

*The offer of the CTO S.A.
Numerical Analysis Team*

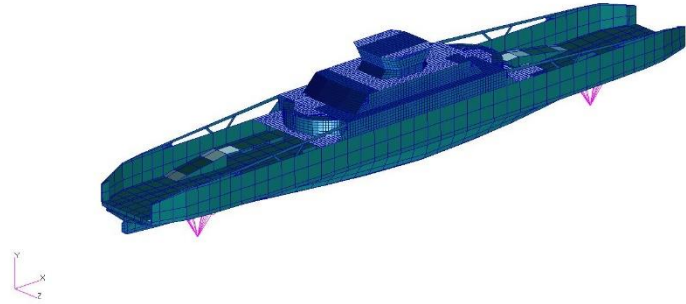
guide for 2020



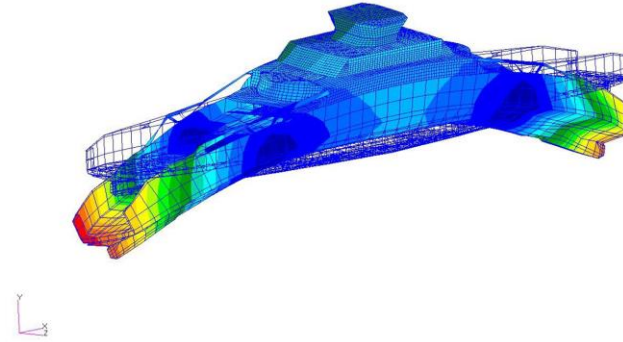
FEM calculations in the field of shipbuilding and offshore

- 1. Analyses of natural and forced vibrations*
- 2. Global, zonal and local analyses of ship hull strength*
- 3. Analyses of the launching process of the ship*
- 4. Shock resistance analysis of the ship's hull*
- 5. Shock resistance analysis of ship equipment*
- 6. Selection of ship's structure framings*

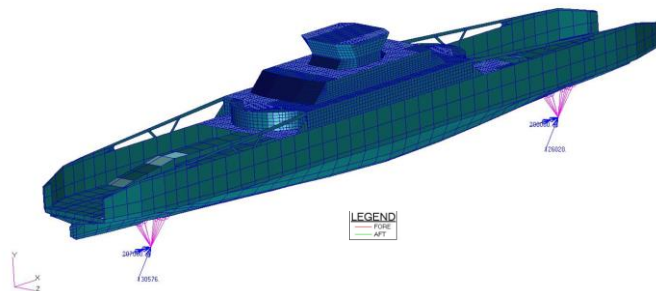
Example FEM model of the ferry



Natural form of vibrations



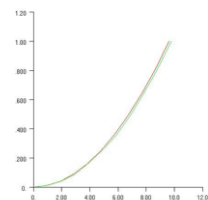
Load the FEM model with forces and moments



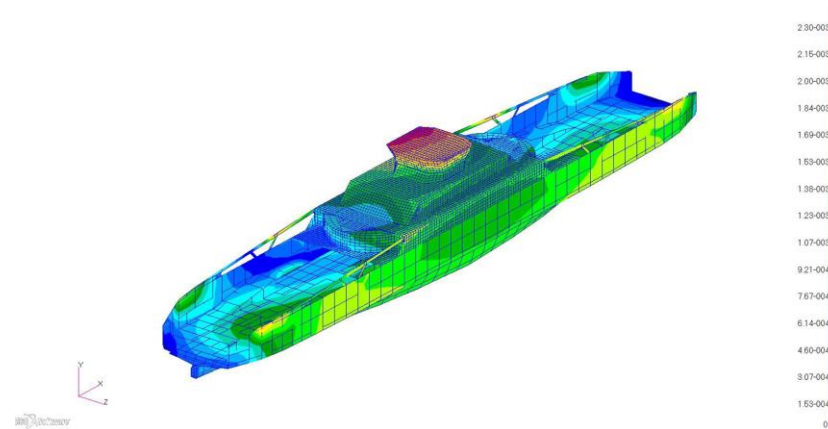
LEGEND

Force

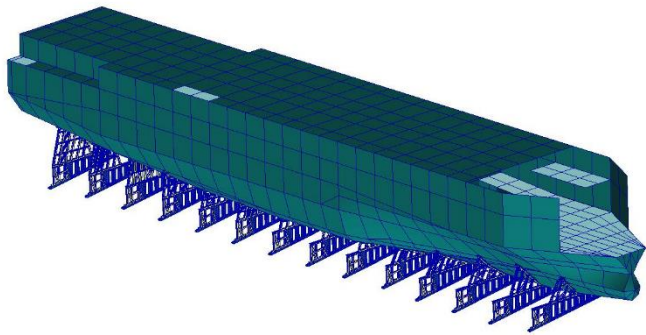
Moment



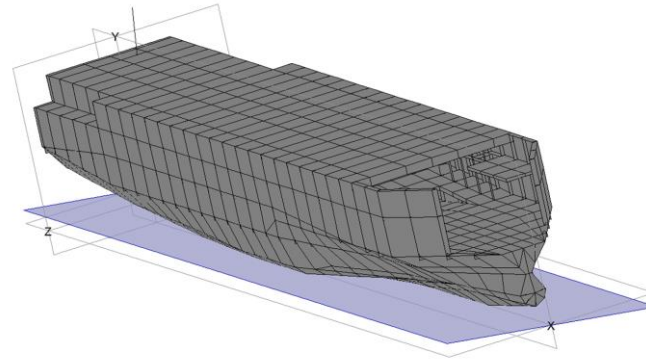
Speed fields as a response to a given extortion



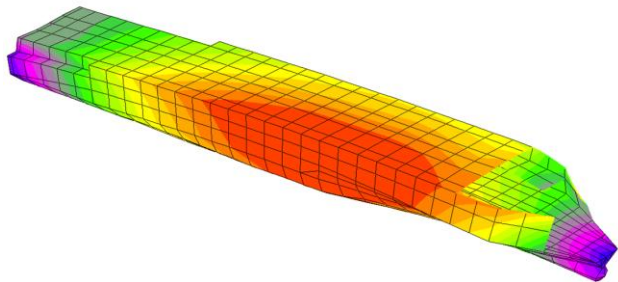
Example FEM model of the ferry together with the launching support



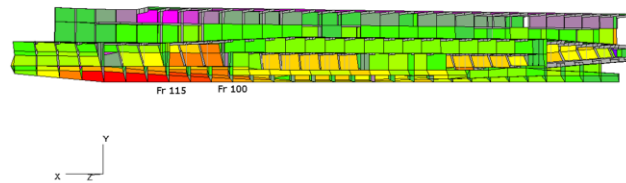
Simulation of side launching



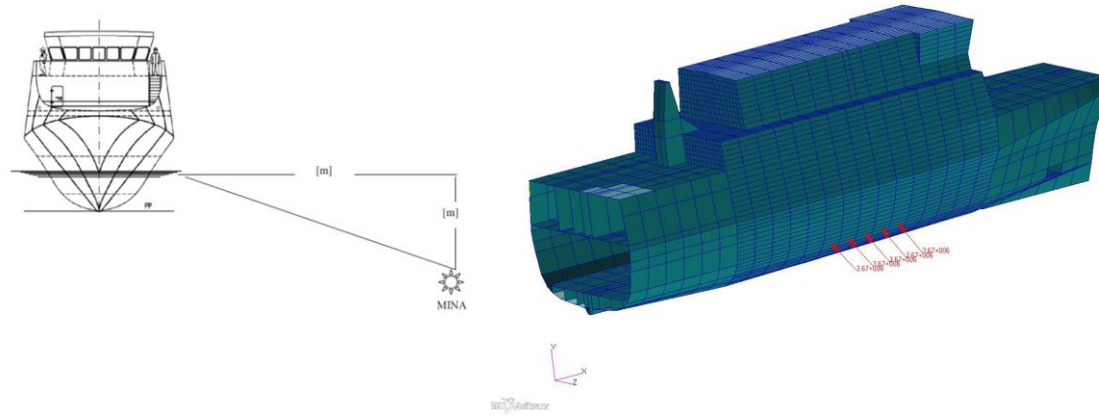
Hull deformation during side launching



Stresses in the hull during side launching

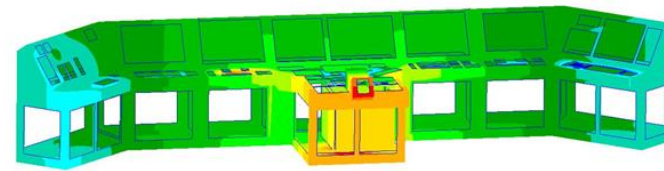


Example of Shock analysis

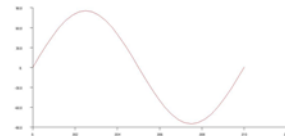


Acceleration field results as a function of time

FEM model of the navigation bridge desktop



Forcing signal

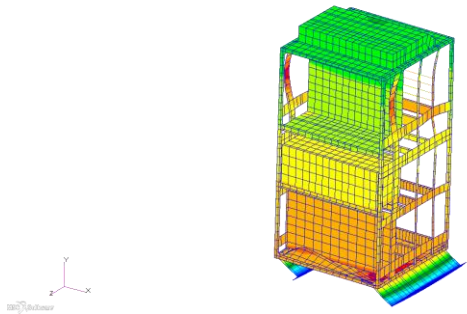


FEM calculations in other engineering fields

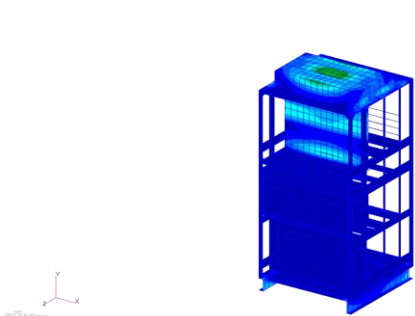
- 1. Vibration analysis*
- 2. Strength analyses*
- 3. Analysis of seismic resistance*
- 4. Thermal analysis*

EXAMPLES

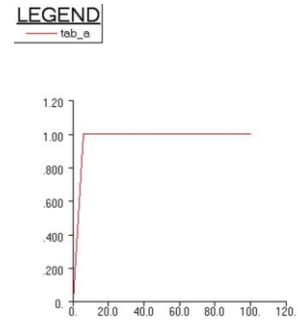
Natural forms of low voltage switchgear



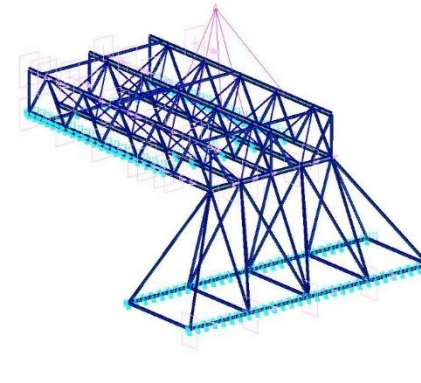
Response to extortion, Von Mises stress



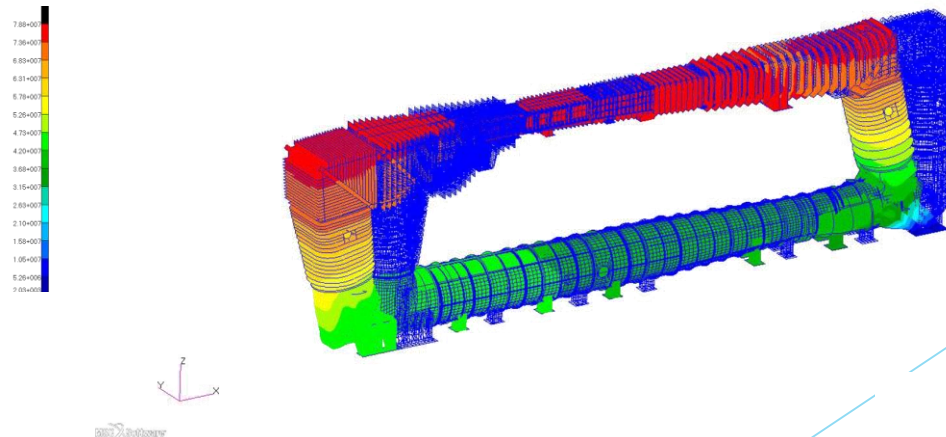
Forcing signal in the form $a, v = f(t, f)$



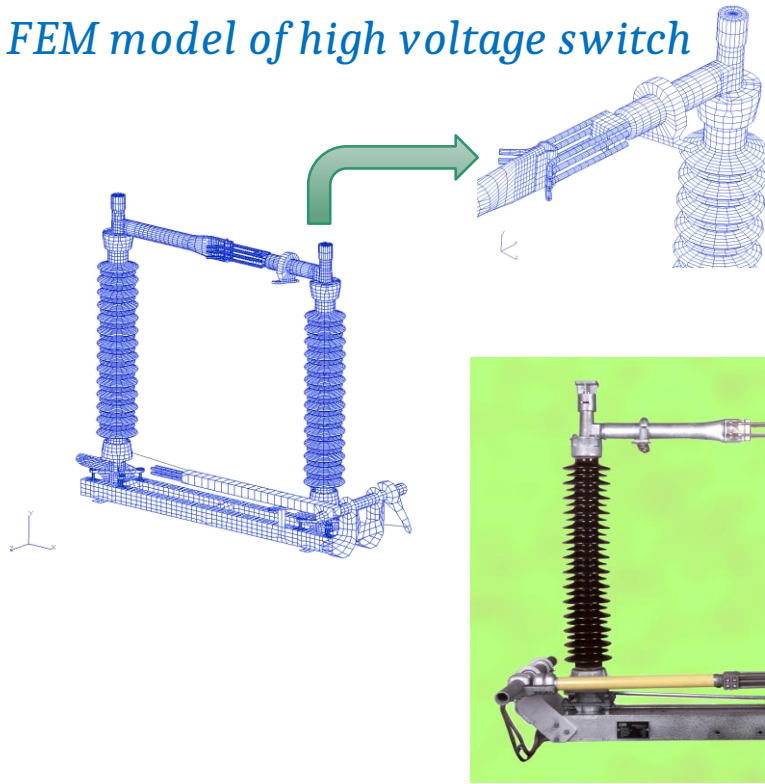
Truss structures



Natural forms of a cavitation tunnel



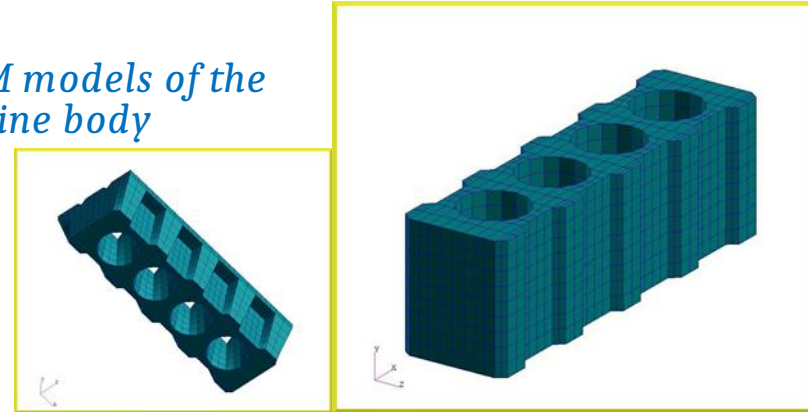
FEM model of high voltage switch



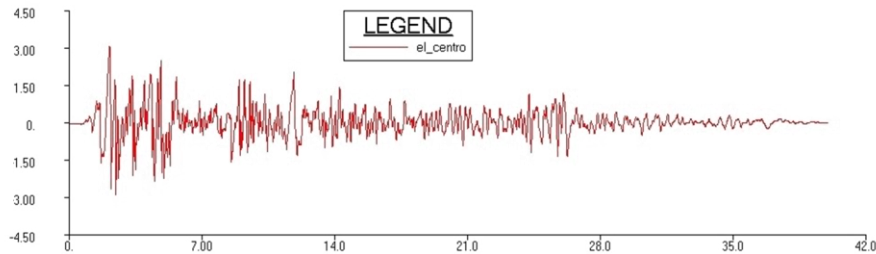
Thermal analysis of the engine cylinder head



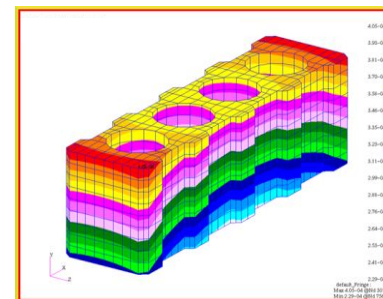
FEM models of the engine body



Record of acceleration of seismic course



Thermal deformations of the cylinder head body



FEM training

1. General training in issues and theory of strength of ship structures (including assessment criteria), including FEM applications

2. General training in issues and theory of vibration resistance of ship structures (including assessment criteria), including FEM applications

3. Practical training in the use of engineering tools (FEM software) in numerical analyzes

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