

ANNEX NO 1

PREPARATION OF A TECHNICAL SPECIFICATION FOR A GREEN METHANOL BUNKERING VESSEL

TECHNICAL TASK

According to the Methanol Institute, methanol is considered to be one of the cleanest alternatives to traditional marine fuels, with 60-95% fewer CO₂ emissions¹ when burned compared to traditional marine fuels.

The European Union's Emission Trading Scheme has been extended to the maritime sector from 2024, with the aim of significantly reducing greenhouse gas emissions and promoting the use of green fuels in the shipping sector, and major shipping companies are already placing orders for ships powered by green fuels. There are currently 26 methanol-powered container ships in operation worldwide, with 200 more on order, Maritime Executive reports, citing DNV data.

In April 2024, 6 ports and X-Press Feeders signed a Memorandum of Understanding (MoU) under which the ports committed to assess the feasibility of bunkering green methanol at the ports as well as the establishment of other necessary infrastructure. Since September of the same year, a methanol-powered ship has been arriving every two weeks in the port of Klaipėda.

Klaipėda State Seaport Authority (hereinafter referred to as "the Port Authority") is taking part in the Interreg Baltic Sea Regions-funded project #C076 H2Derivatives@BalticSeaPorts, together with 15 other Baltic Sea ports, in order to evaluate the technical feasibility and the benefits of bunkering of green methanol. The purchase of these services is partly financed by the European Union.

1. THE PURPOSE OF THE PURCHASE.

1.1. To develop a technical specification and design concept for a green methanol bunkering vessel, taking into account the growing prospective demand for green methanol, the developing methanol storage infrastructure in the Port of Klaipėda and in the Baltic Sea region, taking into account the potential customers, the competitive environment, the capacity of the vessel, the need for investment and the cost of the green methanol bunkering service, and the applicable environmental and safety requirements.

¹ https://www.methanol.org/wp-content/uploads/2022/01/CARBON-FOOTPRINT-OF-METHANOL-PAPER_1-31-22.pdf

2. SCOPE OF SERVICES.

The technical specification shall define the basic parameters of the Green Methanol Bunkering Vessel, defining the vessel's structural basis, equipment and operational parameters, which shall serve as a basis for the procurement of the detailed technical design and construction of the Green Methanol Bunkering Vessel. In this regard, the Service Provider will be required to implement the following actions, including but not limited to.

Stage I Preparatory stage - SOURCE DATA FOR THE PREPARATION OF THE TECHNICAL SPECIFICATION:

Demand for green methanol: The service provider will have to assess the relevance of green methanol as a marine fuel in the context of the energy transformation, identify potential customers (shipping lines, cargo lines and other port customers) and suppliers (producers, brokers, etc.), and analyse the geographic scope of the region: the primary region covers the port of Klaipėda and the territorial waters of the Republic of Lithuania, the secondary region covers the Continental Shelf of the Republic of Lithuania as well as the exclusive economic zone and the rest of the Baltic Sea ports.

To assess the existing and planned green methanol storage infrastructure in the Port of Klaipėda insofar as it is relevant for the operation of the green methanol bunkering vessel. It should be noted that the service provider will have to cooperate with the terminal operators of the Port of Klaipėda on the possibility of storing green methanol at these terminals for refuelling the bunkering vessel. Discuss with these terminals the prospects for the development of green methanol storage and cooperate with the Klaipėda State Seaport Authority on the possible development of green fuel terminals.

Economic evaluation of green methanol bunkering: The service provider will have to prepare a business plan assessing the flows and capacities of the green methanol bunkering service, the interactions with infrastructure (berths, terminals), the need for bunkering vessel capacity (NB: the capacity of the bunkering vessel has to be linked to the data in the technical specification), and the indicative need for investment. The service provider will also have to propose the pricing of the green methanol bunkering service on the basis of competitive practices and to provide the practices of similar ports, with reference to the sources used (e.g. tariff documents, commercial offers for the green methanol bunkering service, policy guidelines, regulations, etc.).

The preparatory work for Phase I resulted in document packages in Lithuanian and English, in Word and PDF formats:

- Analysis of green methanol supply, demand (tables, drawings, graphs, list of sources and data used, maps, charts, etc.), with conclusions and recommendations for an optimal decision on the sailing area and type of vessel.
- Economic assessment of green methanol bunkering (tables, drawings, graphs, list of sources and data used, maps, charts, etc.) with conclusions and recommendations for an optimal decision on the technical parameters, size, capacity and other technical parameters of the green methanol bunkering vessel.

Phase II - DEVELOPMENT OF THE TECHNICAL SPECIFICATION FOR THE GREEN METHANOL BUNKERING VESSEL:

On the basis of the analysis and economic assessment carried out, to draw up a **technical specification for a green methanol bunkering vessel**, specifying the technical parameters in accordance with the requirements set out below, and to provide insights and recommendations on the systems to be developed, the detailed technical solutions of which will be presented at the stage of the technical design:

Operational requirements:

- define the vessel's sailing area. This area is to be defined in the context of the preparatory work for Phase I;
- specify the type of vessel (methanol bunkering tanker or similar, inland or offshore);
- Indicate the purpose of the vessel: transport and bunkering of crude methanol fuel to other vessels in port, on a voyage or in other Baltic ports; indicate the operational regime, based on data from the preparatory phase;
- the flag and class of the vessel: Flag of the Republic of Lithuania, classification according to one of the classification companies recognised by the Transport Safety Administration;
- determine the classification of the vessel in accordance with the IGF Code;
- prepare a description of the vessel; specify the operating conditions of the vessel (weather conditions, sea conditions, etc.); specify the operating mode of the vessel;
- assess and specify the regulations and standards on the basis of which the vessel's technical design will have to be prepared: IMO, IGF Code, MARPOL, SOLAS, IBC Code, EU shipping regulations;
- draw up a list of the necessary drawings, instructions and other relevant documents.

Basic vessel dimensions:

- the maximum length of the vessel;
- the maximum width of the vessel;
- the maximum draught of the vessel;
- the moulded depth of the vessel;
- the minimum and maximum speed of the vessel.

The system of the vessel's tank:

- specify the type of fuel: green methanol;
- assess and specify the maximum capacity of green methanol; assess the possibility of dividing the tank into several tanks;
- provide requirements for green methanol bunker pumps, ventilation systems, truck fuel management systems.

The system of the vessel's engine and power:

- specify the type of engine(s) of the vessel (*dual fuel* system to be assessed);
- specify the number of propellers and their control system;
- specify an electric or hydraulic front propulsion device;
- provide at least two generators;
- provide requirements for the assessment of ancillary systems such as hydraulics, ventilation, refrigeration, vessel management, etc., during the preparation of the technical design.

Navigation bridge:

- provide requirements for radio and navigation equipment and systems, depending on the sailing area.

Crew formation and safety requirements:

- the number of crew members, taking into account the size, capacity, sailing area and other data;

- define the requirements for accommodation and sanitary facilities on board;
- make recommendations on environmental control systems, specifying the type of system (heating, ventilation, air-conditioning (HVAC)), specifying the requirements to be evaluated at the stage of preparation of the technical design with regard to the safety measures to be taken, taking into account the vessel's type and the area of its operation.

Vessel design concept:

- in accordance with the visual identity requirements of the Klaipėda State Seaport Authority, to prepare a visualisation of the vessel, which would include a view of the vessel from both sides, the front and the rear, as well as views of the vessel's individual interior spaces.

The Service Provider must go beyond the requirements set out in this ToR to act as a professional expert in the preparation of the Technical Specification and Design Concept for the Green Methanol Bunkering Vessel and provide technically and economically sound proposals.

Phase II will result in document packages in Lithuanian and English in Word, PDF, JPEG and/or DWG formats:

- Descriptive part
- General arrangement plan (with visualisation)
- Tank plan
- Preliminary mass calculation
- Hull line plan
- Preliminary calculation of speed and power
- Preliminary calculation of buoyancy and stability
- Preliminary vulnerability assessment
- Preliminary equipment list.

3. REQUIREMENTS FOR THE OUTCOME OF THE WORKS.

3.1. The Service Provider will be required to submit the following documentation packages to the Port Authority in Lithuanian and English:

- Analysis of the demand for green methanol and economic assessment of bunkering with it (with annexes and analyses, tables, graphs, list of sources and data used, maps, charts etc.) **PDF and WORD formats;**
- Technical specification of the green methanol bunkering vessel (with description, drawings if required, analyses, list of sources and data used, visualisations, etc.) **PDF, JPEG, Word, and/or DWG formats.**

3.2. The documents produced must comply with the Interreg Baltic Sea Region Project Design Guide (Project Design Guide, 2021-27, Version #1.0, November 2022) and its requirements. The documents must bear the Interreg Baltic Sea Region H2Deri@BSP badge and the Port of Klaipėda logo on each sheet.

3.3. The title page of each document must state that the Interreg Baltic Sea Region H2Deri@BSP project is co-financed by the European Union.

3.4. During the execution of the works, Klaipėda State Seaport Authority will organise regular meetings with the service provider at least once a month, during which the service provider will be obliged to present the completed works to the representatives of the Authority and its partners. The Service Provider may arrange meetings with the responsible representatives of the

Directorate according to his/her needs, by agreeing in advance on the issues, the date, the time and the type of the meeting, either face-to-face or remotely.

4. TIMETABLE FOR IMPLEMENTATION.

Agreement commitment period - 5 months (Agreement duration +1 month)

2025 (months are indicative)	1st month (August)	2nd month (September)	3rd month (October)	4th month (November)	5th month (December)
Analysis of demand for green methanol				<i>Adjustments based on insights provided</i>	
Meeting with representatives of the Port Authority and partners		<i>By 15th of the month</i>			
Economic evaluation of a green methanol bunkering service					
Meeting with representatives of the Port Authority and partners				<i>By 15th of the month</i>	
Technical specification for a green methanol bunkering vessel					
Meeting with representatives of the Port Authority and partners				<i>By 30th of the month</i>	<i>Adjustments based on insights provided</i>
Final submission of documents					<i>By 30th of the month</i>

5. CONFIDENTIALITY

5.1. All information obtained or created in the course of the services is confidential and may not be disclosed to third parties without the consent of the Port Authority.