

## REQUEST FOR PROPOSAL

### Purchase of a low temperature hydrogen fuel cell for the MS Emeli

#### *introduction*

The Maritieme Academie Harlingen (MAH) is a school for secondary education located in Harlingen, the Netherlands. The MAH is a school that trains students in maritime skills and maritime technology. The school operates several ships to create a real-life practice environment for the students. MAH is part of the Dunamare Onderwijsgroep.

The MS Emeli is one of the ships owned by MAH and Dunamare. The main power source, a diesel engine, is in need of replacement.



*The MS Emeli*

#### *innovation in the Interreg consortium*

MAH has shown both entrepreneurship and a will to innovate and create a sustainable future for shipping by participating in a Interreg consortium. Partners of the consortium are, amongst others, the Eindhoven University of Technology, Electrical Ship Facilities, Imotec and Shipyard Talsma.

The Interreg-program MariGreen has awarded financial support to equip the MS Emeli with a new, innovative and sustainable power source. The plans are to install a hybrid electric propulsion system powered by both a diesel electric engine and a hydrogen fuel cell.

This purchase procedure concerns the purchase of the hydrogen fuel cell.

## General scope of work

- Engineering and production of a Plug and Play container as an energy set based on a low temperature fuel cell and battery set.
- The PEMFC power source is to be transported and delivered in Heeg, the Netherlands.

## Requirements

### *Functional description and technical requirements*

- The purchase is a low temperature PEM FC with a peak power of at least 30 KW.
- This FC must be suitable for the operation on board an inland waterway vessel and its associated shock, temperature and humidity resistance.
- The FC should be suitable for regular available H<sub>2</sub>, as used in the industry with Class 3.0 or 5.0 or similar
- The expected life of the FC is greater or equal to 10,000 hours of operation.
- The offered FC is a regular product that has been placed on the market and has proven itself there.
- start-up time and ramp up time should be in a suitable range for use on a inland waterway vessel.

### The FC includes

- All necessary management and control modules including air supply and filtration, internal cooling and the required external circuit (without external heat exchanger)
- Communication interface as e.g. Can
- Hydrogen System Safety
- E-System
  - o The E-system is protected against incorrect polarity.
  - o System delivery is possible without standard DC-DC converter (is shown in the offer as an option)
  - o The risk of H<sub>2</sub> leakage in the system is protected by the system
  - o This protection is also secured with a backup e-connection

### *Supplied by third parties*

- The supply line of hydrogen to the FC is not part of the scope of work. This is secured for leakage and therefore pressure drop.
- In cooperation with the Eindhoven University of Technology, Electrical Ship Facilities will assemble the Plug and Play container on site.

### *Optional technical requirements*

Delivery of the system with DC – DC converter is offered as an option. The DC-DC converter will be able to connect to a battery pack with a nominal voltage of 540VDC or a 3ph AC inverter.

### *Other requirements and conditions*

- Delivery on site 6 month after the purchase order
- 1 year of warranty
- Full brief of technical specifications and FC Maintenance instructions.
- General Terms and Conditions Dunamare Onderwijsgroep apply
- Contract under Dutch law

The listed requirements are knock out criteria. Any proposal in which these criteria are not met, are not in compliance and will not be evaluated.

### Payment schedule

- Contract: 50%
- Delivery on site: 40%
- Succesfull installation: 10%

### Procurement Procedure

1.	Publication of RFP	July 17, 2018
2.	Request for information	July 23, 2018
3.	List of questions and answers	July 30, 2018
4.	Deadline for submitting the proposal	<b>August 24 2018, 15.00</b>
5.	Evaluation of the submitted proposal	Weeknumber 35 / 2018
6.	Results and purchase order	August 31, 2018
7.	<i>Delivery on site</i>	<i>February 8, 2019</i>

### Criteria for the proposal

The proposal should consist of the following:

- Local chamber of commerce information
- Proof that the product offered is a regular product that has been placed on the market and has proven itself there.
- Filled in form 'main details offer' including a price offer incl. VAT.

### Evaluation

- All-in evaluation price, including delivery on site, the optional DC-DC converter, offered services and VAT, are evaluated with the following formula.

$$\text{Points} = 60 - (75 * (\text{Price} - \text{Lowest Price}) / \text{Lowest Price})$$

Max points: 60

- Offered quality:

o Technical performance grade: 0 – 4 weight: 3 max points: 12  
Please fill in the form 'main details offer'

o Delivery on site: 5 points per full month earlier than February 8 max points: 20

o Additional services offered grade: 0 – 4 weight: 2 max points: 8

A brief description of the following:

- how will you support integration and installation on site?

- which risks do you identify in this project, and what services are supplied to mitigate this risk?

- **Total** max points: **100**

Evaluation of offered quality will be performed by a commission of consortium members.

## **Communication**

Communication is possible through the online purchase platform TenderNed.

If issues arise with the online platform, direct communication is possible with:

### Contact:

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- Senior Buyer Dunamare
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