PROPULSION MOTOR DISMANTLING

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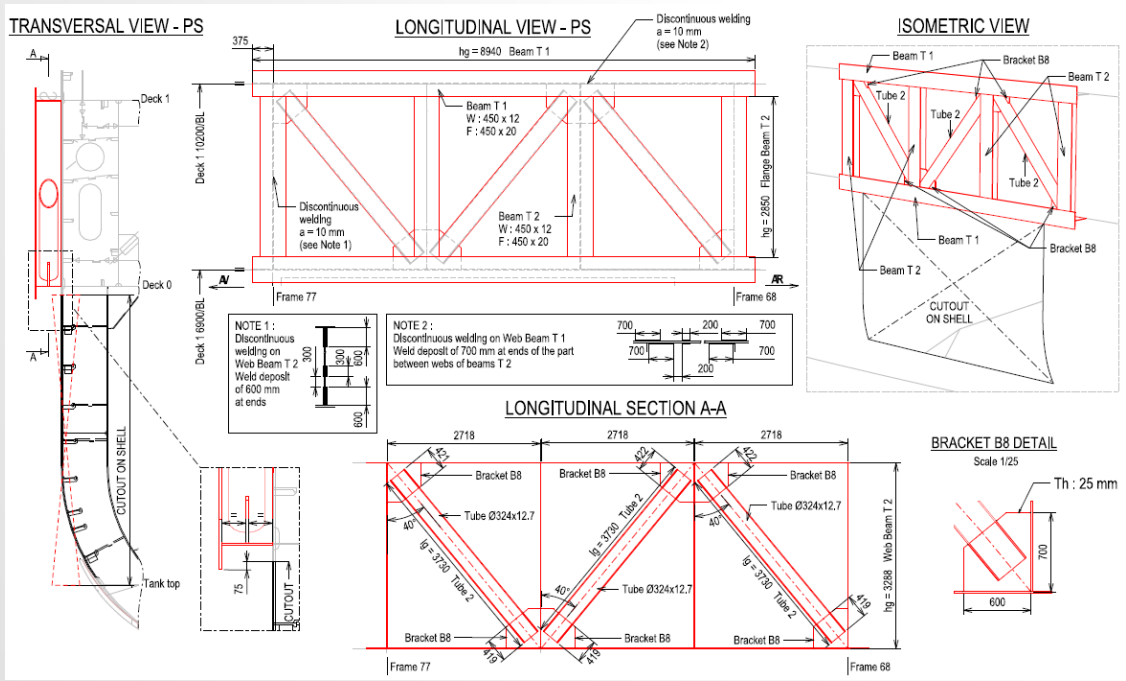
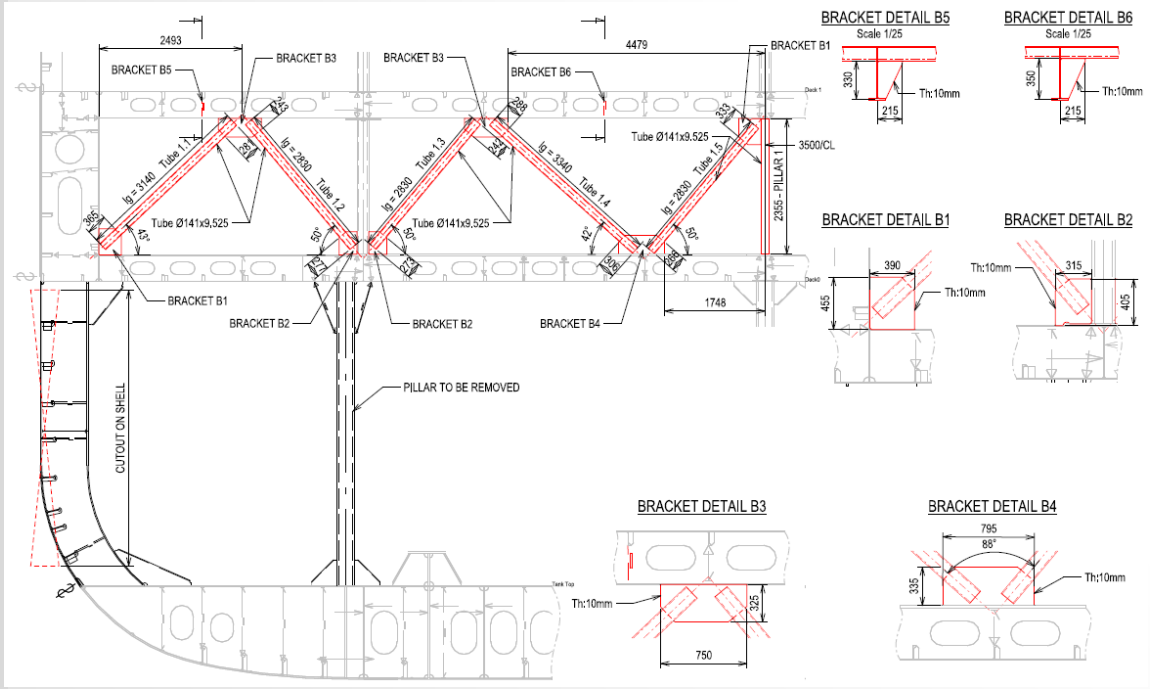
Reinforcement of hull for opening



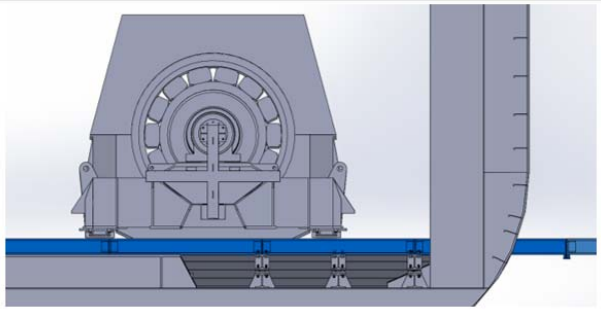
1.2-Architectural calculations for ship structural modifications

Reinforcement of deck for pillar removal



1.3-Structure design and calculations

Calculation of all skidding system used with different case scenarios



The profile chosen for this beam is W10 x 10 x 112, with an elastic section modulus W_Z= 2078 cm^3

We are going to study the worst-case scenario, when the spacing of the legs under the structure is 2000mm, and the weight of the motor is right in the middle.
With motor weight 128Tons, each of the 4 supports will take 32 tons ≈320 N
We consider only the beam in the calculation and none of the stiffeners and reinforcement that will be welded to it.

Mode of failure due to bending - Bending stress:

$$\sigma_x = \frac{M_z y}{I_z} = \frac{M_z}{W_z}$$

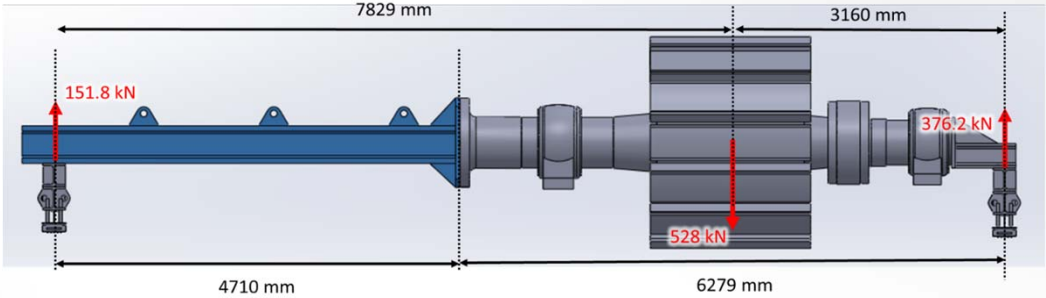
where

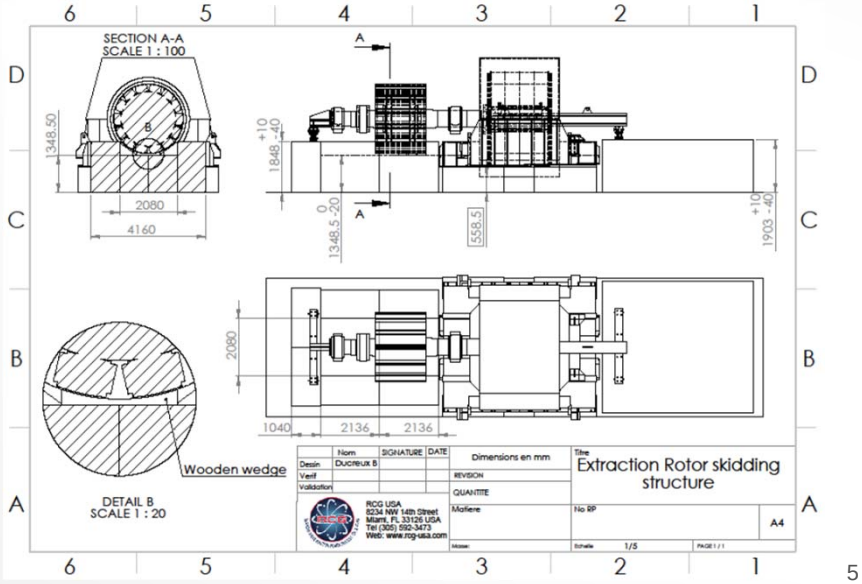
- σ_x is the bending stress
- M_z – the moment about the neutral axis
- y – the perpendicular distance to the neutral axis
- I_z – the second moment of area about the neutral axis z.
- W_z - the Resistance Moment about the neutral axis z. $W_z = I_z/y$

In our case, $M_Z = \frac{PL}{4} = \frac{320000 \times 2}{4} = 160\,000\ Nm$

$$\sigma_x = \frac{M_Z}{W_Z} = \frac{160000000}{2078000} = 77Mpa$$

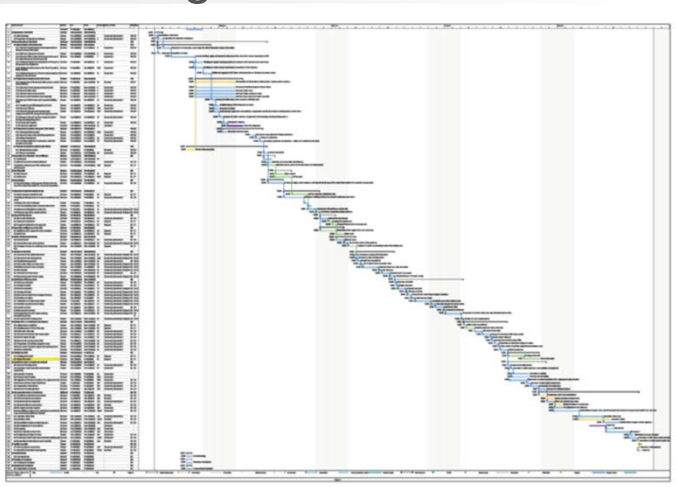
The yield strength for normal strength steel ASTM A36 is 250 MPa which is much higher than the load on the beam.



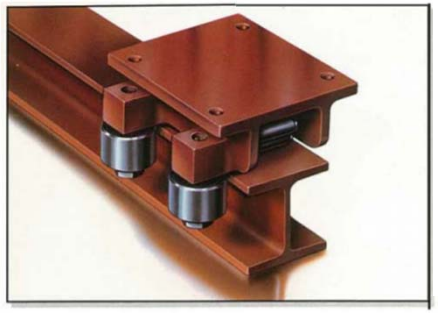


1.4 -Preparations

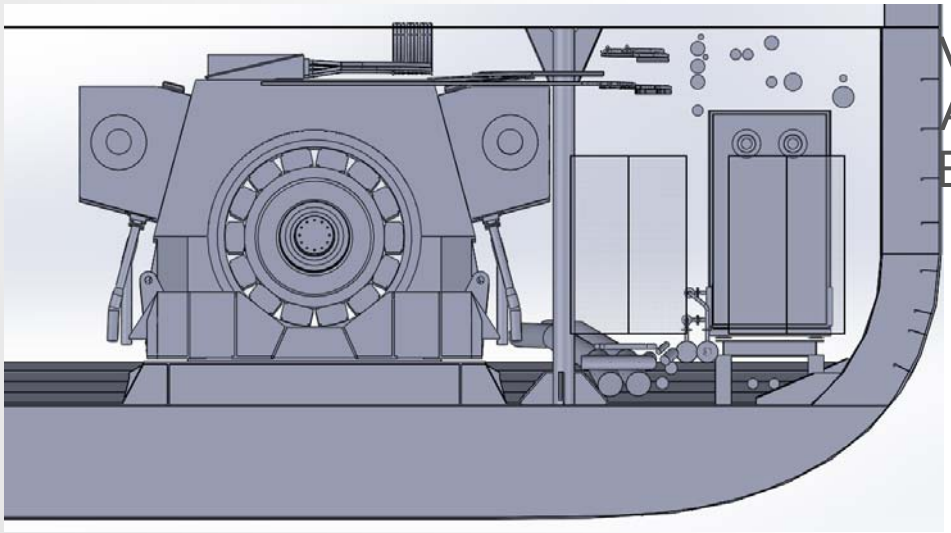
Planning



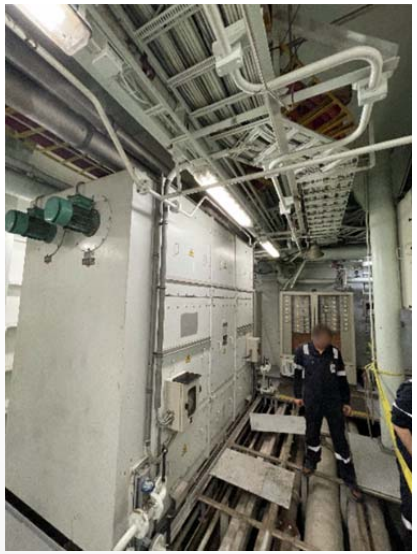
Tooling, controlled and certified



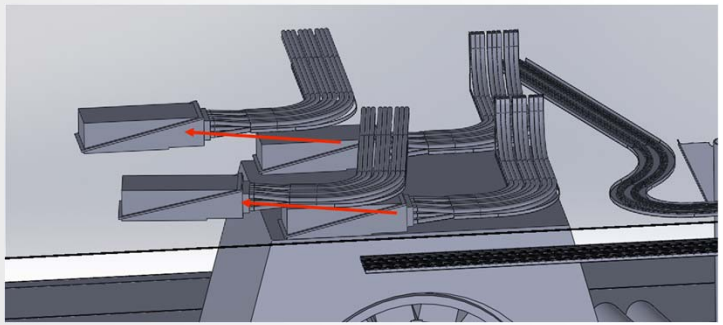
2.1- Preparation inside ship



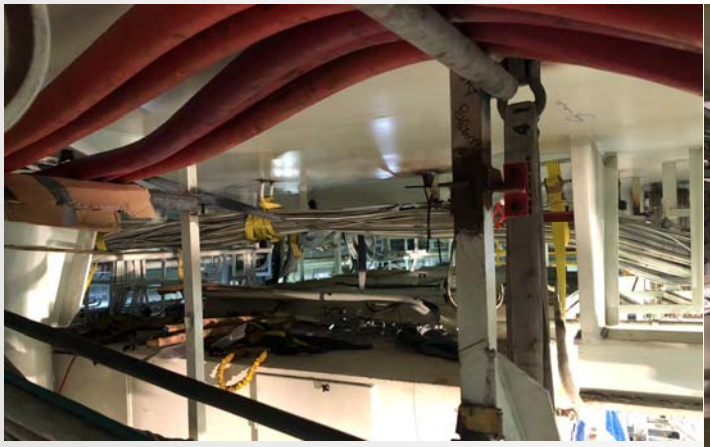
Various type of element to be dism
Availability of technicians specialize
Electricians, pipe fitters, welders, rig



2.1- Preparation inside ship

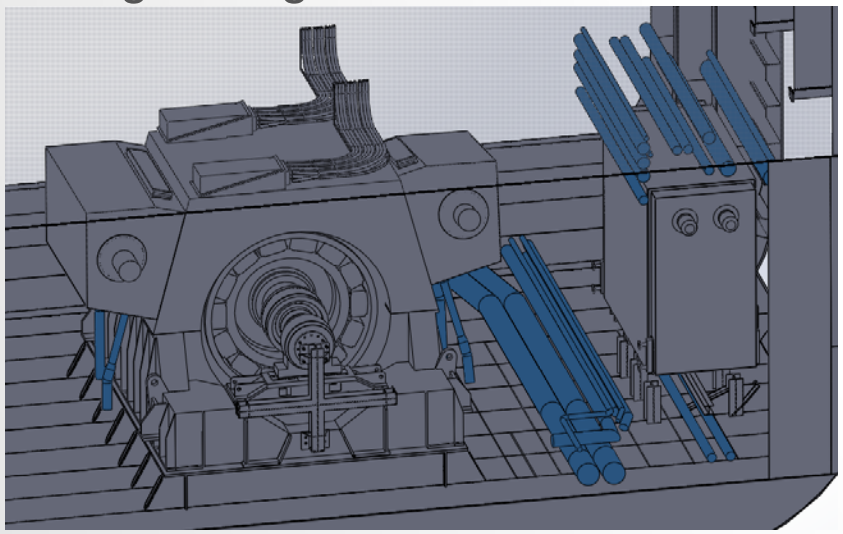


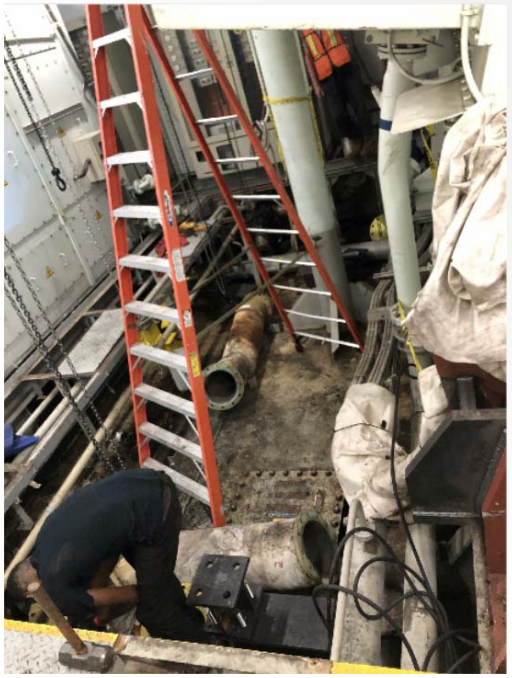
Displacement of power cables, converter disconnections, deck penetration removal



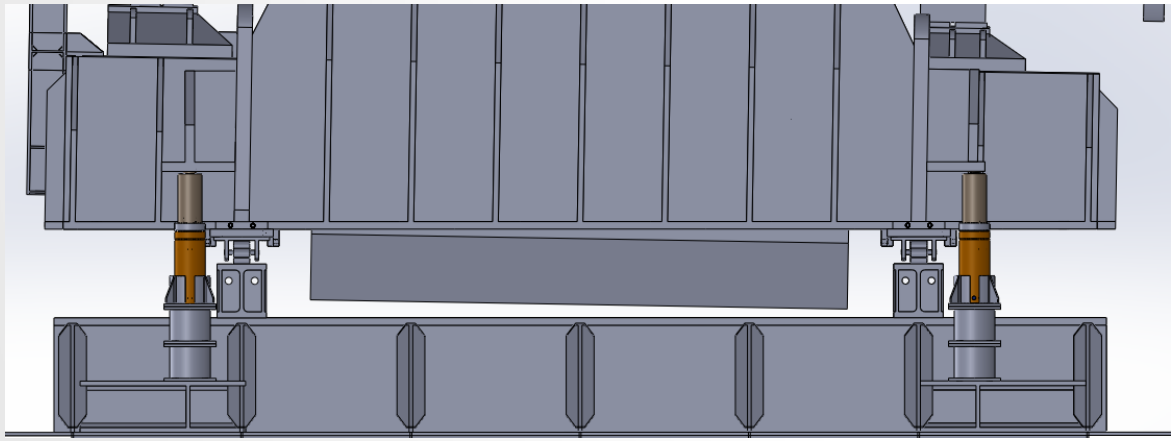
2.1- Preparation inside ship

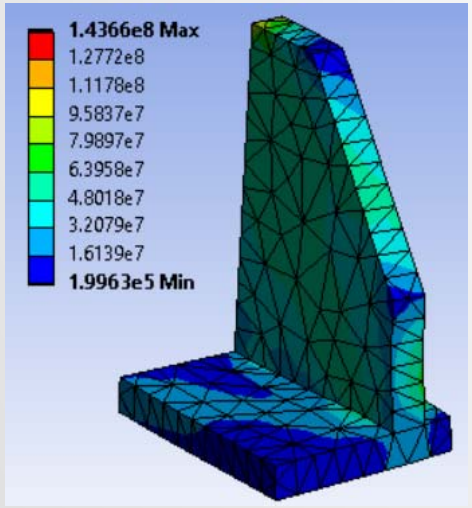
Pipes removal
Untightning



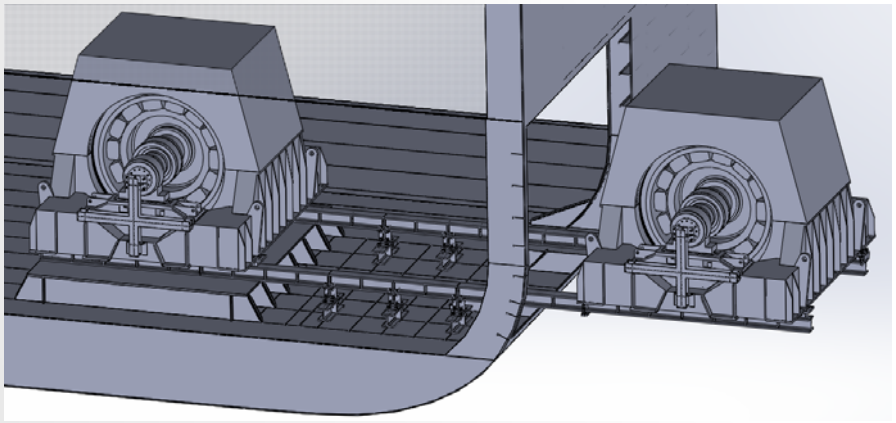


2.2- Lifting of motor

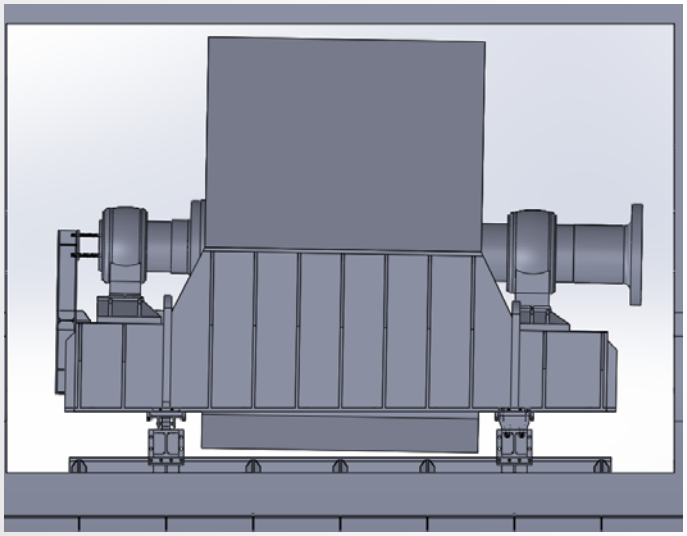


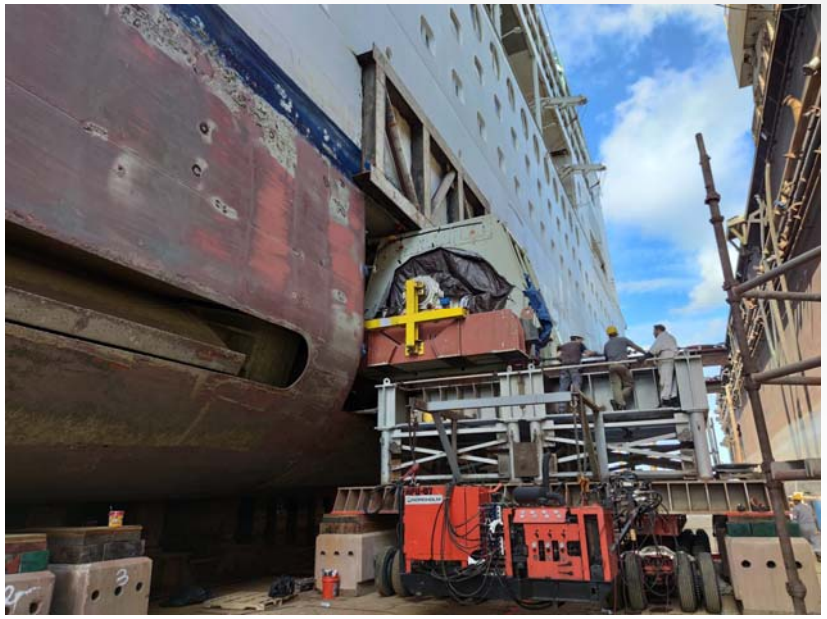


2.3- Structure construction

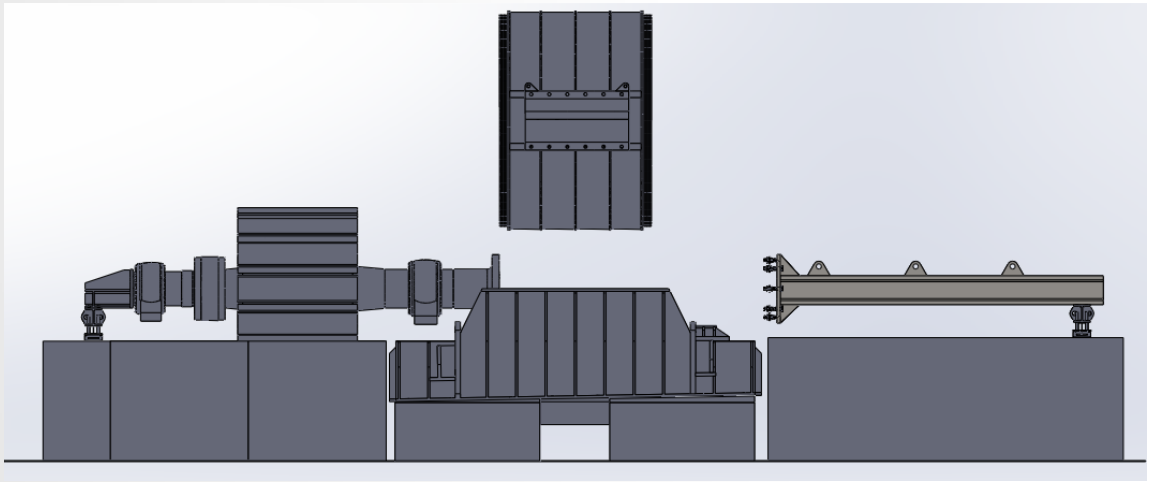


2.4- Removal of motor





2.5- Exchange of stator in shipyard

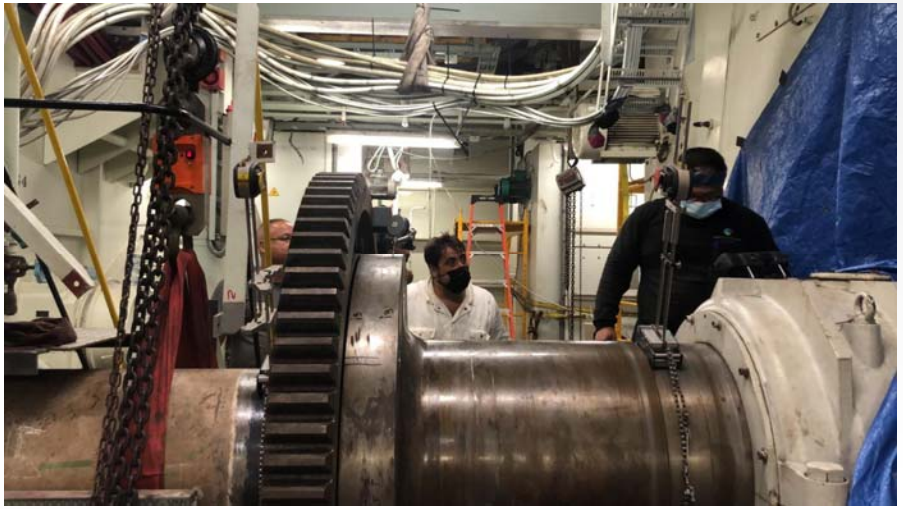


2.5- Exchange of stator in shipyard

2.6- Reinstallation of motor

Adjustment of stator

Alignment



Cabling reinstallation and sealing of all penetrations

Chocking calculations and installation