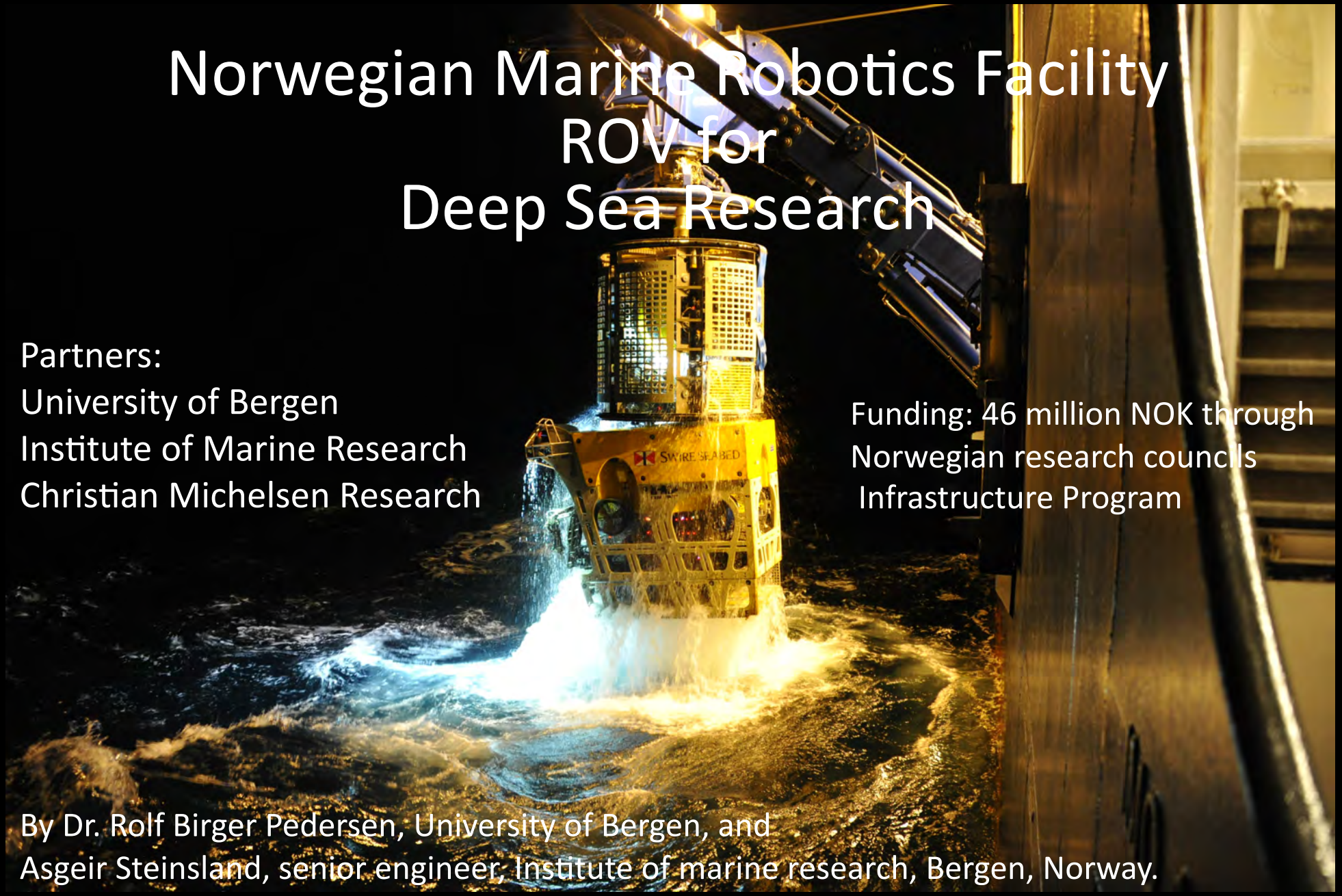
Norwegian Marine Robotics Facility
ROV for
Deep Sea Research



Partners:
University of Bergen
Institute of Marine Research
Christian Michelsen Research

Funding: 46 million NOK through
Norwegian research councils
Infrastructure Program

By Dr. Rolf Birger Pedersen, University of Bergen, and
Asgeir Steinsland, senior engineer, Institute of marine research, Bergen, Norway.

Kystdesign Supporter

Hydraulic work class ROV 4000m

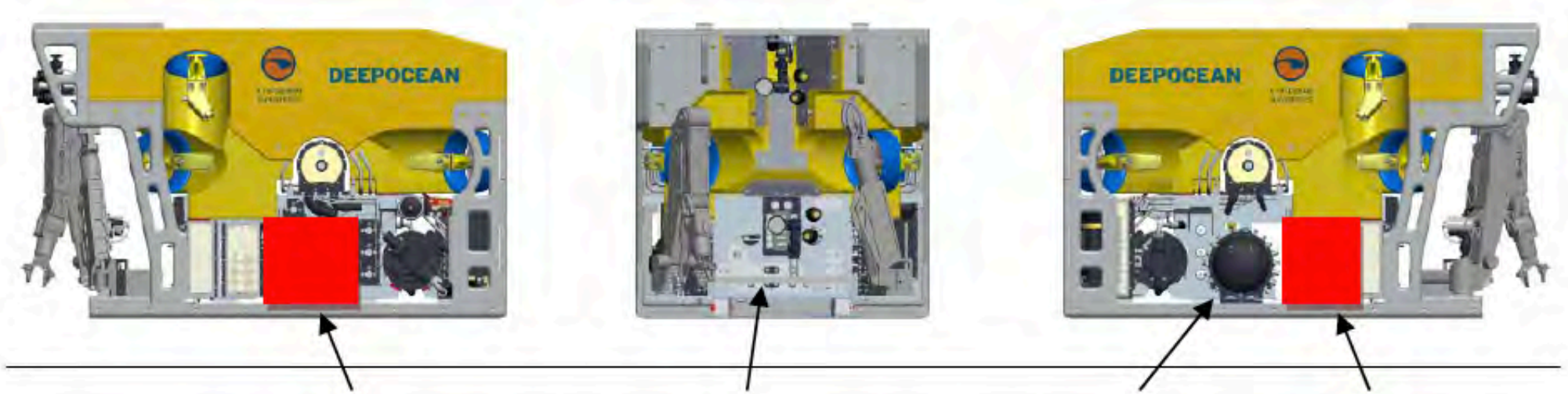
Pay Load and Through Frame Lift Capacity

Pay Load	200Kg in water, with the following equipment mounted : Basic Skid, Schilling Atlas, Schilling T4, Sonar, Altimeter, Depth sensor, 7 Cameras, 1 SIT camera, 10 Lights, 2 P&T units, 1 Tilt unit
Through frame lift capacity	3000Kg

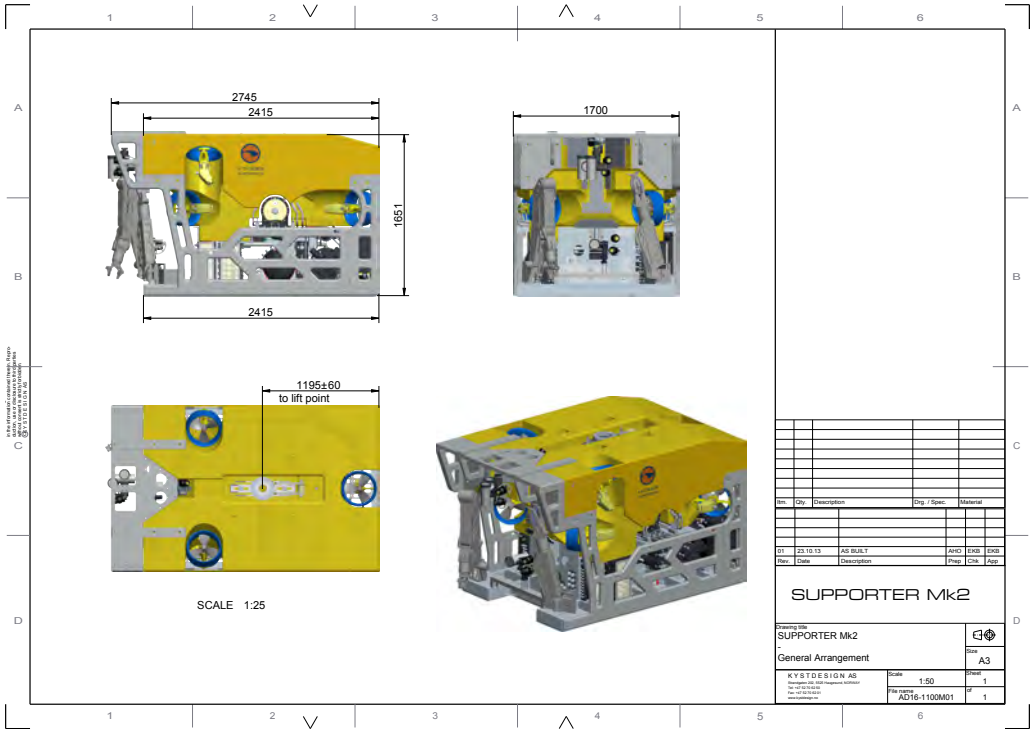
340 kg upward pull

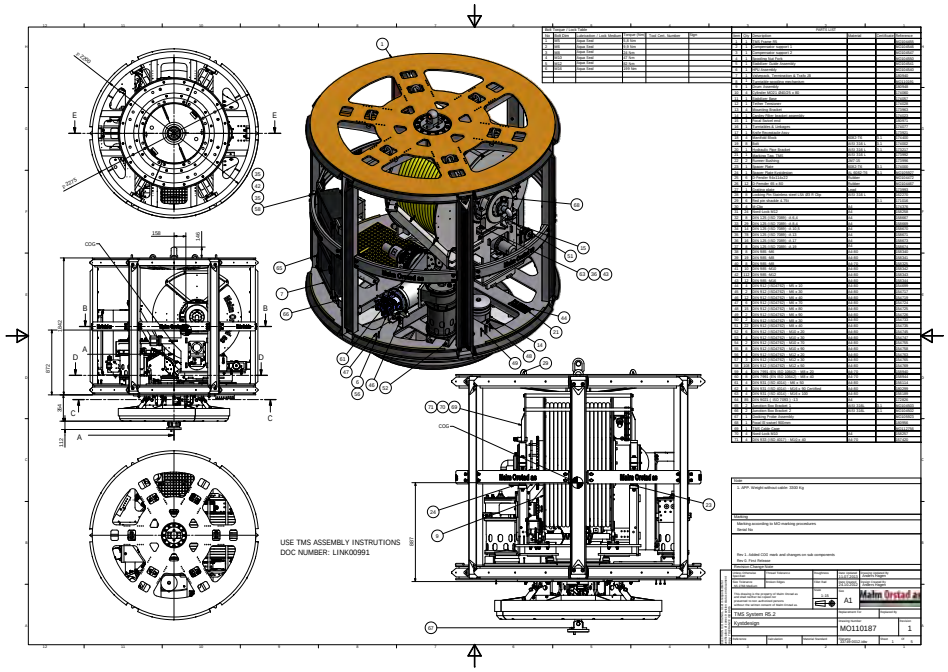
Room For Scientific Payload on the Outside

Room for scientific Payload
Inside the Structure



Remotely Operated Vehicle (ROV) & Tether Management System (TMS) Kystdesign





Camera systems

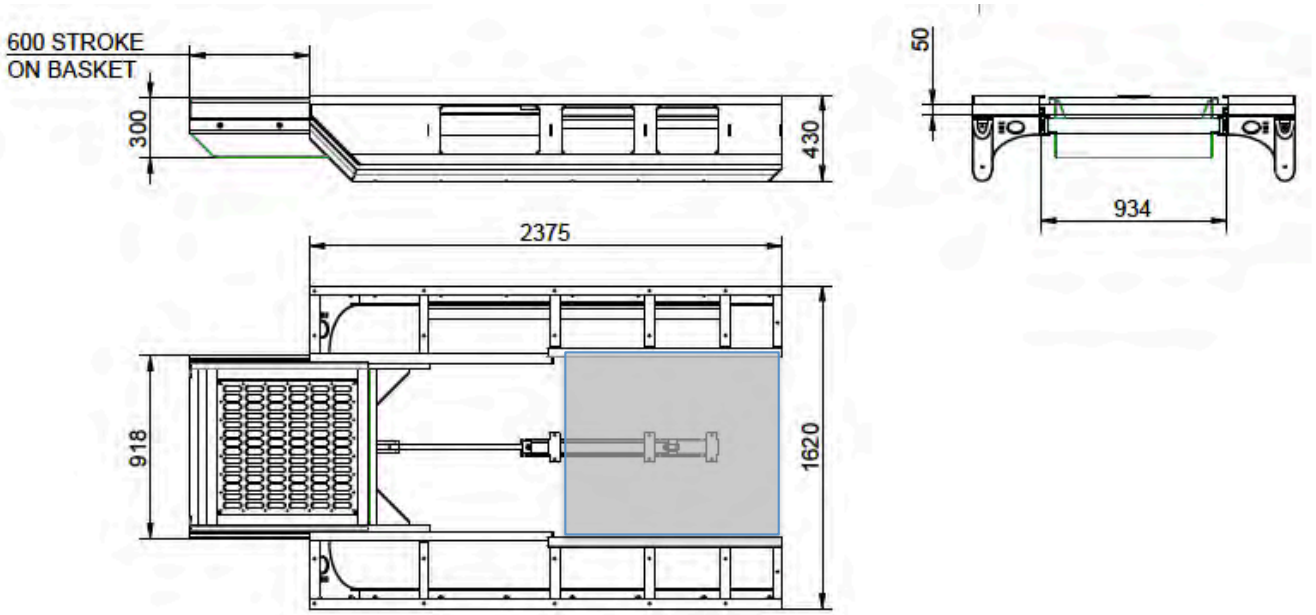
- 2x Sidus Pan & Tilt with position feedback, type SS109HT
- 2x HD-SDI 1080p on pan tilts
- 1x HD-SDI 1080p
- 1x Imenco Low Light, type Basking
- 2x Imenco Tool camera, type Greytip

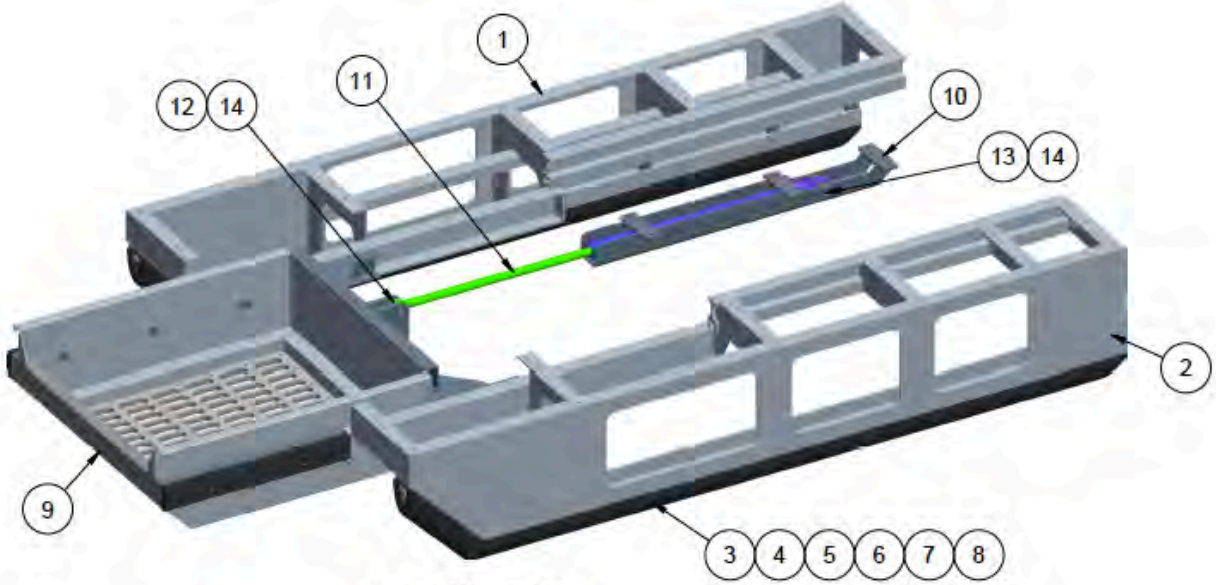
Lighting

16 x 130W Dimable LED lights

210.000 Lumen

Skid & Drawers





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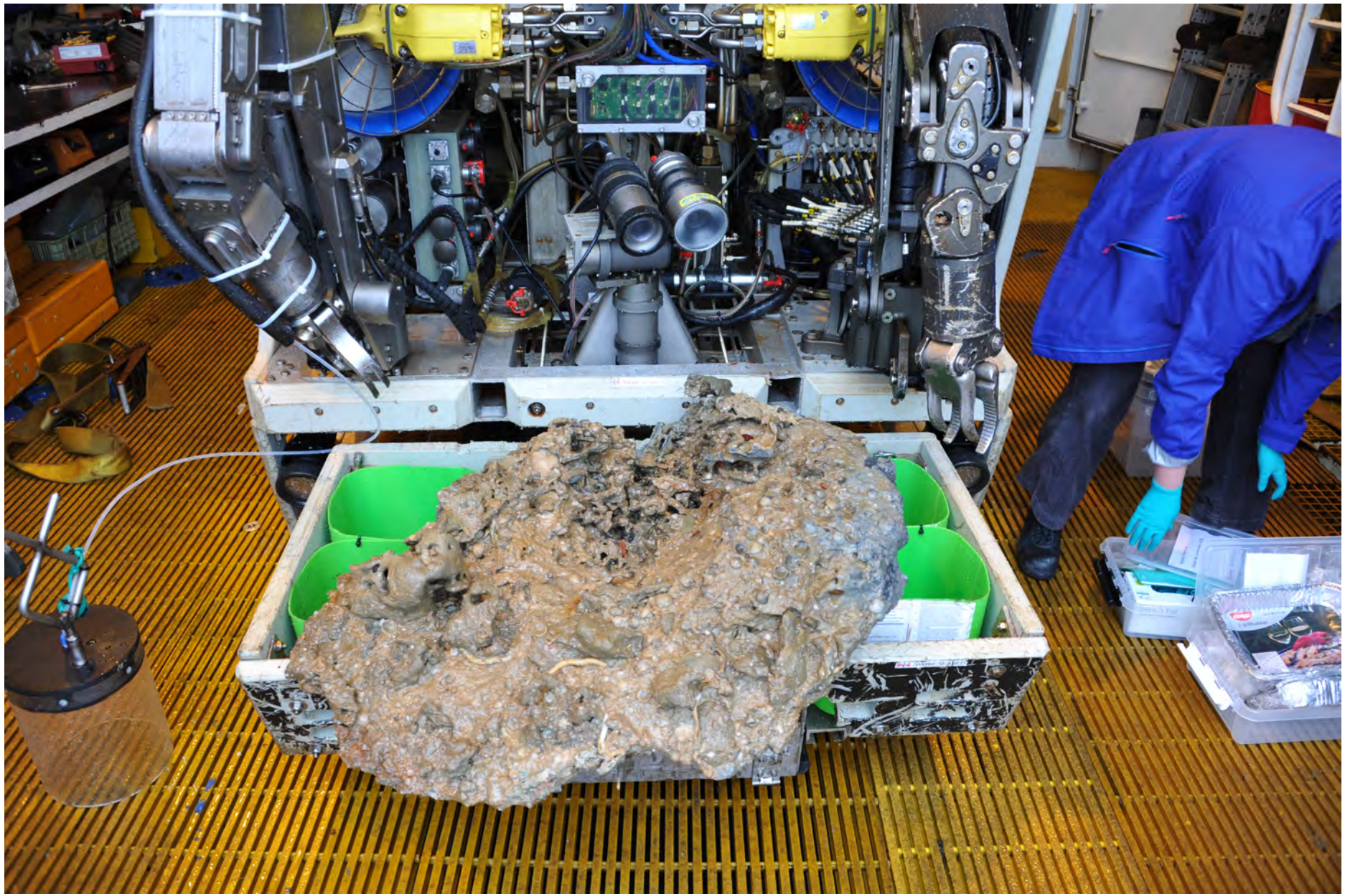
Manipulators and toolskid

Schilling T4

Schilling Atlas



Hydraulic valves available for samplers and tooling

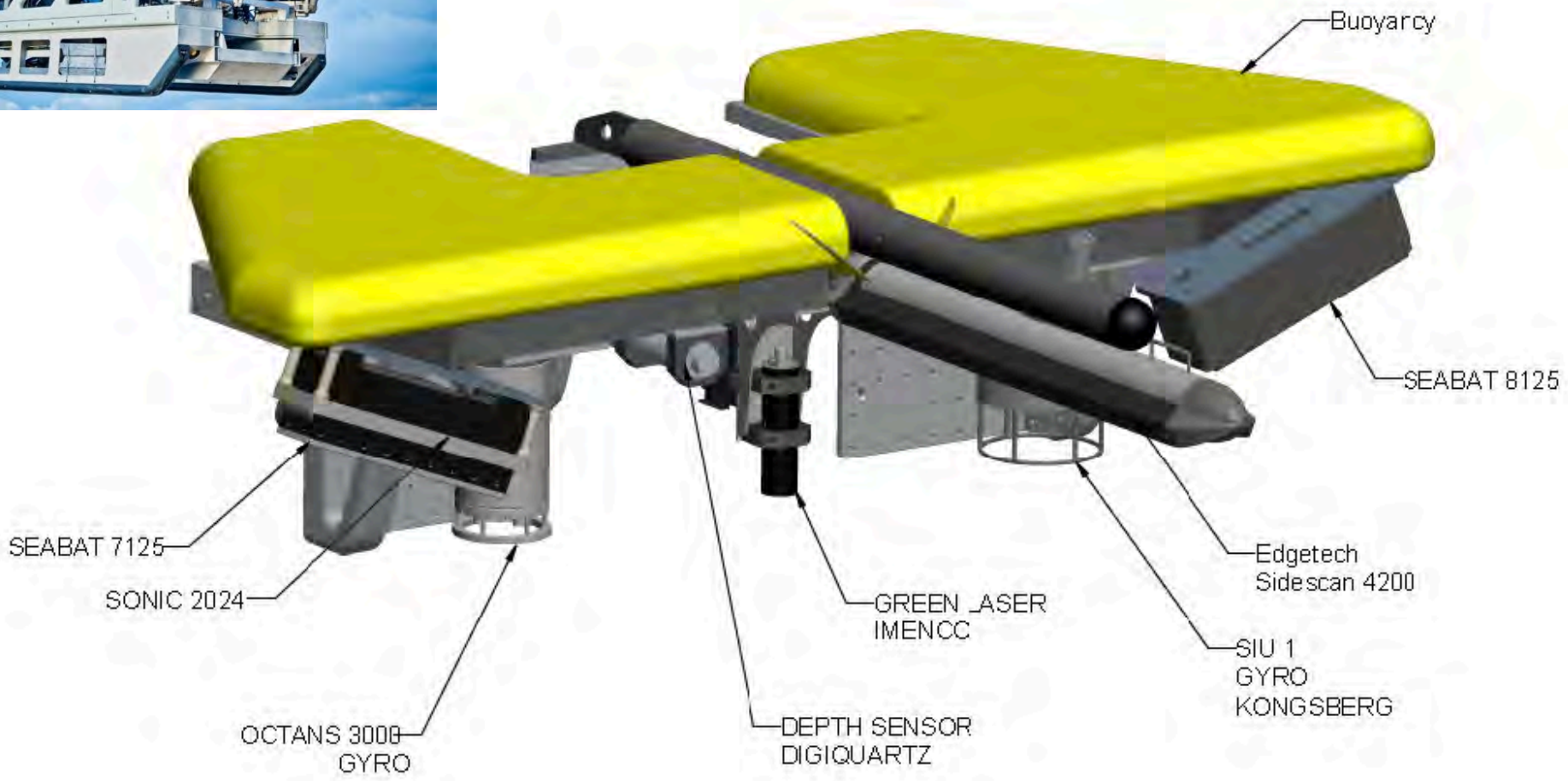
Two separate hydraulic system

1) Propulsion and arms
2) Auxiliary system for samplers and tools

Auxiliary system includes the following proportional valves that are controlled topside:

1) 11 x 8 l/min @200bar
2) 4 x 75 l/min @200bar
3) 1 x 200 l/min @200bar

Survey Frame



Navigation Sensors

Supplier	Description	Type	Qty
Ixblue	Inertial Platform, ROV INS		1
MacArtney	MS1171 4000m Dual freq. Sonar, Imaging P/N: 975-21030000 ,Incl.:MS1000 Software processor Express Version	35201312	1
	Doppler, NavQuest 600 Micro		1
Innova	PA500 Precision Altimeter	S02125 232	1
	Depth sensor 4000m		1
Kongsberg	Transponder MST 342/N - 4000m +/- 20°	MST-216277	2
MacArtney	ST-400A Novatech Xenon Flasher	31000110	1

Auto functions

- Auto heading
- Auto depth
- Auto altitude
- Auto position
- Auto track

Auto holding capability	Heading	+/- 1°
	Altitude	+/- 100 mm
	Depth	+/- 75 mm
Trim functions:	Pitch	+/- 10°
	Roll	+/- 10°

Power Supply and Telemetry for Sensors and Instruments

- 17 spare connections
- 5 spare optical fibers

Power supply for external sensors (default):

- 24Vdc
- 48Vdc
- 115 Vac

Telemetry system provides interfaces

- serial communication (RS232/485/TTL)
- Ethernet
- Other interfaces can be provided if needed

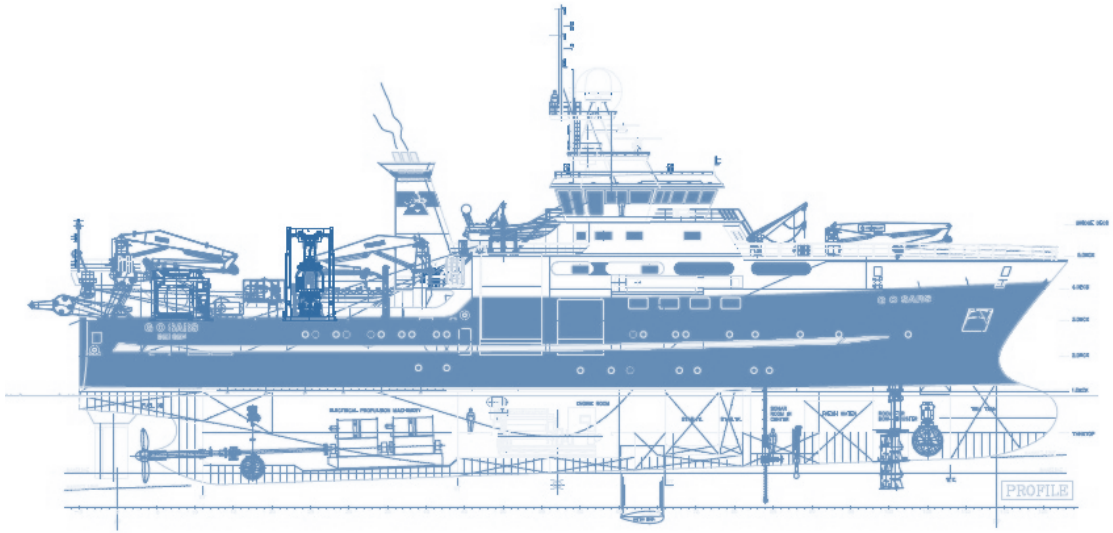
Samplers, sensors & Tools

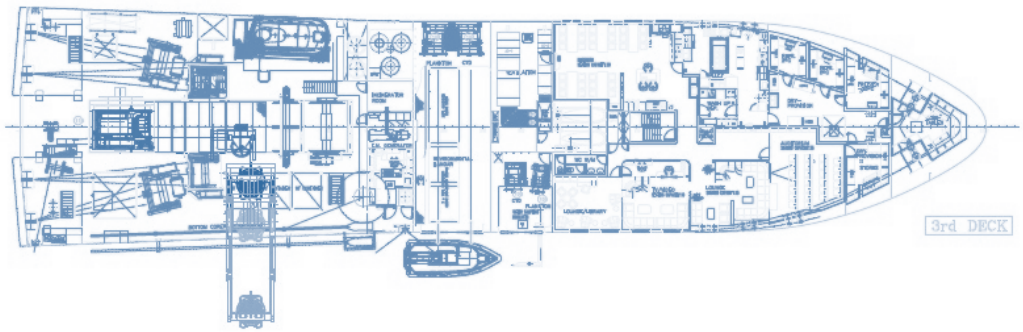
- Water/gas samplers
  - high temp
  - low temp
- Suction sampler
- Biosyringe
- Push cores
- Chain saw
- Rock drill

- CO2
- CH4 (Methane)
- Temperature probes
- CTD

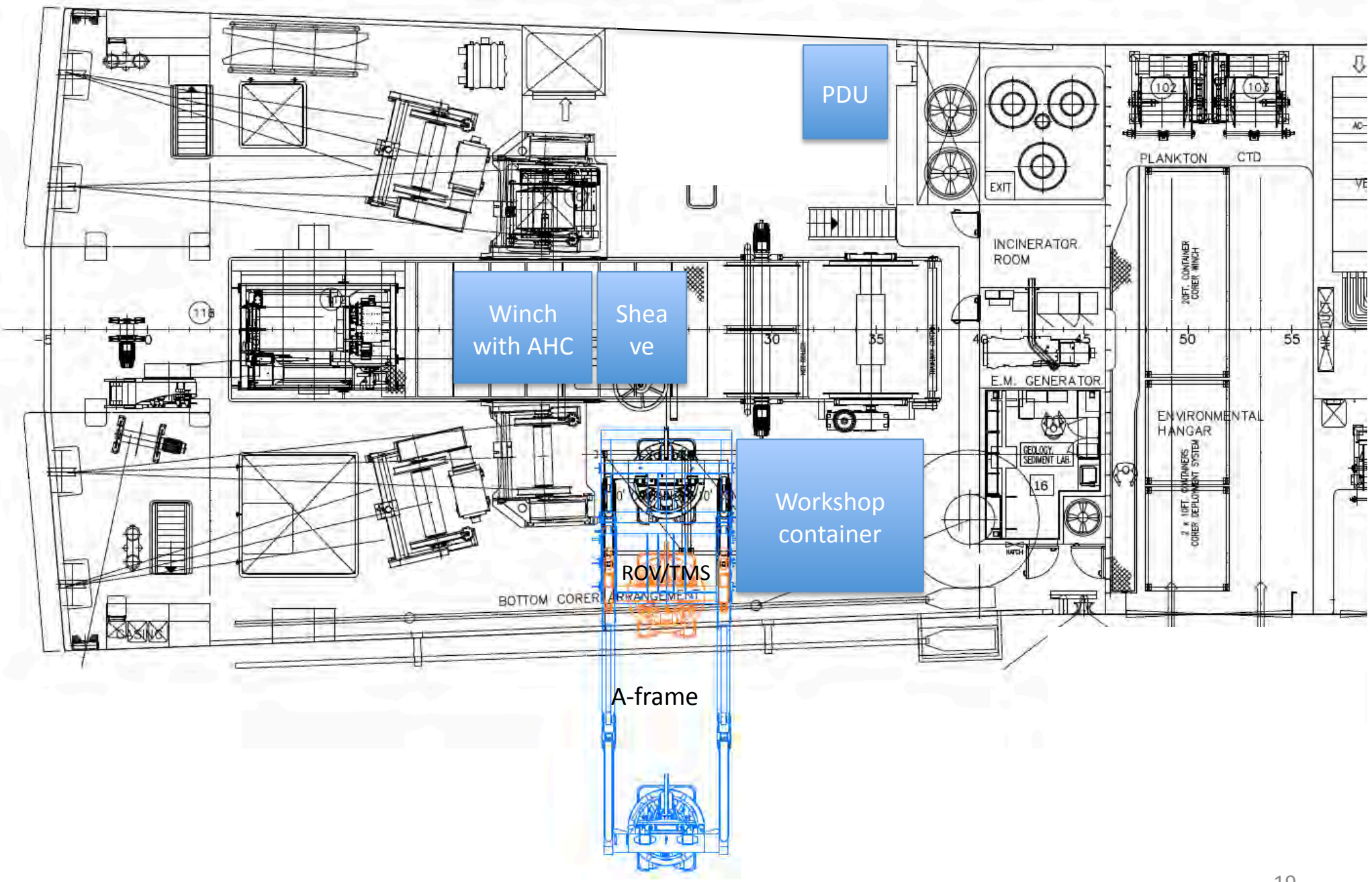
Our research vessels, where the ROV will be used.

Installation of ROV and LARS on R/V G.O. Sars



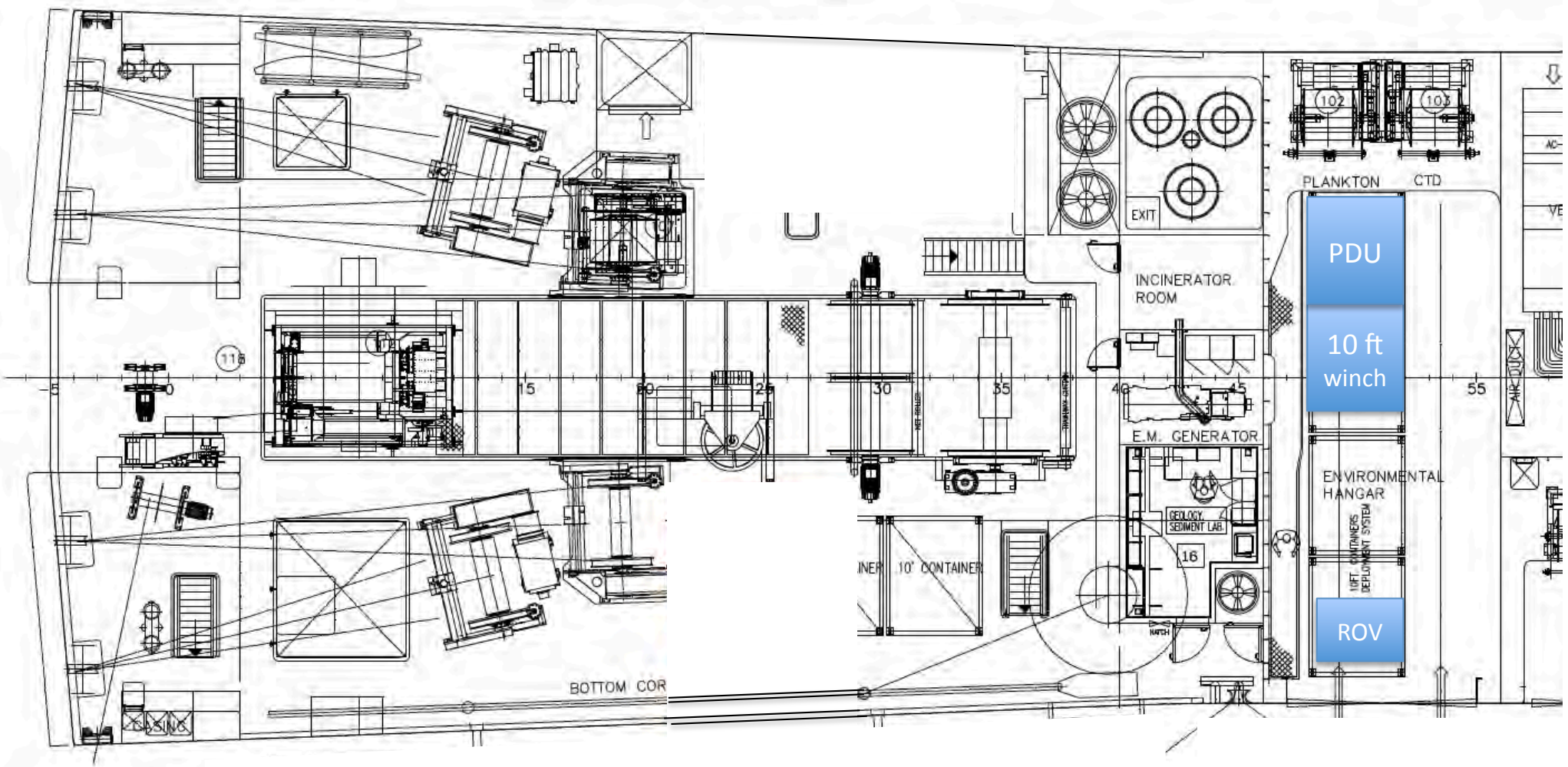


Full installation with TMS and AHC winch

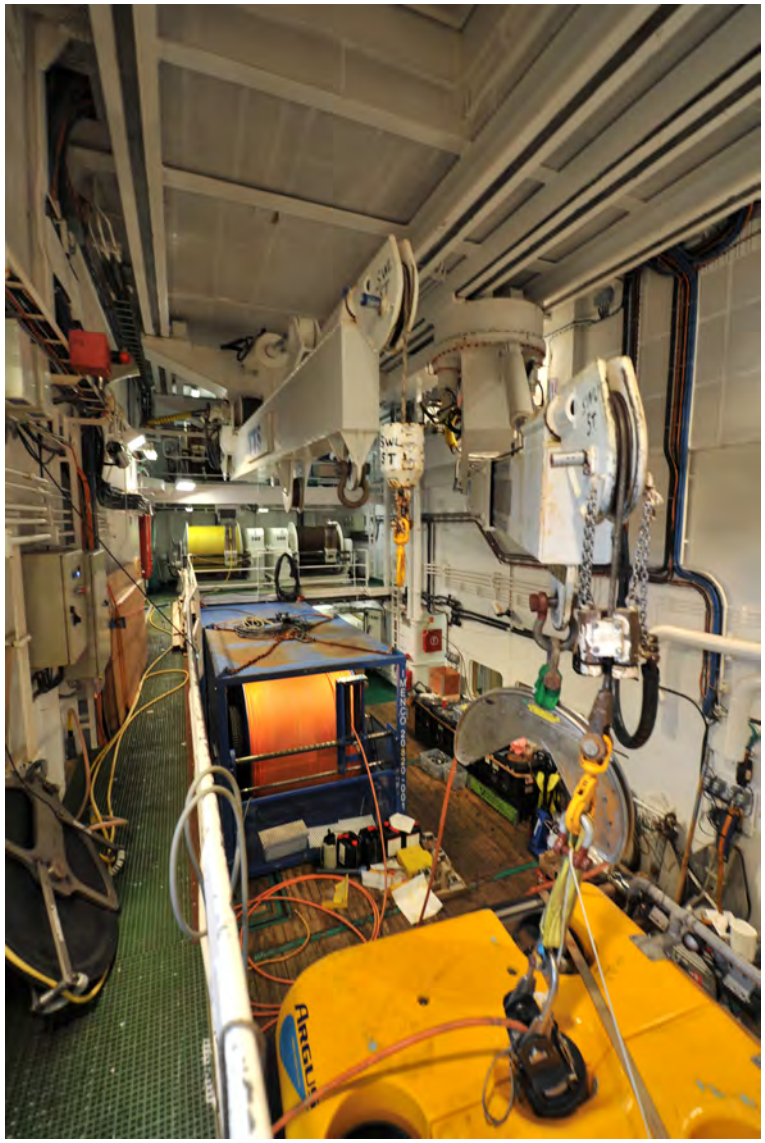


Launch and Recovery System (LARS)
SEPRO

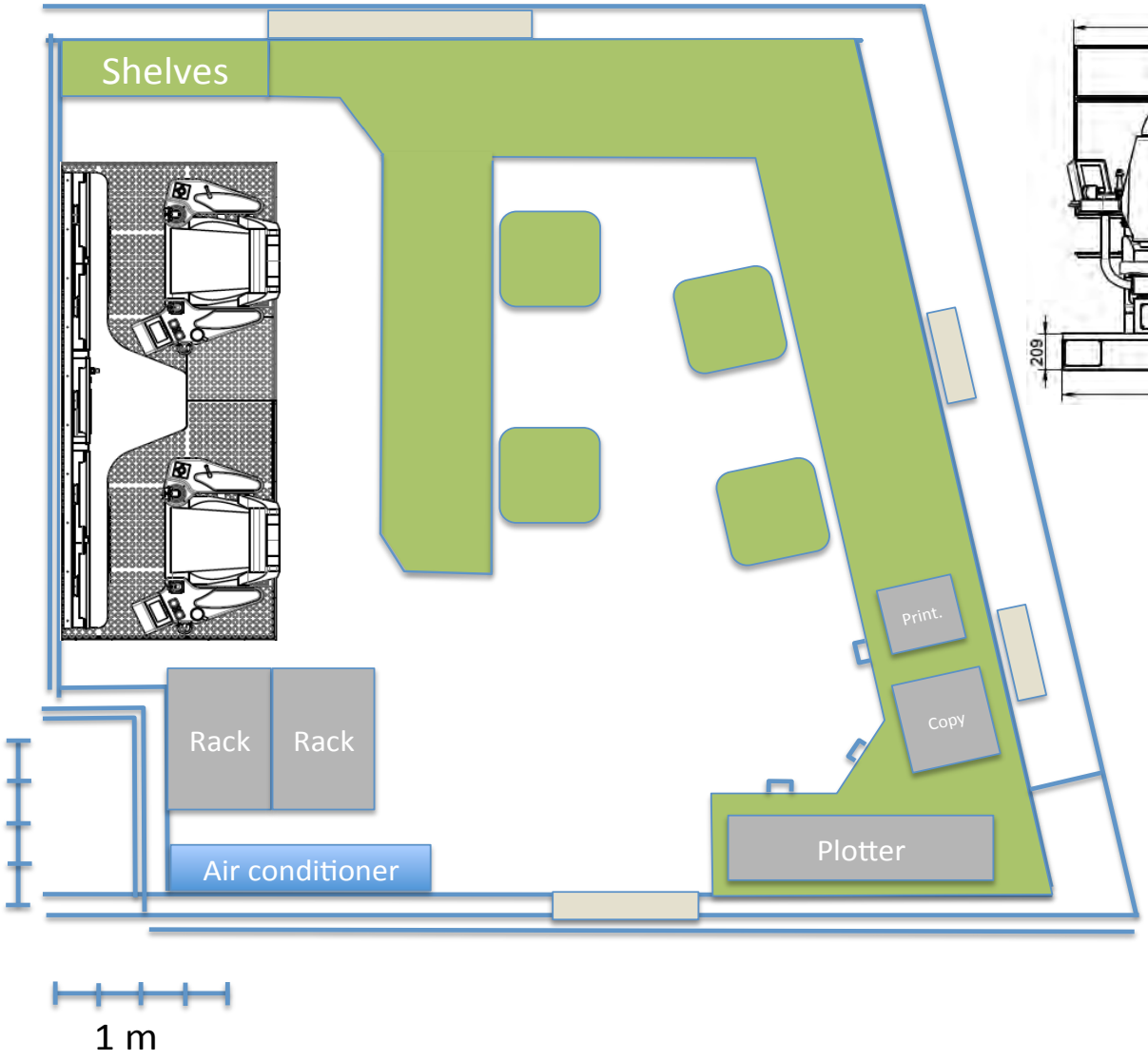
Minimum Installation in the hangar Without TMS.

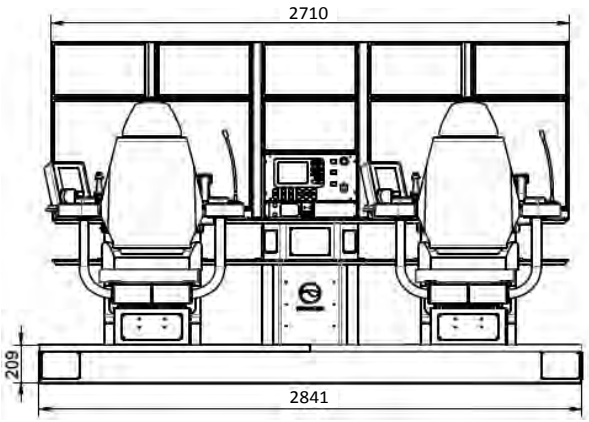


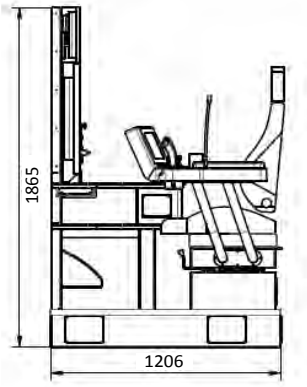
Installation - Hangar



ROV Control room








UiB/NPD