

Судостроение

Издается с 1898 г.

НАУЧНО-ТЕХНИЧЕСКИЙ И ПРОИЗВОДСТВЕННЫЙ ЖУРНАЛ

ISSN 0039-4580

ПРОЕКТИРОВАНИЕ СУДОВ

№ 5
2017
сентябрь–октябрь

**ВОЕННОЕ
КОРАБЛЕСТРОЕНИЕ**

**СУДОВОЕ
ОБОРУДОВАНИЕ**

**ТЕХНОЛОГИЯ
СУДОСТРОЕНИЯ**

ИСТОРИЯ



SUDOSTROENIE 5 2017

/SHIPBUILDING/

(834) September–October

Published since September 1898 r.

Russian president visited SC «Zvezda»

AT SHIPBUILDING YARDS

«Sudostroenie» has been reregistered

SHIP DESIGN

***Semenov D.O., Luskin B.A., Gurin G.S., Klochkov P.A.* 3D-design of advanced modular unmanned submersibles.**

JSC CDB MT «Rubin» has commenced the development of marine robotic systems for self-contained and remote-controlled unmanned submersibles (SCS and RCS). Production of modular unmanned submersibles is one of most promising trends.

Keywords: robotic systems, self-contained remote-controlled unmanned submersibles, modular UA.

***Ravin A.A., Amirley E.A.* Modeling of ship emergency deceleration**

The authors hereby review results of simulation modeling of various emergency deceleration methods for diesel-driven ships: main engine reverse or stowage of adjustable pitch propeller (APP). It is noted that alteration of propeller specifications during reverse combined with diesel engine limitations cause transient dragging and subsequent increase of ship deceleration and stopping time. The article shows, that APP ships can minimize those limitations by using rather simple method with no complication of algorithms, software or hardware comprising the control system, i.e. due to optimal selection of system commands.

Keywords: ship emergency deceleration, stopping and braking time, propulsion system, diesel, adjustable pitch propeller, PC-aided simulation modeling.

NAVAL SHIPBUILDING

***Dubchuk N.P., Bykov I.I., Kudrin M.A., Sochinsky S.V., Ankudinov O.S.* Estimating common longitudinal strength of ship hull in combat and routine conditions using shipboard damage control system.**

The authors hereby describe the developed shipboard damage control system used to evaluate common longitudinal strength of ship hull having combat or emergency damage. The software used has been specified.

Keywords: ship, combat strength, hull, damage, software.

***Sagaidakov F.R., Chernetsova N.A., Nikitina E.K.* US naval strategic nuclear system.**

The authors hereby analyze current state and modernization of US naval strategic nuclear system, including development of strategic nuclear-powered submarines – SSBN (X).

Keywords: US naval strategic nuclear system, nuclear-powered submarine, ballistic missile, modernization.

SHIP POWER PLANTS

Rodionov N.G., Korotkov V.V. Increasing efficiency of ship power plants.

This article analyzes prospects to increase efficiency of ship power plants (SPP). Main specifications of SPPs have been demonstrated together with analysis thereof showing that highest SPP efficiency with satisfactory mass-dimension parameters can be achieved when using combined-cycle gas turbines (CCGT). The article lists actual problems in domestic shipbuilding, which are to be solved in order to design and produce marine CCGTs. Options for solving the above have been offered.

Keywords: ship power plant (SPP), — cycle gas turbines (CCGT), efficiency increase.

Myasnikov Yu.N., Nikitin A.M. Specifications of propulsion systems as a factor to ensure energy-saving exploitation and environmental safety of sea-going ship.

Acceptable ship fuel consumption depends on technical state of the whole propulsion system: ship hull, main engine, gear and propeller. All above components are subject to alteration during exploitation and need for repair and maintenance thereof is to be defined on basis of alteration of certain parameters. Measured parameters to be compared with results of sea trials.

Keywords: propulsion system, specifications, fuel consumption, energy efficiency.

Kresov D.G. Unification of requirements to operability of ship nuclear power plants during pitch and roll.

This article analyzes applicability of standard requirements stipulated in regulatory documents to pitch and roll rate for ensuring operability of ship nuclear power plants.

Keywords: nuclear power plant, sea disturbance, standard pitch and roll requirements, conventional initial data.

SHIPBOARD EQUIPMENT

Dolmatov M.A., Galanin Yu. A., Kozlov V.A., Tyumentsev G.A. Considering ergonomic requirements for design of shipboard fittings using 3D modeling and electronic ergonomic analysis.

This article reviews application experience of electronic simulation and ergonomic analysis in virtual environment when checking conformance of ship fittings being designed to common ergonomic requirements based on Virtual Research Center of JSC SSTC.

Keywords: design, fittings, ergonomic analysis, electronic simulation, virtual environments.

SHIPBUILDING ORGANIZATION AND TECHNOLOGY

Shtaitz V.V. Advancement of methods for monitoring leak tightness of protective shells of ship nuclear power plants.

This article reviews options for advancement of leak tightness monitoring methods for protective shells of ship nuclear power plants by scientifically grounded application of modern measuring aids and two new leak tightness control methods.

Keywords: leak tightness, tests, reactor compartment, ice-breaker, protective shell.

SHIPYARD RETOOLING

Sechin I.I. Establishment of shipbuilding cluster at Far East.

The author narrates about establishment of shipbuilding cluster at Far East, gains and immediate tasks.

Keywords: shipbuilding complex, building berth, transfer dock, hydraulic structures.

***Trubetsky N.K., Pavlov A.A., Vasilyev A.A.* Reconstruction and modernization of Zhataisky shipyard and dockyard.**

This article reviews technological solutions adopted in design of high-tech Zhataisky shipyard in city of Yakutsk. Yard production program, composition and specification of production facilities are highlighted.

Keywords: shipyard, river fleet, modernization.

SHIPBUILDING MATERIALS

***Krushenko G.G.* Enhancing mechanical performance of aluminum parts by nanomodification of the alloy.**

The author hereby describes nanomodification procedure, which lies in injection of nanoparticles of high-tensile and high-melting titanium nitride (TiN) into liquid aluminum alloy with subsequent mechanical performance enhancement of parts this alloy was used in.

Keywords: aluminum alloy, nanomodification, mechanical performance.

LABOR SAFETY

***Ratnikov V.I.* Current state and optimization of electromagnetic ecology on fishing vessels.**

The author hereby analyzes issues pertaining to improvement of electromagnetic ecology on sea fishing vessels due to their design features and works to be conducted to fulfill the requirements of relevant regulatory documents.

Keywords: fishing fleet, electromagnetic ecology.

INFORMATION SECTION

***Syrodubov V. A.* – Fire Director. «Shtandart» yacht and family of the last Russian emperor. *Tsekhanovskaya O. K.* Battle of Navarino in paintings and graphics from CNM collection. *Amosov A. G., Ivanov A. V. D. M.* Klykov – chief designer and his projects**

HISTORY OF SHIPBUILDING AND FLEET

***Kudishkin V.S.* Diesel-electric vessel «Ob» in Antarctic region. History of sailing, drifting and field trials.**

This article reflects main stages of historical 18th Antarctic cruise of diesel-electric vessel «Ob» in 1972–1973 and subsequent forced drifting in Ballen ice cluster. This was first Antarctic cruise which included field trials of vessel's ice performance, strength and vibration.

Keywords: ice-breaker, ice compression, stability, drifting, ice strength, ice vibration.

***Gribovsky V. Yu.* Baltic fleet in 1917.**

This article is devoted to 100 years anniversary of the February revolution and narrates about combat activities of the Baltic fleet in 1917 campaign, including Moonzund battle.

Keywords: February revolution, Baltic fleet, Moonzund battle, history of fleet, naval shipbuilding.

***Glebov A.M.* Russian schooners of English admiral Charles Nowles.**

The author narrates about construction of first naval schooners designed for Russian Navy by English admiral Charles Nowles at Russian service in city of Kronshtadt and Izmail in 1770–1773. It has been proposed to consider «RoyalTransport» model of 1695 year build as the model of schooner of last third of XVIII century brought to Russia by admiral Nowles.

Keywords: shipbuilding, schooner, drawings, model, shipbuilding components.