

# МОРСКОЕ СУДОСТРОЕНИЕ

Издается с 1998 г.

НАУЧНО-ТЕХНИЧЕСКИЙ И ПРОИЗВОДСТВЕННЫЙ ЖУРНАЛ

ISSN 0039-4580

**ПРОЕКТИРОВАНИЕ СУДОВ**

**№ 1  
2018**

январь-февраль

**ВОЕННОЕ  
КОРАБЛЕСТРОЕНИЕ**

**СУДОВОЕ  
ОБОРУДОВАНИЕ**

**ТЕХНОЛОГИЯ  
СУДОСТРОЕНИЯ**

**ИСТОРИЯ**



# SUDOSTROENIE 1 2018

## /SHIPBUILDING/

(836) January–February

Published since September 1898 r.

### AT SHIPBUILDING YARDS

#### NAVAL SHIPBUILDING

##### ***Platonov A. V. Post-war designs of Soviet battleships.***

This article reviews post-war design of Soviet battleships. Specifications and diagrams thereof have been included.

**Keywords:** naval shipbuilding, design, history of shipbuilding, battleship.

#### RESCUE MEANS

##### ***Ilyukhin V. N. Development of search and rescue vessels.***

This article reviews features, trends and topical issues of development of search and rescue vessels considering their role and place in federal search and rescue system. The author concludes, that unification level of search and rescue vessels and equipment must be enhanced as well as state technical policy to fulfill search and rescue tasks at federal, ministerial and agency levels.

**Keywords:** search and rescue vessels, rescue vessels, tugs, federal marine search and rescue system, search, rescue, rendering assistance, unification, search and rescue services of ministries and agencies.

#### SHIP POWER PLANTS

##### ***Bogdanov V. I. Concept of pulse water-jet propulsion unit using resonator pump.***

The explosion theory states that air pulse power can be increased in 3 times compared to power of detonation products leakage to vacuum due to addition of free air, weighing 40 times more than detonation products. This feature can be used to increase the power of water-jet propulsion unit. Surveys dedicated to implementation of high-efficient pulse operation of jet motors proved high potential of R&D works in this field.

**Keywords:** pulse water-jet propulsion unit, additive weight, jet motor, power, pulse, resonator pump.

#### SHIPBOARD EQUIPMENT

##### ***Korzhavin G. A. Development of innovative technologies to produce advanced shipboard and onshore radar systems.***

This article reviews issues of development of prospective and innovative technologies by JSC «Concern «Granit-Elektron» used to produce world-class equipment and to actively implement the same both in civil and military fields. Products of JSC «Concern «Granit-Elektron» show development trends of modern construction technologies for marine radar systems.

**Keywords:** radar, shipboard system, navigation complex, innovative technologies.

## SHIPBUILDING ORGANIZATION AND TECHNOLOGY

### **Alferov V. I., Mikhailov V. S. Estimating impact of die forming and welding on load bearing capacity of torispherical shell.**

This article analyzes the residual stresses and deformations after die forming and welding and their impact on load bearing capacity of torispherical shell. Calculations have been done using finite elements method and thermoplastic solutions.

**Keywords:** strength, load bearing capacity of ship hull structures, welding deformations and stresses.

### **Rubtsov V. E., Eliseyev A. A., Druzhinin N. V., Krasnovykin V. A., Vasilyev P. A., Mikhailov V. S., Kolomeyets N. P. Ultrasonic friction welding ensures solid connections of aluminum alloys.**

To make up solid connection of high-tensile aluminum alloys which are either hard-to-weld or require nonstandard welding techniques, one have developed the new method: friction stir welding (FSW) which continuously spreads worldwide. However, heat-strengthened alloys may suffer the decrease of welding seam strength due to intense thermal and mechanical impact.

To minimize the impact, one can combine FSW method with ultrasonic processing. New technique of ultrasonic application and relevant equipment for FSW have been developed.

**Keywords:** aluminum alloys, friction stir welding, ultrasonic impact.

### **Chuprikov V. G. Practical estimation method of construction steel consumption for inland and sea vessels.**

The author hereby proposes to apply method of practical estimation of construction steel consumption at vessel design stage with subsequent comparison to existing vessels to make the optimal choice.

**Keywords:** design, vessel, metal consumption, design, vessel, optimal choice.

### **Rydlovsky V. P., Shtaits V. V. Development of monitoring system, software and tightness monitoring technology for protective shells of modern nuclear-powered vessels.**

This article describes automated measuring system (AMS) for monitoring the tightness of protective shells (PS) at nuclear-powered vessels. AMS is capable to determine relative air leakage rate from PS of up to 1000 m<sup>3</sup> within 0,1–25% range per day at 30% maximum tolerance under test pressure 0,5 MPa/0,19 MPa.

**Keywords:** tightness, trials, reactor compartments, ice-breakers, protective shell

## ECONOMY AND FINANCE

### **Dunayev A. A., Sidorov E. B., Smirnov V. G., Vorobieva E. A. Defining efficiency of capital investments in production facilities of domestic shipbuilding industry.**

Defining investment efficiency and main estimation principles thereof. Main efficiency types and criteria. Defining risks and uncertainty rates to evaluate the investment efficiency. Efficiency of capital investments required to establish modern shipyards focused on heavy-tonnage shipbuilding.

**Keywords:** efficiency, capital investments, payback, revenue, domestic shipbuilding.

### **Netsvetayev V. A. Advancement of price formation methodology and development (actualization) of norm and regulation documents on price formation, labor intensity and labor rating.**

The advancement of norm and regulation basis for price formation in shipbuilding industry has recently started. For this purpose, JSC SSTC developed more than 70 books on standard labor time and 20 books on standard labor intensity during construction and repair of ships and vessels.

**Keywords:** price formation, labor intensity, labor time.

**Fomichev A. B., Dorofeyev V. I., Klyakhin V. N. New approach in defining the labor intensity for ship hull construction.**

It is proposed hereby to simplify calculation of labor intensity required for production of flat/3D sections maintaining the accuracy level. This will decrease calculation time of labor intensity required to build the ship hull.

**Keywords:** labor intensity, sections manufacturing, hull works, simulation model.

## **PERSONNEL TRAINING**

**Vlasov S. V. Training and technology center of FEFU and Rosneft: establishment concept.**

This article reviews the establishment concept of training and technology center of FEFU and Rosneft and justifies the creation of material basis for engineer training.

**Keywords:** material basis, training and technology center, shipbuilding production organization, training and technological infrastructure.

## **INFORMATION SECTION**

**Amendments in Merchant Marine Code. Foreign information. Exhibitions and conferences in 2018 году. Our congratulations. Vyborgsky zavod laid down the lead ship of freezing trawler class**

## **HISTORY OF SHIPBUILDING AND FLEET**

**Mozgovoy V. P. Administrative and technical measures undertaken to ensure combat stability of fast attack crafts (by experience of Great Patriotic War in 1941–1945).**

This article reviews administrative and technical measures undertaken during Great Patriotic War in 1941–1945 to ensure combat stability of fast attack crafts.

**Keywords:** Great Patriotic War, stability of fast attack crafts.

**Abayeva G. P. Passenger-and-freight steam vessel «Bayan».**

The author narrates about passenger-and-freight steam vessel «Bayan» which was ordered by «Po Volge» society, built in 1912 at Sormov shipyards, and was used on Volga river under name «Mikhail Kalinin» till midyear of 1980.

**Keywords:** history of shipbuilding, inland shipbuilding, passenger-and-freight steam vessel.

**Tsekhanovskaya O. K. N. D. Prokofiev – the architect, painter, graphic designer.**

The author narrates about creative work of Nikolay D. Prokofiev (1866–1913) – the professor of architecture and aquarellist painter. The article contains reproductions of his paintings now stored in CNM.

**Keywords:** history of shipbuilding, naval shipbuilding, drawing.