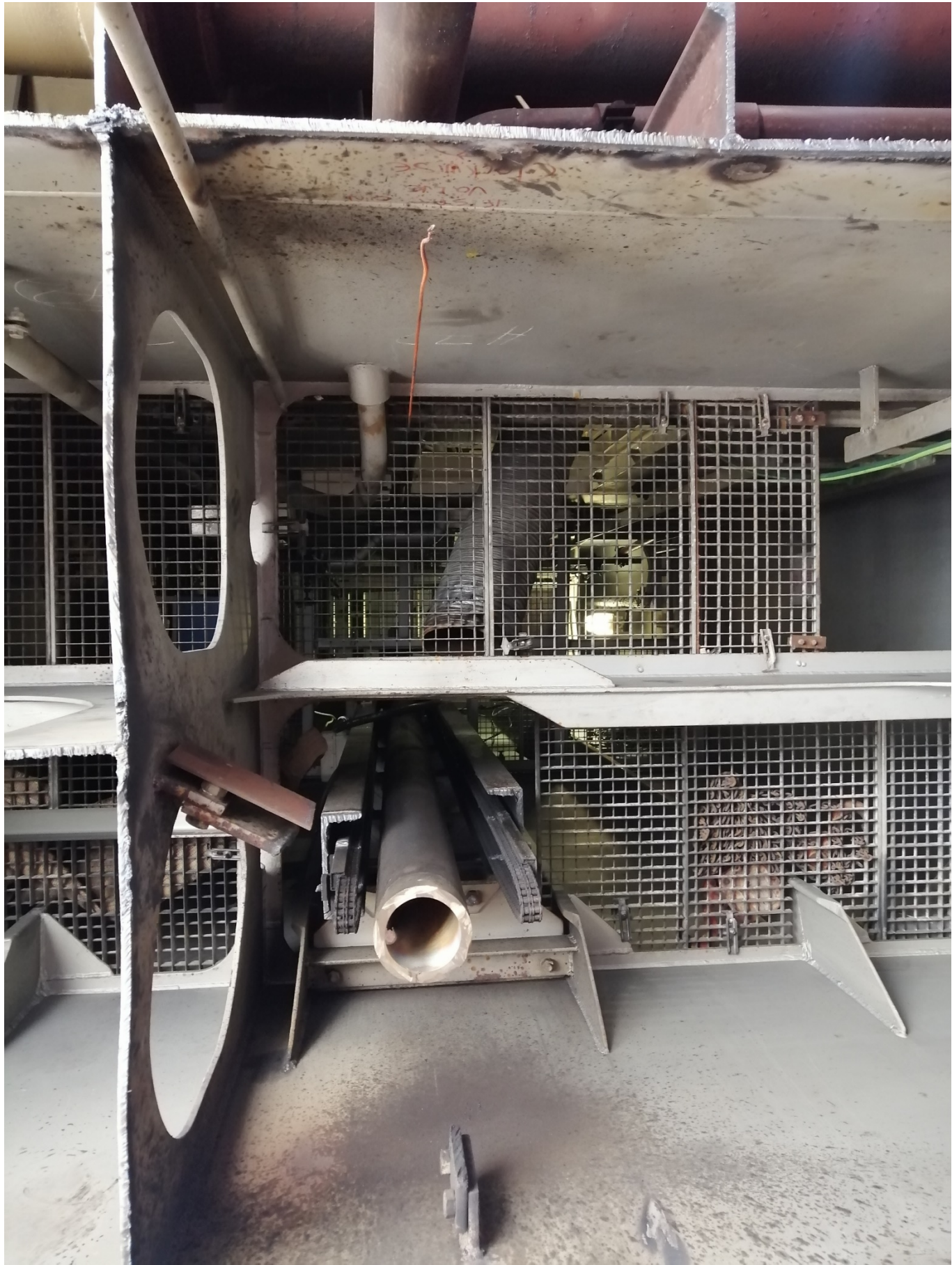
Hull mounted acoustic system – transducers installation GA



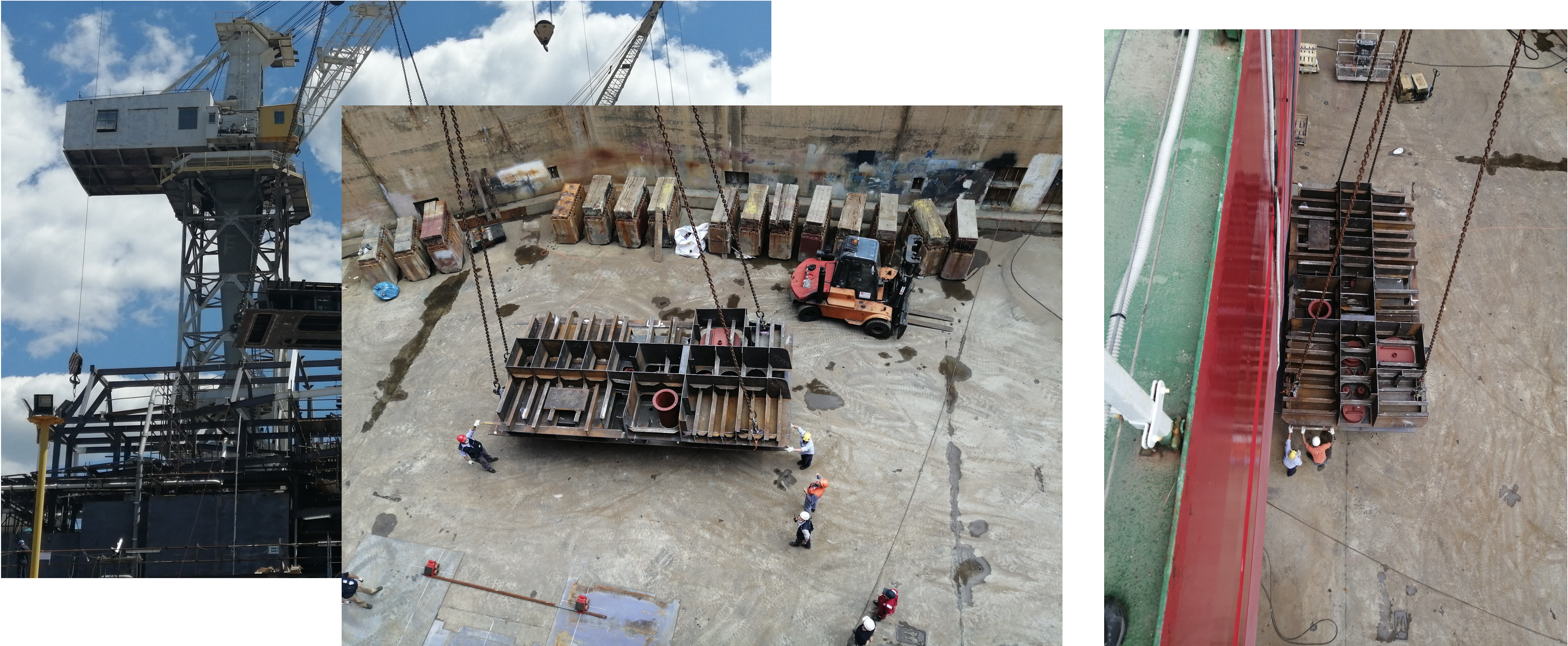
Hull mounted acoustic system – the cutting



Hull mounted acoustic system – the cutting



Hull mounted acoustic system – the block installation



New capabilities – water and sediment sampling, multichannel seismic

- IBERCISA integrated winches system (all electrically driven and controlled):

CTD winch for standard 24 bottles rosette.

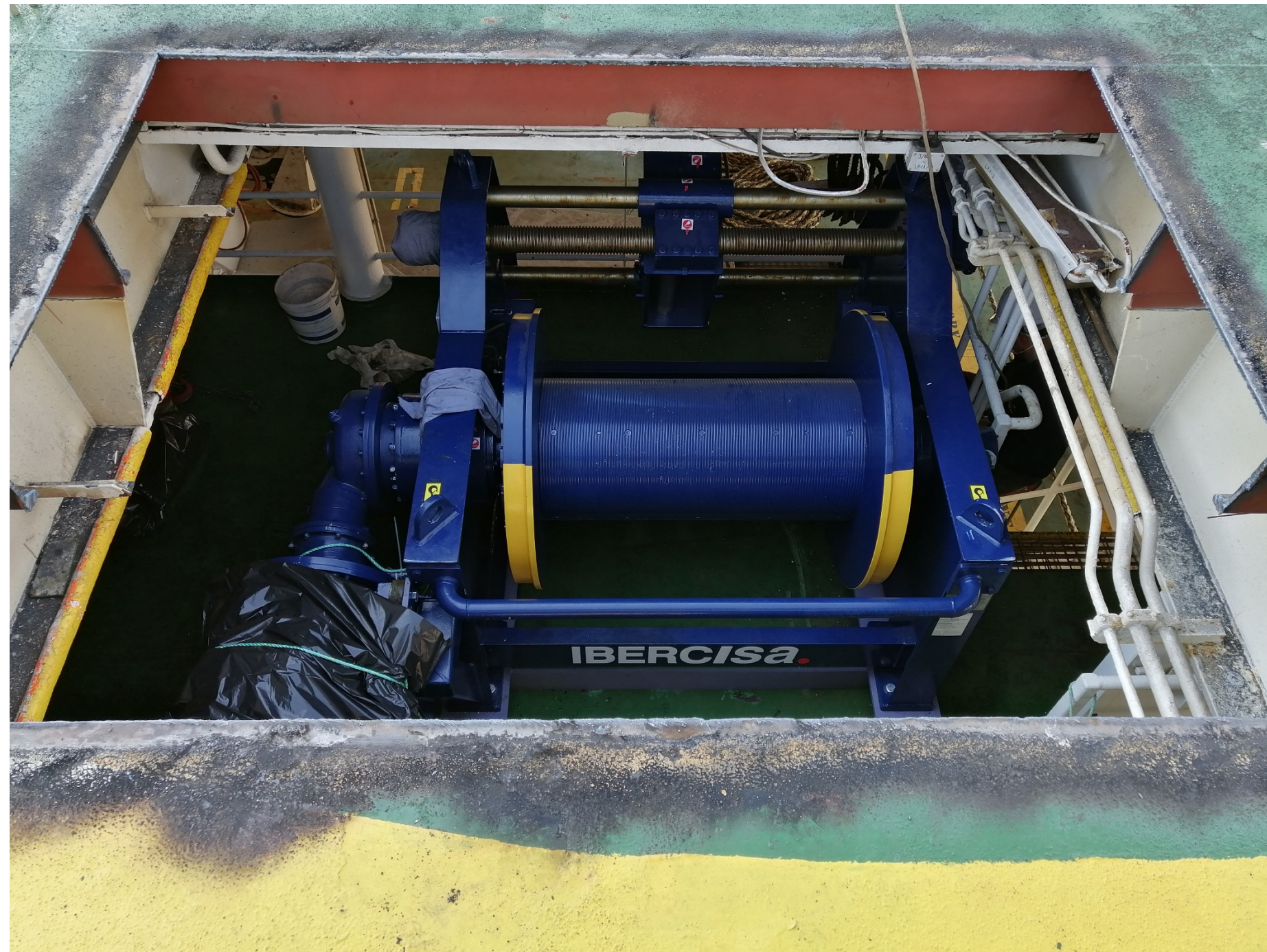
Coring winch with a corer handling system suitable for gravity and piston corer till 18m length

Streamer winch suitable for 2400m of Sercel Sentinel (solid state multichannel streamer)

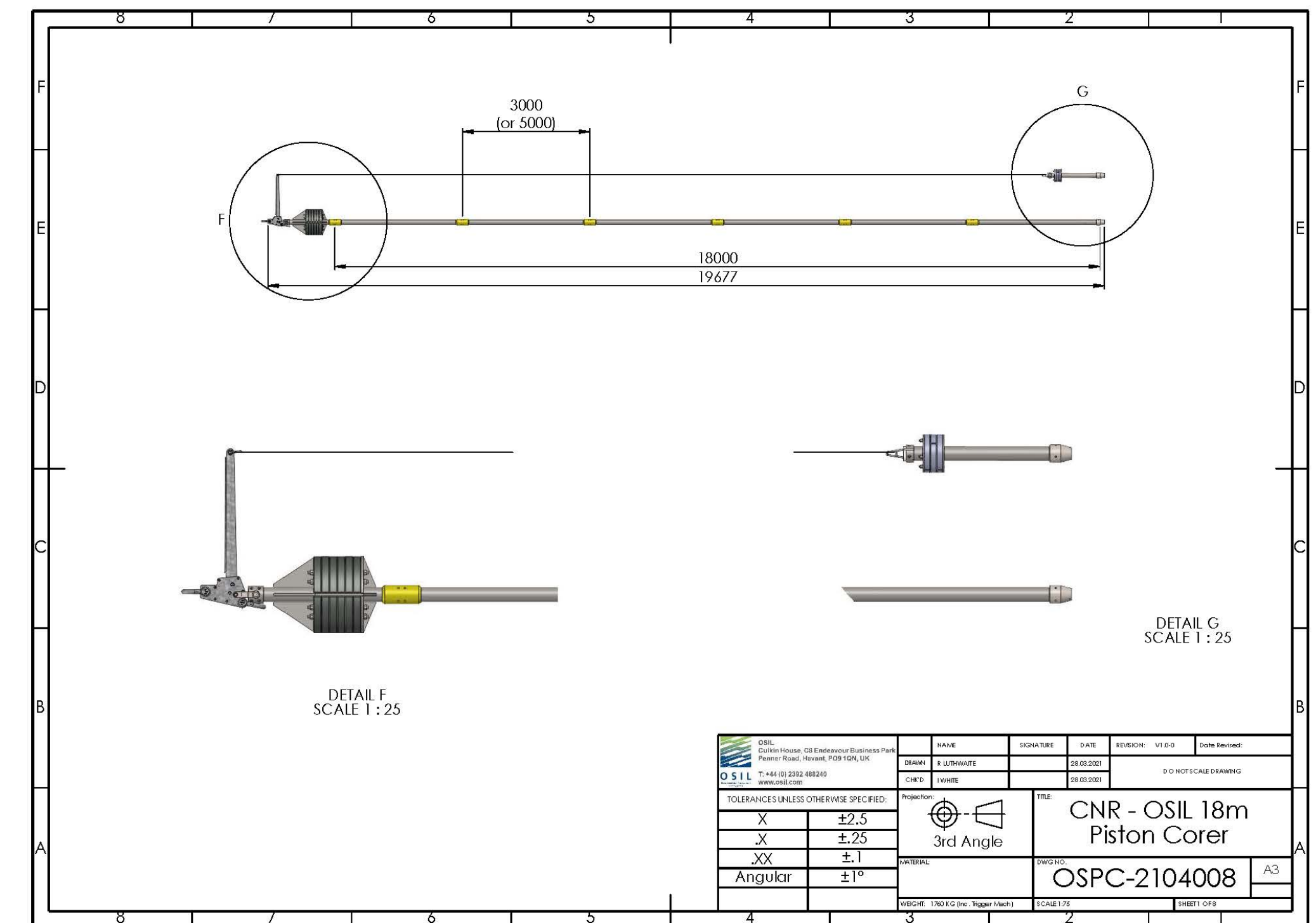
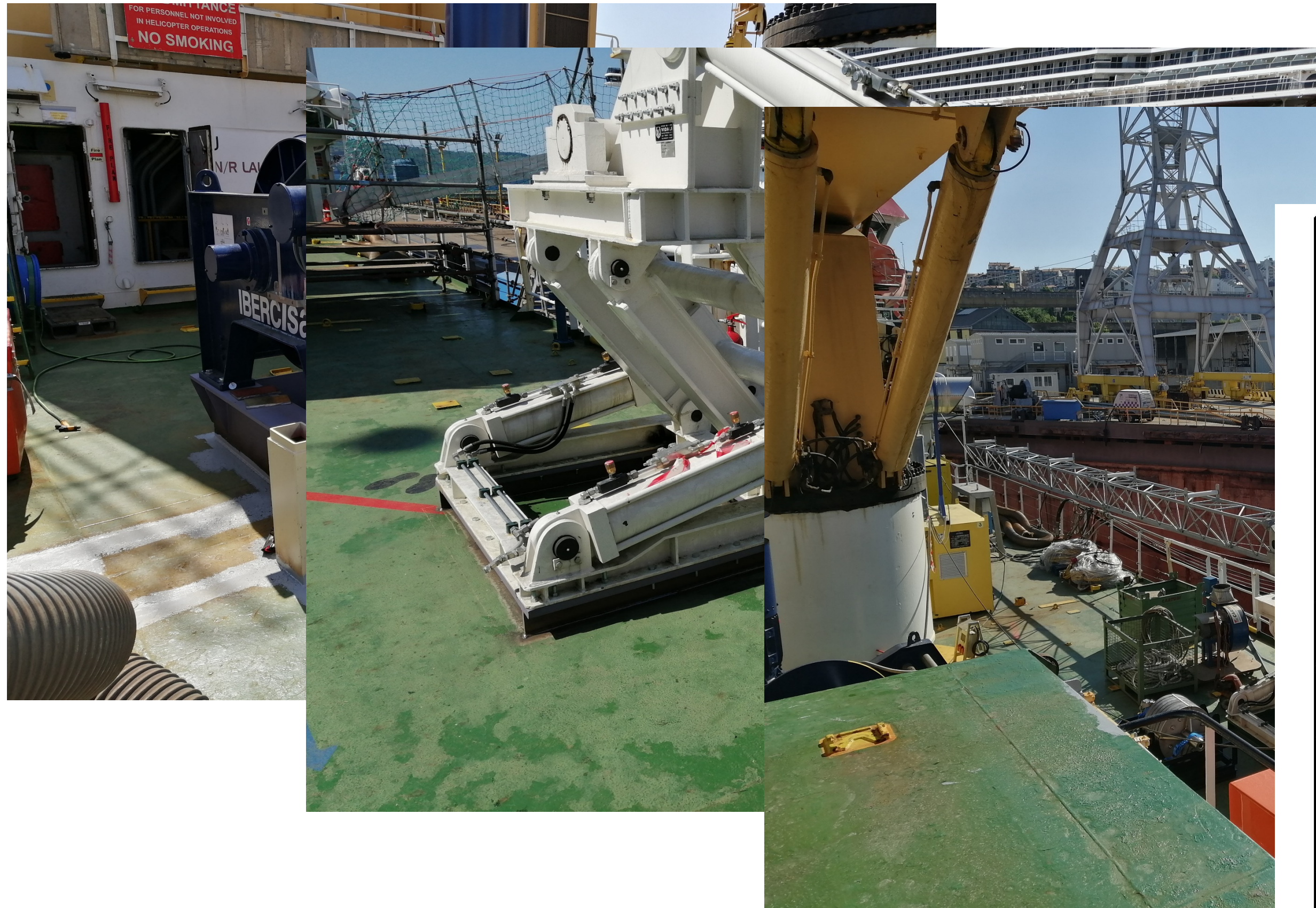
- Multiple Goflo handling unit for «very clean» water sampling

- Sea water line suitable for continuous water analysis or surface water sampling with several «tapping stations»

The new scientific winches – CTD and water sampling



The new coring handling system and the new corer



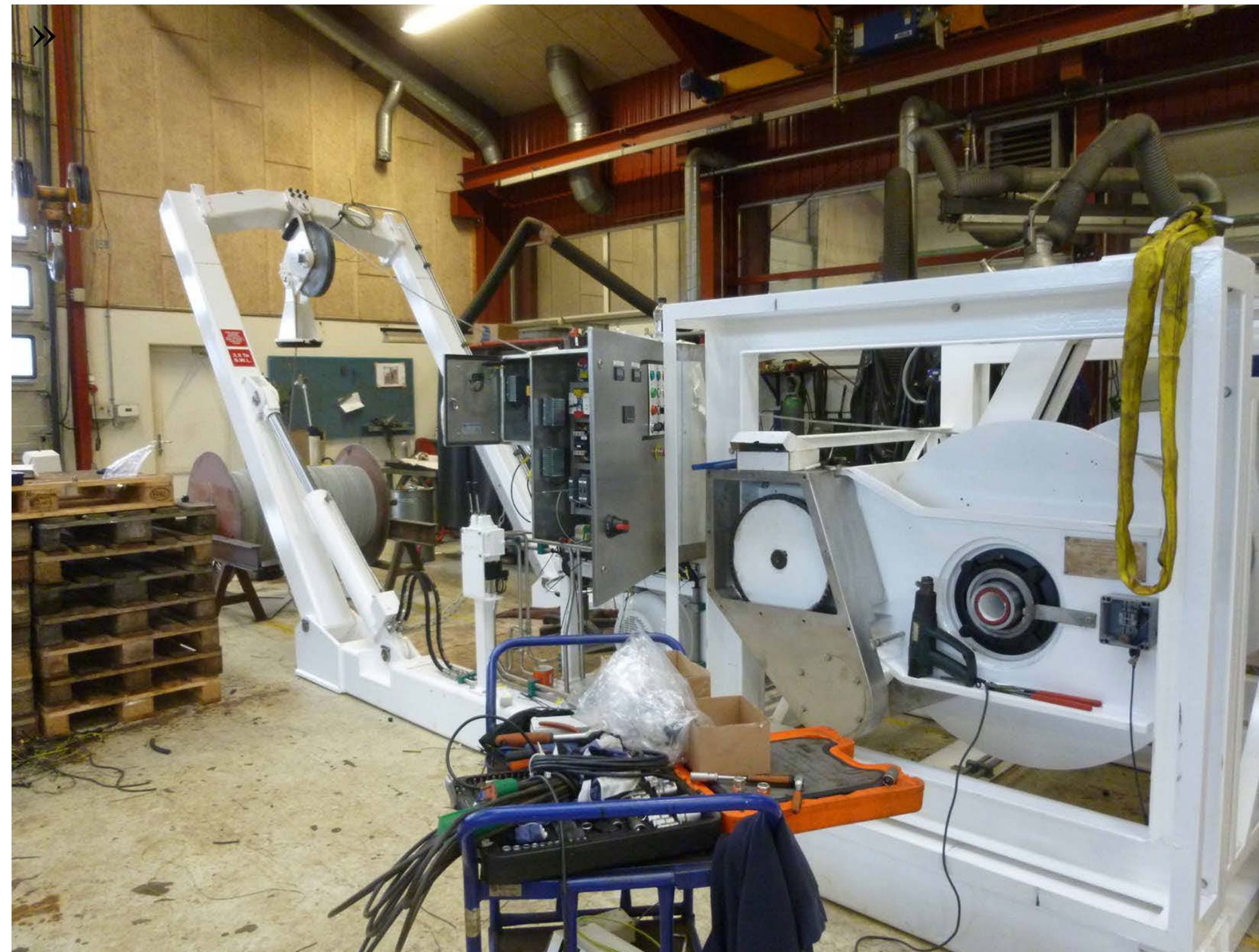
The new scientific winches – Streamer Winch



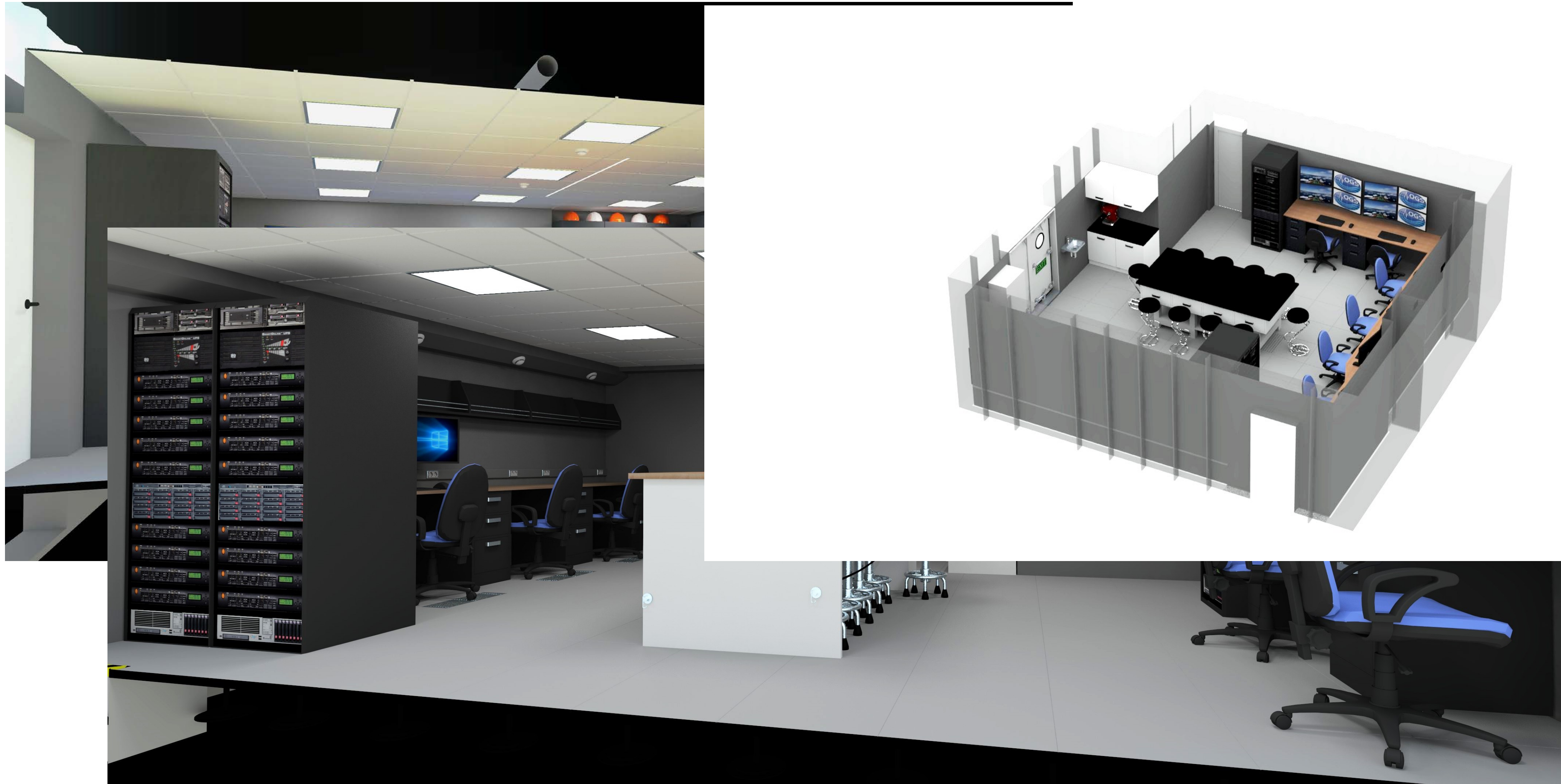
The new scientific winches – Goflo



- 6000m of Kevlar wire
- 12 x bottles every deployment
- completely autonomous and portable



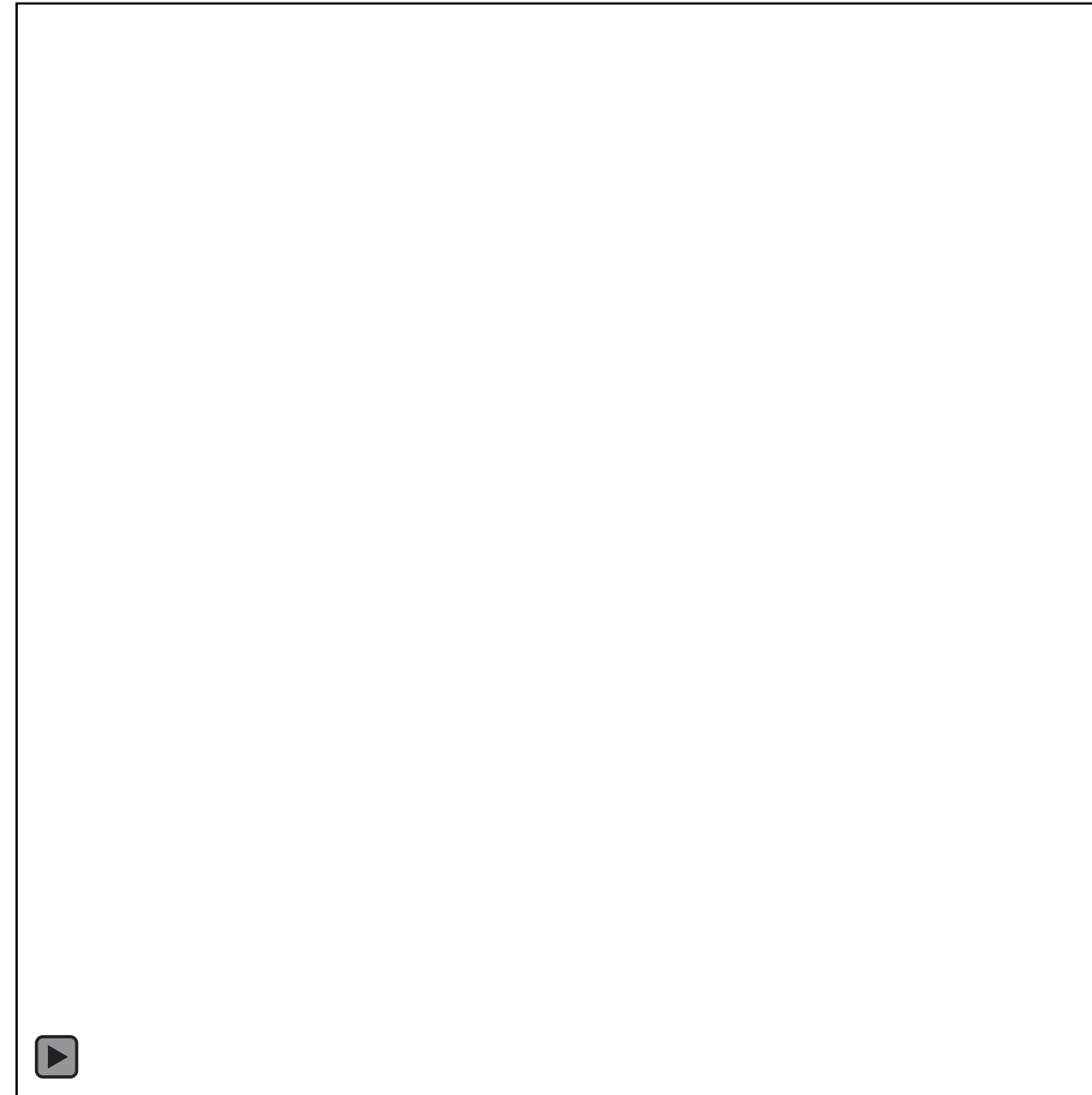
The Dry Lab – The feasibility studi and the preliminary project



The Dry Lab – A challenge to save some money

- First offer was over 150.000 Euro
- Second offer was 130.000 Euro
- Third offer was 75.000 Euro saving wall panels and without the electrical works

..... and finally



..... some numbers

- KONGSBERG package, 2.950.000 Euro
- KONGSBERG executive design, 120.000 Euro
- KONGSBERG installation, approx 750.000 Euro
- IBERCISA winches, 360.000 Euro
- IBERCISA electrical works, approx. 70.000 Euro
- New capabilities installations (CTD, Coring system, MCS), approx. 60.000 Euro
- Dry Lab renovation, approx 20.000 Euro
- Shipyard and drydock for 3 months estimated cost 400.000 Euro

..... and the work continues

