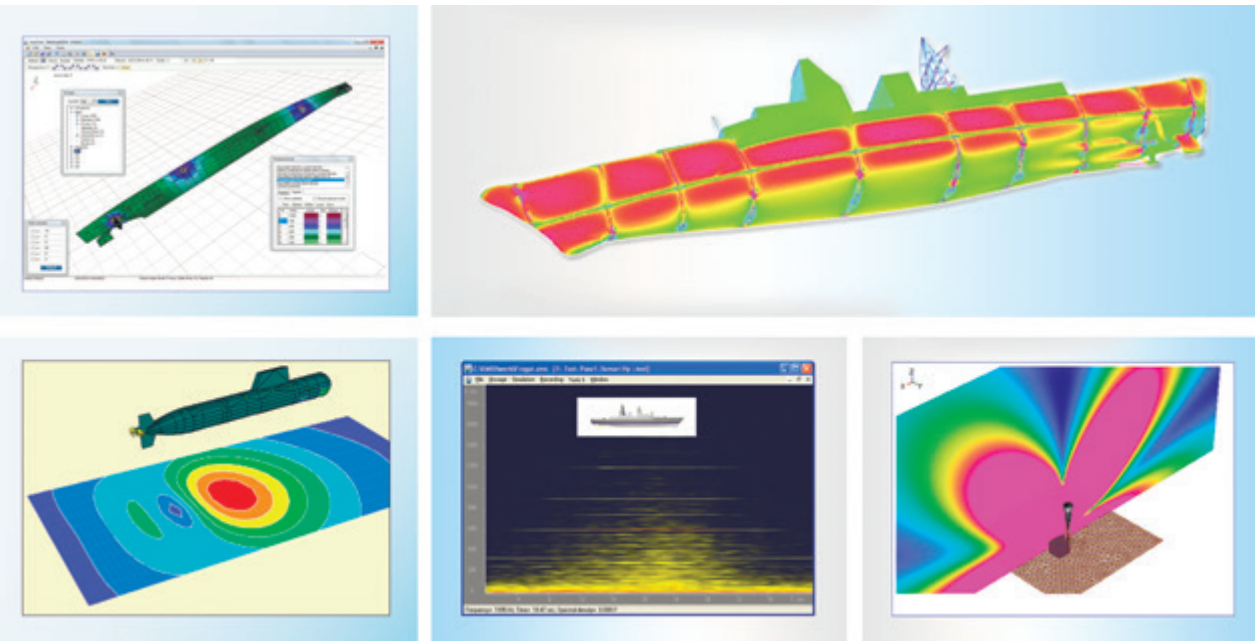# THE SOFTWARE PACKAGE STAR3D

The software package STAR3D implementing unique techniques developed at the Krylov State Research Centre for three-dimensional computer modeling of electromagnetic fields for structures of arbitrary shapes and topology.

Software capabilities:

- Calculation of static electric and corrosion related magnetic fields and analysis of ship electric signature control and corrosion protection systems (STAR3D Electric).

- Calculation and processing of data of full scale measurement of ELFE field (EMSS).

- Calculation of static magnetic field of ferromagnetic structures and analysis of ship degaussing systems (STAR3D Magnetic).

- Calculation of electromagnetic fields in the radio and microwave frequency range associated with operation of radio communication and radar systems (STAR3D High Frequency).

Distinctive features of simulation technique:

- Application of special boundary conditions for the median surface of thin-walled structures with significantly reduced computer power requirements as compared with the finite element techniques.

- Efficient methods for simulation of rod-type structures (shafting, masts, cables) and small-size structures (anodes, protectors).

- Direct specification of live cables (feeders).

- Simulation of electric and magnetic circuit discontinuities by contact resistances.

- Special conservative numerical techniques ensuring stable solutions even with relatively coarse and irregular boundary element meshes.

- Ability to solve high-dimension problems (up to 200 000 unknowns) on personal computers.

- Advanced pre and post-processing tools based on intensive application of Open GL technology.

- Exchange with CAD (through IGES).

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