Replacement RV SONNE

Introduction

Tendering procedure was for the construction as well as for the operation of the ship. That is for a consortium consisting of a shipyard and a shipping company.
In July 2011 the contract was signed for the construction of the ship as well as for operating the ship for 10 years.
Construction is now underway at the Meyer Shipyard in Papenburg (famous for huge cruise liners).
Ship operator will be the Reedereigemeinschaft Forschungsschiffahrt (RF) in Bremen (owner of the old SONNE).

Shipyard's time schedule

12. April 2013 – keel laying
13. September 2013 – floating
16. February 2014 – first sea trials
14. April 2014 – partial completion
June to August 2014 – scientific sea trials
16. October 2014 – delivery to science

Short history

1969	built as stern-trawler
1977	conversion to global multidisciplinary research vessel
1991	extension and modernisation
work area:	mainly Pacific und Indic Ocean
field of work:	mainly geophysics and multidisciplinary oceanography
owner:	RF-GmbH, Bremen

http://www.rf-gmbh.de/galerie.php

RV SONNE

general data

	new	old
length:	116,0 m	87,00 m
width:	20,6 m	14,2 m
draught:	6,4 m	6,8 m
displacement:	about 9.000 t	4.700 t
speed:	15 kn	12,5 kn
crew:	32 pers.	25 pers.
scientists:	40 pers.	25 pers.
propulsion:	diesel-electric	diesel-electric
endurance:	50 days	50 days
cables + wires:	max. 12.000 m	max. 8.000 m
scientific rooms:	550 m^2	450 m^2
working deck area:	700 m^2	260 m^2
20'-container:	25 (4 inside)	7,5 (2 inside)
scientific store room:	150 m^2	50 m^2
ICES 209:	yes	no

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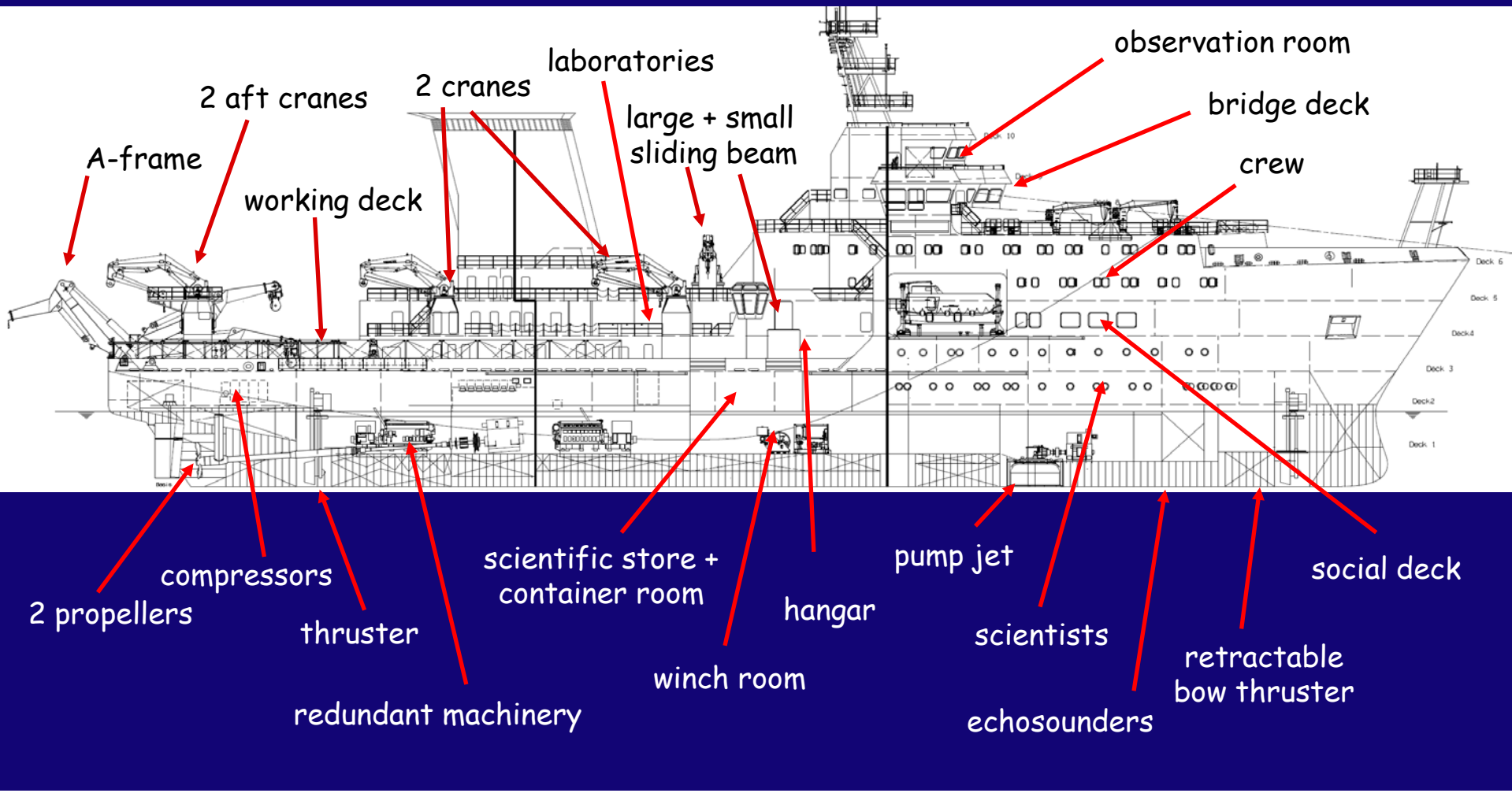
Helmholtz Centre for Ocean Research Kiel

side view

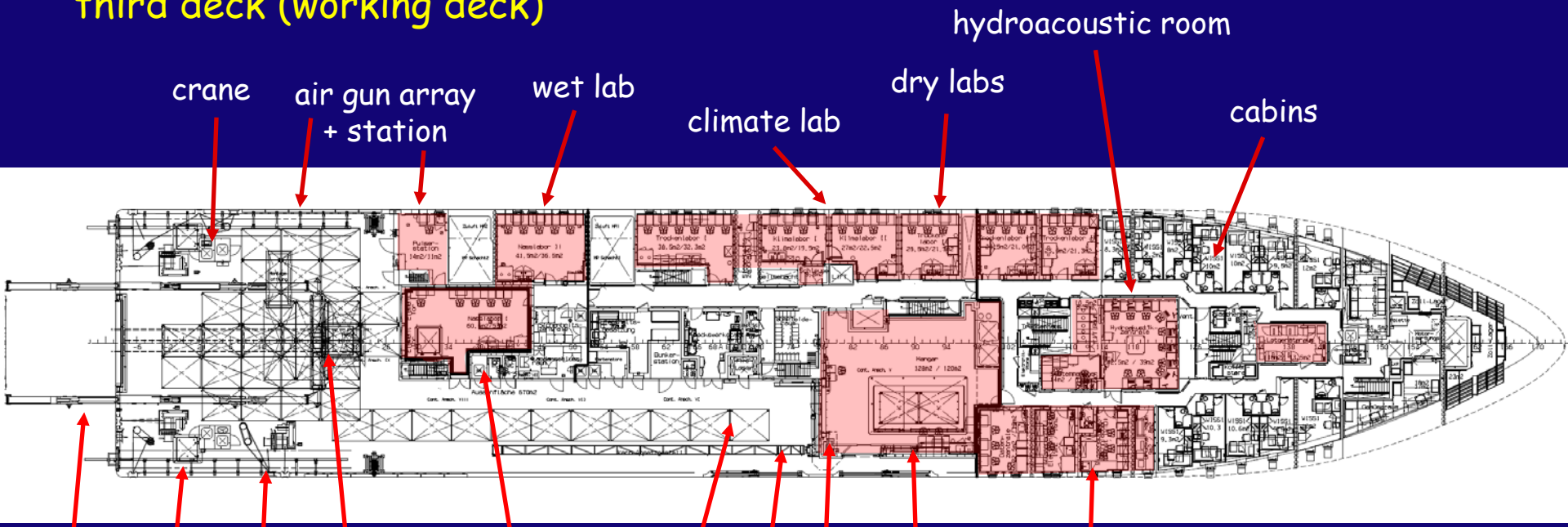


Klaus von Bröckel, ERVO, June 2013

RV SONNE

general arrangement

third deck (working deck)



Klaus von Bröckel, ERVO, June 2013

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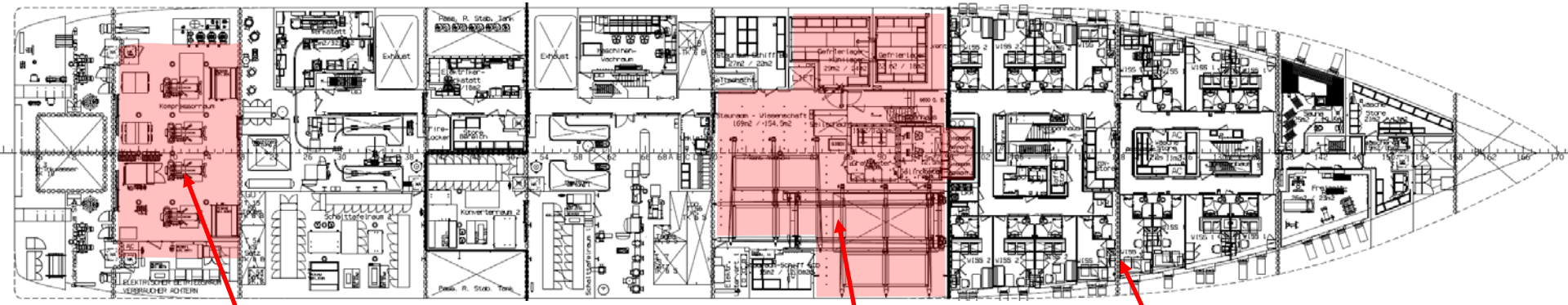
RV SONNE

general arrangement

second deck

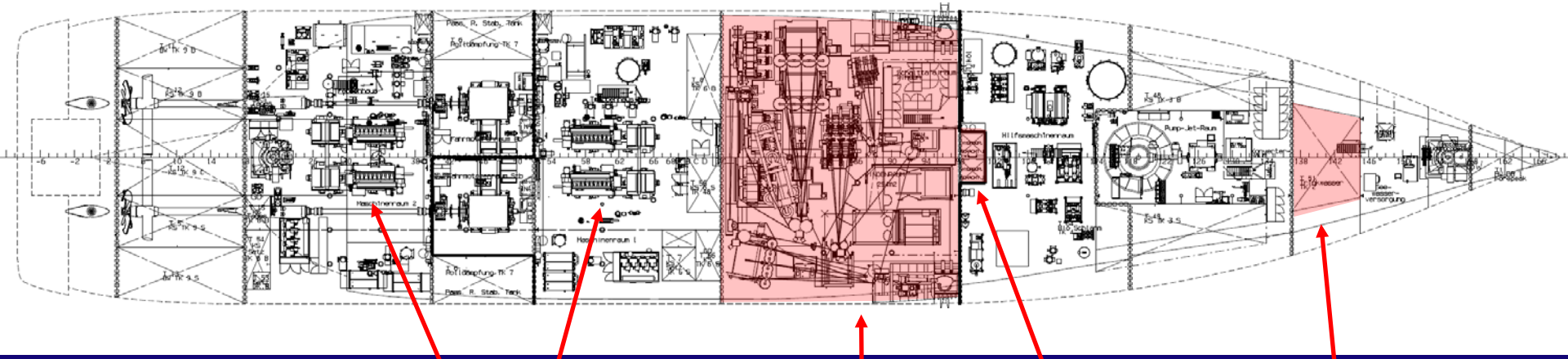


geophysic compressors

scientific store + container room

scientists accomodation

first deck



redundant machinery

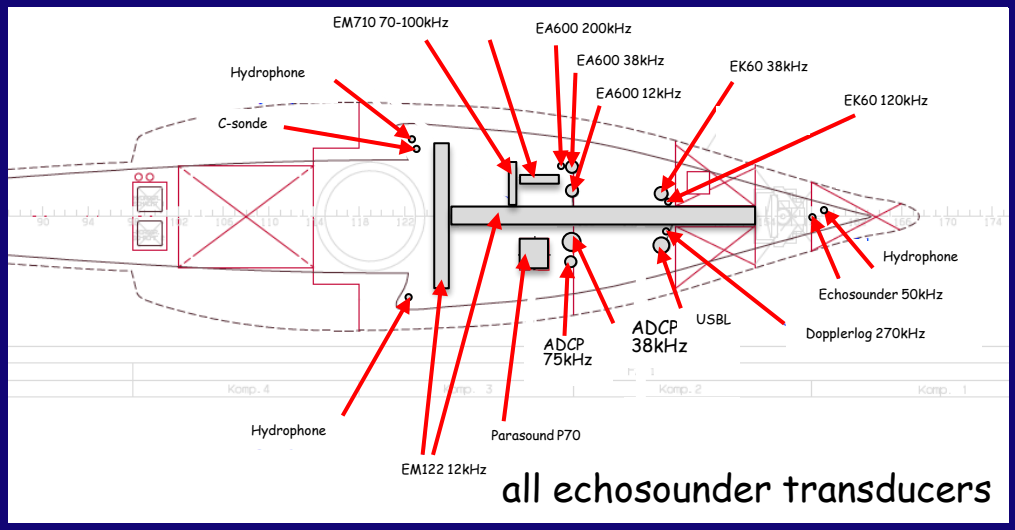
winch room

hydrographic wells

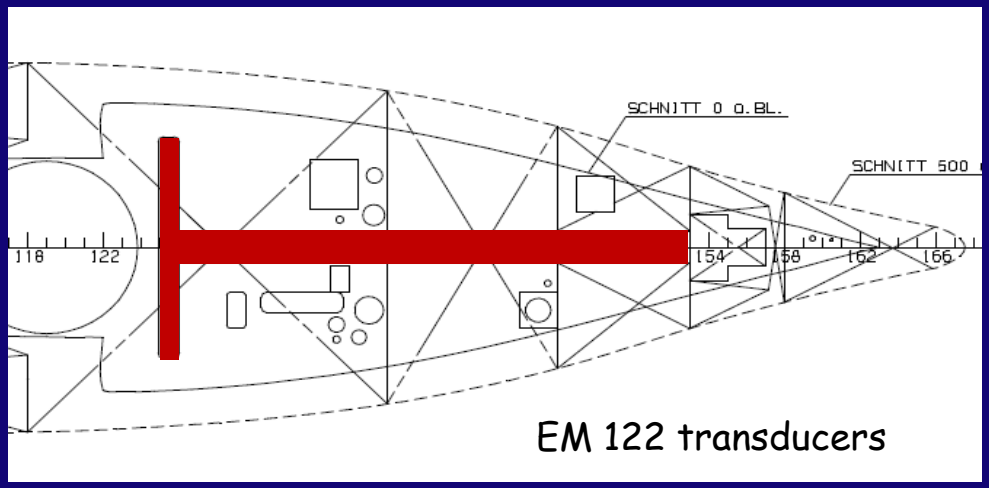
seawater room

Echosounder requirements

- many different echosounder transducers
- largest transducers for deep-sea multibeam echo-sounder Kongsberg EM 122
  - beam-opening: $0.5^0 \times 1^0$
  - total size: 15.4 m and 7.2 m)



all echosounder transducers



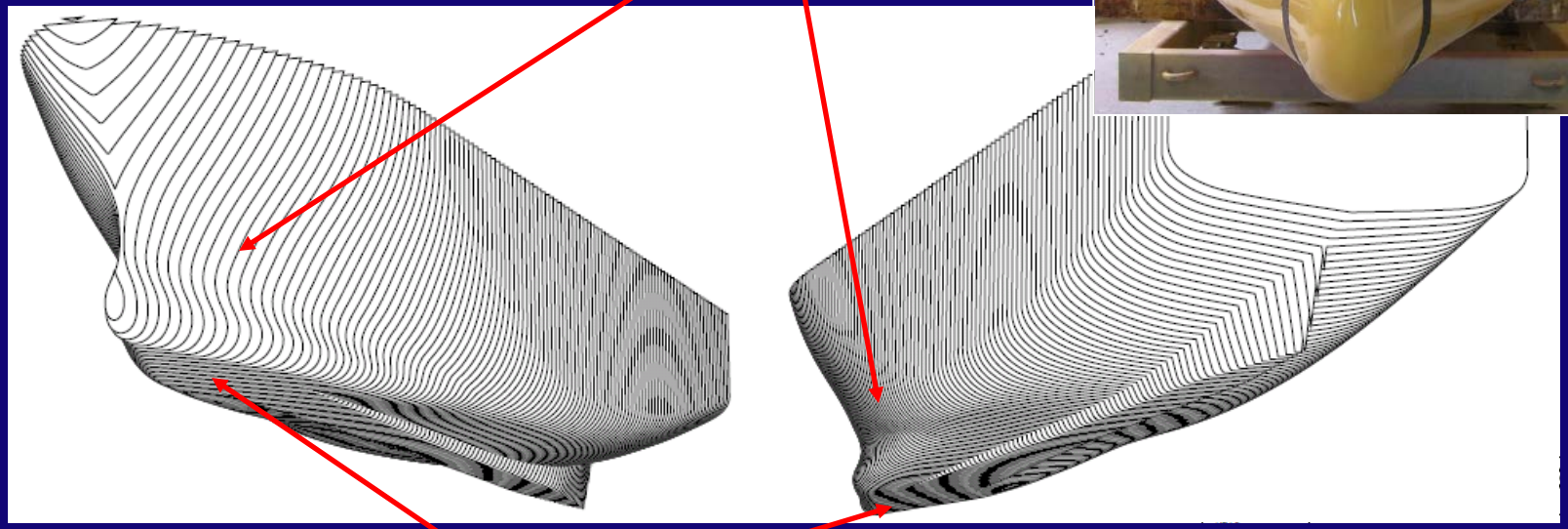
EM 122 transducers

Echosounder challenge

- hull design has to rule out air-bubble sweep-down from water surface
- hull construction has to avoid air-bubble generation through cavitation processes

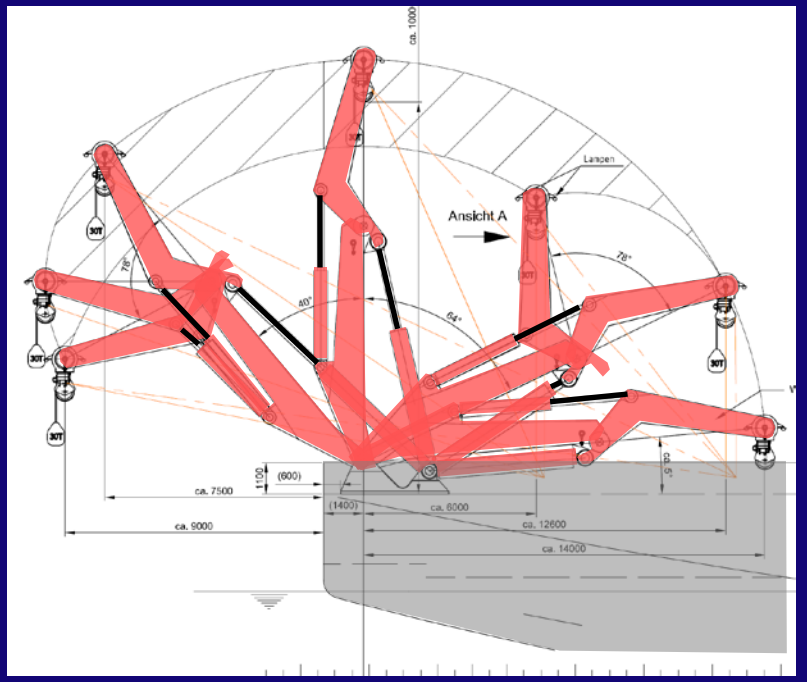
Solutions

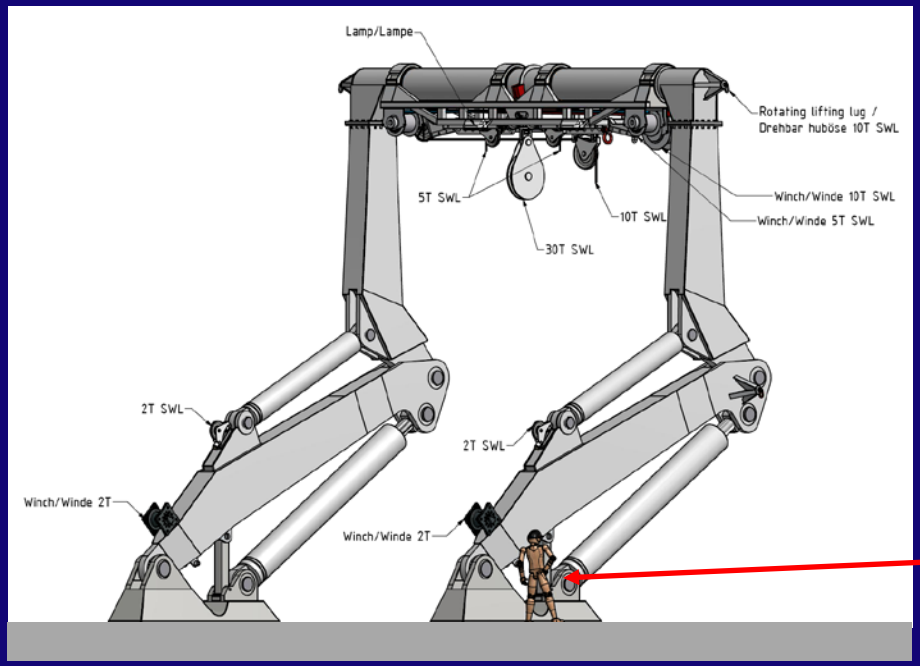
- 'dent' plus integrated gondola
- smoothing all welding seams



A-frame – folding

SWL 30 t
height 10 m
width 7.5 m
range 7.4 m behind stern to 12.5 m inboard
auxiliary winches (1 x SWL 10 t; 2 x SWL 5 t)



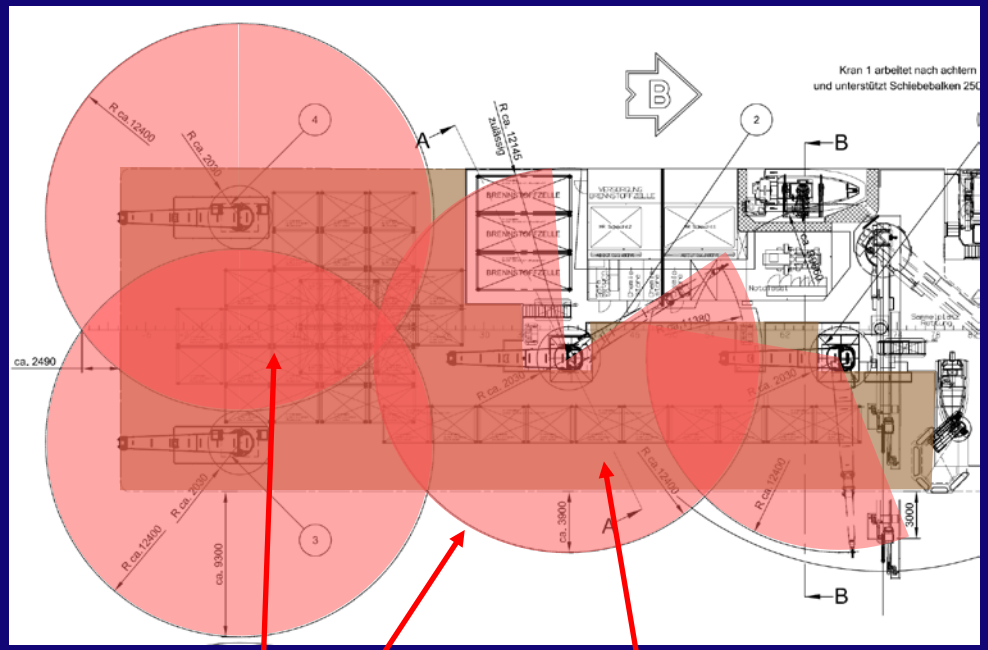


normal sized decksman

Cranes

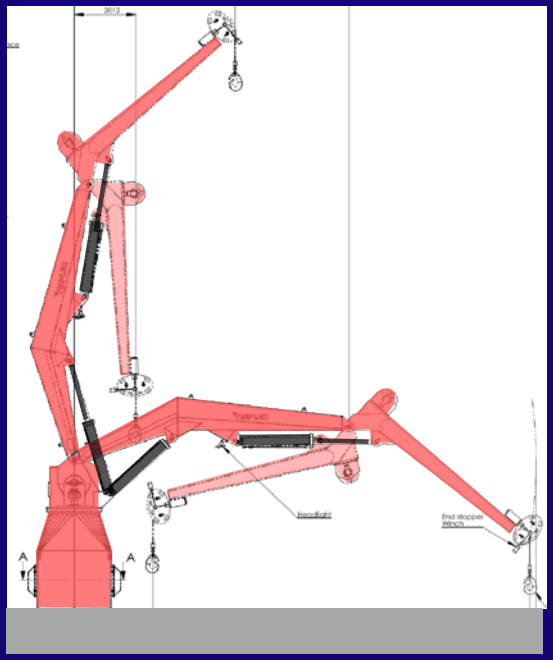
4 cranes cover the working deck area

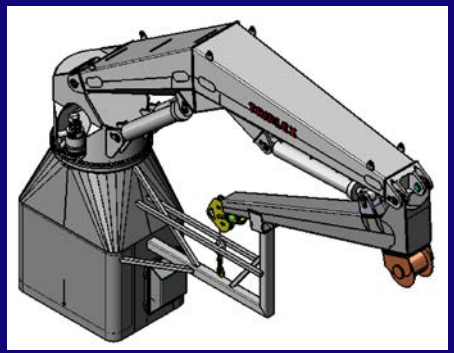
in-shore SWL	12 t
off-shore SWL	7 t
range and height	ca. 12 m
beside aft-deck	10 m



crane ranges

working deck

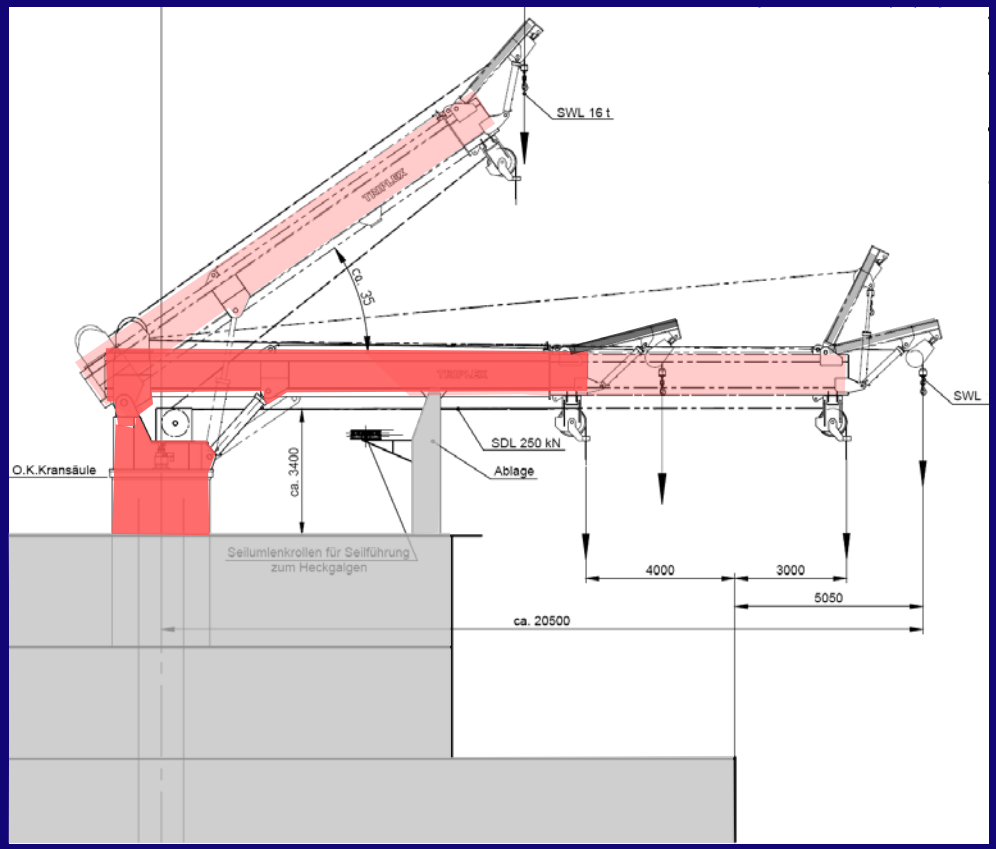




Large sliding beam

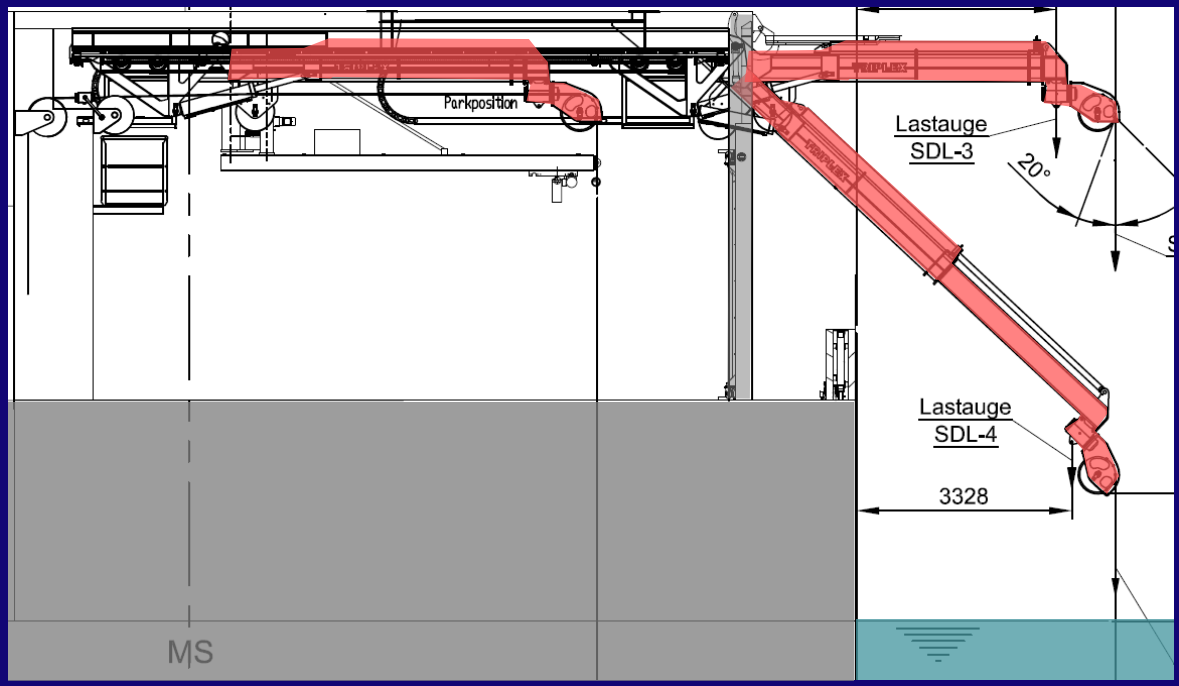
installation at front part of working deck
with crane function to load containers

SDL	25 t
as crane SWL	16 t
height	5.6 to 13 m
range	4 m inboard
	3 m outboard



Small sliding beam

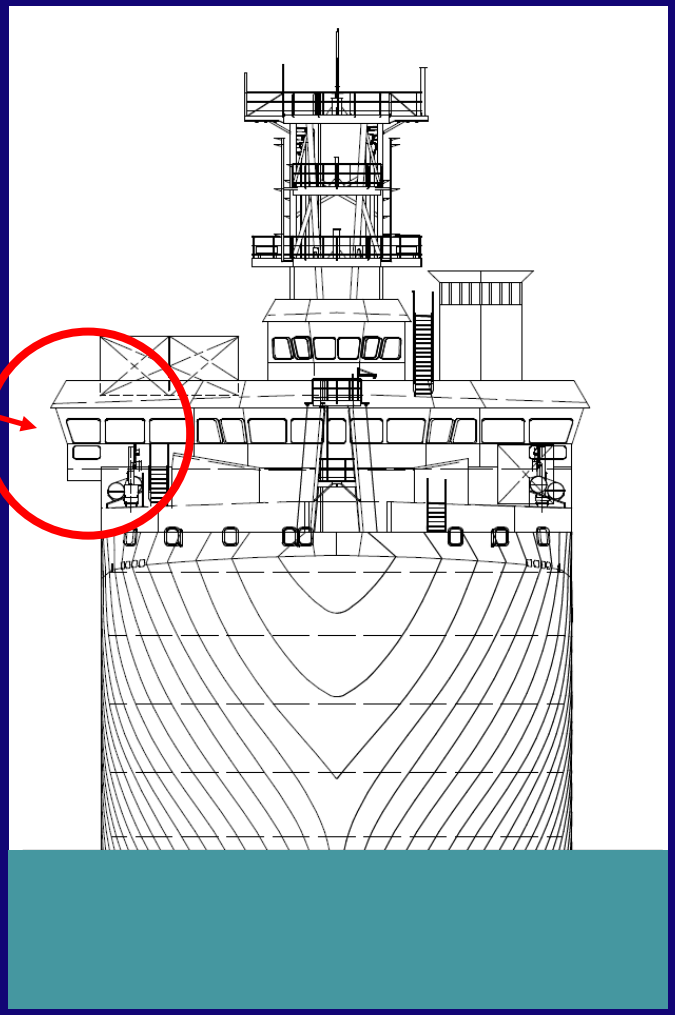
installation inside hangar
SDL 7 t
height ca. 5 m
range 4 m inboard to 4 m outboard
head lowerable to water surface



Yardarm

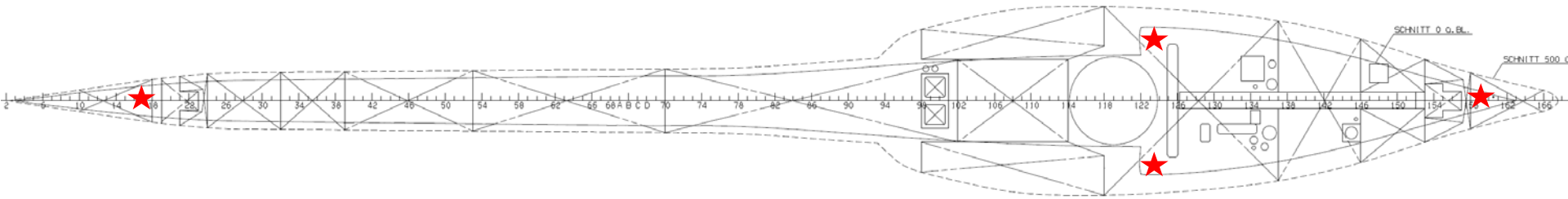
bridge-house with starboard yardarm overhanging at 1.5 m.

A good view not only ahead but also onto the working deck and the starboard waterside will be guaranteed.



Hydrophones

four hydrophones will be installed underneath the hull
to be able to hear the ship noises, which might influence
or disturb any hydroacoustic system



★ hydrophone locations

RV SONNE

impressions

bow part in dry dock hall

box for EM 122 transducer

seismic compressors already in place

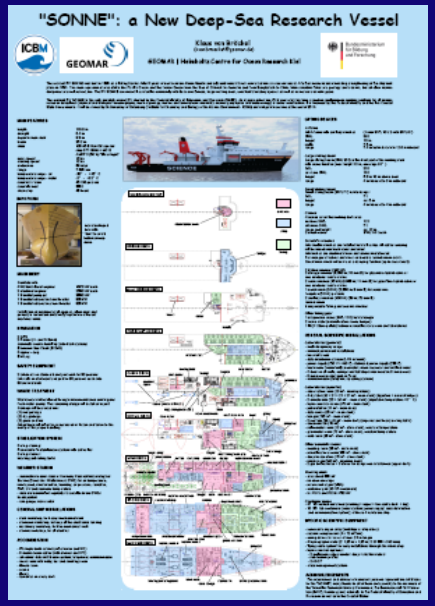
RV SONNE

impressions

2 bow parts (upside down) with 'dent' visible

aft part

stern with sliding gate



more information
through poster