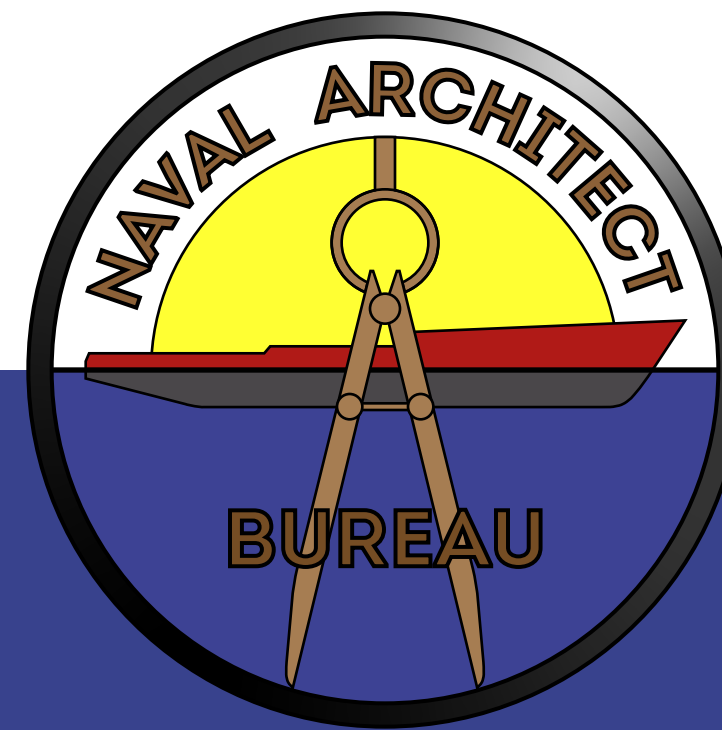


LIMITED LIABILITY COMPANY
«NAVAL ARCHITECT BUREAU»

Professional engineering services for sea and river fleet



Leading engineering solutions and reliability decisions for your fleet



ABOUT OUR COMPANY

LLC «NAVAL ARCHITECT BUREAU» - is an engineering company providing design, consulting and research services for sea and river fleet.

Our bureau was founded by graduates of the Naval Architect Department of Odessa National Maritime University in 2014.

Our specialists have developed and successfully implemented new shipbuilding projects, reclassification and modernization projects, operational documentation, navigation area expansion groundings and software applications.

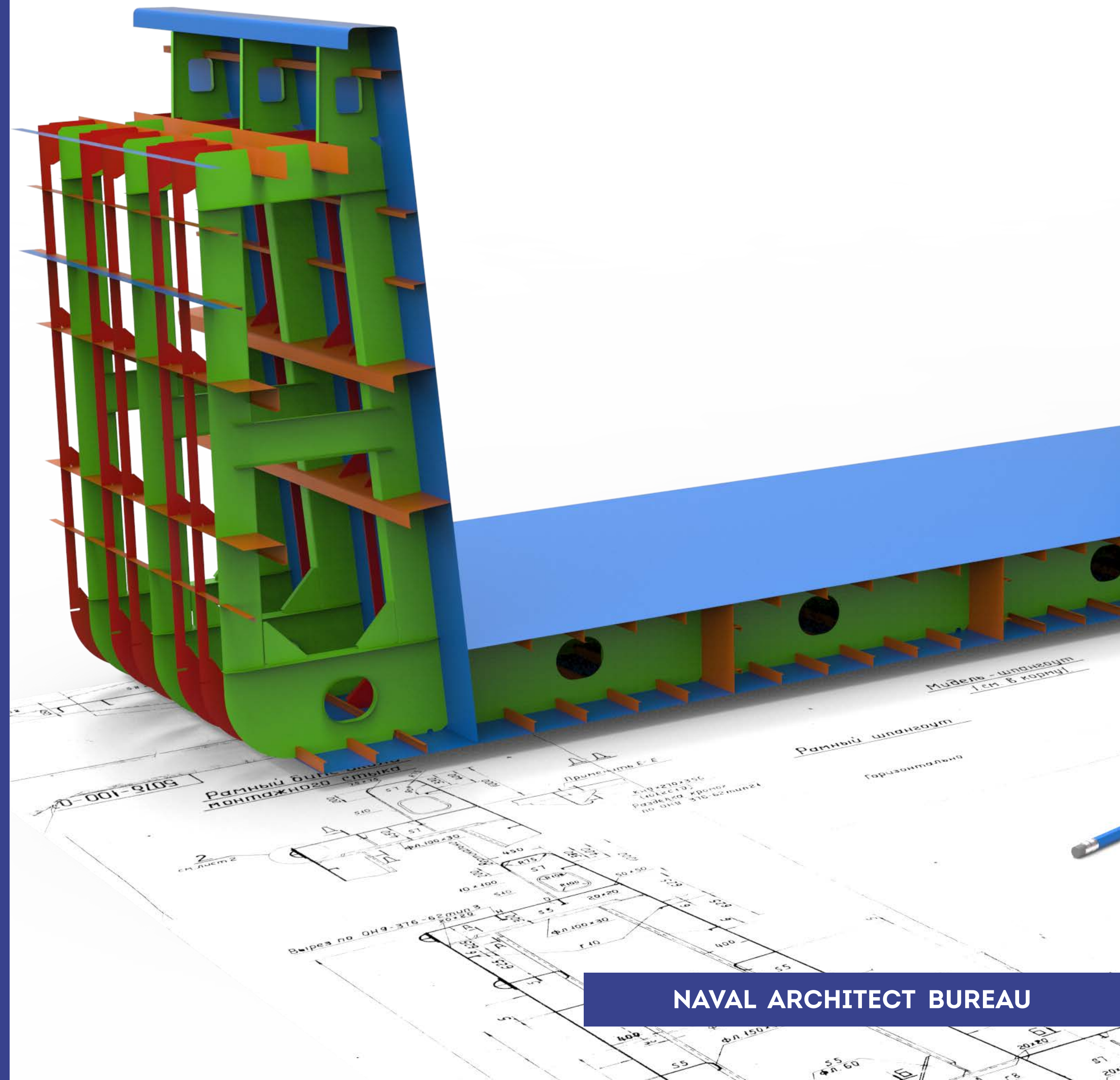
Works have been carried out both for Ukrainian shipping companies and for our clients from near and far abroad: Turkey, Austria, Kazakhstan, Russia, Moldova, Singapore, UAE, Georgia.



OUR PROJECTS

Over the past six years, our engineers have been successfully working on a wide variety of projects, solving both typical and non-standard problems:

- ✓ over 30 groundings of navigation area expansion (including projects without any reclassification) were fulfilled;
- ✓ more than 10 conveyance projects were carried out;
- ✓ operational documentation for typical vessels of Black Sea region and Ukrainian inland waterways is constantly being developed or recovered;
- ✓ over 30 ice category groundings for dry cargo vessels, tugs and floating cranes (including reinforcement and modernization of the fore part) were fulfilled;
- ✓ more than 20 exception analysis to escape International Convention requirements were developed;
- ✓ dangerous goods transportation projects were carried out.





Docking facilities projects:

- ✓ full detailed project of smart floating dock – stern-lifter with lifting capacity 350 t for DDSG Company was developed and in 2019 the object was built and brought into service;
- ✓ lightweight check and new operational documentation was fulfilled for floating dock No. 1084 of PJSC “Dunaysudoremont”;
- ✓ for Chernomorsk ship-repair yard floating docks No.152 and No. 154 were carried out actual hull strength calculations;
- ✓ sketch project of a floating dock with lifting capacity 5000 t with the use of donor vessel hulls was developed in co-operation with our partners – “PROSHIP” bureau.



Tug and tow caravans projects:

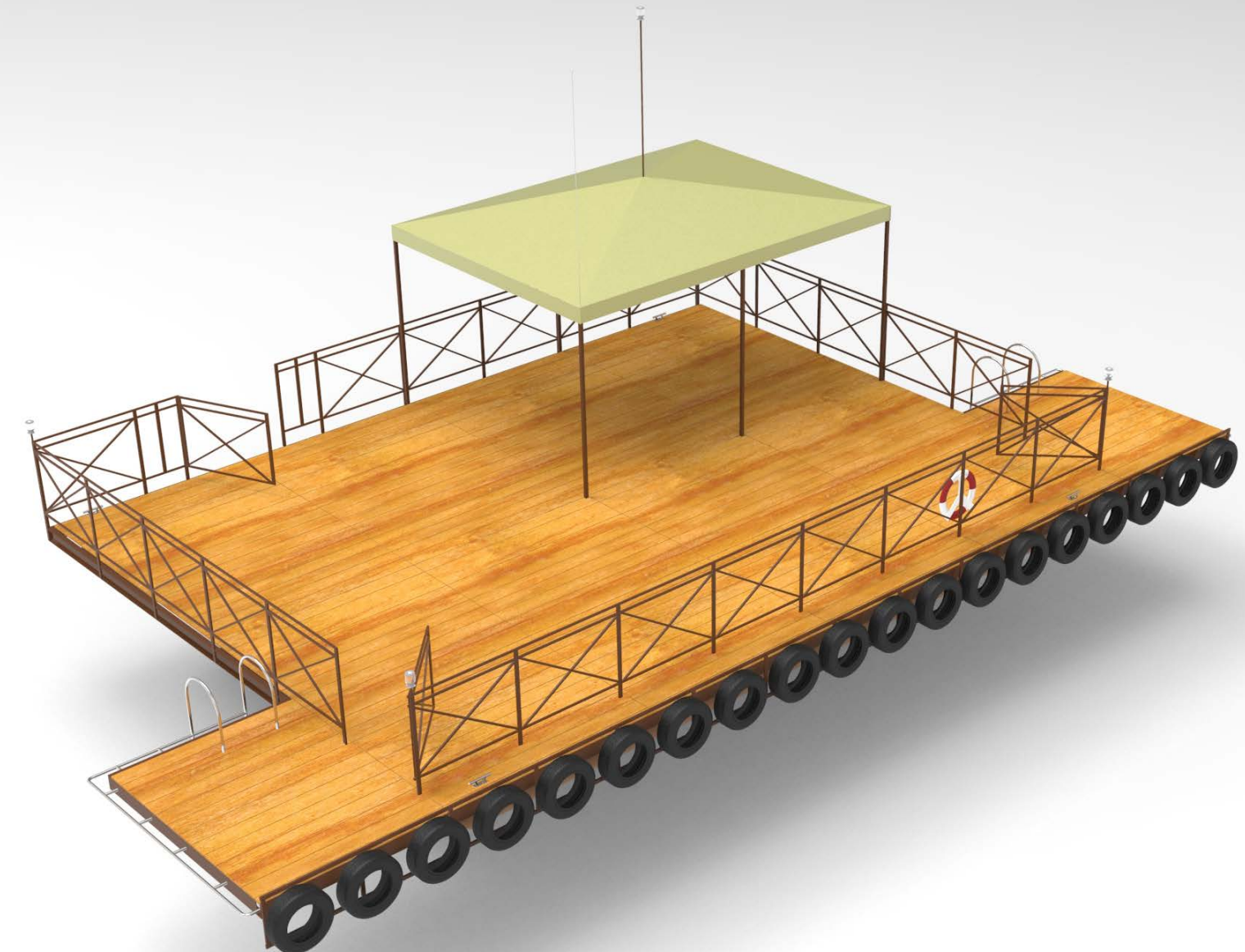
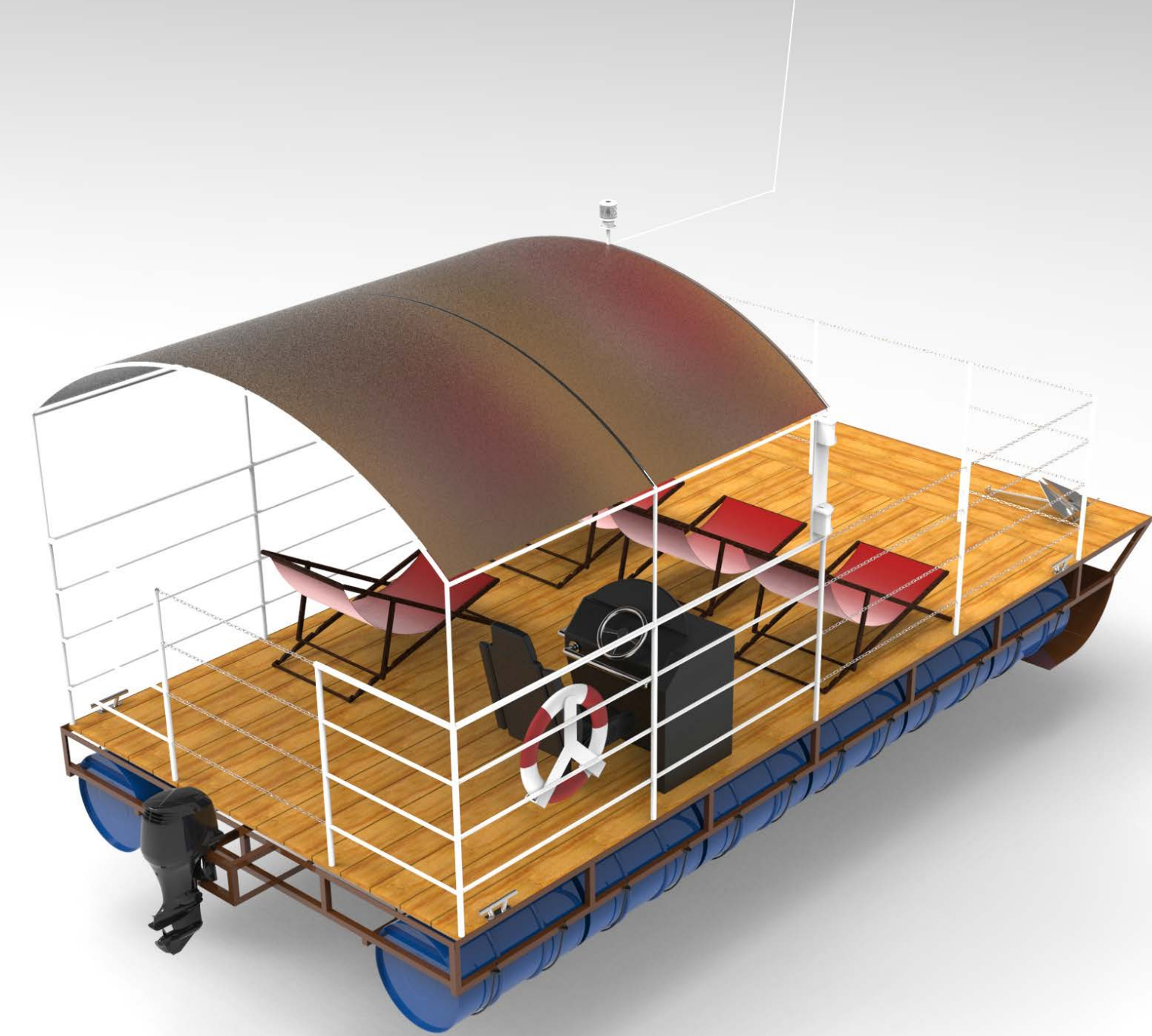
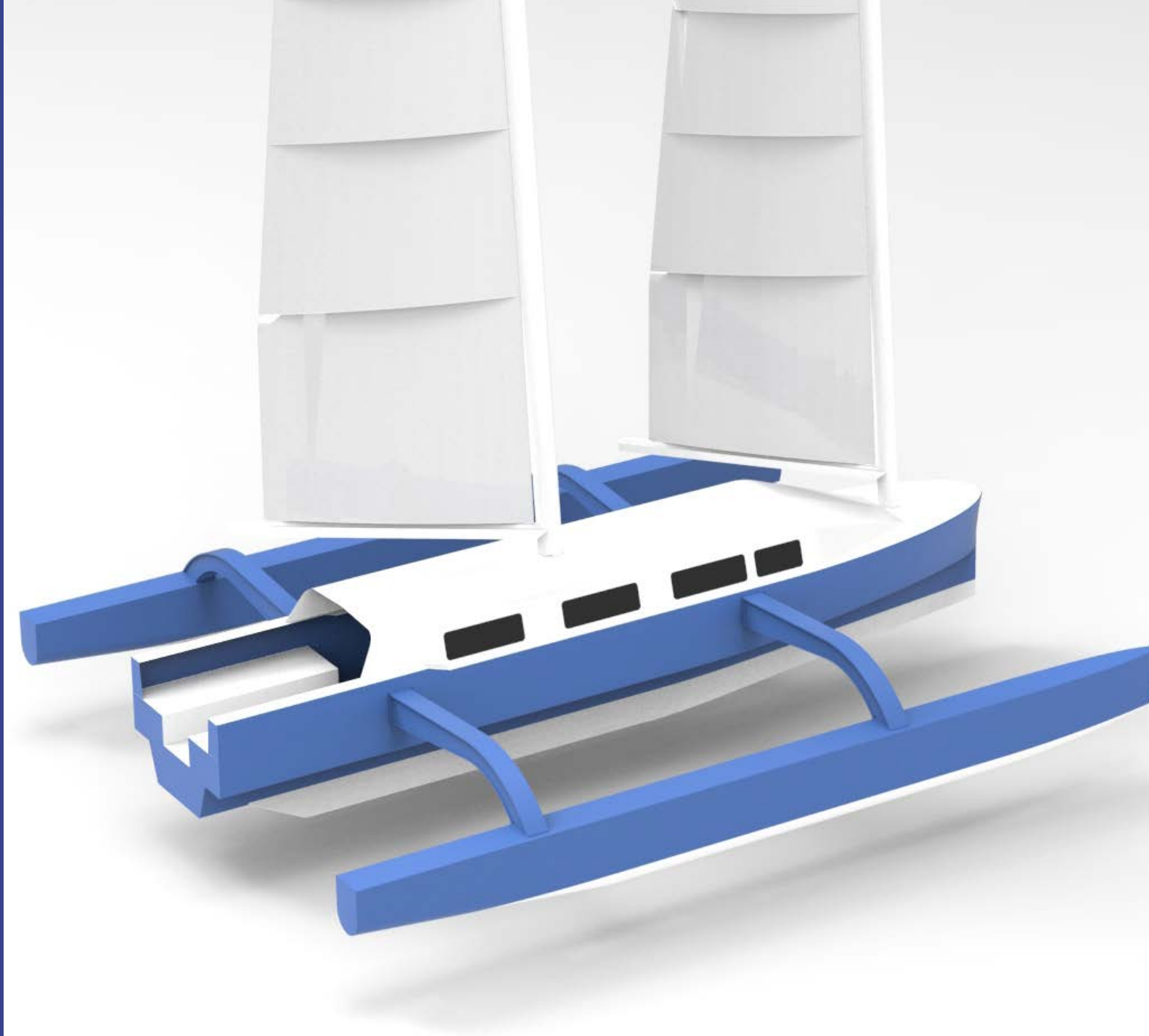
- ✓ grounding of caravan operation including 1 pusher and 12 barges with total loading capacity 19 000t on European inland waterways, which allowed our Customer to approve his leading position in the field of river transportation of goods;
- ✓ reclassification projects for river class barges to operate in coastal zone;
- ✓ engineering works on aft part reinforcement of barges in order to provide possibility of pushing;
- ✓ actual hull strength calculations for barges and tugs;

- ✓ sketch and full-detailed projects of main engine replacement on tugs;
- ✓ sketch designs of hatch covers modernization of river fleet to provide watertightness and strength for operation in coastal zone;
- ✓ consulting in selection of on-sale barges and pushers to operate on Ukrainian inland waterways and Black Sea coastal zone.

Small craft projects:

More than 15 small craft objects of various types and purposes for operation on inland waterways were built according to our projects:

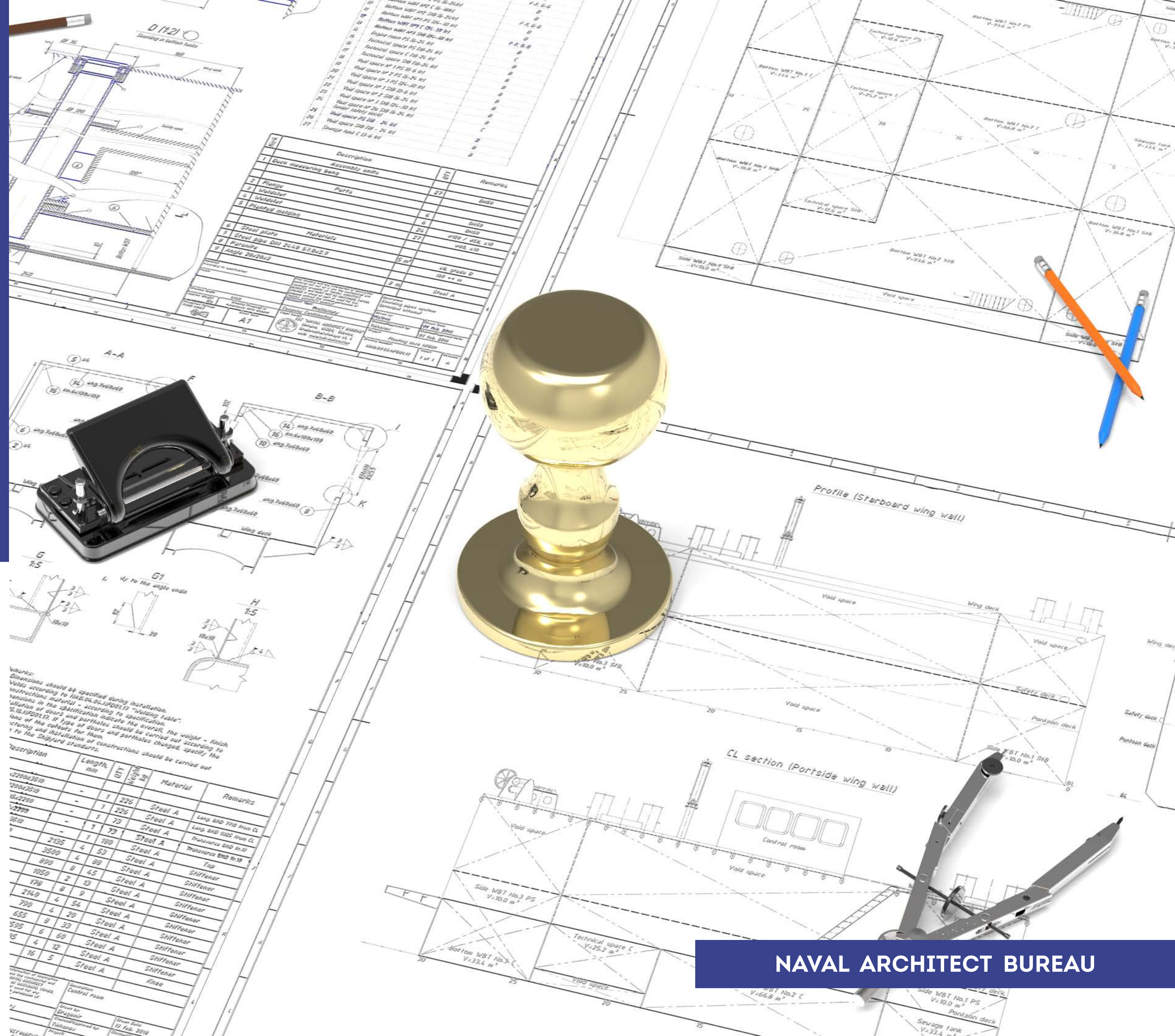
- ✓ pleasure yachts;
- ✓ multihull vessels;
- ✓ boat houses;
- ✓ floating bridges;
- ✓ floating births;
- ✓ boats.



NAVAL ARCHITECT BUREAU

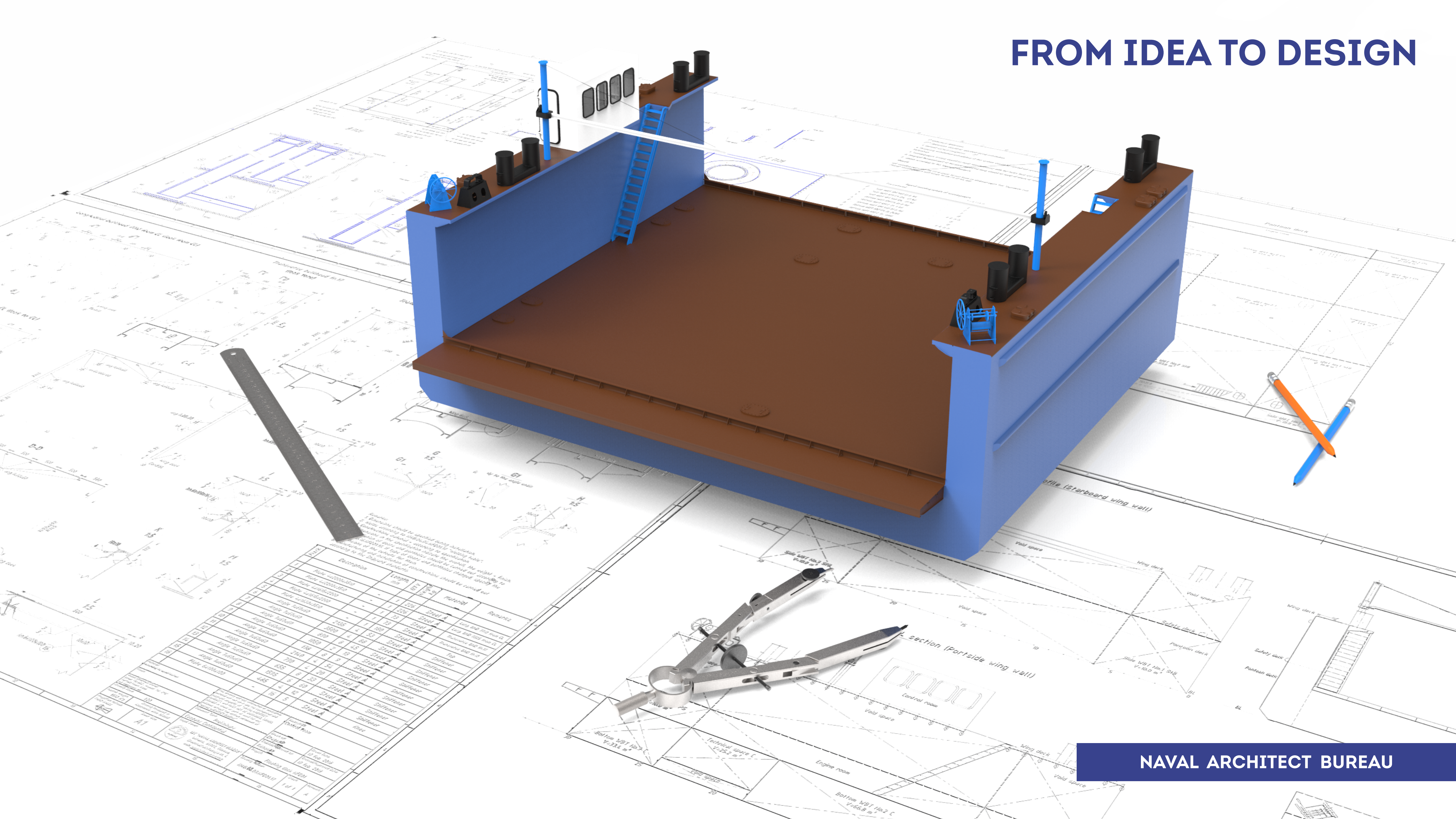
Our projects were successfully approved by the following classification societies:

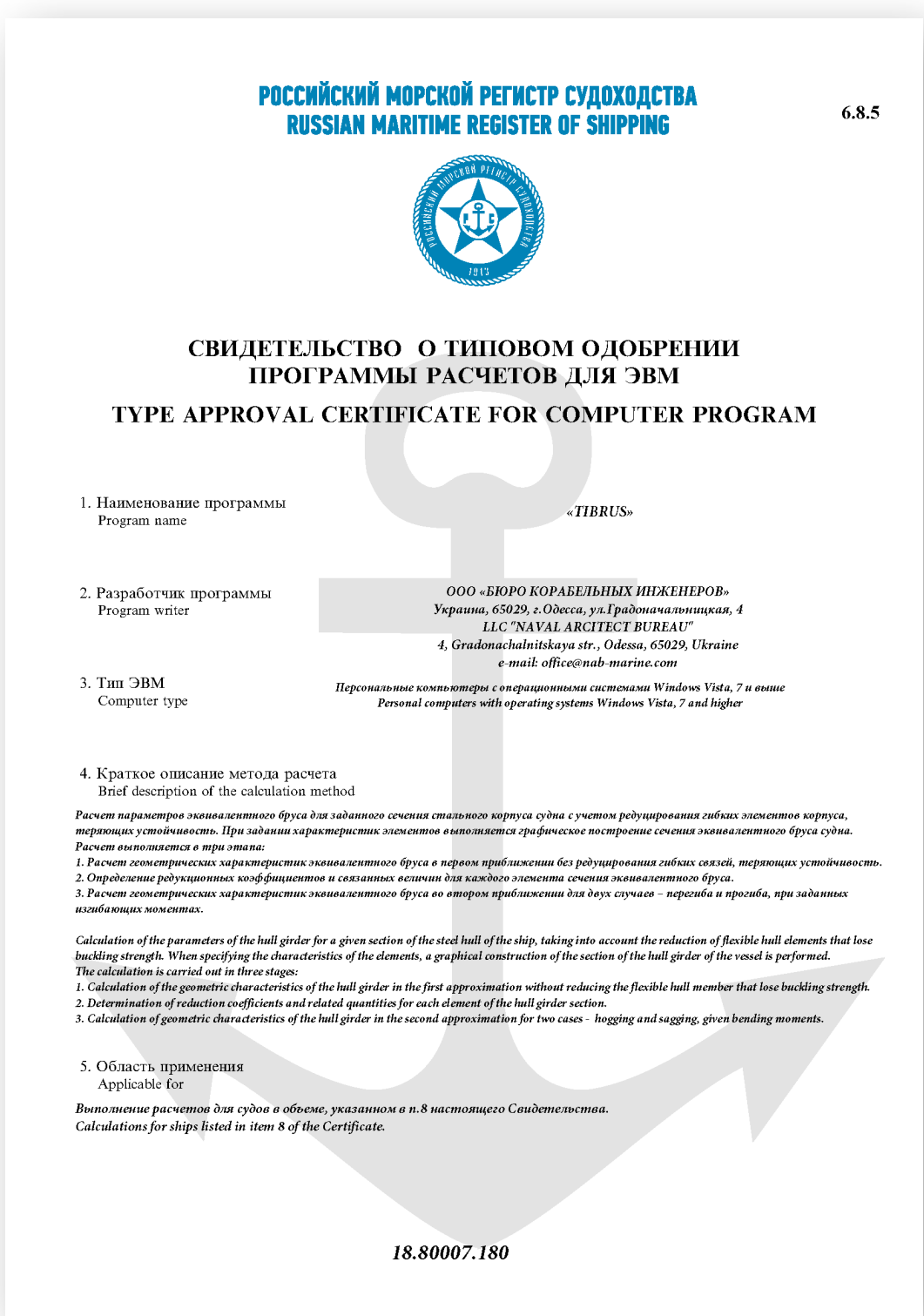
- ✓ Shipping Register of Ukraine
- ✓ Bureau Veritas
- ✓ Russian Maritime Register of Shipping
- ✓ Russian River Register
- ✓ Phoenix Register
- ✓ Mediterranean Shipping Register
- ✓ International Naval Surveys Bureau



NAVAL ARCHITECT BUREAU

FROM IDEA TO DESIGN





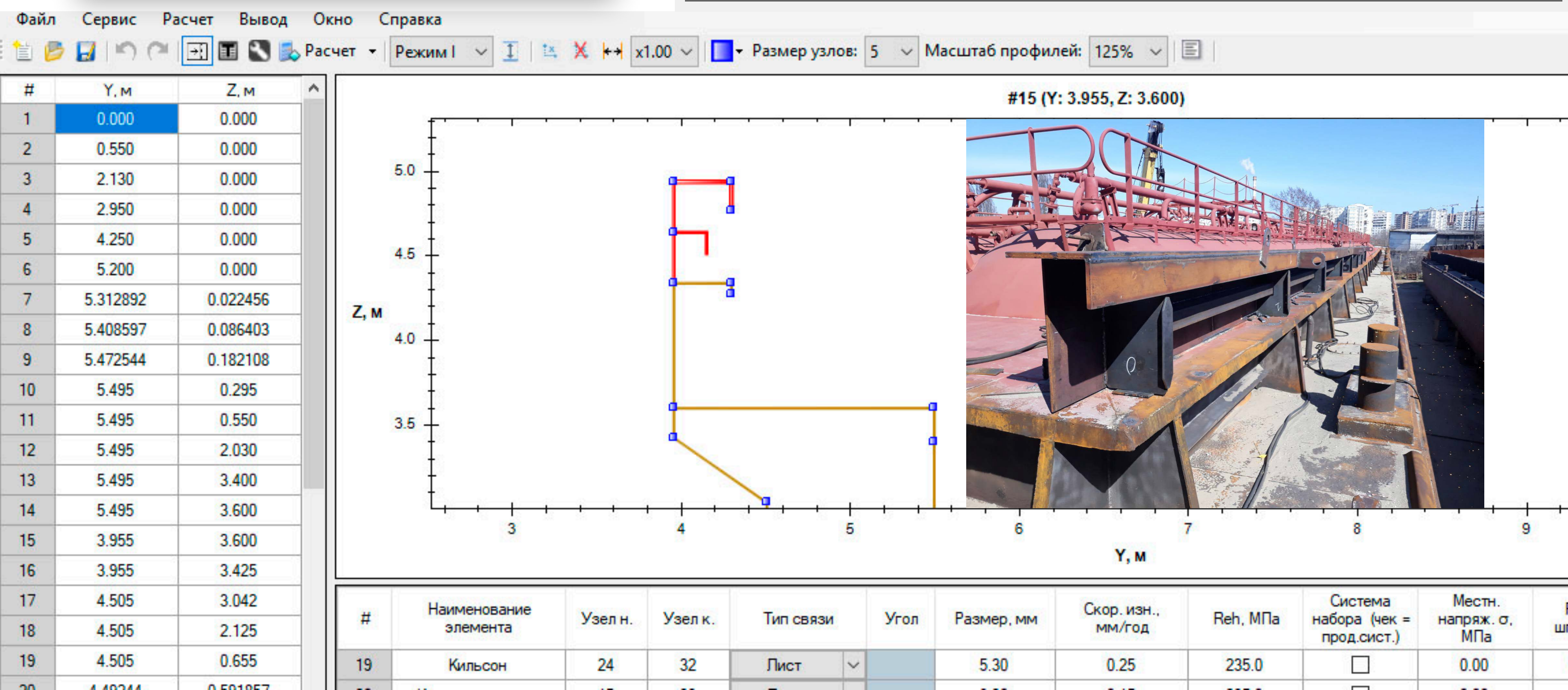
OTHER COMPANY ACTIVITIES

Software Development

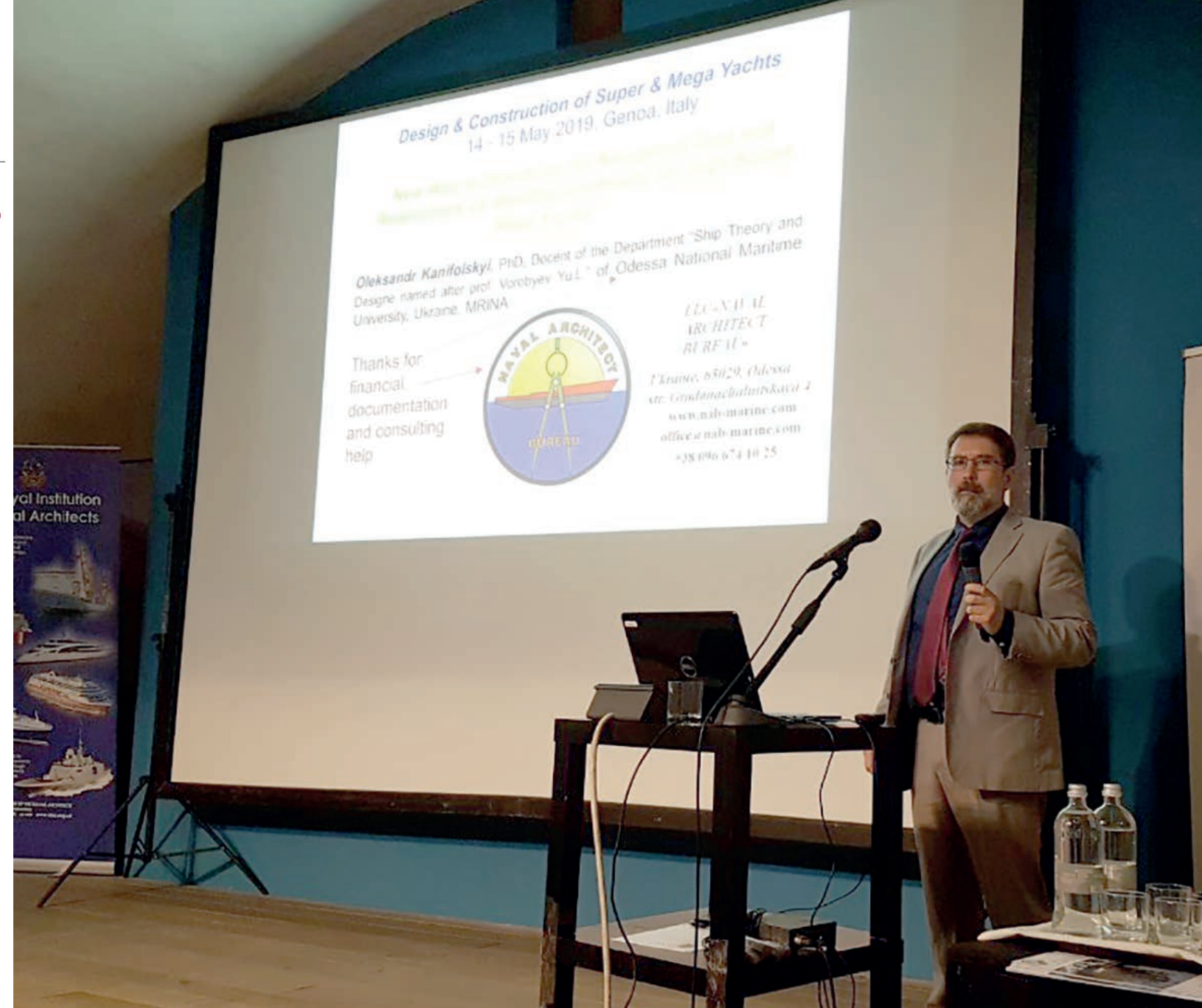
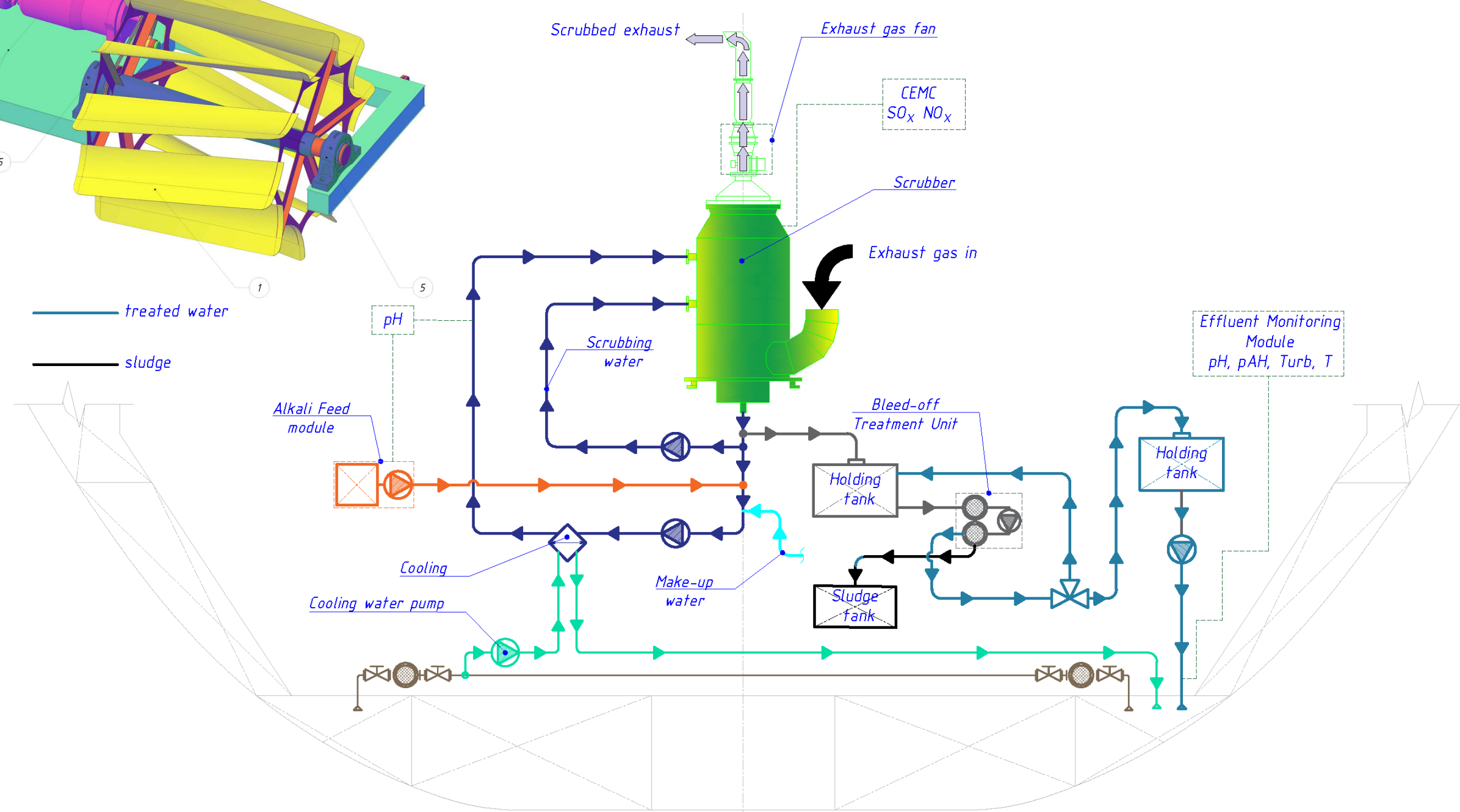
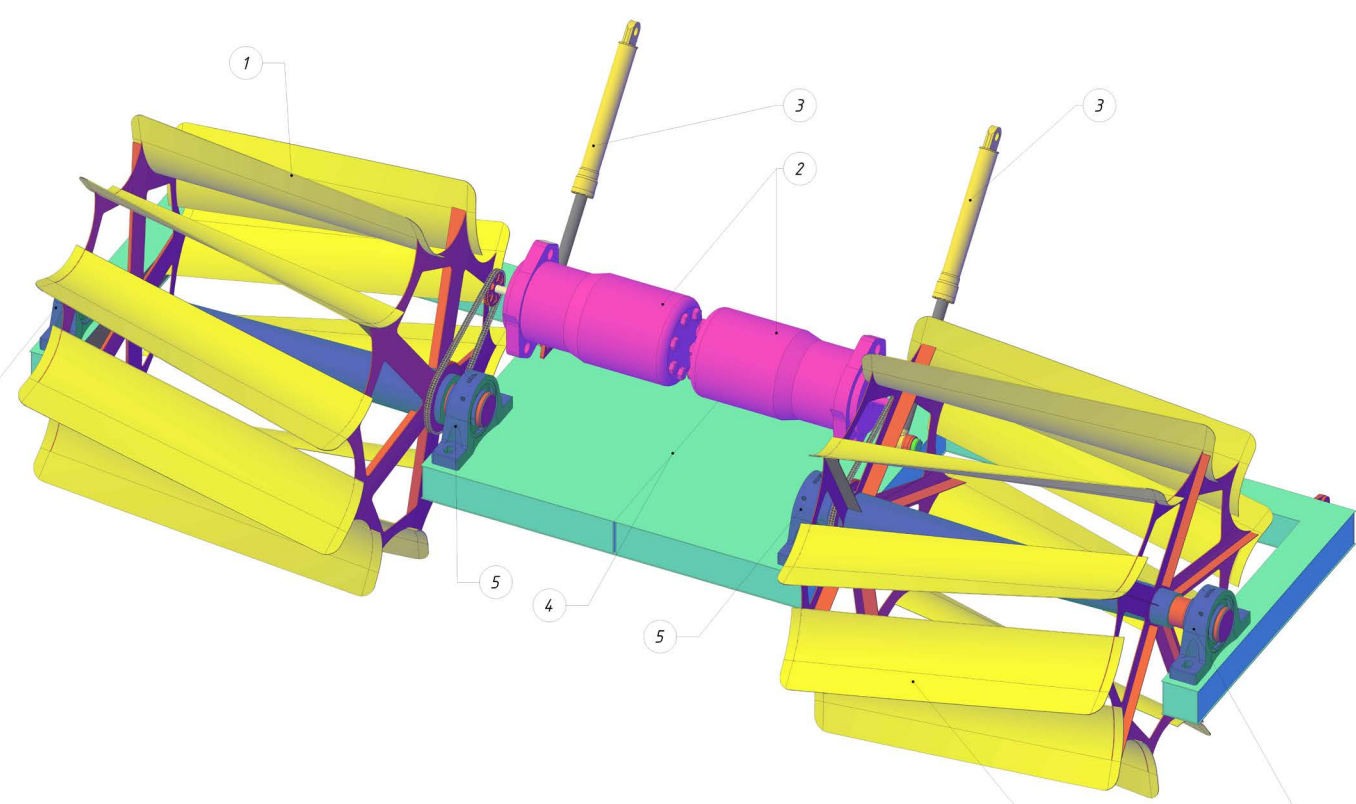
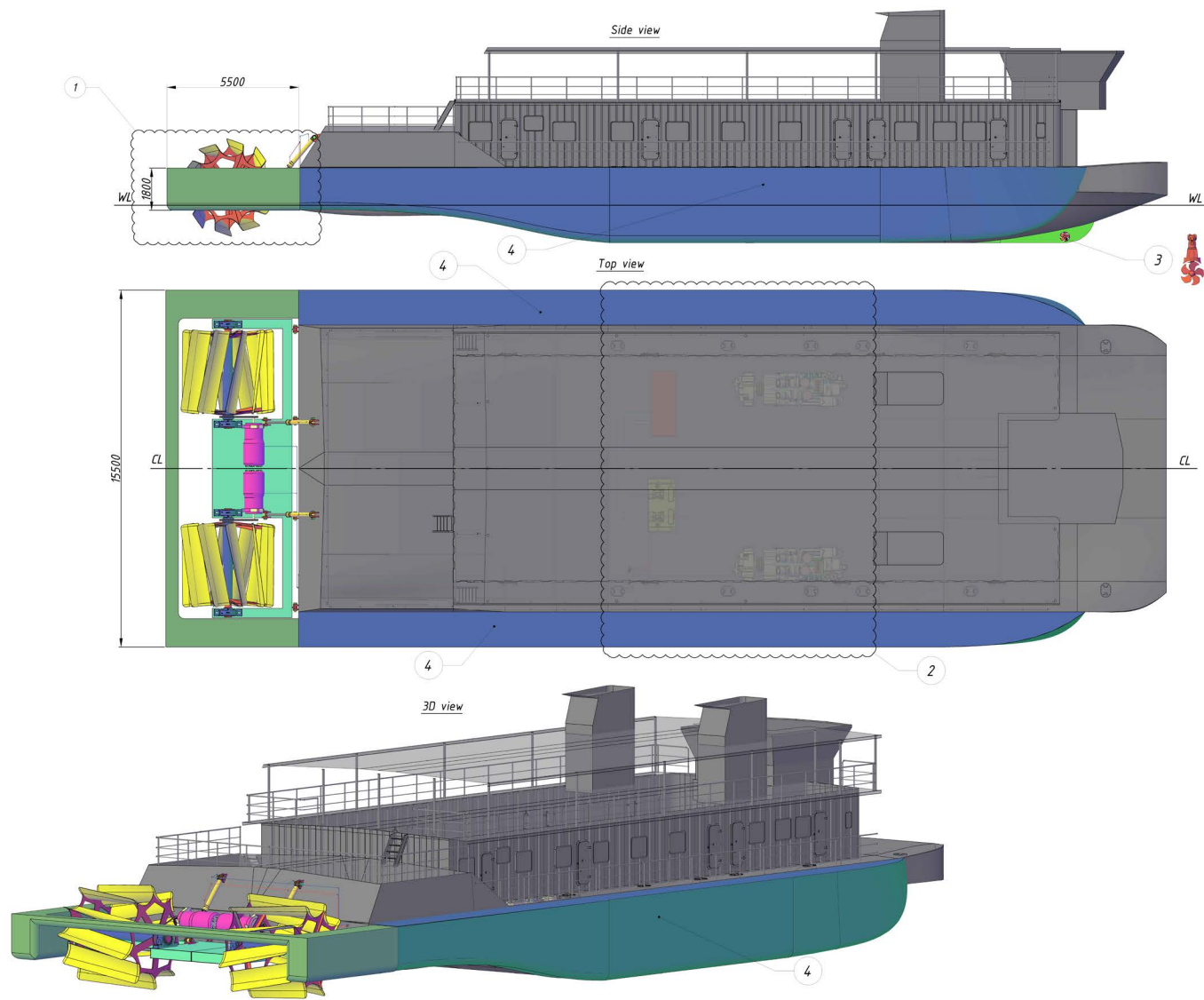
In order to optimize the working process, we have developed our own software for performing calculations of longitudinal strength of ship hulls - «TIBRUS».

TIBRUS has successfully got «Type approval certificate for computer program» of Russian Maritime Register of Shipping No18.80007.180 from 14.03.2018.

The main features of the application are the ability to perform simultaneous calculations according to the requirements of various classification societies and considerable reduction in the complexity of calculations.



NAVAL ARCHITECT BUREAU



Research engineering

We constantly maintain relations with magistral staff of Odessa National Maritime University: change experience and work together on actual shipping and shipbuilding problems.

With the participation of our company, ONMU lecturers attend scientific conferences in Europe.

Our company is actively exploring latest trends and problems of sea and river fleet.

Our specialists are carrying out sketch investigations in the following areas:

- ✓ installation of gas or hybrid engines;
- ✓ paddle-wheel operation in small depth areas;
- ✓ exhaust filter systems (scrubbers) installation.

OUR LONG-TERM CUSTOMERS

Over the years of successful work, we have got the following large shipping companies as our long-term customers:



When interacting with each Customer, we try our best to develop individual and proper strategy for solving client's tasks, taking into account all possible technical features of the vessel and terms of work, paying much attention to shipping safety and regulatory requirements.

Each important stage of work is preliminarily agreed with the Customer and before our submitting of the design documentation for the Classification Society review and approval, the Customer already has information about its future results, which eliminates unpleasant factor of suddenness.

These work principles allow us to provide our services with quality and on time.

OUR PARTNERS

We effectively co-operate with other design bureaus and shipyards.

Close interaction in engineering services with our partners from «PROSHIP» and «CHAIKA» allows our specialists to change experience with each other and improve professional skills.

During such cooperation we have got great experience in design of floating docks and platforms and also in small craft design, especially in calculations for vessels made from high-density polyethylene (HDP).

Our teamwork with Intellectual Maritime Technologies Company (Nikolaev, Ukraine) which is specialised on ship's propulsion design and calculations, gives us an opportunity to carry out projects on main engine replacement, propeller-rudder complex modernisation, and also to develop full-scope design for new building of self-propelled vessels.

While carrying out detailed projects for vessels modernization we have become long-term partners with shipyards and supply companies:

- ✓ Chernomorsk ship-repair yard, Ukraine
- ✓ Sigo Marine (small craft shipbuilding, Ukraine)
- ✓ Hidrodinamik (ship-repair yard, Turkey)
- ✓ Intellectual Maritime Technologies
- ✓ Electric Engineering (supply and service company, Ukraine)



NAVAL ARCHITECT BUREAU

OUR SERVICES













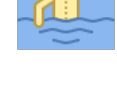



1. MODERNIZATION AND RECLASSIFICATION PROJECTS












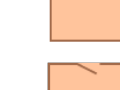

-  Cargo carrying capacity increasing
-  Navigation area expansion
-  Dangerous goods transportation
-  Specific goods transportation
-  Double bottom and double side installation
-  Bow thruster mounting
-  Crane equipment installation
-  Increasing volume of cargo spaces
-  Decreasing draught without deadweight changing
-  Air draught decreasing
-  Propulsion modernization for low draught vessels
-  Length changing
-  Passenger capacity increasing
-  Main engine changing
-  Main engine cooling system modernization
-  Towing gear installation

-  Hull reinforcement
-  Ice category grounding
-  Ballast water management system installation
-  Ship's purpose or type changing
-  Build of new vessels with the use of donors
-  Exhaust filter systems (scrubbers) installation
-  Additional fire system installation
-  MARPOL or Environmental protection projects
-  Installation or modernization of sewage and oil waste systems
-  Propeller-rudder complex optimization
-  Pushing boxes installation
-  Ship's electric powerplant modernization
-  Monitoring system of fuel consumption
-  Anchor and mooring gear modernization

OUR SERVICES





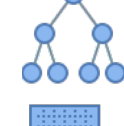


2. OPERATIONAL DOCUMENTATION

-  Strength and stability booklet for the Master
-  Loading manual
-  Information on ship's stability loaded with grain
-  Strength and stability booklet for the ship loaded with solid bulk cargoes
-  Damage stability booklet
-  Technical grounding of the exception from the International Conventions requirements
-  Inclining tests and lightweight check
-  Emergency towing booklet (ETB)
-  Plans and procedures for recovery of persons from water
-  Cargo securing manual
-  Sounding tables for ship's tanks
-  Tug and tow caravans groundings and calculations
-  Damage control plan
-  Ship garbage management plan
-  Ship energy efficiency management plan
-  Schedule of maintenance of life-saving appliances

-  Schedule of maintenance of fire-fighting appliances
-  Inventory of hazardous materials (IHM)
-  Load line
-  Draught marks and deadweight scale drawing
-  Cargo plan
-  Docking plan
-  Capacity plan
-  Damage stability calculations
-  Freeboard calculation
-  Gross and net tonnage calculation
-  Fire and safety plan
-  Ballast water management plan (BWMP)
-  Ship oil pollution emergency plan (SOPEP)
-  Conveyance projects
-  Analysis of actual fulfilment of International Convention or Code requirements
-  Analysis of actual fulfilment of Classification Society requirements

OUR SERVICES

3. SHIP'S HULL AND ITS CONDITION ANALYSIS






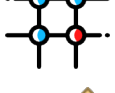



-  Actual hull strength calculation based on UTM reports
-  Hull condition expert analysis
-  Repair recommendations and sketches
-  Shell plating elements retaining groundings
-  Strength FEM (Finite element method) calculation
-  Vibration strength calculations
-  Overall deflection analysis and unbending plan

4. VESSELS DESIGN



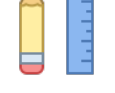

-  Small pleasure craft
-  Berth-connected vessels
-  Floating offices
-  Tugs and pushers
-  Barges and lighters
-  Tug and tow caravans
-  Docking facilities
-  Special purpose vessels
-  Floating bridges
-  House boats
-  Floating platforms
-  Floating trans-shipping terminal
-  Floating module constructions

OUR SERVICES






5. SMALL CRAFT AND PLEASURE YACHTS

-  Water resistance calculation and main engine selection
-  Maneuverability calculation
-  Propeller-rudder complex optimization
-  Passenger capacity increasing
-  Navigation area expansion
-  Strength calculations of composite material vessels
-  Measurements of the vessel
-  Inclining tests
-  Technical review

6. RECOVERY OF LOST DOCUMENTATION AND DRAWINGS

-  Lines plans
-  Construction drawings
-  General arrangement drawings
-  Operational documentation

7. PROPULSION SYSTEM CALCULATION

-  Marine propulsion shafting design
-  CFD analysis of propeller hydrodynamic loads
-  Bracket bearing stiffness calculation
-  Shaft alignment design
-  Torsional, whirling and axial vibration analysis

8. SOFTWARE DEVELOPMENT

9. OTHER

-  3-D modelling
-  Consulting



Thank you for the time you spent on our informational booklet.

If you have any questions or propositions, please do not hesitate to contact us in any convenient way.

Our company is ready for developing interesting and complex projects, solving new problems and is open for effective and reliable cooperation.

Respectfully yours,

Director of

LLC «NAVAL ARCHITECT BUREAU»

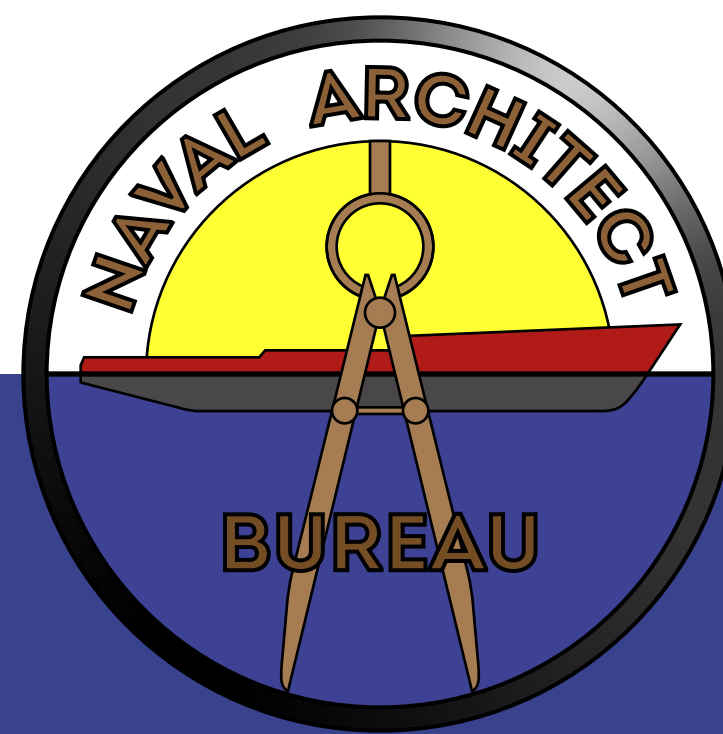
Tikhonov Mikhail



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