

СУДОСТРОЕНИЕ

Издаётся с 1998 г.

НАУЧНО-ТЕХНИЧЕСКИЙ И ПРОИЗВОДСТВЕННЫЙ ЖУРНАЛ

ISSN 0039-4580

ПРОЕКТИРОВАНИЕ СУДОВ

**ВОЕННОЕ
КОРАБЛЕСТРОЕНИЕ**

**№ 3
2020**
май–июнь

**СУДОВОЕ
ОБОРУДОВАНИЕ**

**ТЕХНОЛОГИЯ
СУДОСТРОЕНИЯ**

ИСТОРИЯ



SUDOSTROENIE 3 2020

/SHIPBUILDING/

(850) May–June

Published since September 1898 r.

CONTENTS

AT SHIPBUILDING YARDS

CIVIL SHIPBUILDING

G. V. Egorov, D. V. Chernikov. SDS18 multifunctional diving vessel-catamaran of «Igor Ilyin» type.

The analysis of Russian diving in operation is executed. Necessity of building of new generation multifunctional diving vessels with large open deck with fastening equipment, dynamic positioning, well for divers and equipment, special personnel accommodation is shown. The concept of diving catamaran is developed, basic characteristics are defined. Comparison with existing diving vessels is made. Hull contours of multifunctional diving catamaran vessel by means of model trials in experimental tank and CFD modeling have been created and optimized. Basic functions and equipment installed on the vessel are described.

Keywords: salvage vessel, catamaran, multifunctionality, diving complex, hull contours, design, equipment.

V. I. Lyubimov, E. P. Ronnov. The usage of amphibious hovercrafts —an important component of technological progress in water transport.

This article reviews modern state and development trend of amphibian hover crafts and application area thereof. The author generalizes accumulated design and exploitation experience to focus on design and navigation features of amphibian hover crafts to extend water transport application area.

Keywords: high-speed vessels, amphibian hover crafts, wing-in-ground vehicles, operating performance, navigation performance, design features.

NAVAL SHIPBUILDING

A. V. Krasilnikov. Unification and aggregation of small-sized off-board launchers.

This article describes principles of unification and aggregation of small-sized subsea launchers allocated on subsea vehicles.

Keywords: small-sized subsea weapons, launchers, assembly technology, installation technology, unification, aggregation.

SHIPBUILDING ORGANIZATION AND TECHNOLOGY

V. V. Shtaits, N. I. Gerasimov, A. V. Lipnyakov. Features of checking seal assemblies with rubber rings and high leak-tightness rate.

This article explores features of sealing assemblies with rubber rings in course of leak-tightness trials. To solve this task, one should utilize method of comparing the technical features of welded connections and seals with rubber O-rings in course of leak-tightness tests, as well as experimental quantitative estimation method on gas leakage from elastomers and application of grease on O-rings during installation.

Conducted surveys strongly limited the variety of appropriate leak-tightness tests of sealing assemblies with rubber rings. Experimental data revealed, that pressure spikes occur due to gas leakage from elastomer, while application of grease on rubber rings prior to the installation may plug potential leakages. The obtained results should be

considered for development of installation procedure and leak-tightness check of sealing assemblies with rubber rings to maintain required leak-tightness rate.

Keywords: leak detector, helium purging, drying, leakage plugging, vacuum meter, defect.

V. S. Mikhailov, A. V. Savinov, D. L. Desnev, V. E. Medvedeva. Development and implementation of pass-through validation of geometrical parameters during construction of hull and installation of pipes and equipment.

To increase production efficiency JSC PA «Sevmash» mostly relies on application of digital technologies. Computer-aided technologies developed on basis of coordinated measuring methods and utilized digital equipment at all production stages allow to speed up the production cycle as well as to enhance dimensional check quality at all ship construction stages.

Keywords: pass-through validation, geometrical parameters, installation, pipe and equipment.

SHIP POWER PLANTS

A. A. Pshenitsyn, A. N. Lesnyak, V.G. Peshkov, A. Yu. Spiridonov. Diagnostics of noise formation in screw propellers.

This article describes obtained experimental data used for estimation of dynamic and hydrodynamic specifications of various screw propellers. The analysis of the same allows to explain reasons of high noise level and to isolate noise generation zones. It is assumed, that screw propeller rotation and associated axial load lead to forced oscillations of propeller blades which are caused by irregular pulsating flow formed by propeller itself.

Keywords: noise generation, diagnostics, screw propeller, hydrodynamic specifications.

SHIPBOARD EQUIPMENT

V. N. Ilyukhin. Conceptual development of shipboard deep-sea diving systems: problems and issues.

This article reviews features, trends and problematic aspects of deep-sea diving systems (DSDS) development, considering their role in rescue activities at sea. The authors hereby conclude that it is feasible to create mobile shipboard DSDS both for short-term (120—200 m depth) and saturated (200—300 m depth) diving. The article also analyses place and role and stationary shipboard DSDS for saturated diving under higher pressure and on 300 m depth and above.

Keywords: deep-sea diving system, search-and-rescue system, short-term diving, long stay under higher pressure, containerized modular diving system, remote controlled unmanned subsea vehicles.

E. A. Amirli, E. F. Sultanov, E. M. Mamedov. Choosing electric drive control system for shipboard lifting mechanisms.

This article reviews power loss issues during start and speed adjustment of asynchronous motor with phase-wound rotor utilized in high-capacity lifting mechanisms as well as aspects of selection of controls system for lifting mechanisms.

Keywords: vessel, lifting mechanism, electric drive, asynchronous motor, phase wound rotor.

A. V. Kashenkov, M. S. Sviridov, L. N. Tokarev. Calculation of Joule integral using differential equations for synchronous generators.

The author hereby represents calculations of short-circuit current using differential equations for synchronous generator converted as per two-reactions theory, i.e. with respect to dq-axes. Impact of transformer's EMF on transient processes has been reviewed. It has been shown, that in order to estimate thermal resistance of electric equipment at short circuit conditions one must stick to differential equations of synchronous generator considering transformer's EMF in the stator part.

Keywords: short circuit, thermal resistance, differential equations, synchronous generator, transformer's EMF.

ECONOMY AND FINANCE

A. M. Khodzhayeva. Innovative developments by R&D enterprises: role of intellectual property objects.

This article analyses innovative developments rendered by R&D enterprises. The author evaluates special role and position of intellectual property objects in innovative development of R&D enterprises. On one hand, intellectual property objects constitute a resource pool for R&D enterprises, on the other hand, they can be classified as goods capable to bring financial profits. The author defines main issues existing in area of intellectual property control and utilization and offers relevant solutions to ensure stable innovative development of R&D enterprises.

Keywords: innovation activity, R&D enterprises, intellectual property objects, intellectual property control utilization

PERSONNEL TRAINING

S. M. Dmitriyev, V. A. Zuev. Training masters on educational program «Design of ice-class vessels and marine equipment».

This article describes training, methodical and R&D activities of students being trained under educational program «Design of vessels and marine equipment to be exploited in ice conditions». The author reveals experimental student's training base, training schedule and master's training conditions, new trends of surveys in area of ice-class shipboard equipment, which are greatly affected by participation of candidates for a master's degree working on their course and graduation papers.

Keywords: education program, master's training on program «Design of vessels and marine equipment to be exploited in ice conditions».

INFORMATION SECTION

Industry development program has been adopted by the government of the Russian Federation Business partnership between Baltic Shipyard «Yantar» and JSC SSTC. S. I. Ovsyannikov. 40 yrs anniversary of history museum JSC «Northern Design Bureau». Foreign information. Russian Maritime register of shipping has published regulations on the classification of autonomous vessels. LLC «Nevsky shipyard» launched the lead ship of the project PV22

HISTORY OF SHIPBUILDING AND FLEET

V. V. Yarovoy. «Kolkhidas» in the Russian fleet.

The author narrates about ships of the Russian fleet bearing «Kolkhida» name at different times. Technical description and servicing history thereof has been provided.

Keywords: history of fleet, history of shipbuilding, steam yacht.

R. V. Kondratenko. Last years of service of 1st class battlecruiser «Pamyat Azova».

This article tracks the servicing history of battlecruiser «Pamyat Azova» within 1904—1919 period. The author hereby reviews its modernization issues, service before and after the First World War within 1914—1918 period and its loss in 1919.

Keywords: history of fleet, history of shipbuilding, cruiser, mother ship, training vessel.

N. V. Mityukov. Passenger motor vessel «Jubileiniy».

This article provides drawings and description of passenger motor vessel, p.287 developed in Kiev design bureau in 1952 (due to that, vessels of this project are sometimes called as «kievers») and narrates about its servicing life as part of Izhevsk operating organization, which used to transfer passengers through Izhevsk pool.

Keywords: river shipbuilding, river passenger transportation, river passenger motor vessels.