

# СУДОСТРОЕНИЕ

Издается с 1898 г.

НАУЧНО-ТЕХНИЧЕСКИЙ И ПРОИЗВОДСТВЕННЫЙ ЖУРНАЛ

ISSN 0039-4580

**ПРОЕКТИРОВАНИЕ СУДОВ**

**ВОЕННОЕ  
КОРАБЛЕСТРОЕНИЕ**

**СУДОВОЕ  
ОБОРУДОВАНИЕ**

**ТЕХНОЛОГИЯ  
СУДОСТРОЕНИЯ**

**ИСТОРИЯ**

**№ 2**  
**2019**  
март-апрель



# SUDOSTROENIE 2 2019

## /SHIPBUILDING/

(843) March–April  
Published since September 1898 r.

### AT SHIPBUILDING YARDS

#### CIVIL SHIPBUILDING

***Lyubimov V. I., Khlutchin I. V. Design of cruise inland and sea-going vessels: prospective development trends.***

This article analyses current state and prospective development trends of domestic cruise inland and sea-going vessels, including design features thereof.

*Keywords:* passenger vessels, cruise vessels, ship design, architecture and design, ship configuration, general layout, design features, design.

***Bayov A. S. Creation and implementation of fleet renovation program of shipping holding company.***

The author hereby reviews policy priorities of a shipping holding company regarding: shipbuilding and shiprepair, load optimization model for associated enterprises, achievements from implementation of shipbuilding and shiprepair program.

*Keywords:* shipping holding company, shipyard, shipbuilding and shiprepair program, vessels of higher class and lifting capacity, optimization model, order placement for shipbuilding and shiprepair.

***Egorov G. V., Tonyuk V. I. Series of cargo and chemical carrier of «Volga-Don Max» class (Pr.RST27M) with «saturated» hull form, and 7900/5360 ton of sea/river deadweight.***

Vessels with «saturated» hull form of «Volga-Don Max» class designed by Marine Engineering Bureau are newest and most economic-efficient vessels in this class at presence. The author specifies features of P.RST27M tanker and its differences from basic Pr. RST27. Chemical carrier of new P.RST27M has enhanced sea specifications, i.e. 7902 t actual deadweight at 4.6 m maximum draft. Cargo tanks capacity is oriented for transfer of oil products in Caspian region and therefore increased to 8970 m<sup>3</sup>. Three different types of cargo can be carried simultaneously.

*Keywords:* design, mixed sea-river going tanker, fullness ratio, economics, ecology, safety.

#### NAVAL SHIPBUILDING

***Baskakov I. Ya. Light gunships of «Buyan» class, P.21630.***

The author narrates about construction history and trials of small gunships of «Buyan» class (P. 21630).

*Keywords:* history of shipbuilding, small gunship, JSC SF «Almaz».

#### SHIPBUILDING ORGANIZATION AND TECHNOLOGY

***Alferov V. I., Mikhailov V. S. Influence of process factor on rigidity of sample reinforced cylindrical shell.***

This article analyses influence of residual post-assembly and post-welding deformations on rigidity of sample reinforced cylindrical shell described in survey [1].

*Keywords:* rigidity, ship structures bearing capacity, welding deformations and stresses.

***Morozov V. S., Ryukhin A. G. Blast cleaning. Performance enhancement by optimizing the operation parameters.***

The authors hereby describe blast cleaning of metal products and attempt to reveal dependence of processing quality and performance on jet operational parameters. This work was conducted by the specialists of shipbuilding division of Hyundai Heavy Industries.

*Keywords:* metal cleaning, blast cleaning, surface preparation, paint coating application.

## **ECONOMY AND FINANCE**

***Klyakhin V. N., Dorofeyev V. I., Fomin A. V. Another approach to estimate competitiveness of naval equipment in world market.***

This article offers methodical approach to estimation of naval ships competitiveness in world market, considering specific regional features, prosperity of potential buyers, developed infrastructure and high-qualified personnel (crew), etc.

*Keywords:* ship, competitiveness, world market, method, specifications.

***Vauchsky A. N., Grishin Yu. N. Price formation issues upon construction of state-ordered ships in frames of existing normative legal base and proposals on its advancement considering shipbuilding industry aspects.***

The authors hereby review the normative legal base of price formation for state-ordered vessels and determination of ship construction cost. On basis of this review the proposal has been made for advancement of normative legal base to determine budget-funded cost of ship construction.

*Keywords:* price formation, shipbuilding, normative legal base, ships ordered by state, price examination.

## **FLEET EXPLOITATION**

***Kotov V. S. Enhancing fuel performance by using hydrodynamic homogenizer.***

To enhance fuel performance in shipboard boiler-and-turbine plants it is proposed to use homogenizers. The analysis shows, that fuel tanks replenishment system has reserve of fuel potential sufficient to ensure operation of hydrodynamic mixing homogenizer.

*Keywords:* fuel, power plants, boiler unit, homogenizer.

***Kanevsky G. I., Klubnichkin A. M., Sazonov K. E. Calculation of propulsion quality of multi-shaft vessel.***

The recommendation of Propulsion Committee of International Conference of Experimental Basins (ICEB) regarding calculation of ship propulsion quality requires conduction of additional model tests to define «thrust-deduction» factor but seems to be unsatisfactory for researchers due to acquisition of paradoxical results. The formula used in Russian practice has no thrust-deduction factor.

*Keywords:* multi-shaft vessel, propulsion quality calculation, thrust-deduction factor.

## **SHIP POWER PLANTS**

***Nikiforov B. V., Bogoslovsky A. L., Makarov A. M. Fully electrical vessels.***

Fully electric vessels associated with three main electrical components: high-capacity power plant, fully-variable electric propulsion system and reliable auxiliary electric drive. Therefore, the most perspective propulsion motors are: asynchronous motor with

short-circuit rotor, ac inductor motor, permanent magnet motor. The authors narrate about advantages of electrical transmission before hydraulic transmission and examples of replacement of mechanical assemblies with electrical assemblies in domestic industry. Domestic and foreign experience in creation of storage battery motor has been analysed. The article also reviews existing sea and river vessels powered by storage batteries and traces worldwide trend for increase of production of fully electrical-driven vessels. Russian Federation has large R&D and production potential for construction of fully electrical-driven vessels.

*Keywords:* electric vessel, electric drive, ac inductor motor, storage batteries.

## **INFORMATION SECTION**

***Nesterov V. E., Gutkin Yu. M., Korenko V. A., Pozdnyakov V. I. Activity of «Proyektverf» (now known as PS «Proyektverf») in pre-war period (60). Polovinkin V. N. The astonishing life of academician Ashot Arakelovich Sarkisov (64). Khaustov A. N. Admiralty Shipyards build a large refrigerating trawler (67). New regulatory and procedural guidelines related to pricing, labor intensity and rating (69). Foreign information (70)***

## **HISTORY OF SHIPBUILDING AND FLEET**

***Klimovsky S. D. Francis type vessels in Russian fleet.***

In the middle of 19th century, vessels with grooved plating patented and built as per method of American inventor Joseph Francis became one of notable type of vessels in world shipbuilding history. In 1850-s and 1860-s, such vessels became popular in different countries, including Russia.

*Keywords:* history of shipbuilding, history of fleet, Russian fleet.

***Vasilyev D. M. Steam vessel «Transbalt».***

This article traces the story of Steam vessel «Transbalt».

*Keywords:* history of shipbuilding, history of fleet, steam vessel, navigation.

***Yarovoy V. V. River self-driven landing crafts, P.1290A.***

History of design, construction and participation of self-driven landing crafts, P.1290A in combat operations of the Great Patriotic War (1941–1945).

*Keywords:* history of shipbuilding, landing craft, Leningrad defence.