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

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# FEM calculations in the field of shipbuildingand offshore

1. Analysesof natural and forced vibrations
2. Global, zonal and local analysesof 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’sstructure framings

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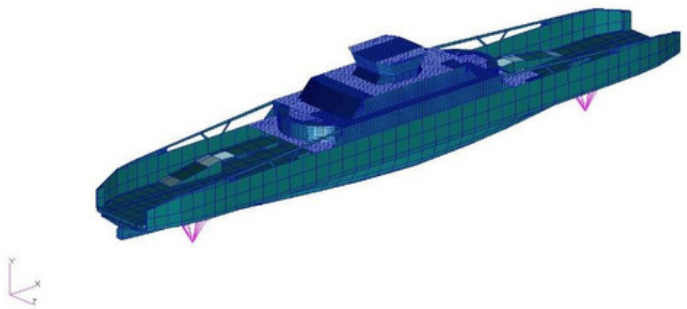
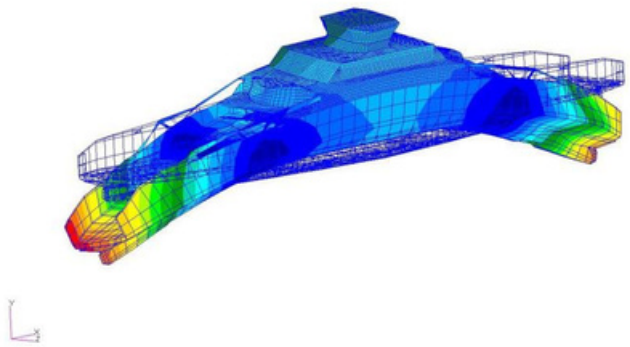
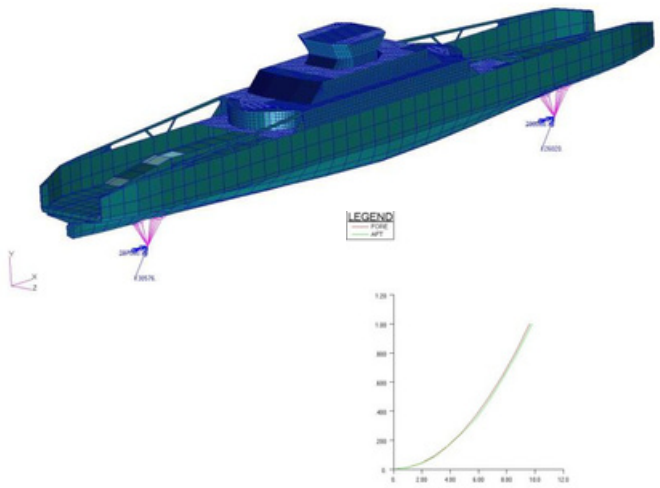
## ExampleFEM model of the ferry



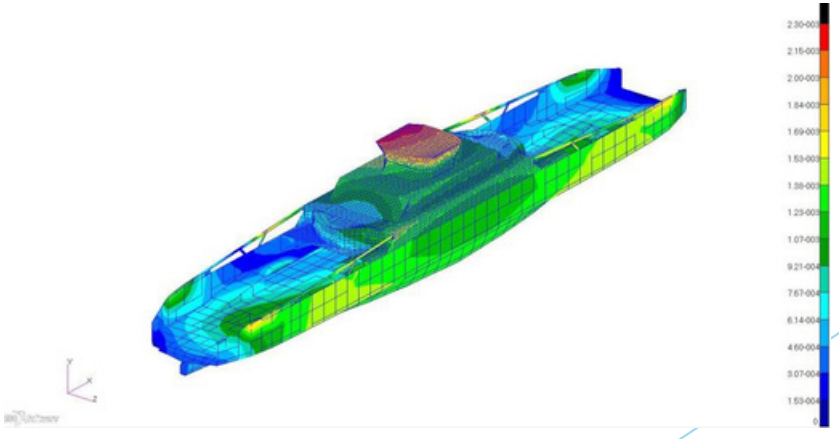
## Natural form of vibrations



## Load the FEM model with forces and moments




## Velocityfields as a response to a given extortion



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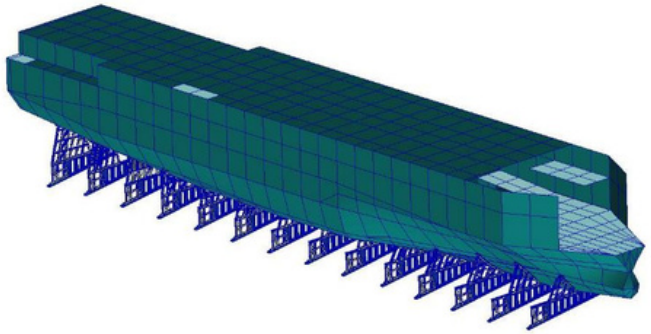
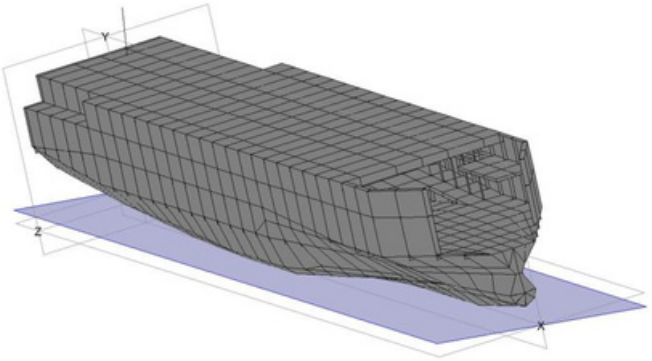
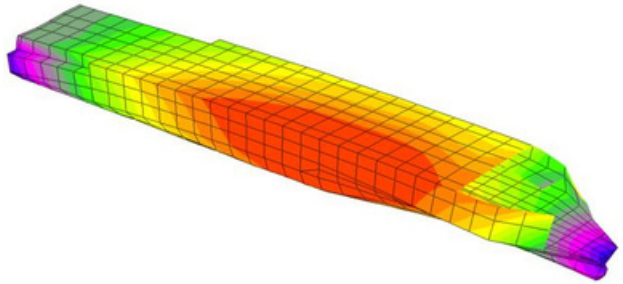
## ExampleFEM model of the ferry together with the launching support



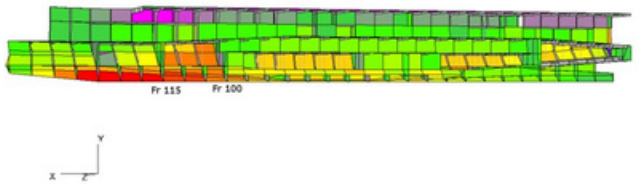
## Simulation of side launching



## Hull deformation during sidelaunching



## Stresses in the hull during side launching

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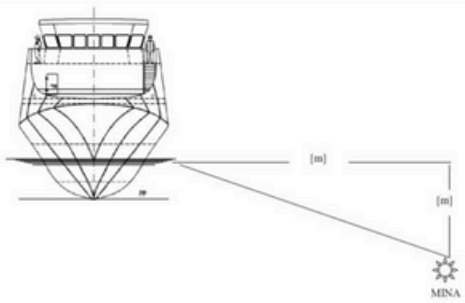
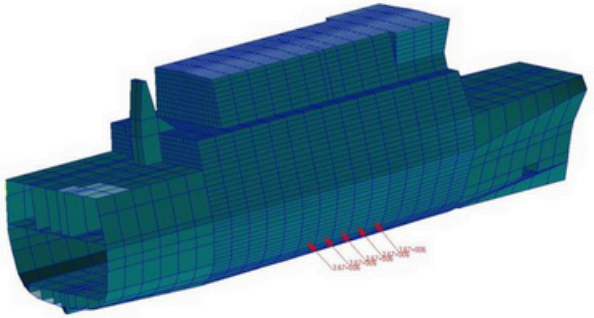
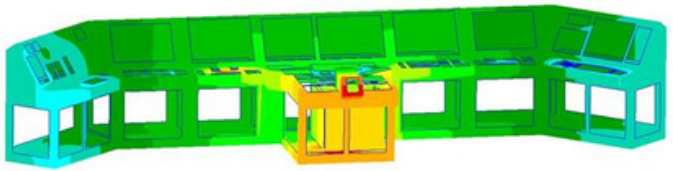
## Exampleof Shock analysis

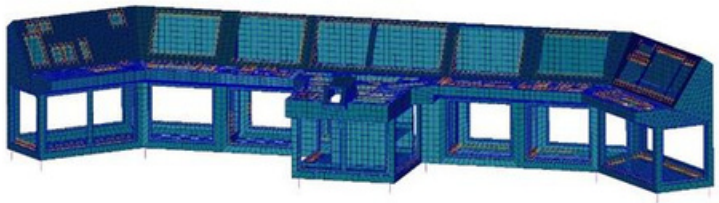


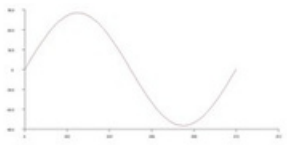
## Acceleration field results as a function of time



## FEM model of the navigation bridge desktop



## Forcing signal



# FEM calculations in other engineering fields

1. Vibrationanalysis
2. Strengthanalyses
3. Analysis of seismicresistance
4. Thermalanalysis

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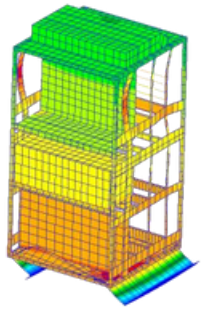
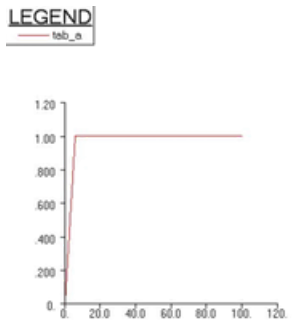
# EXAMPLES

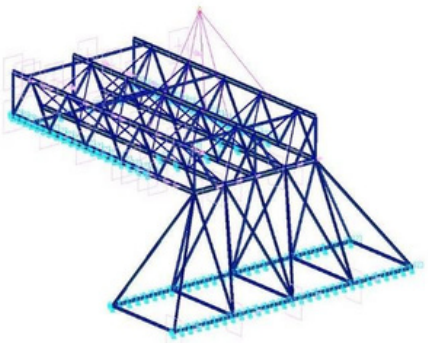
Natural forms of low voltage switchgear



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

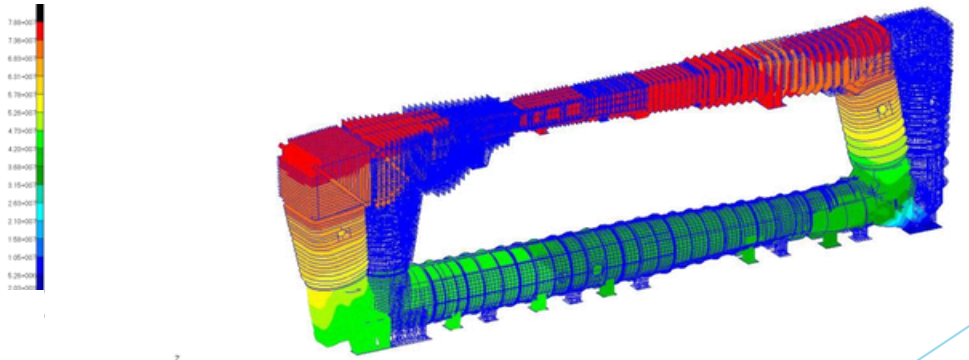



Truss structures

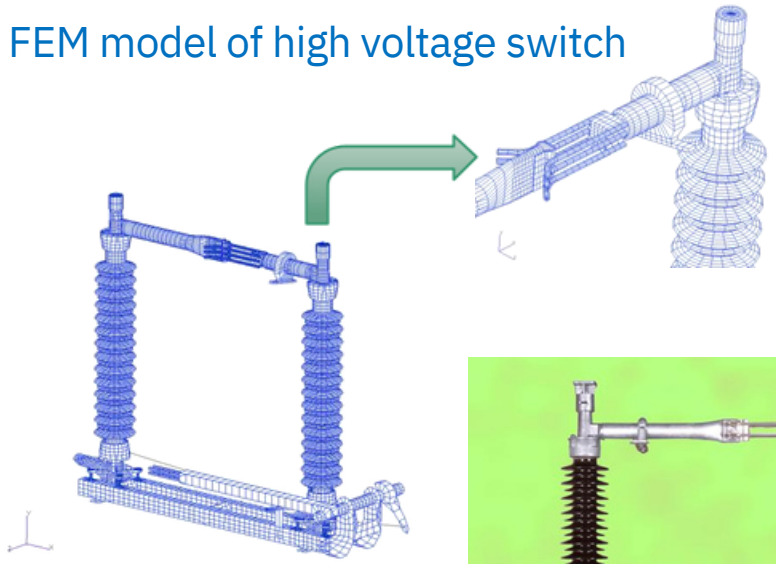


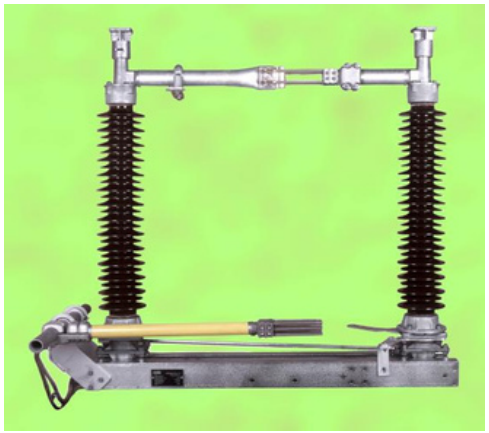
Response to extortion,
Von Misesstress

Natural forms of a cavitationtunnel



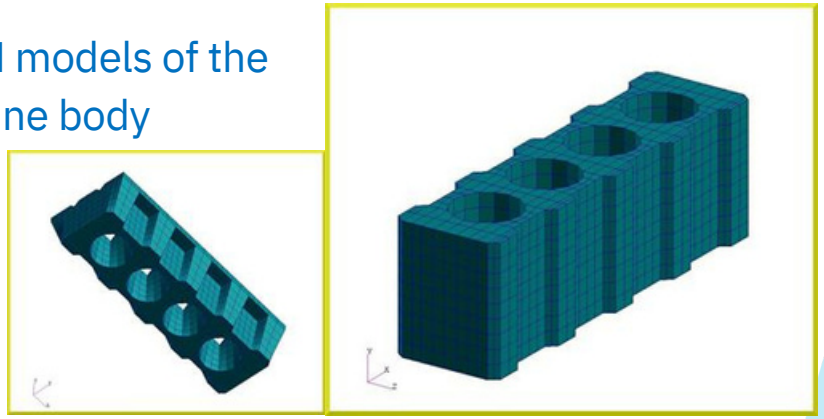
## FEM model of high voltage switch



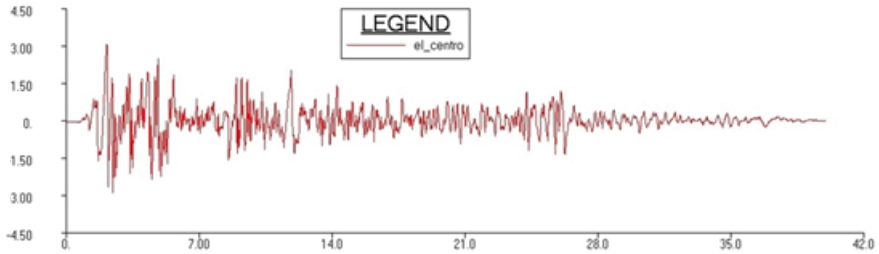


## Thermal analysis of the enginecylinder head

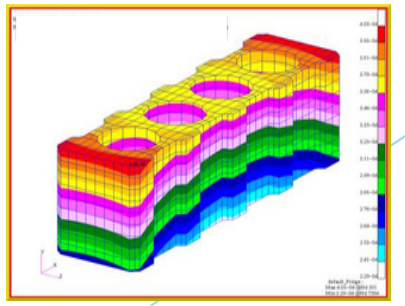

## FEM models of the engine body



## Record of acceleration of seismic course




## Thermal deformations of the cylinder head body



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# 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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