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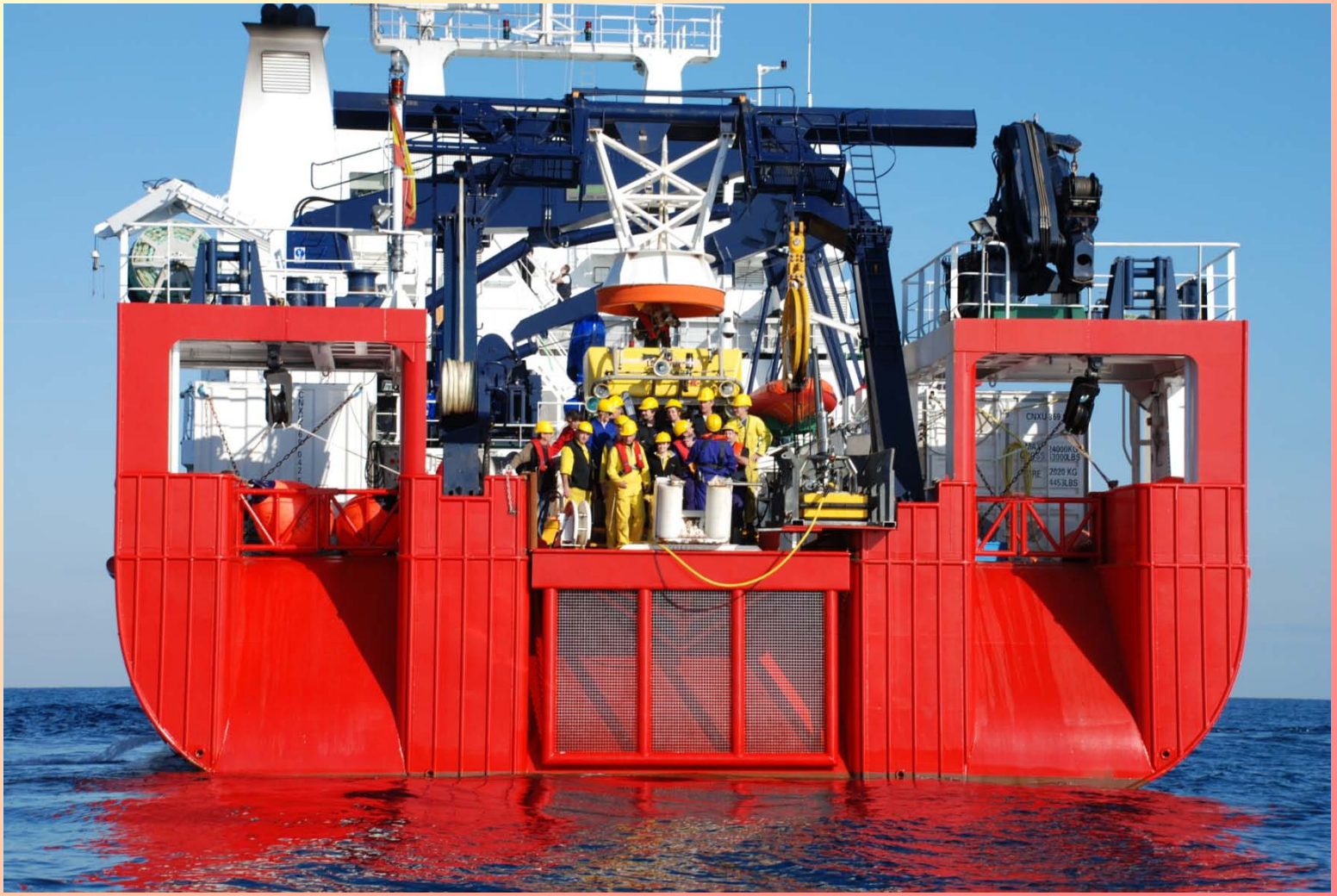
# Using Victor 6000 on board R/V Sarmiento de Gamboa

*A. Castellón[(1)], A. Massol[(2)], P.Simeoni[(2)] , J.Prades[(1)] , P. Rodríguez[(1)], L. Ansorena[(1)]*

*[(1)]Marine Tecnology Unit, CSIC Spain , [(2)]IFREMER , France*



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## ABSTRACT

**The R/V Sarmiento de Gamboa was designed with the capacity to operate the deep-ocean ROV from Ifremer *Victor 6000*.**

**Design of several devices and gears, together with ship's design requirements, were applied for load and operation of Victor 6000: as maximum deck load of 120 Tons for ROV equipment.**

**Adaptation of R/V Sarmiento de Gamboa deck for ROV installation and operation, as well as the design of stern "A" frame.**

**Specification of power lines and navigation aids (USBL, DP).**

**The shipyard (C.N.P. Freire ) and other companies (Industrias Ferri) participated on these design and development.**

**The vessel was finished on july 2007. In January 2008, a test cruise at depth 2000 m, was carried on in french waters, close to Toulon Ifremer base.**

**Three test dives were done : fixed point survey, line survey and a recovery operation.**

**The cruise was a complete success and today R/V Sarmiento de Gamboa and its crew is prepared for using this ROV in scientific cruises.**

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# Ship Characteristics

***Main Particulars***

Length O.a.: **70,50 m**

Length p.p.: **62,0 m**

Max Breadth : **15,50 m**

Depth to main deck: **5,00 m**

Design Draught: **4,60 m**

Scantling Draught: **4,90 m**

Dead weight: **850 tpm**

Gross Tonnage: **2630 GT**

Prop. power: **2400 kW**

Endurance: **40 days**

Accommodation (crew, research) **16,26**

Fuel Oil **573 m3**

Fresh Water **101 m3**

Ballast **239 m3**

Lub. Oil **10 m3**

Call sign: **E A K F** IMO Nº**: 9.335.238**

Ifremer

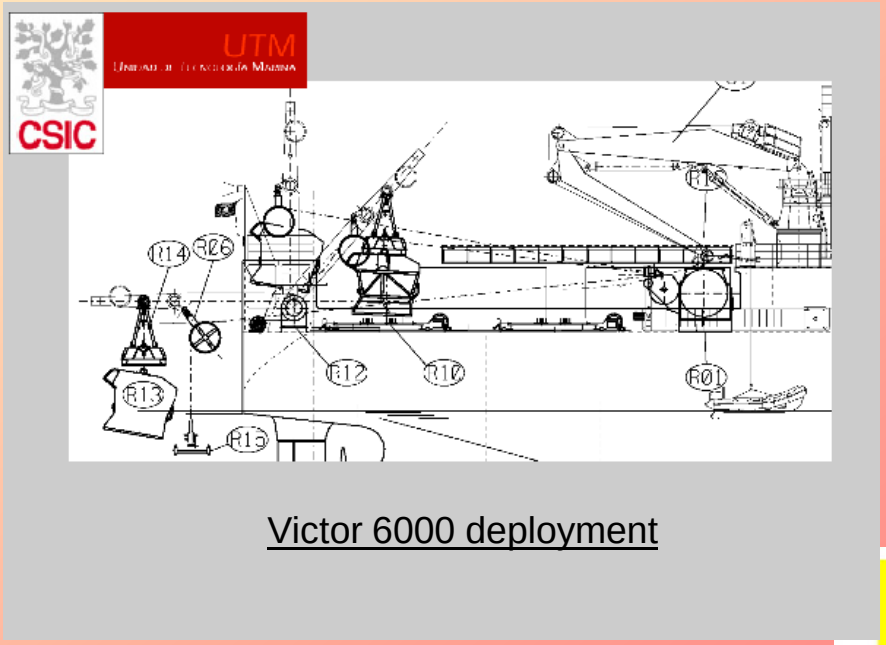
# Victor 6000

Concept with depressor

- No heave compensator on ship
- Main subsets
  - *-Vehicle + trolley + rails*
  - *- Depressor + support*
  - *- Five containers*
  - *- Deep sea winch*

-Weight : 31t
-Length : 4.5m
-Width : 4.2 m
-Height : 2.3 m

-Direct driven winch equiped with 8500m of electro-optical cable




Victor 6000 deployment

- Total package weight : **≠ 100t**
- Power : **≠ 135 kVA, 320 kVA**, **400V**

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# Victor 6000

**ROV**

Depth: **6000 m**

Length: **3.1 m**

Width: **2.2 m**

Height: **2.7 m**

Dry weight: **4.6 t**

Propellers: **6**

Cameras: **7**

Manipulators: **2**

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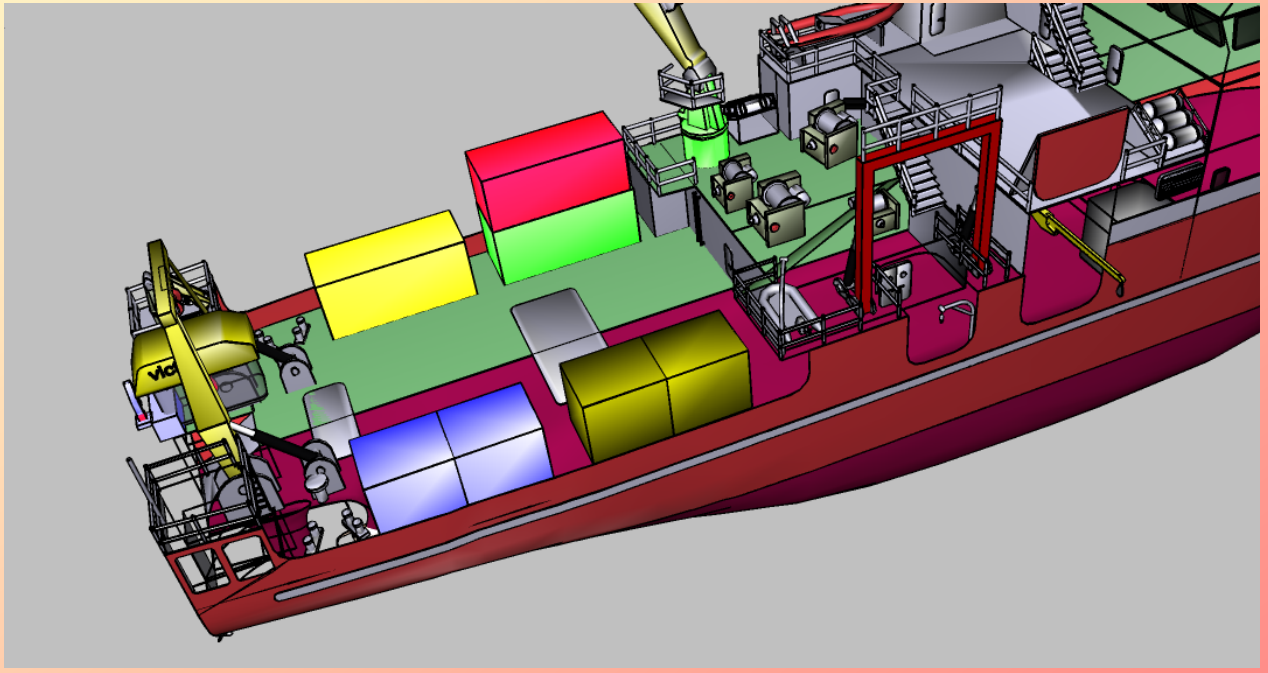
# Victor 6000

**Five Containers**

- Power Plant
- Hidraulic Plant
- Control
- Mecanic Workshop
- Hold



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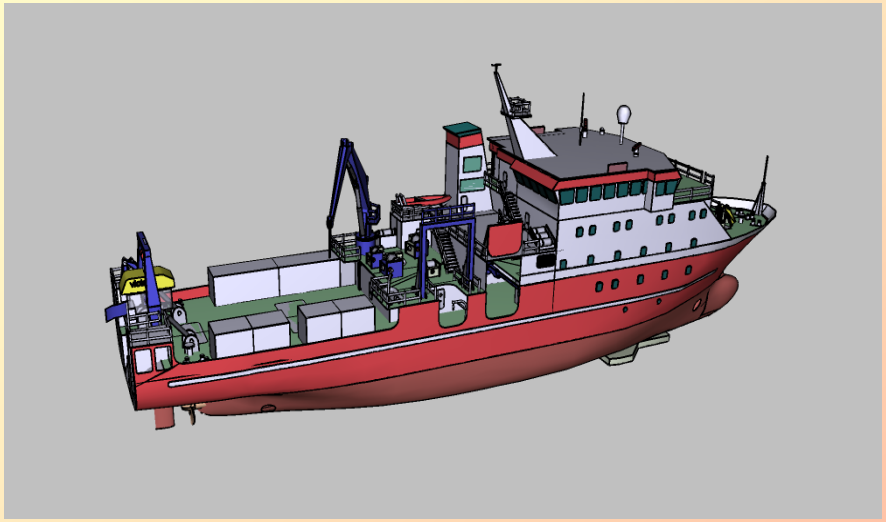
# Ship equipment



- Electrical and Control Connectivity
- Water and Air services for containers and winches
- Tent
- “Tie down” for rails and accessories installation
- Acoustic positioning
- Dynamic Positioning

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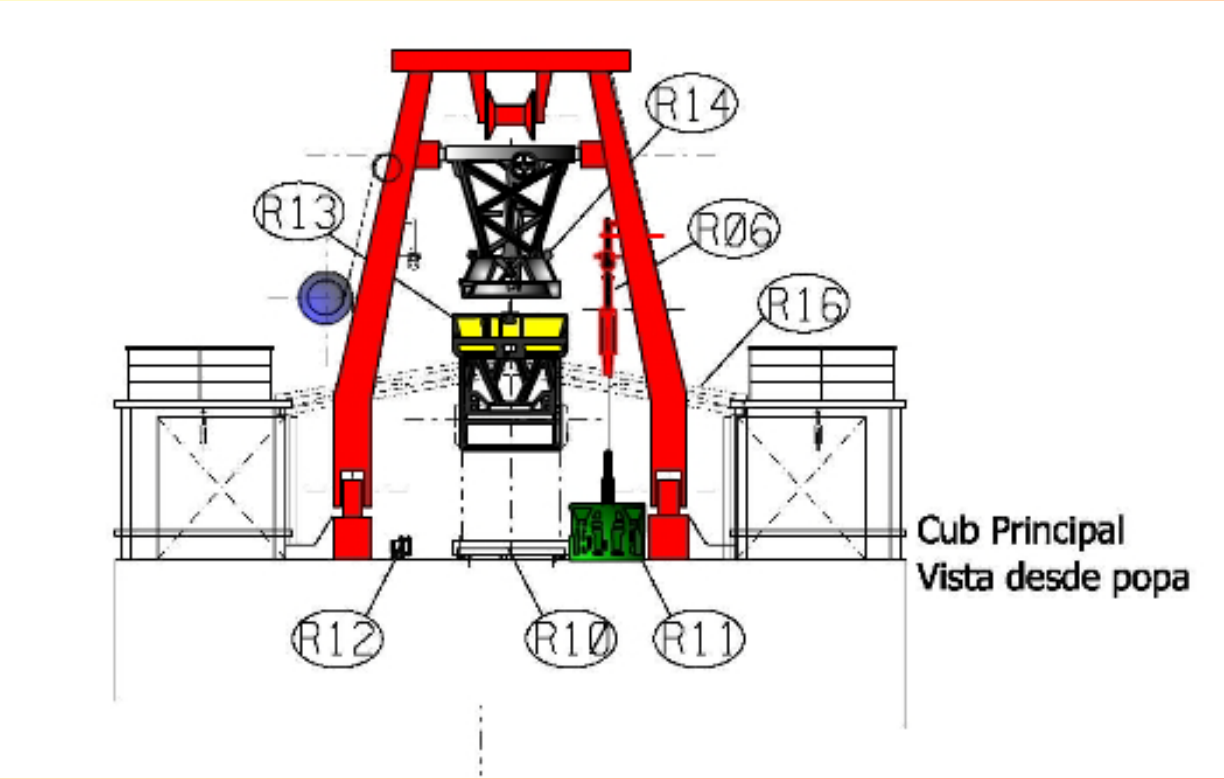
# Adapting the vessel




**“A” Frame**
Lift Line winch
Deep cable puley

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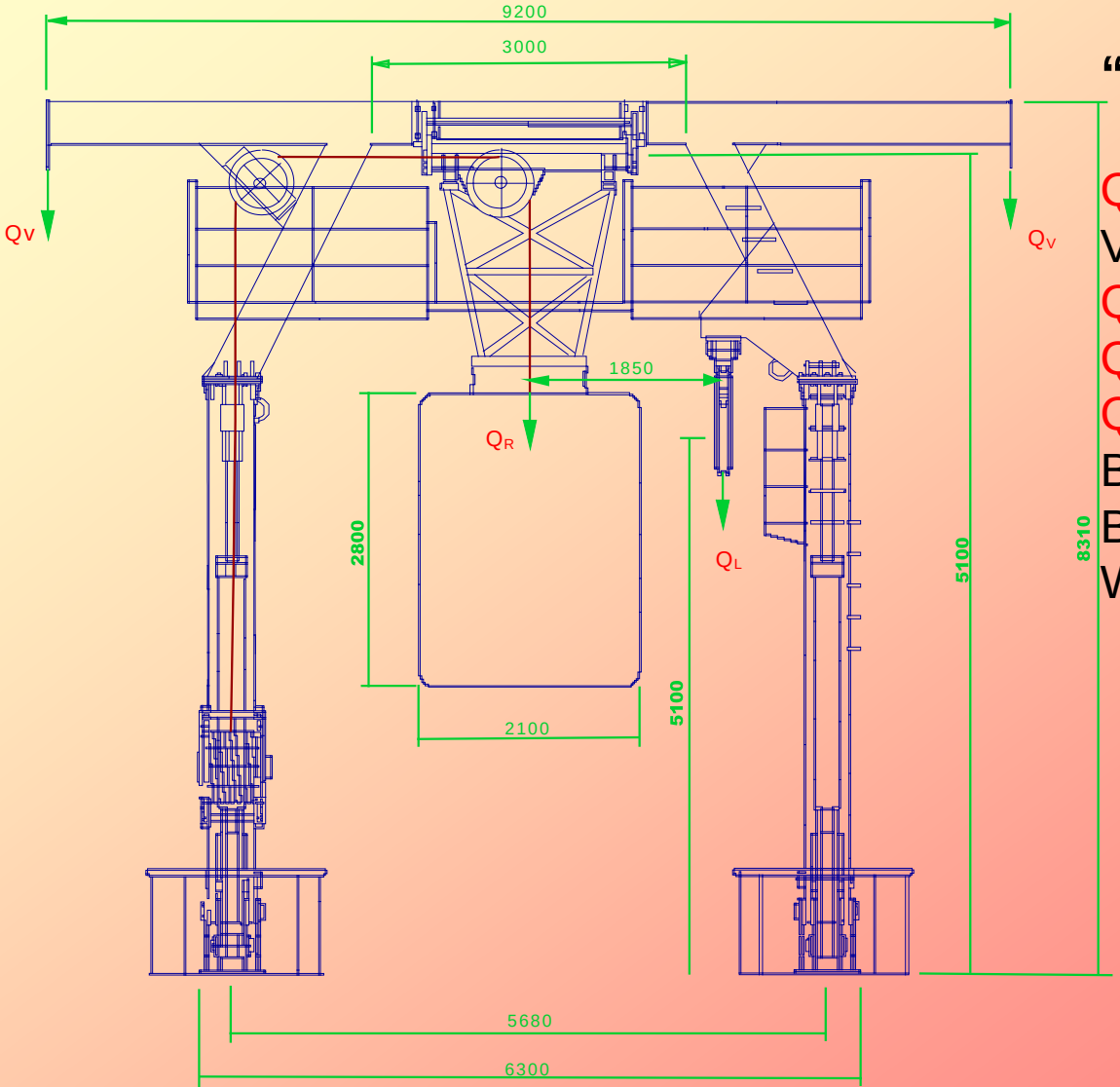
# Adapting the vessel




## "A" Frame (*Industrias Ferri*)

$Q_R$ : **5 000 daN (sea state 5)**
Velocity: **45 m/min**
$Q_C$ (all out): **12 000 daN (s.s. 1)**
$Q_L$ (depressor):**15 000 daN (s.s. 5)**
$Q_V$: **2 000 daN**
Basc. Angle: **120º**
Basc. Time: **50 s**
Weight: **12 000 Kg**

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# Adapting the vessel

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# Adapting the stern “A” frame

**On A frame** :

- Lift line winch
- Deep sea pulley
- Docking head on tilting beam

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**On A frame** :

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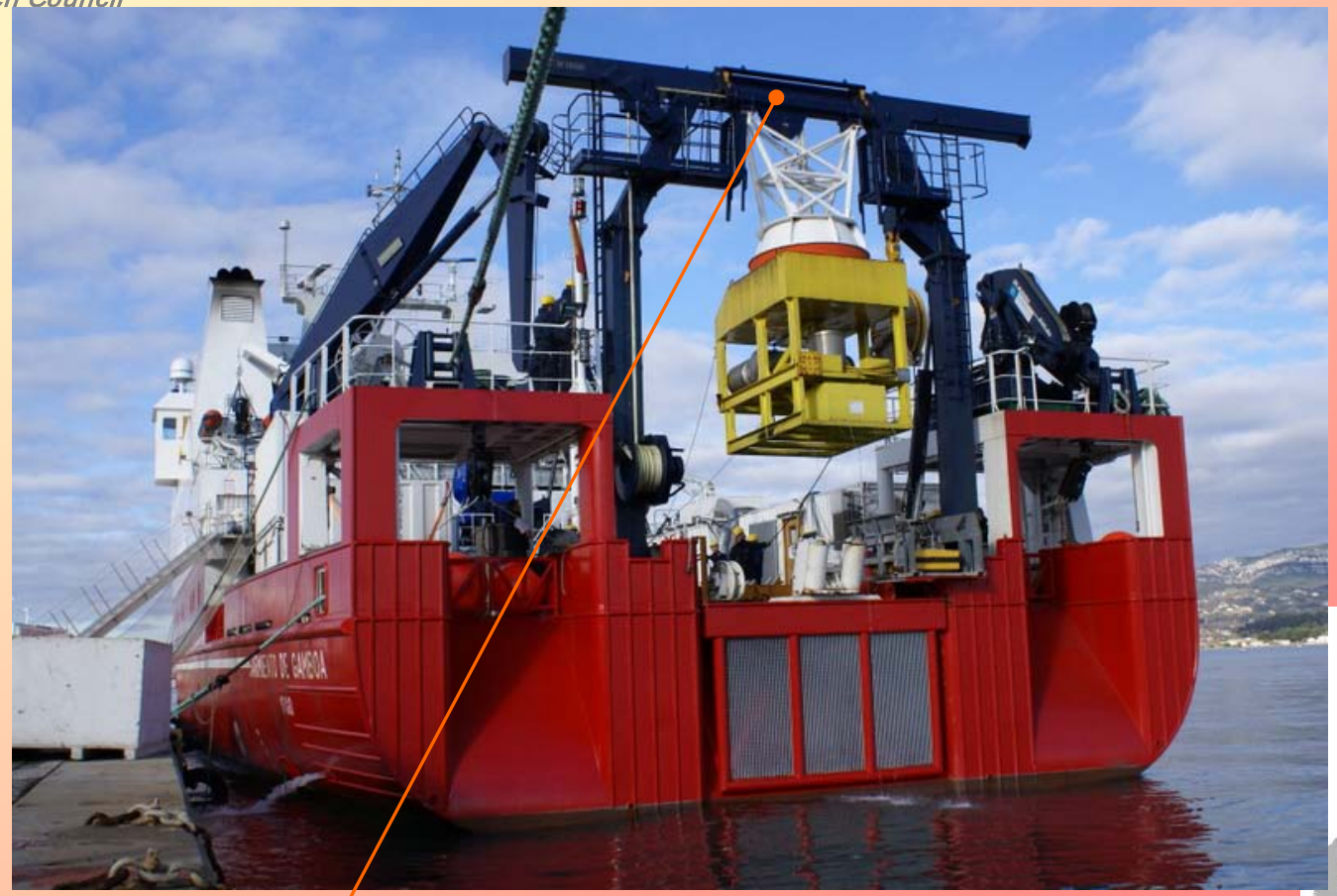
# Adapting the stern “A” frame



**On A frame** :

- Lift line winch
- Deep sea pulley
- Docking head on tilting beam

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# Adapting the vessel deck

**On deck**

- Guide lines winch
- Fairlead

# Adapting the vessel deck

**On deck**

- Depressor bed adaptor
- Tether winch

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# Adapting the vessel deck

**On deck**

- Deep sea cable winch

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# Adapting the vessel deck

**On deck**

- Trolley and rails

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# Adapting the vessel deck

**On deck**

- Five containers

# Adapting the vessel deck

**On deck**

- Five containers

# Adapting the vessel deck

**On deck**

- Five containers

**i. Elcetrical plant container (R08)**
*380 v | 5% 50 Hz |1%*
*45 kVA*
*3 phases*
**ii. Electrical powering for hydraulic container (R05)**
*400 v 50 Hz*
*2 x 160 kW*
*3 phases*

# Adapting the vessel deck

**On deck**

- Five containers

# Navigation Equipment

**USBL and Navigation**

- Posidonia (Ixsea) installed on Drop Keel

•Transponders on Vehicle and Depressor
•Tracking with EIVA + Hypack
•Sending Telegram (Ifremer) to Control Room

Posidonia

■POS-MV attitude and DGPS

■Dynamic Pos. (DP I)

Drop Keels

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# Navigation Control

- Data Output (Telegram) from Posidonia to Control Container

Data Output/User Defined Output
On UDP Port: 10100 255.255.255.255

***$PIFM,GBGEN,ddmmyy,hh:mm:ss.sss,LAT (DDDºMMM.MMMMMM N/S),LON (DDDºMMM.MMMMMM E/W),Gyro (%2lf),SMG (%2lf),CMG (%2lf),Depth (%2lf),<CR><LF>***

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# Test Cruise

January 8th, 2008, Toulon

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