STRENGTH AND STRUCTURE

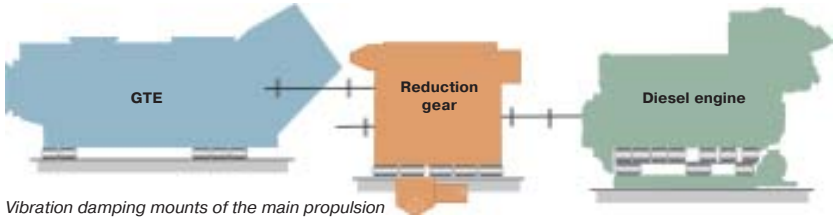
EXPERIMENTAL VALIDATION OF ADVANCED OFFSHORE TECHNOLOGIES

Unique experimental facilities of the Krylov Institute have numerous times demonstrated their efficiency in obtaining data on the actual strength of the full-scale structures in various spheres of engineering. Development and experimental validation of advanced offshore technologies is among the most prioritized trends of the Institute activities. Here, we would like to highlight the following:

- studies of the actual strength of aluminum high pressure bottles for the offshore platforms. Comprehensive tests of material samples, joints and full-scale items have confirmed efficiency of selected design solutions giving opportunities for Russian manufacturers to enter international market of equipment;
- investigations of strength for the full-scale aluminum riser for the deep-sea drilling. Comprehensive investigations of the strength characteristics for aluminum alloys, their joints and full-scale items have allowed to develop the structures with parameters that enable to perform the deep-sea drilling and oil production.

Experimental studies of strength characteristics

SIGNATURE CONTROL



Vibration damping mounts of the main propulsion plant

ELABORATION OF RECOMMENDATIONS FOR OPTIMIZATION OF SURFACE SHIPS ACOUSTIC PROTECTION

To support the design of advanced surface ships based on numerous calculations of underwater noise and contribution of various sources into it performed at various stages of design the optimum structure and range of acoustic protection means has been selected. Proposals and recommendations have been formulated with respect to acoustic protection optimization by means of:

- Improvement of vibration isolation systems for the main and auxiliary propulsion machinery;
- Application of more effective flexible inserts in the pipelines;
- Design of special sound-insulating enclosures for main diesel engines and diesel-generators, etc.

The shock mounts configuration has been developed for the main propulsion machinery, which incorporates main diesel engines, gas-turbine engines and combined reduction gears. Calculations have been performed for serviceability and efficiency of such vibration isolating mounts.

AN INTEGRATED SYSTEM "KASKAD" OF NEW GENERATION FOR REDUCTION OF ELECTRIC FIELD AND CORROSION PROTECTION OF SHIPS

The Krylov Institute has developed the "Kaskad" system of new generation which ensures the following:

- integrated corrosion protection for the hull and propellers;
- electric field control.

Unique advantage of "Kaskad" type systems as compared to other engineering facilities is integrated provision of specified requirements for electric field and corrosion protection of the ship propellers and hull. Due to application of optimum arrangement of anodes and algorithms for regulation of the output current, the "Kaskad" system allows to keep the ship electric field at the safe level during the whole service life of the ship.

"Kaskad" system