Finite element modeling and analysis at MEGA

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# 1. FEA Scope at MEGA

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Workflow detailed modeling:

- Receive Nupas model/.step files/ Autocad Drawings
- Import into NX the structure
- Import 2D/3D details
- Simplify the structure according to the structural requirements
- Check and fix the wrong modeled solids
- Make the fem and simulation model – apply boundary conditions, loads, material properties
- Analyze the model
- Apply refinements and re-mesh
- Obtain final results
2. FEA Workflow - Cont’d
3. FEA Team

*Mega FEA Team: trained and certified by DAMEN RESEARCH*

- **START:** September 2012;
- Number of projects in which the team was involved: 11 (eleven) DSGo projects, 3 (three) Research projects and 4 (four) training projects;
- No. of team members: 3 engineers and 3 trainees;

**Team Skills**

**Current:**
- Linear static analysis;
- Buckling analysis;
- Natural frequency analysis;
- Solid and shell modeling in NX for local analyses;
- Shell modeling in NX for global analyses;
- Nonlinear fender analysis;
- NUPAS detailed modeling.

**Perspective**
- Advanced nonlinear analysis;
- Frequency/forced response;
- Develop and implement Distributed Memory Parallel (DMP) for large analysis in NX.
4. Teams Communication chart

- MEGA Management Team
- ICT Department
- Hull and Piping & Mechanical Departments
- DAMEN RESEARCH Department
- DSNS Engineering
- FEA Department
- MDEM FEA Department
Team principles:

INNOVATION
SUCCESS
EVALUATION
DEVELOPMENT
GROWTH
SOLUTION
PROGRESS
MARKETING
5. Projects portfolio

- YN512504/ASD3212-Crane foundation analysis

- YN556064/RSV8318-Natural frequency analysis

- YN556064/RSV8318-LARS foundation analysis
5. Projects portfolio - Cont’d

- YN522800/WAFL6312-Natural frequency analysis

- YN540391/SPA5509-Natural frequency analysis

- YN553014/DOC7500-Engine girder stiffness analysis
5. Projects portfolio - Cont’d

- YN522054-Spudpole-Stess analysis

- JSS-engine foundation stiffness analysis-Training project

- YN556064/RSV8318-AHC winch foundation analysis
5. Projects portfolio - Cont’d

- YN512500-Ears of fore guide post stress analysis

- YN512200/ASD Tug 2412-Calculation new Rolls-Royce thruster

- YN545000/Tractor tug 2412-Hoisting plan analysis
- Correlation study between strain gauge measurements and nonlinear FEM analysis
- Crash analysis nonlinear
Thank you for your attention!