Progress of inland and “river-sea” going fleet replacement programs (Russia)

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2015

Cargo volumes transported by "river-sea" going vessels (including to remote Nordic zones of Russia)

Year	1990	1992	1994	1998	2002	2006	2010	2012	2013
Export-import transportation, mil. tons	17.5	16.4	20.2	19.0	29.3	22.3	17.0	29.5	31.2
Transportation to the remote Nordic zones of Russia, mil. tons				12.2	13.3	13.7	18.0	20.0	17.7

COMPARISON facts:

USSR: The record of cargoes transported by river fleet was in the year 1988 and amounted 582.3 mil.tonns of goods;

Modern Russia: In 2012 a total volume of cargoes transported by inland shipping amounted up to 142 mil.t, in 2013 – around 137 mil.t – which is only 24-25% of the 1988 level

Dynamics of inland vessels number and age

Year	Number of vessels, units	Average age, years
1980	48000	14.9
1990	44654	18.9
1994	41308	22.9
1996	37920	23.1
2000	34034	23.9
2004	29657	24.7
2008	28215	29.2
2012	23851	32.4

Winter laden up vessels

Demand for Newbuilding for Russian Maritime and Inland Shipping till 2020

- Deep-sea going vessels - 186-198 units;
- River-Sea going vessels - 90-100 units;
- Inland cargo vessels - 220-260 units;
- Passenger and cargo-passenger vessels - 30-35 units;
- Inland passenger vessels – 5 units;

- Ice-Breakers – 6 units;
- Rescue vessels – 40 units;
- Hydrographical vessels and vessels for servicing at ports - 46-48 units;
- Tugs, bunkering vessels and dredging units for commercial activities at sea-ports - 54-76 units;
- Buoy laying vessels, other units for safe navigation along inland waterways – 352 units.

Examples of Auxoliary multifunctional Vessels

Ice-breaking + Rescue vessel
MPSV 07 type

Power 4 MWt

4 units, built by Nevsky Shipyard

Small vessel for functions:
Supply + Divers service + Rescue

4 units built by Yaroslavl Shipyard

2011 a Federal Law

- shipyards, resided in purposed economic zones (or tax free zones) are released from land tax and property tax for 10 years;
- shipyards are released from custom dues for the imported equipment, which is not producing in Russia;
- shipping companies are released of income tax incurred from built in Russia ship's commercial operation or gained from its sale;
- for such shipping companies in a period 2012-2027 a zero degree rates are invented regarding the social, medical insurance and pension security funds

Vessels built totally and by 4 leading shipyards vs 8 the rest yards

	Totally built	"Krasnoye Sormovo" Yard	Okskaya Yard	Kherson Yard	Bolgograd Yard	Other 8 shipyards
2000	6	4			2	
2001	3	2			1	
2002	7	4			3	
2003	10	6			4	
2004	12	6			5	1
2005	17	5	3	1	4	4
2006	19	6	2	1	3	7
2007	23	7	1	2	6	7
2008	17	7	1	2	3	4
2009	14	6	1	2	1	4
2010	16	7	3	1	1	4
2011	18	9	8	1		
2012	23	10	8	1		4
2013	23	2	7	4		10
2014	5	2		1		2

General cargo NEVA-Leader type, project RSD49

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Planned 12 unit series, 10 of which are to be completed by Nevsky Yard (Shlisselburg), and two units to be built by Lotos Yard (Astrakhan)

Technical data of the vessel:

* L x B x H: 139.95 x 16.50 x 6.00 m = 13 855 m^3
* Draught in the sea 4.7 m; Draught in the river 3.6 m;
* DWT in the sea 7154 t; DWT in the river 4518 t;
* Holds – 3, with volume cargo capacity of 10920 m^3;
* Sailing range 4000 miles;
* Main Engines: WARTSILA 6L20: 2 x 1200 kW; 2 fixed blade propellers + 2 rudders, Speed 11.5 knots
* Bowthruster 200 kW; Auxiliary Engines, 2 x 292 kW; Emergency diesel-generator, 90 kW

Crew 10; places for 12 people

General cargo NEVA-Leader type, project RSD49

Innovational features:

Ship designed with maximum dimensions for Volgo-Don canal navigation. Cargo carrying capacity of the vessels of this project is about 7000 t. Each vessel has innovative cargo arrangement of two separate 25 m long cargo holds, and one 51 m long cargo hold.

Such arrangement designed for transportation of heavy and voluminous cargos often needed to be delivered in one unit for Russian consumers from European ports during the back voyages.

Tanker dwt 5600/5100, project 19614, 25 units

Tanker Armada Leader type, dwt 6500/4700, 23 units

Product tanker of RST27 project

Product tanker of RST27 project

Designed by Marine Engineering Bureau

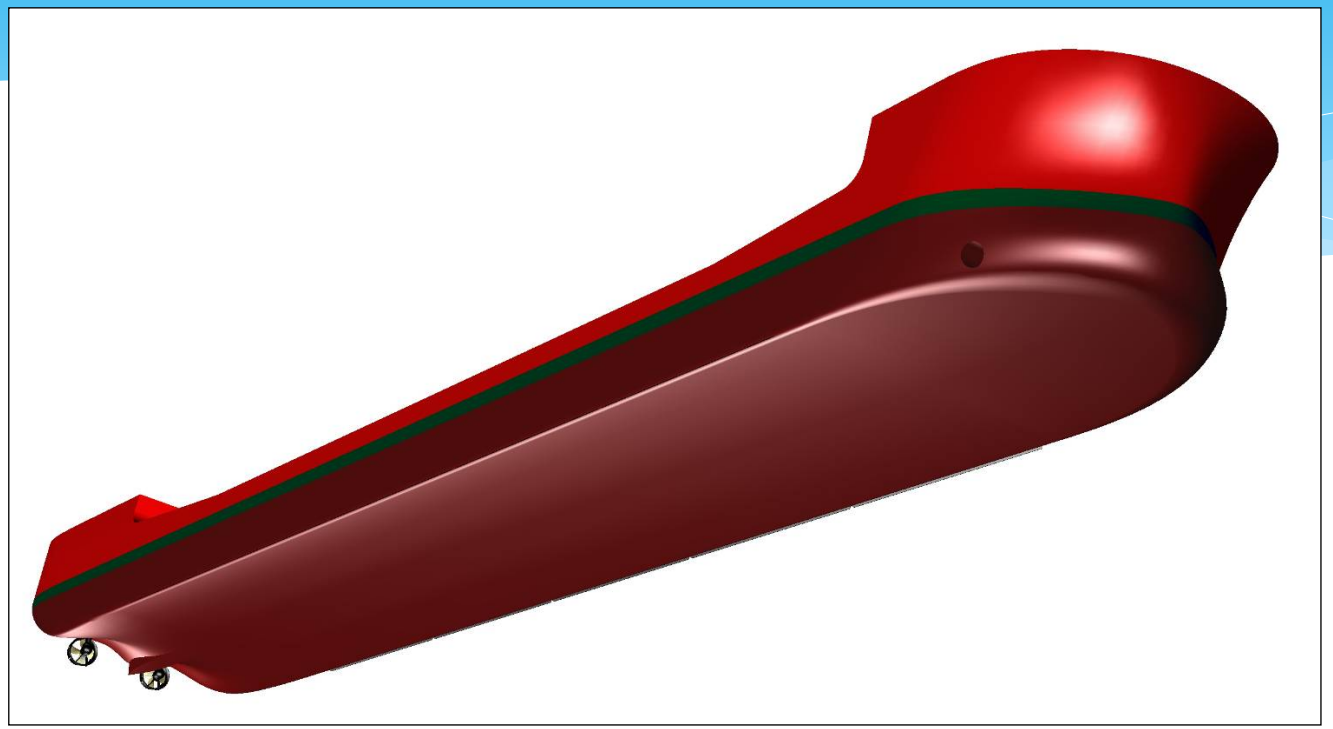
Builder Krasnoye Sormovo Yard and Okskaya Yard.

The inventional design features of the tanker is resulted in its increased deadweight in the river for more than 730 t compared with some previous designs like Armada-type, which has been delivered to the customers in the beginning of 2000s.

Thirteen vessels have already being delivered to the Volgo-Flot Tankers shipping company and four more units are under different stages of construction. The same type of vessels is also building from 2011 in a small series of three units at Kherson Shipyard (Ukraine).

Product tanker of RST27 project

Model of vessel's hull was tested beforehand in Krylov Center using the CFD modeling for optimal dimensions and hydrodynamics; K = 0,93



Product tanker of RST27 project

Technical data of the vessel:

* L x B x H: 140.85 x 16.70 x 6.00 m = 14 113 m^3;
* Draught in the sea 4.2 m; Draught in the river 3.6 m;
* DWT in the sea 7030 t; DWT in the river 5428 t;
* Holds – 8, with volume cargo capacity of 8100 m^3;
* Russian Maritime Register Class KM Ice1 R2 AUT1-ICS OMBO VCS ECO-S Oil tanker (ESP);
* Main Engines: WARTSILA 6L20: 2 x 1200 kW; Shottel SRP1012FP, Speed 11.7 knots;
* Schottel STT0170FP 230 kW; Auxiliary Engines, 3 x 292 kW; Emergency diesel-generator, 136 kW;
  Cargo pump capacity 6 x 200 m^3 per hour;
* Crew 12; places for 14 people + pilot.

Push Oil-Barge at Azov Sea

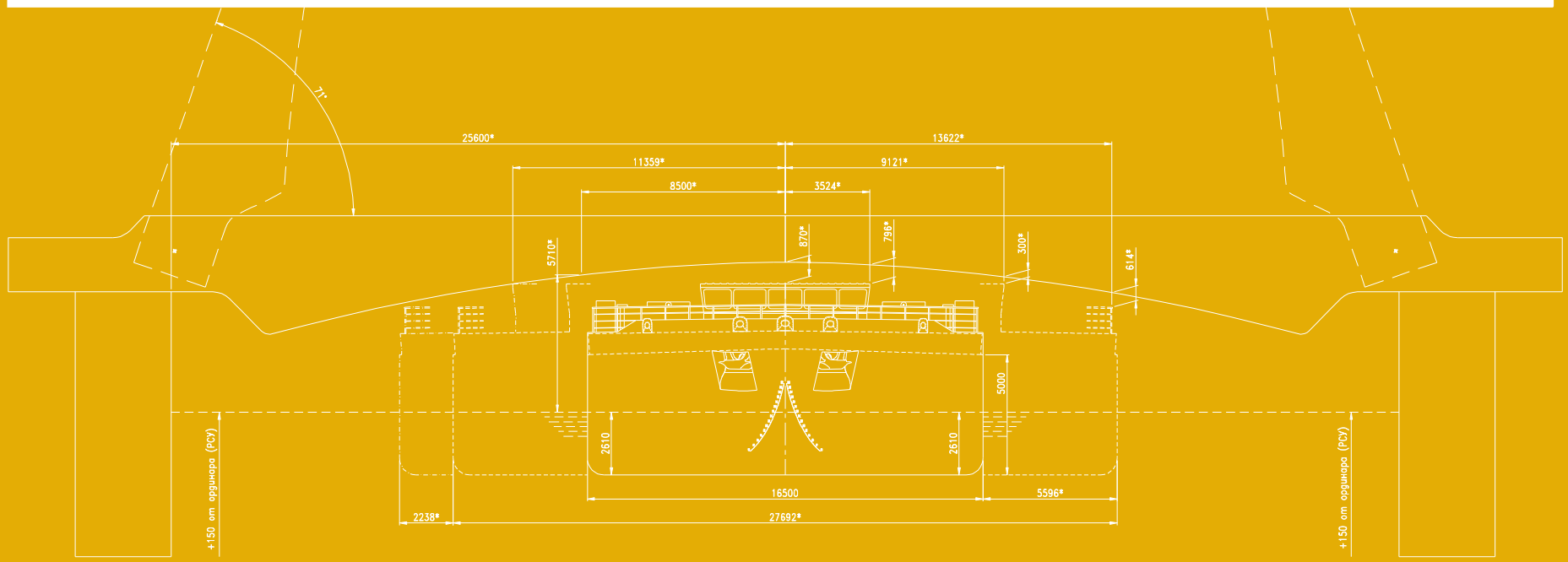
7 units; builder Volgograd Shipyard

Push Oil-Barge at Volga River, project 2731

9 units; builder Kostroma Shipyard

Dry cargo vessel for inland navigation, project RSD 44

Scheme for passing IN BALAST of the vessel under lowest bridge in St.-Petersburg (river Neva), draught 2,61 m



Dry cargo vessel for inland navigation, project RSD 44

Small cruise crafts for inland shallow waterways of "SURA" type

Invention triggered by physical navigational conditions: winged propeller gave ability to operate this vessel on small rivers even without quays, piers or berths but directly "landing" it on the river shore banks ("bow into shore" action). Self ungrounding capacity provides either the commercial advantages.

Novelty of the vessels also includes the Deutz dual-fueling engines able to work not only on diesel oil but on bio-oil too.

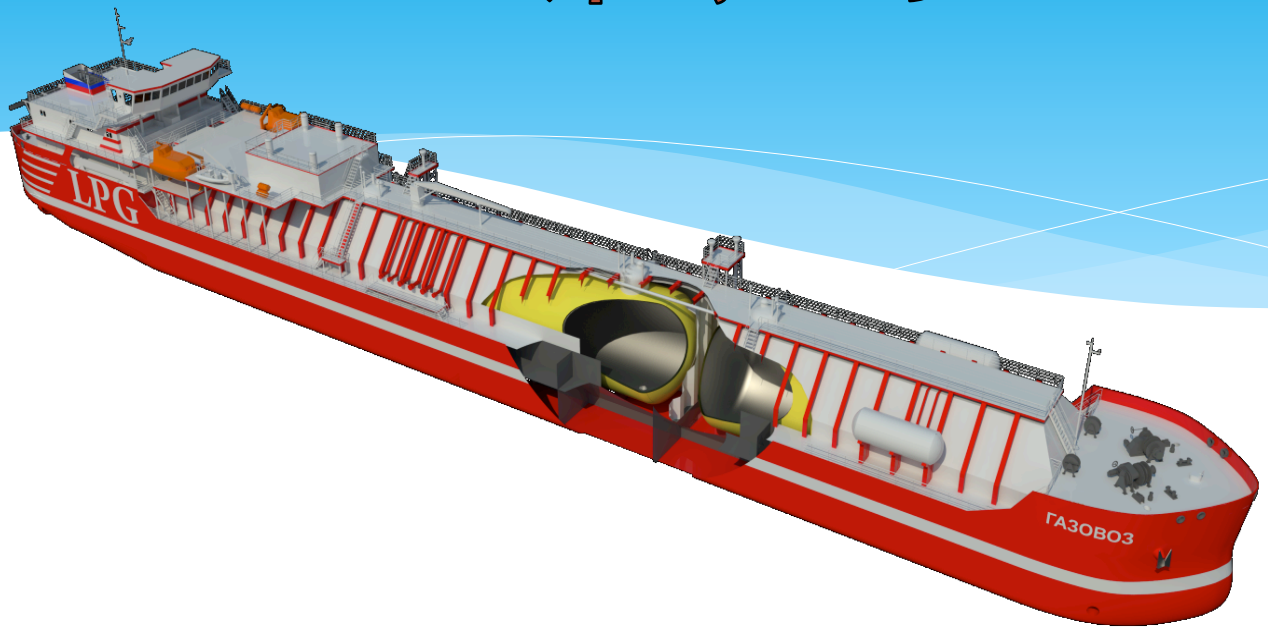
Small cruise crafts for inland shallow waterways of "SURA" type

Technical data of the vessel:

- L x B: 35.5 x 9.8 m;
- Draught 0.67-0.8m;

* Crew of 11 people including 5 workers of onboard restaurant;
* Passenger capacity 42 (in compartments for day-night routes) and 120 (for day dinner-party option).

Innovative concept design of river-sea going vessel for LPG, project 23070



Length$_{max}$ x breadth$_{max}$ x midship depth: 140.2 x 16.6 x 6.7 m;

Draught in the sea 4.7 m;

Draught in the river 3.6 m;

Cargo carrying capacity 7000 cub. m;

Class for Russian Register KM Ice2 [1] R1 AUT1 Gas carrier type 2G (-50 °C, 6 Bar);

Speed in IWW 20 km per hour and in the sea up to 11 knots;

Sailing range 5000 nautical miles;

Crew up to 14 members with additional 6 places available

Innovative concept design of river-sea going vessel for LPG, project 23070

Designer: Krylov Center

Functional description of the vessel:

The semi-refrigerated vessel is designed to transport LPG (with density up to 0.98 t/m^3) and other petroleum gases and liquids (spirits, acetone, aethereal oils etc.) from Caspian Sea ports, inland terminals in Russian waterways to other domestic marine ports, as well as to some Europe destinations.

Innovative concept design of river-sea going vessel for LPG

On the basis of this vessel design the following innovative concept designs of river-sea going vessels can be further worked out:

- Universal (multi-purpose) gas carrier LNG-LEG-LPG type;
- Gas-carrier for local inland and coastal transportation;
- Ice-enforced gas-carrier for Siberian and Arctic region;
- Bunkering LNG;
- Floating gas-storage

Thank you for attention and hoping to see you in St.-Petersburg!

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for Winter Seminar, 21/01/2015, Laapenranta, Finland Waterway Association