



**XI International Conference  
«NAVY AND SHIPBUILDING NOWADAYS»  
NSN'2021**

*June 24 – 25, 2021  
St. Petersburg, Russia*

# **CONFERENCE PROGRAM**

*Conference Theme*

**Hydrodynamics and strength in modern shipbuilding**



**Krylov State Research Centre**

**XI International Conference  
«Navy and Shipbuilding Nowadays» NSN’2021**



Government of Saint Petersburg, Russia



Committee for Industrial Policy, Innovations and Trade  
of Saint Petersburg, Russia



Krylov State Research Centre, Russia



SRI of Shipbuilding and Armament of the Russian Navy  
MESC the Russian Navy “Naval Academy”, Russia

## ORGANISING COMMITTEE OF NSN'2021 CONFERENCE

|                     |   |
|---------------------|---|
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| Co-chairmen         | <b>O.V. SAVCHENKO</b> , Director General, Krylov State Research Centre, Russia<br><b>V.N. POLOVINKIN</b> , Science Principal, Krylov State Research Centre, Russia<br><b>I.I. SHIGAPOV</b> , Head of Shipbuilding Directorate, Russian Navy HQ<br><b>O.V. TRETIAKOV</b> , Head of Scientific Research Institute of Shipbuilding & Armament of the Russian Navy (MESC «Naval Academy»), Russia<br><b>A.V. KLIMENKO</b> , Commandant of Naval Polytechnic Institute, Russian Navy (MESC «Naval Academy»), Russia<br><b>S.I. LUKIN</b> , Deputy Commandant of Naval Polytechnic Institute (Navy MESC) for professorial and scientific activities, Russia   |
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## PROGRAM COMMITTEE OF NSN'2021 CONFERENCE

|                 |  |
|-----------------|--|
| Co-Chairmen     | <b>V.N. POLOVINKIN</b> , Science Principal, Krylov State Research Centre, Russia<br><b>M.Yu. GARSHIN</b> , Chief Research Scientist, Scientific Research Institute of Shipbuilding & Armament of the Russian Navy (MESC «Naval Academy»), Russia |
| Deputy Chairmen | <b>V.V. MAGAROVSKY</b> , Head of Division, Krylov State Research Centre, Russia<br><b>V.M. SHAPOSHNIKOV</b> , Head of Division, Krylov State Research Centre, Russia   |
| Members         | <b>V.O. BORUSEVICH</b> , Deputy Head of Division, Krylov State Research Centre, Russia<br><b>N.B. KHRYMOV</b> , Head of Department, SRI of Shipbuilding and Armament of the Russian Navy (MESC Navy), Russia                                     |

## GENERAL INFORMATION

**Conference theme** Hydrodynamics and strength in modern shipbuilding

**Technical sessions**

- Research in theoretical and applied hydrodynamics.
- Strength of surface ships and submarines.
- Shipbuilding developments for Coast Guard

**Venue** – Convention and Exhibition Centre EXPOFORUM. Address: Peterburgskoye sh. 64/1, St. Petersburg, Russia. *Pavilion H. Entry to Pavilion H is via Pavilion G.*

**Official language** – English

**Working languages** – Russian and English, synchronous translation being provided

**Conference publications** – Collection of papers *Proceedings of NSN'2021* in English language.

**Registration** Registration will take place on June 24, 2021 from 10.00 to 11.00 at the Secretariat of the Conference, EXPOFORUM Exhibition Centre (*registration desk is between entrance/exit G2-G1, Pavilion G*).

### NSN'2021 Secretariat

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## CONFERENCE CALENDAR

### June 24, 2021

|   |  |
|---|--|
| <i>Registration desk is between entrance/exit G2-G1, Pavilion G</i> |  |
| 10.00-11.00   | Registration of Conference participants and guests               |
| <i>Pavilion H, Conference room 4</i>                                |  |
| 11.00-11.30   | Conference Opening and Welcome Speeches                          |
| 11.30-14.00   | PLENARY SESSION  |
| 14.00-14.30   | <i>Coffee</i>  |
| 14.30-16.30   | TECHNICAL SESSION<br>“Shipbuilding developments for Coast Guard” |

### June 25, 2021

|   |  |
|---|--|
| <i>Pavilion H,<br/>Conference room 9</i>  | TECHNICAL SESSION<br>“Research in theoretical and applied hydrodynamics” |
| 10.30 – 14.10                             | <i>Break: 12.10 – 12.30, Coffee 14.10-14.40</i>                          |
| <i>Pavilion H,<br/>Conference room 10</i> | TECHNICAL SESSION<br>“Strength of surface ships and submarines”          |
| 10.30 – 16.30                             | <i>Break: 12.10 – 12.30, Coffee 14.10-14.40</i>                          |

# CONFERENCE OPENING

## PLENARY SESSION

**June 24, 2021**

- 10.00 - 11.00 Registration of Conference participants and guests  
*Registration desk is between entrance/exit G2-G1, Pavilion G*
- 11.00-11.30 Conference Opening and Welcome Speeches  
*Pavilion H, Conference room 4*

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**11.30 – 14.00** *Plenary session*

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*Chairman: V.N. Polovinkin, Krylov State Research Centre, Saint Petersburg, Russia*

- 11.30 - 11.55 **V.N. Polovinkin**, Krylov State Research Centre, Saint Petersburg, Russia  
Navy as key element of global geopolitics. State of the art and prospects of naval forces
- 11.55 - 12.20 **G.N. Muru, V.V. Kharitonov**, 51<sup>st</sup> CDTISR JSC, Saint Petersburg, Russia  
**K.V. Plotnikov, V.N. Tryaskin**, Saint Petersburg State Marine Technical University, Saint Petersburg, Russia  
Issues of the Navy ships and vessels hull condition assessment and its prediction
- 12.20 - 12.45 **G.S. Malhotra**, Indian Navy, Ministry of Defence, New Delhi, India  
Influence of underwater explosion damage to the ship's hull
- 12.45 - 13.10 **Zhang Qingshan, Chen Weimin, Du Yunlong, Dong Guoxiang**, Shanghai Ship and Shipping Research Institute, Shanghai, China  
Full-scale self-propulsion simulation with a discretized propeller
- 13.10 - 13.35 **Biplabananda Talukdar**, Directorate of Naval Architecture, Integrated Headquarters –Ministry of Defence (Navy), New Delhi, India  
Comparative resistance & seakeeping analyses of warship displacement monohulls, when modified to inverted bow forms from conventional bow
- 13.35 - 14.00 **V.N. Polovinkin, L.I. Vishnevsky**, Krylov State Research Centre, Saint Petersburg, Russia  
**D.Ch. Luk**, Saint Petersburg State Marine Technical University, Saint Petersburg, Russia  
On specifics of complex geometry propeller design for ships of various missions

**14.00-14.30** *Coffee*

## Technical session

# SHIPBUILDING DEVELOPMENTS FOR COAST GUARD

**June 24, 2021**

Pavilion H, Conference room 4

*Chairman: I.V. Zubov, FGKU “Military Unit 2599”, Moscow, Russia*

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**14.30 – 16.30**

***Technical session***

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***D.E. Yurchenko, FGKU “Military Unit 2599”, Moscow, Russia***

Creation of the universal system of automatic registration, storing and reproducing the circumstances of the ship service activities

***O.I. Baganov, FGKU “Military Unit 2599”, Moscow, Russia***

Current problems of domestic diesel engines’ building industry and their impact on modern shipbuilding

***I.V. Zubov, FGKU “Military Unit 2599”, Moscow, Russia***

***N.M. Yelovsky, S.V. Plastinin, A.P. Orlov, S.N. Bakay, Kronstadt Technologies JSC, Saint Petersburg, Russia***

Prospects of marine robotic systems in coast guard service

***G.A. Dubov, V.S. Yakushev, PJSC “Yaroslavl Radio Plant”, Yaroslavl, Russia***

Evolution of emergency rescue technology

## Technical session

# RESEARCH IN THEORETICAL AND APPLIED HYDRODYNAMICS

June 25, 2021

Pavilion H, Conference room 9

*Chairman: V.V. Magarovsky, Krylov State Research Centre, Saint Petersburg, Russia*

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**10.30 - 14.10**

**Technical session**

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**G.I. Kanevsky, A.M. Klubnichkin**, Krylov State Research Centre,  
Saint Petersburg, Russia

**K.E. Sazonov**, Krylov State Research Centre, Saint Petersburg, Russia,  
Saint Petersburg State Marine Technical University, Saint Petersburg, Russia  
Scale effects in propeller hydrodynamics of Arctic combatants

**O.P. Orlov**, Krylov State Research Centre, Saint Petersburg, Russia  
Principal possibility of full modeling of forces on ship hull and propeller

**A.Yu. Yakovlev, Thant Zin**, Saint Petersburg State Marine Technical University,  
Saint Petersburg, Russia  
Practical method for scale effect accounting for marine propellers

**N.V. Marinich, V.A. Rodionov, A.A. Koval, A.V. Sverchkov, F.E. Mamontov**,  
Krylov State Research Centre, Saint Petersburg, Russia  
Development of a waterjet family for ships with improved seakeeping performance  
and variable-discrete bottom deadrise

**V.V. Klichko, T.A. Dyakova, O.A. Zaitsev, S.O. Rozhdestvensky, D.V. Fomichev**,  
Krylov State Research Centre, Saint Petersburg, Russia  
A new type of flexible skirt for amphibious air cushion vehicle

**12.10 - 12.30**

**Break**

**V.N. Anosov**, Krylov State Research Centre, Saint Petersburg, Russia  
**V.E. Egurnov**, Hydro Energy Special Construction Group, St. Petersburg, Russia  
Specific aspects of investigations into dynamics of offshore structures in shallow  
water conditions

**V.I. Maslov**, Krylov State Research Centre, Saint Petersburg, Russia  
On freak wave simulation in test tank

**A.A. Petrov**, AO CNIIMF, Saint Petersburg, Russia  
**V.A. Suvorov**, AO CIFRA / Peter the Great St. Petersburg Polytechnic University,  
Saint Petersburg, Russia  
Simulation of vessel towing along the fairway of an offshore transshipment complex

**Yu.V. Guryev, M.Z. Slutskaya**, *Naval Polytechnic Institute (Branch) MESC NF "Naval Academy", Saint Petersburg, Russia*

Mathematical and software for predicting hydromechanical characteristics of marine mobile objects for simulators and on-board complexes

**E.A. Kulichkova, V.A. Kozlov**, *JSC "Shipbuilding & Shiprepair Technology Center", Saint Petersburg, Russia*

Mathematical models of the main geometric objects characterizing hydrodynamic processes in the flow section of ship valves

**14.10 - 14.40**

**Coffee**

## **Technical session**

### **STRENGTH OF SURFACE SHIPS AND SUBMARINES**

**June 25, 2021**

Pavilion H, Conference room 10

**Chairman: V.M. Shaposhnikov**, *Krylov State Research Centre, Saint Petersburg, Russia*

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**10.30 - 16.30**

**Technical session**

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**G.A. Tumashik**, *Krylov State Research Centre, Saint Petersburg, Russia*  
Mathematical modeling of shell structure behavior under creep conditions

**O.G. Efimova, E.A. Maslich, N.N. Fedonyuk**, *Krylov State Research Centre, Saint Petersburg, Russia*  
Damage development and failure of new butt joint types for hull structures made of polymeric composite material

**Ya.M. Lyubomirov, B.A. Yartsev**, *Krylov State Research Centre, Saint Petersburg, Russia*  
Prospects for application of composite blades for reducing the levels of hydroelastic vibrations of ship propellers

**M.A. Dmitriev, V.E. Tyutyukov, D.Yu. Shalaev**, *Krylov State Research Centre, Saint Petersburg, Russia*  
Development of analytical and experimental procedures to ensure strength and functional reliability of unmanned submersibles

**D.V. Linev, V.V. Osipenko, G.A. Tumashik**, *Krylov State Research Centre, Saint Petersburg, Russia*  
On experimental verification of submersible hulls and pressure modules designed for extreme depth of the ocean

**12.10 - 12.30**

**Break**



**E.Yu. Mikhailov, V.I. Nigmatullin, O.G. Rybakina, O.A. Strogonova,**  
*Krylov State Research Centre, Saint Petersburg, Russia*  
Creep of titanium alloys under unloading and rest conditions

**G.B. Kryzhevich,** *Krylov State Research Centre, Saint Petersburg, Russia*  
**A.Yu. Pravdin,** *NPK Morsvyazavtomatika, Saint Petersburg, Russia*  
Improvement of operational safety for wave-cleaving catamarans by introduction of bow buoyancy volumes with polyurethane foam

**D.A. Avtaikin, A.I. Kunitsky, G.T. Mikaelyan, A.N. Miryakha, V.A. Panarin, S.N. Sokolov, L.I. Shestak,** *Research and Manufacturing Enterprise INJECT LLC, Saratov, Russia*  
Technology of surface hardening of materials by diode lasers and prospects of its application

**A.A. Vasilev, P.D. Metelkin, V.V. Stepanov,** *JSC Shipbuilding and Shiprepair Technology Center, Saint Petersburg, Russia*  
Development of technology for low-frequency vibration treatment of welded structures in shipbuilding and automotive industry

**A.G. Sukhov, S.M. Shanchurov,** *Regional Center of Laser Technologies, Ekaterinburg, Russia*  
Development and application of laser technologies in the manufacture of high-precision constructions made of titanium and aluminum alloys and steels

**14.10 - 14.40**

**Coffee**

**K.S. Eranosyan, E.A. Maslich, N.N. Fedonyuk,** *Krylov State Research Centre, Saint Petersburg, Russia*  
Limit state of hull grillages made of polymeric composite materials

**A.P. Lysenko,** *Krylov State Research Centre, Saint Petersburg, Russia*  
Dynamics of composite vibration-absorbing couplings

**M.A. Kudrin, V.V. Platonov,** *Krylov State Research Centre, Saint Petersburg, Russia*  
Analysis of modern requirements on ice strength of surface ships hulls