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**ИСТОРИЯ**



# SUDOSTROENIE 3 2016

## /SHIPBUILDING/

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### **Shipbuilding industry in 2015**

#### **AT SHIPBUILDING YARDS**

##### **NAVAL SHIPBUILDING**

#### ***Zvinyatsky A.Ya., Timokhin I.G., Shalomov V.I.* First nuclear-powered cruiser at Far East.**

This article is devoted to construction of first nuclear-powered strategic missile submarine (project 667A) at Amur shipyard in 1966-1969s.

**Keywords:** naval shipbuilding, nuclear-powered submarine cruiser.

#### ***Guryanov K.V., Guryanov S.K., Sagaidakov F.R.* New generation of aircraft carriers in UK Navy.**

This is final part of article on construction technology and armament of new generation aircraft carrier, the largest ship ever in UK Navy.

**Keywords:** aircraft carriers, performance, armament, architecture, unified power system.

##### **MILITARY AND TECHNICAL COOPERATION**

#### ***Losev A.N.* SSTC export work on setting-up on-shore infrastructure for station and repair of naval ships. Experience and future perspectives.**

JSC SSTC is involved in setting up on-shore infrastructure for station and repair of naval ships for foreign customers. There are four main directions in this, such as: mooring facilities, ship repair workshops, armament repair facilities and technical positions for storage, preparation and repair of marine ammunition. As per the experience, such works are of great demand and have good perspective.

**Keywords:** onshore infrastructure, station, ship, armament, repair.

##### **CIVIL SHIPBUILDING**

#### ***Lyubimov V.I., Khlutchin I.V.* Specific architectural features of domestic inland cruising ships**

The author hereby analyzes architectural features of inland cruising ships in order to estimate achievements of traditional «Volga» school of architecture in domestic shipbuilding.

**Keywords:** ship architecture, ship architect, passenger vessel, architecture and design type, hull, superstructure, wheel house, architectural analysis, interior design

## MARINE EQUIPMENT

### ***Tokarev L.N.* Estimation of short-circuit currents in section breakers circuits of onboard power station MDBs**

Upon short circuit in feeder line of ship power plant, current will go through generator cutout switches, bus bar sections and section switches. One can use differential equations system, including mathematical description of generators, communication circuits between connection points of generators and bus bars, equivalent asynchronous load motors to estimate surge current in generator circuits, short-circuited feeder and section switch circuits.

**Keywords:** synchronous generator, equivalent asynchronous motor, main distribution board, section switch, short-circuit surge current.

### ***Vlasov A.B., Vlasova S.V., Mukhalev V.A.* Analysis of changes of cable insulation hardness under the conditions of forced aging at high ambient temperature**

New method was developed for checking cable rubber insulation, thus allowing estimation of insulation performance while aging. This method is based on insulation hardness checking in course of operation.

**Keywords:** insulation hardness, cables, insulation aging.

### ***Zhiltsov A.S.* Monitoring of technical condition of propulsion complexes of fast-going ships with partially submerged propellers**

Two-shaft propulsion systems with partially submerged propellers are used at high-speed vehicles of various purpose. The analysis showed low operation rate of such vessels. Faults were observed in all propulsion systems. Arneson-driven vessels were used as basis for development of quality control procedure of propulsion system using in-place diagnostics methods.

**Keywords:** propulsion system, Arneson drive, partially submersible propellers, in-place diagnostics methods.

### ***Chhetiani P.D., Sherbakov Yu. I.* Experimental study of veering capacity of hydrodynamic lubricating film in radial water-lubricated sliding bearing**

Sliding bearings made from titanium alloys with oxidized friction surface (shaft) and graphite-fluorine plastic (insert) lubricated with fresh water were used to define Shtreeback's relationships between friction factor and sliding speed for subsequent estimation of the bearing capacity of hydrodynamic solid lubricating film. It was demonstrated that such film can separate friction surfaces of shaft and insert under certain conditions of stern bearings operation. However, this requires to secure micro-geometry, straightness of cylindrical friction surfaces, mutual axial parallelism of shaft and insert, diametric gaps and feed of lubricant to most intense friction spot.

**Keywords:** stern bearing, hydrodynamic solid lubricating film, Shtreeback's relationship, bearing capacity, friction factor.

## SHIPBUILDING ORGANIZATION AND TECHNOLOGY

### ***Vorontsov I.A.* Modern requirements to painting of ship steel structures.**

The author hereby reviews modern requirements to painting of ship steel structures. Main limitations for painting in many Russian regions are: high air humidity (in heat period) and low temperature (in cold period). This article combines international specifications, recommendations of paint manufacturers and weather condition statistics by the example of Vladivostok.

**Keywords:** steel structures painting, specifications, weather conditions.

### ***Shchegolikhin V.P.* Recognizing initial stage of defect growth in shipborn mechanisms with use of onboard vibro-acoustic systems.**

The author hereby describes algorithm to define initial stage of flaw growth in shipboard mechanisms using onboard vibroacoustic check systems (OVCS).

It is stated, that incorporation of such algorithm in software for existing and perspective OVCS will substantially increase efficiency of vibroacoustic check of shipboard mechanisms.

**Keywords:** shipboard mechanisms, shipboard information and measuring system for vibroacoustic check, correlation matrix.

***Bertov V.I., Troshin E.P. Composition and content of design solutions providing counter-terrorist protection of shipbuilding sites***

The authors hereby analyze documents which must be used as basis for development of design documentation related to counter terrorist measures at capital construction sites, including guidelines on composition and content of the same.

**Keywords:** counter-terrorism, capital construction sites, regulatory documents.

### **SHIPREPAIR AND UTILIZATION**

***Tepliyashin M.V., Gerasimov N.I., Tyumentsev G.A. Technology for additive manufacturing and repair of shipboard pipe fittings in course of marine equipment operation.***

The authors hereby review additive technologies as basis for recovering the operability of shipboard pipe fittings in course of marine equipment operation. One of proposed methods for solving such task is direct laser growth. This article also reviews existing trends in area of additive technologies, specifies advantages of direct laser growth method, analyses issues and features of its effective application. This technology can be tested on shipboard pipe fittings for subsequent use of achieved results in recovery of other structural components, assemblies, mechanisms, tools and instruments.

**Keywords:** shipboard pipe fittings, additive technologies, direct laser growth method, repair, recovery, weld deposition.

***Ovsyannikov S.I. «Aurora» cruiser – the memorial of domestic naval shipbuilding.***

The author narrates about repair of legendary «Aurora» cruiser at Northern Shipyard in 1980-s and recovery works being conducted at presence at JSC «Kronshtadt shipyard»

**Keywords:** «Aurora» cruiser, repair, memorial ship.

### **INFORMATION SECTION**

***Plenum of headquarters of TS in the name on academic Krylov A. N. Afonin N. N. Baltiisky zavod is 160 years old! Barbanel B. A. Results of S&T competitions and conferences between younger specialists New books. Foreign information***

### **HISTORY OF SHIPBUILDING AND FLEET**

***Ivanov I. V. P. A. Chernoverkhsky***

***Chernoverkhsky P. A. Four periods of my activity in submarine construction***

Chernoverkhsky P.A., veteran of domestic shipbuilding, hereby narrates about his working activities within the period from 1939 till 1949.

**Keywords:** history of shipbuilding, submarine, technology, submarine construction, shipyard, Krasnoye Sormovo shipyard.

***Vasilyev D. M. Identification of Baltic Fleet Submarines. Years 1906–1917***

This article reviews identification issues of Baltic fleet submarines in course of joint cruising or battles of World War I, 1914-1918.

**Keywords:** history of shipbuilding, submarine, maneuvering, insignia.