

Diodore™

Hydrodynamics and motions analysis of floating systems

Diodore is a general purpose hydrodynamics program combined with a mechanical solver for the motions analysis of naval and offshore floating systems.

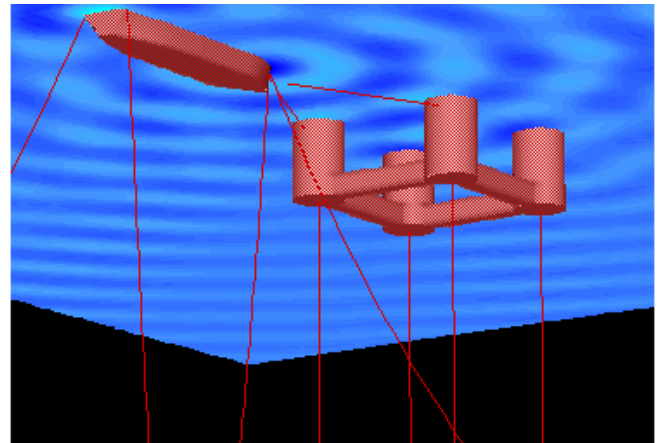
Diodore offers a wide range of applications in offshore engineering, harbor engineering and naval architecture.

Hydrodynamics features include advanced hydrostatics analysis, radiation/diffraction solver with forward speed capable of handling multi-bodies interactions, full QTF formulation for low frequency diffraction analysis and wave resistance models. The mechanical solver includes frequency domain and non-linear time-domain dynamic simulation features for the assessment of the global performance of floating systems.

Diodore forms part of the marine software solutions developed by Principia.

Applications

- Intact and damaged stability analysis including the effect of internal tanks
- Sea keeping analysis
- Coupling effects between sea keeping and sloshing in tanks for LNG carriers
- Wave resistance
- Mooring analysis
- Marine operation including deck mating, load transfer, offloading and berthing
- Calculation of top riser motions and accelerations
- Strength analysis and pressure loads transfer for FE structural analysis



Hydrostatic analysis

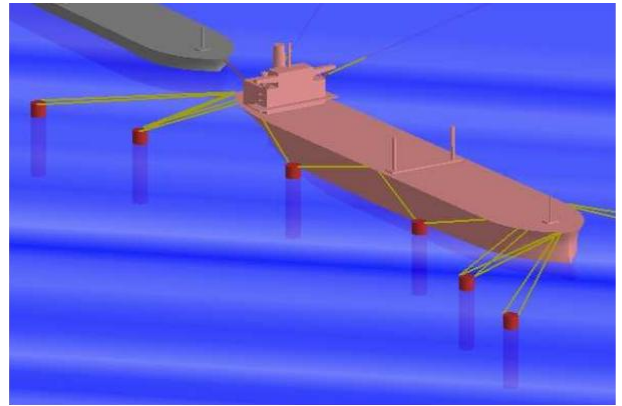
- Intact and damaged stability
- Handle closed, open or damaged tanks
- Trim or Heel stability
- Wind heeling moment computed with OCIMF or user- defined coefficients

Diffraction/radiation model

- Without forward speed, in finite or infinite depth
- With forward speed, in finite or infinite depth (several formulations)
- 2nd order 3D low frequency diffraction (full QTF)
- Multi structures and sub-structures handling
- Pressure, velocity, wave elevation in the fluid domain or on the mesh
- Tank analysis : eigen period – added mass – coupling with ship motion
- Wave resistance (Neumann-Kelvin formulation)
- Infinite domain

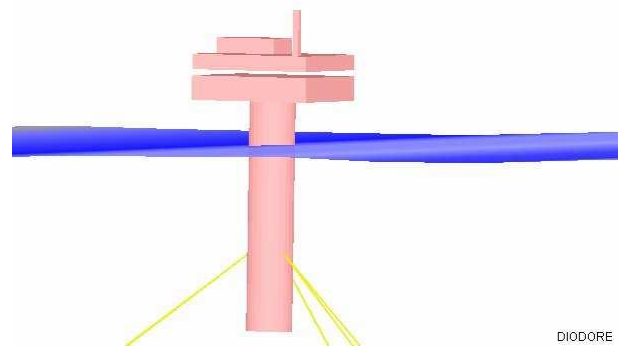
Mooring and UFL design

- Mooring & UFL design
- Static, quasi-static, quasi-dynamic simulations
- Transfer to DEEPLINES of fairlead motions for dynamic simulations
- Squall winds
- Batch processing
- API 2SK rules applications
- Compliant to BV rules
- Export of HDB files for DEEPLINES coupled models

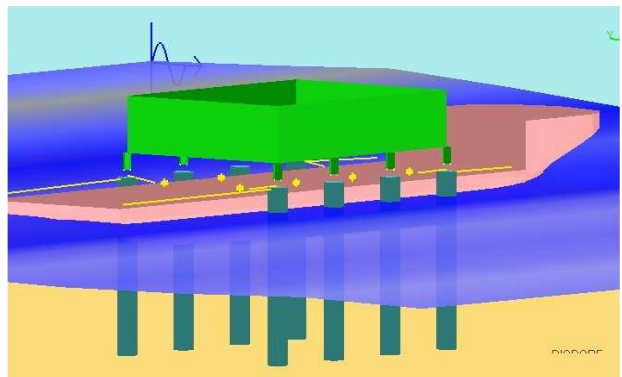


Linear mechanics

- Wave frequency domain, multi-structures
- Motions, loads and pressures transfer functions
- Quadratic and linear added damping, mass, stiffness
- Automatic linearisation of complex mooring system (lines, fenders...)
- Natural periods, critical damping
- Drift loads
- Post-treated through spectral analysis
- Slamming occurrence
- Deck wetting/ Green water occurrences



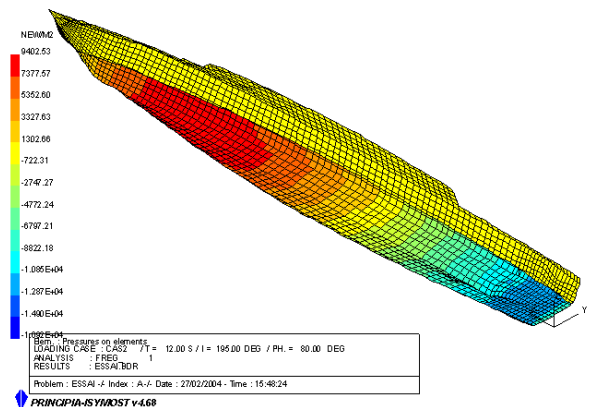
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Non linear mechanics

- Time domain simulation
- Complex mooring modeling spring, chain, tether, fender
- Wind and current load
- Thruster loads and DP including capability plots
- Foil and rudder with or without PID pilot
- Non linear hydrostatic loads
- Modification of the initial position (mean offset)
- Damping with a large set of formulation : WF and LF global, on bar elements, on bilge keel with ITH formula
- Memory effects



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