

Building traditional wooden boat with e-engine: concept, process and results 2017-2021

Traditional and Historical Ships` Association Lithuania

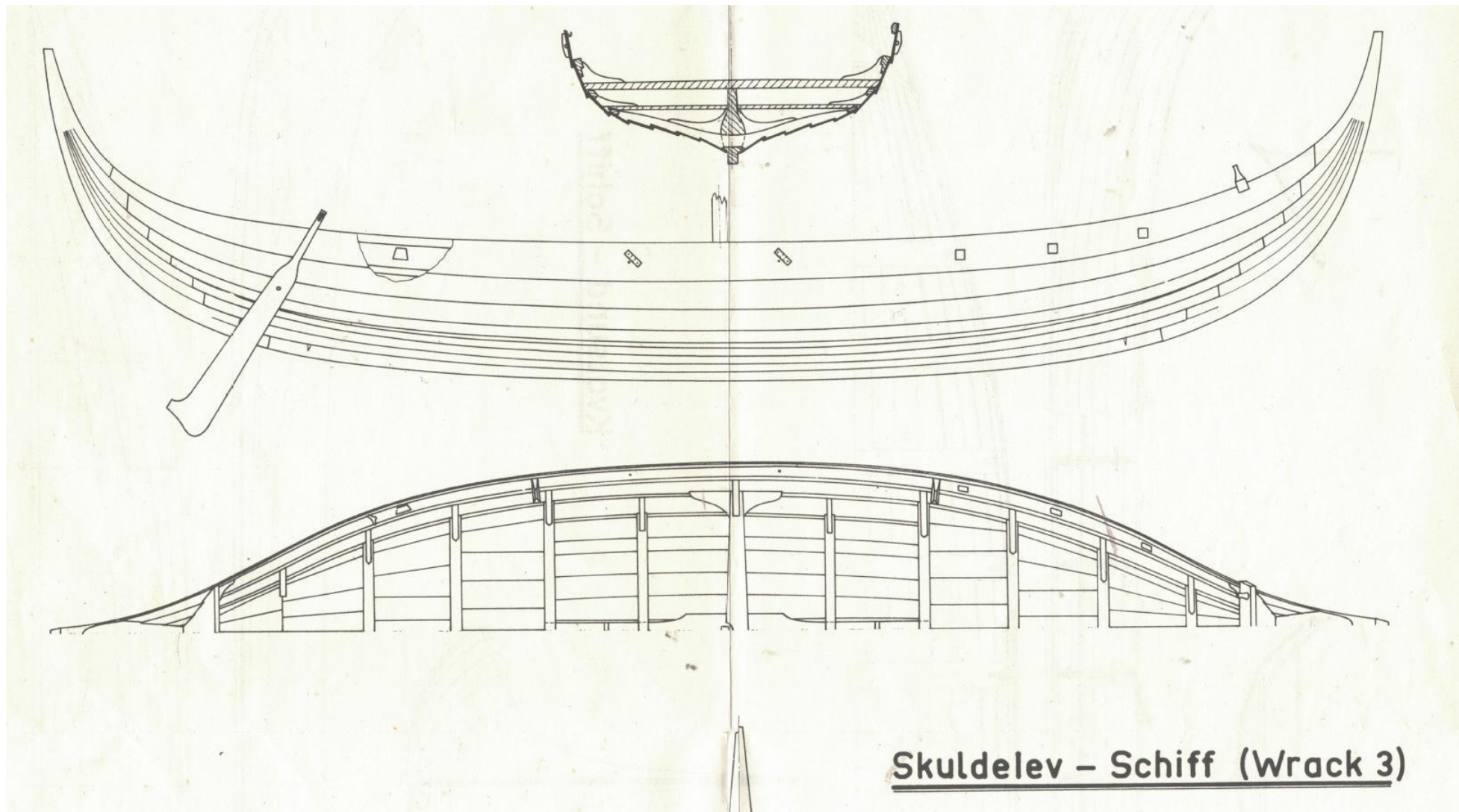


European
Regional
Development
Fund



European
Regional
Development
Fund

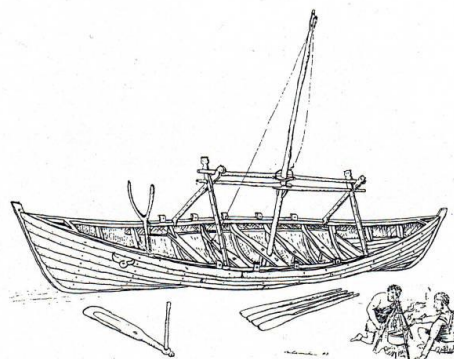
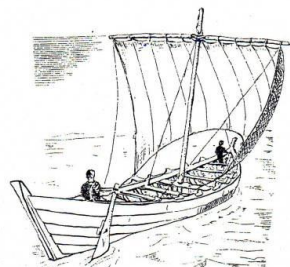
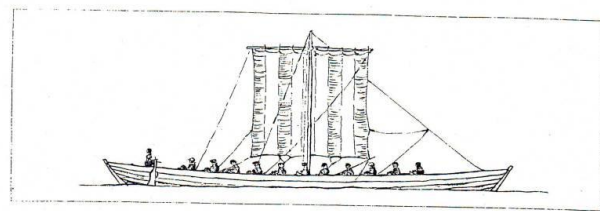
The aim was to build traditional wooden sailing ship of historical Viking times (9th-12th c.). Before that we needed to figure out the type of boats Western Balts used to sail during those times. We had to know exact boat building techniques before the process of reconstructing real replica. Also we had a goal to use electric engine as additional driver for this boat.



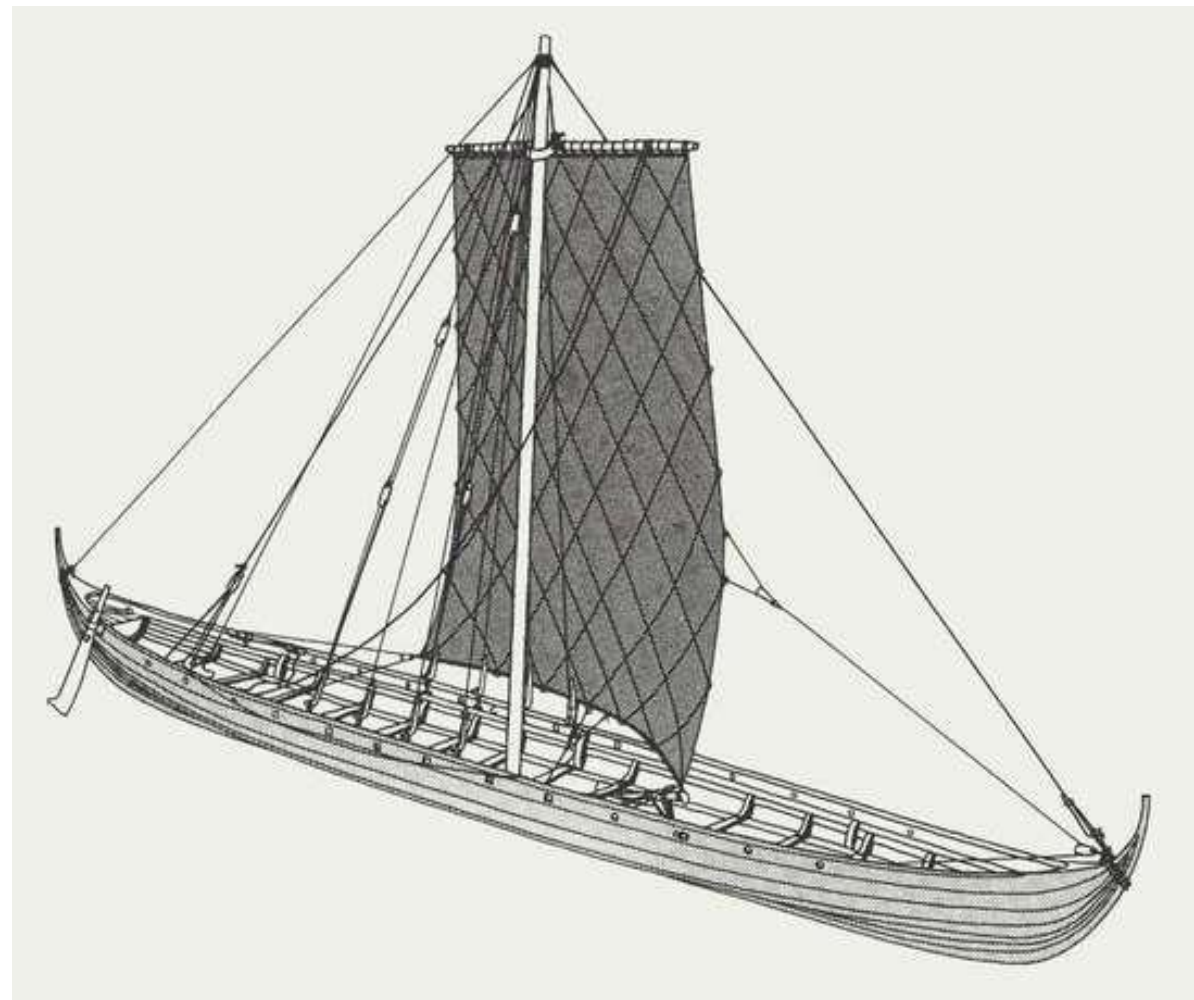


European
Regional
Development
Fund

There are no solid historical or archeological evidences about boats and ships Western Balts used to sail in the Baltic sea and inland waters. We organized scientific seminar to discuss how sea-going boats of Curonians and Prussians could have looked like, also find out the methods to integrate e-engine and its additional equipment into similar replica.



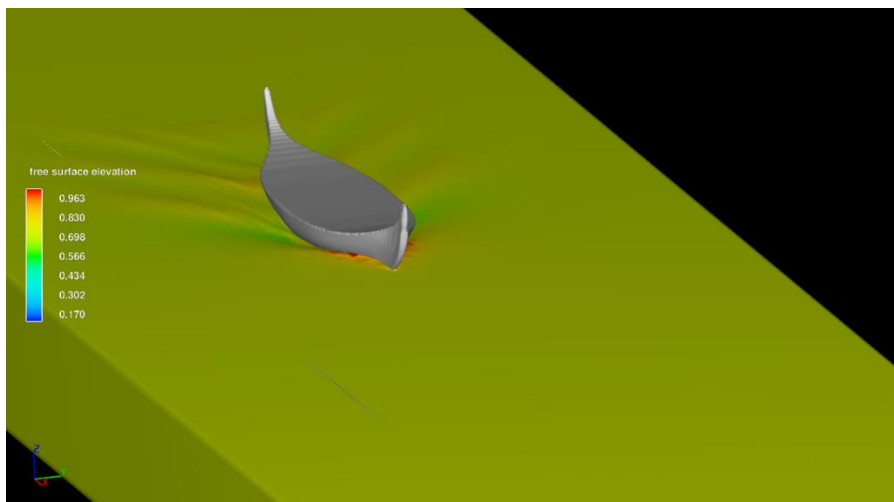
Schiffe der Alten Preußen um 1.000 n.Ch.
nach Ausgrabungen in Rauegarth und Frauenburg
Zeichnungen von P. P. ...





European
Regional
Development
Fund

As a result of the discussion it was decided that Westerns Balts, although there no evidences of how their boats looked like, should have used very similar boats of Viking type. Because historical resources give us information about series of events when Western Balts captured sea-going boats from Vikings.





European
Regional
Development
Fund

„Skuldelev 3“

The prototype of the replica boat we decided to build in Lithuania.

It is accurate replica of archeological findings near Roskilde in Denmark. Dates 11th century.

14 m long, 3 m breadth, up to 1 m draught, material – oak, sail – 45 sq. m, average speed – 4-5 knots.

Considering auxiliary drive power alongside sail power the idea was to have e-engine with ability to work for up to 8 hours continuously maintaining cruising speed of 4-5 knots.

Batteries for e-engine should be installed on the bottom (under the deck) and serve as ballast weight for stability.



<https://www.vikingskibsmuseet.dk/en/visit-the-museum/exhibitions/the-five-viking-ships/skuldelev-3>



European
Regional
Development
Fund

The group of people was formed: to search for building materials – oak wood and pine wood; to learn the skills and techniques from Danish replica boat builders in Roskilde; to prepare boatbuilding shed.





European
Regional
Development
Fund

Drawings of replica boat „Skuldelev 3“ were purchased from „Vikingskibs Museet“, contract for building the boat was signed with small partnership company „Vytinė“. The leader of this entity and main shipbuilder – Simas Knapkis from Rusnė. Boatbuilding shed was arranged in Laučiai (village near Šilutė).





European
Regional
Development
Fund

In June of 2019 in Lithuania boat building seminar and workshop was arranged for „ELMAR“ project partners and South Baltic region SME's representatives from the field of classic boat building craftsmanship and electric mobility innovation.





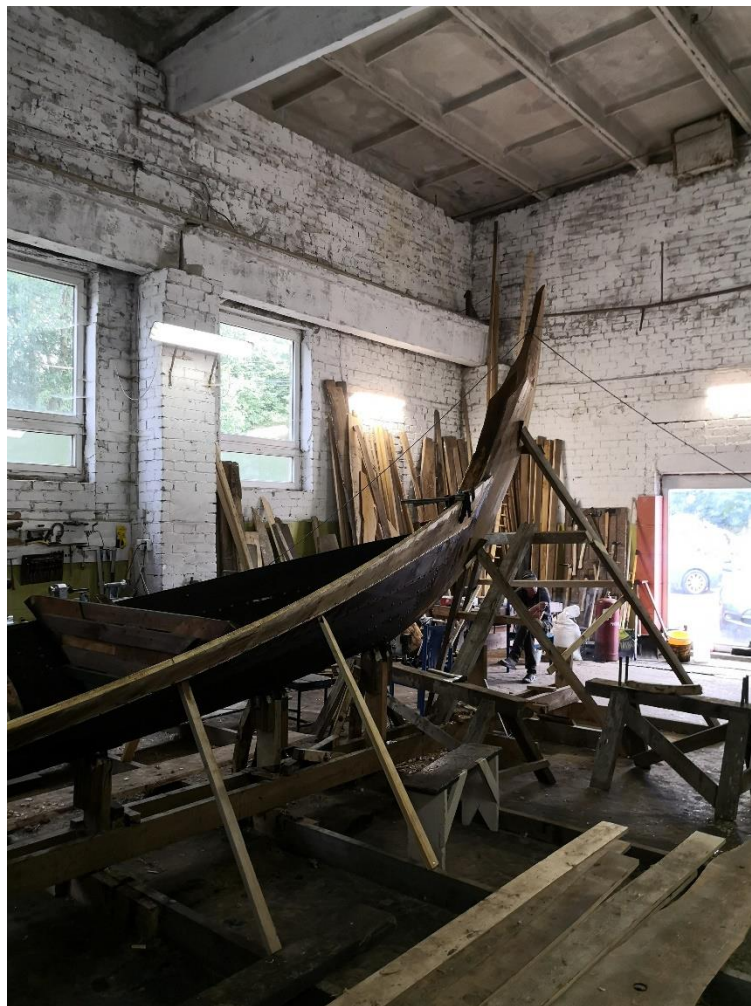
European
Regional
Development
Fund





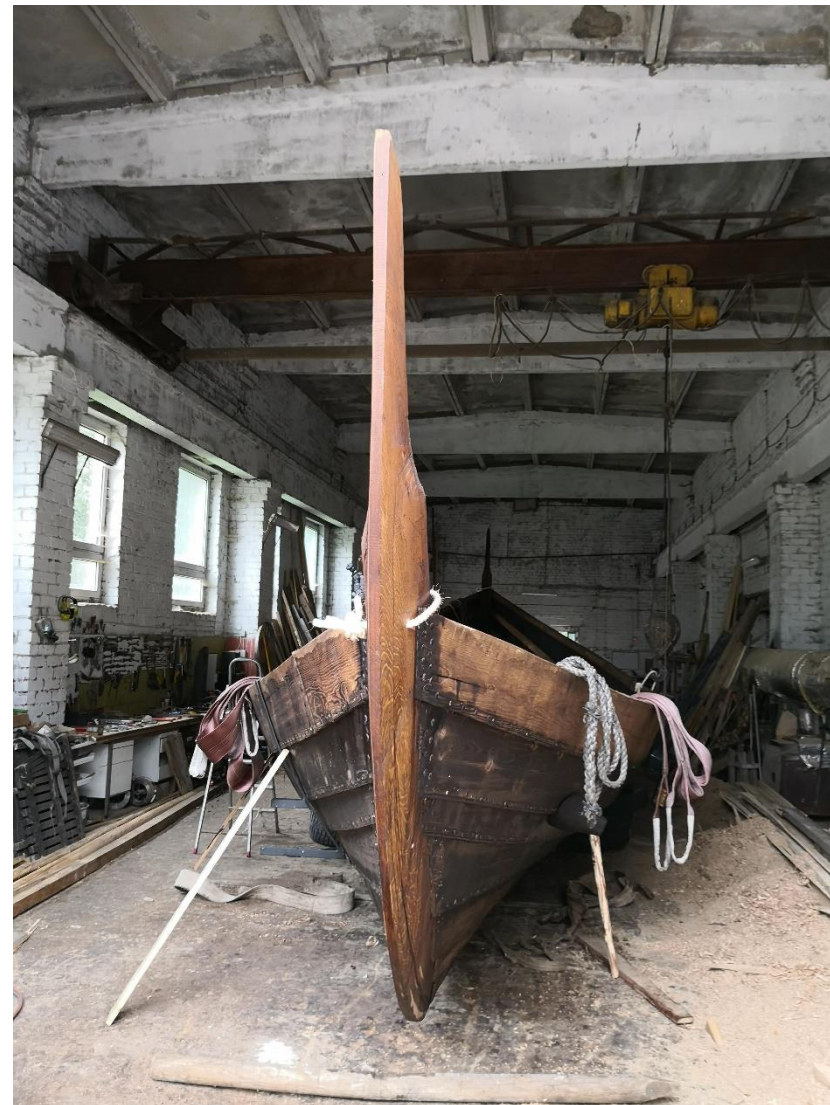
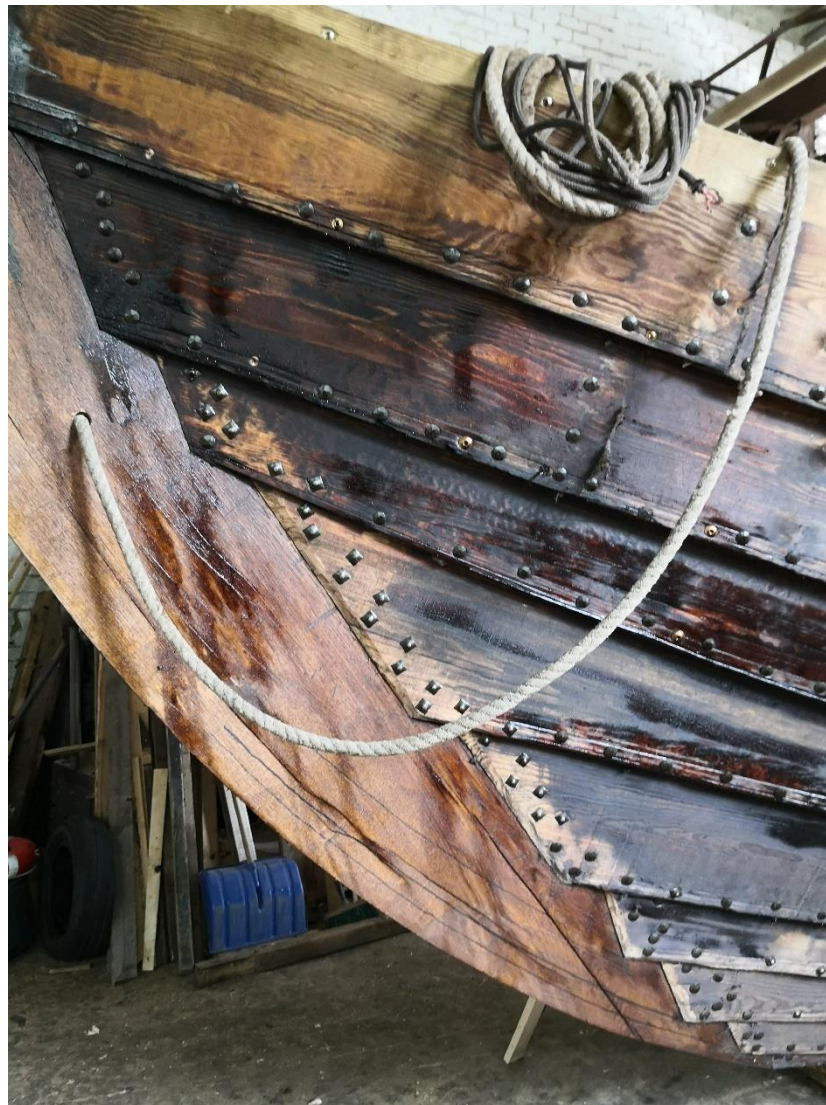
European
Regional
Development
Fund

The boat was finished during the summer of 2021 and launched in August.





European
Regional
Development
Fund





European
Regional
Development
Fund

The boat was equipped with outboard e-engine. The idea of inboard e-engine with stationary drive system was ruled out because of risk to damage traditional wooden structure of the boat. We calculate electric drive autonomy for up to 8 hours, at about 4-5 cruise speed at moderate conditions. Heavy conditions – going against strong wind and big waves. Capabilities of engine and capacity of batteries in different conditions will be analyzed in coming years.

Main characteristics of outboard e-engine and additional equipment:

Engine – „Torqeedo“ Cruise 4.0 RS, 42-58,8 V, 4000 W

Batteries – „Victron energy“ AGM 12 V-110 AH, 10 units

Power inverter – UY 2500

Charger – „Victron energy“ 12 V / 15 A





European
Regional
Development
Fund

First impressions of e-engine drive system on traditional wooden boat are really positive. Out-board engine although with no considerable power (4 kW) was enough for 3-4 tons heavy wooden boat. Of course, we will test it on longer cruise journeys in Lithuanian waters – Curonian Lagoon, river Nemunas and its tributaries. What can we state now that we will need is additional ballast for open lagoon waters, 10 pieces of batteries are not enough.

Video of the boat launch, summer of 2021:
<https://www.youtube.com/watch?v=1w9GzmpLJcY>





European
Regional
Development
Fund

Thank you for your attention! And you are welcome to have a sailing/e-drive journey with us!

Traditional and Historical Ships` Association Lithuania

Contacts:

Chairman – Romualdas Adomavičius, romualdas.adomavicius@gmail.com, +37065319212

Boat builder – Simas Knapkis, info@vytine.lt