

# Multi-Purpose eFoiler design challenge



**FOILING WEEK**

Powered by:

***TORQUEEDO***

***Gurit***

MPeF Rules v1.1

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## ABBREVIATIONS

FW	Foiling Week
MPeF	Multi-Purpose eFoiler

## 1 GENERAL

### 1.1 Introduction

The *Multi-Purpose eFoiler design challenge* is a design competition aimed at professional naval architects, engineers and designers willing to create a revolutionary electric hydrofoil concept. The goal of this challenge is to encourage and promote energy efficient transportation of people on water, by using eco-friendly electric engines and hydrofoils.

### 1.2 Concept

The constitutional goals of the **Foiling Week™** are to make the experience of foiling accessible for everyone, to promote an eco-social behavior, as well as to ensure the safety of the foiling community on the water.

The *Multi-Purpose eFoiler Design* concept is in line with the three pillars of **The Foiling Week™** – *accessibility, sustainability and safety*.

#### 1.2.1 Accessibility

One of the key aspects of the Foiling Week™ is to facilitate an inclusive and extensive experience for the sailing community and newcomers to the foiling world. The challenge allows professional designers from all over the globe to participate in an innovative and challenging design competition.

#### 1.2.2 Sustainability

Business models of shipyards and in the naval industry are typically focused on the economic benefit of the product. This was even more the case after the financial crisis of 2008 and its impact on the naval industry. Sustainability has only recently been put at the top of the agenda again, taking fuel consumption, alternative drive concepts and lightweight design for weight saving reasons into consideration.

The Foiling Week team believes that a professional competition is a great opportunity to foster innovative ideas and to contribute to a mind-set change in the industry.

#### 1.2.3 Safety

The participating teams should consider the marine environment and be aware of the importance of safety in high speed vessels. Foiling brought a new generation of boats that can reach high speeds and with it the increased risk of accidents and injuries. The degree of consciousness for safety and security should be higher than ever before.

### 1.3 Concept application

The *Multi-Purpose eFoiler* design challenge is set up as a competition where the teams and their designs are evaluated in three categories:

- Engineering and Design
- Innovation
- Sustainability

Each category will be evaluated by the corresponding Jury on the basis of a technical report. The top three (3) winners will be entitled to cash money and materials prizes.

## 2 CHALLENGE PROCEDURES

### 2.1 Registration

Participating teams must send a completed [registration form](#) to [mpefoiler@foilingweek.com](mailto:mpefoiler@foilingweek.com) and to [bruno.giuntoli@foilingweek.com](mailto:bruno.giuntoli@foilingweek.com) by 23:59CET on **April 15<sup>th</sup> 2019**.

### 2.2 Submissions

Concept submissions are required to be delivered by 23:59 CET on **July 5<sup>th</sup> 2019**.

Submission files can be provided in PDF format and sent to [mpefoiler@foilingweek.com](mailto:mpefoiler@foilingweek.com). All provided documentation must be in English.

No late submissions will be accepted.

### 2.3 Concept evaluations

Concepts will be presented at Foiling Week Garda 2019 on July 11<sup>th</sup> to 14<sup>th</sup> during the Forum sessions, conference posters will be an option for submission teams unable to attend.

The winners will be selected by Jury and announced at METS 2019 in Amsterdam.

### 2.4 Cost and expenses

All cost and expenses involved in the competition process are to be borne by the team. Including the travel and associated expenses for the detailed presentation.

### 2.5 Other details

Any questions seeking for details about the challenge that are not covered in the MPeF rules shall be send to [bruno.giuntoli@foilingweek.com](mailto:bruno.giuntoli@foilingweek.com).

## 3 PARTICIPATING TEAMS

The *Multi-Purpose eFoiler design challenge* is open to all professional participants who comply with the *MPeF rules*.

### 3.1 Team requirements

The teams willing to participate in the challenge must provide the registration form, as specified in section 2 of this document.

## 3.2 Team roles

Two roles must be defined by each team, in the case of a single person team, the roles will be assigned to the only member.

### 3.2.1 *Team manager*

The *Team Manager* will be responsible for all communications with the organization, from registration to final concept files delivery.

### 3.2.2 *Lead designer*

The lead designer will be the contact person between the team and the technical partners, from the *MPeF Jury* to [Gurit](#) and [Torqeedo](#) technical support.

## 4 CONCEPT TECHNICAL REQUIREMENTS

### 4.1 General requirements

The Multi-Purpose eFoiler designs must:

- Comply to ISO 12215 standards (if applicable)
- Accommodate at least two (2) people (average of 80kg per person)
- Have a minimum cruise speed of 12kt
- 1h range at cruise speed minimum
- Have a hull structure that is at least 50% from a recycled source
- Easily dockable and accessible for passengers

### 4.2 Structural materials

The main structure of the concept and composite calculations and estimations must be done with [Gurit](#) materials. The materials datasheet shall be found on Gurit website.

### 4.3 Engine and batteries

The concepts must be designed with specific Torqeedo components, of which:

- [Torqeedo Cruise 4.0 FP](#) (maximum of 4, preferable 2)
- [Torqeedo Cruise 10 R](#) (maximum of 2, preferable 1)
- [Torqeedo Power 48-5000](#) (maximum of 4<sup>1</sup>, preferable 2)

### 4.4 Launching and retrieving

The MPeF shall be designed to be launched and retrieved to and from the water with a standard marina crane or with a wheeled trailer.

### 4.5 Transportation

Transportation should be considered for both short and long distances. With a hitch back trailer for short distances and standard shipping container cargo for long distances.

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<sup>1</sup> When 4 x Cruise or 2 x Cruise 10.0

#### 4.6 Other specification

The Multi-Purpose eFoiler batteries can be charged outside the vessel.

### 5 EVALUATION SPECIFICS

The evaluation will take part in two stages as specified in the Concept evaluations section.

#### 5.1 First stage deliverables

##### 5.1.1 *Technical Report*

For the first stage evaluation, each participating team shall provide a Technical Report in PDF format of not more than 20 (twenty) pages, excluding appendices.

The reports shall contain the design and manufacturing specifics of the boat as well as details on the intended sustainable manufacturing process for the parts with three main sections:

##### 5.1.1.1 *Engineering and design*

This section shall outline the philosophy applied by the team to achieve their concept, their main calculations and estimated practical results.

##### 5.1.1.2 *Speed and range estimation*

The takeoff, cruise and top speeds, along with the range estimations must be demonstrated by calculations. The references to achieve this calculation must be added in the appendix (i.e. hydrofoil polars, propeller coefficient, etc.)

##### 5.1.1.3 *Manufacturing and cost analysis*

Each team will provide a detailed analysis of their intended manufacturing process to produce their concept.

The scenario for cost estimations on manufacturing is set to 25 MPeF units.

##### 5.1.1.4 *Sustainability analysis*

Each team shall provide a simplified Life Cycle Assessment (LCA) of the structural parts and used materials.

#### 5.1.2 *Renderings and drawings*

Each team shall provide a minimum of:

- Five hi-definition renderings of their concepts in standard image formats (JPG,PNG,etc).
- Complete 2D drawings of the concept and appendages (iso and main views).

#### 5.1.3 *Bill of Materials (BOM)*

A BOM shall be presented with the needed materials for the manufacturing of the concept.

## 6 PRIZES

1 <sup>st</sup> Prize winner	2 <sup>nd</sup> Prize winner	3 <sup>rd</sup> Prize winner
3000 € cash money	1250 € cash money	750 € cash money
10000 € equivalent Gurit materials*	-	-
Torqueedo powertrain and batteries*	-	-

\*Gurit materials and Torqeedo powertrain will be available once a clear commitment to production of at least one boat is received. The winner will have 1 year to provide commitment details, by **November 30<sup>th</sup> 2020**.

## 7 ORGANIZER

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### 7.1 Contacts

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