



HYDROCONTEST



Jointly organized by



HEIA-FR  
HTA-FR

EPFL

With the support of



Rules 2019

## Content

Art. 1.	HydroContest-X concept.....	3
Art. 2.	Application of the concept.....	3
Art. 3.	Organization, Participants, Race Management.....	3
3.1	Organization .....	3
3.2	Participants.....	4
3.3	Race Management .....	5
Art. 4.	Rules.....	5
Art. 5.	Registration.....	5
Art. 6.	Liability .....	6
Art. 7.	Insurance .....	6
Art. 8.	Organization, communication and promotion .....	6
Art. 9.	Racing.....	7
9.1	Courses.....	7
9.2	Race formats .....	7
Art. 10.	Calendar .....	10
Art. 11.	Race rules.....	11
11.1	Aim of the competitions .....	11
11.2	Boat(s).....	11
11.3	Loads to be carried .....	15
11.4	Piloting.....	15
11.5	Incidents arising during racing .....	16
11.6	Protest.....	16
11.7	Briefing sessions .....	17
11.8	Rules of conduct.....	17
Art. 12.	Safety.....	17
Art. 13.	Technical document.....	17
Art. 14.	Boat inspections.....	18
14.1	Inspection process.....	18
14.2	Technical compliance certificate .....	18
Art. 15.	Support to the Teams .....	18
15.1	Team communication support.....	18
15.2	Financial support .....	19
15.3	Material support.....	19
Art. 16.	Logistics .....	19
Art. 17.	Property .....	20
Art. 18.	Team undertaking.....	20
18.1	With regard to communication .....	20
18.2	With regard to material support.....	20
Art. 19.	Prizes .....	20
19.1	Racing prizes.....	20
19.2	Off race prizes .....	21

## Art. 1. **HydroContest-X concept**

To heighten the awareness of tomorrow's engineers, industrialists, opinion leaders and the general public of what is at stake with regard to energy efficiency in the carriage of goods and passengers by sea and the nautical industry.

To be a community and an incubation platform, bringing together students, universities, industrials and sponsors, in order to detect the most promising young talents and the most innovative ideas.

To be a multidisciplinary education tool for universities and schools worldwide, providing them the knowledge capitalised during the previous HydroContest.

## Art. 2. **Application of the concept**

The Hydrocontest is an international competition open to all for the management of a Project including at least :

- The design and build of one or two boats. These boats must have technological innovations enabling them to achieve the most efficient use of energy.
- Their confrontation in the races of the HydroContest-X, in each of the four categories : Mass Transport, Lightweight Transport, Agility and the Long-Distance Race.
- The sharing of skills and knowledge with the other participants, professionals and the public.
- The distribution of a strong message on energy efficiency.
- Communication and logistics of the project.

This competition, referred to herein as "the Event", is aimed to be organised by a group of students, whether or not they have already participated in the previous competitions. It is currently only planned for 2019.

HydroContest-X will take place in Switzerland, in the municipality of Yverdon, along the Neuchâtel Lake, from the 1<sup>st</sup> to the 8<sup>th</sup> of September 2019.

## Art. 3. **Organization, Participants, Race Management**

### **3.1 Organization**

The HydroContest-X 2019 is organized locally by the following three Swiss institutions :

- École Polytechnique Fédérale de Lausanne (EPFL)
- Haute École d'Ingénierie et de Gestion du Canton de Vaud (HEIG-VD)
- Haute École d'Ingénierie et d'Architecture de Fribourg (HEIA-FR)

They are referred to herein as « the Organization ».

The postal address is declined in relation to the desired activity :

- |                                |                        |
|--------------------------------|------------------------|
| – Administration and finance : | – Logistics :          |
| HEIA-FR                        | HEIG-VD                |
| Thierry Ursenbacher            | Laurent Grenier        |
| Bd de Pérolles 80              | Av. des Sport 20       |
| 1700 Fribourg                  | 1401 Yverdon-les-Bains |
| Switzerland                    | Switzerland            |

Similarly, the contacts and intervenors are respectively :

- Event managers :
  - Thierry Ursenbacher ([thierry.ursenbacher@hefr.ch](mailto:thierry.ursenbacher@hefr.ch))
  - Laurent Gravier ([laurent.gravier@heig-vd.ch](mailto:laurent.gravier@heig-vd.ch))
  - Amacher Robin ([robin.amacher@epfl.ch](mailto:robin.amacher@epfl.ch))
- Logistics managers :
  - Gabriel Lopez ([gabriel.lopez@heig-vd.ch](mailto:gabriel.lopez@heig-vd.ch))
  - Pedro Garcia ([pedro.garciacandidodesouza@heig-vd.ch](mailto:pedro.garciacandidodesouza@heig-vd.ch))
- Communication managers :
  - Pedro Garcia ([pedro.garciacandidodesouza@heig-vd.ch](mailto:pedro.garciacandidodesouza@heig-vd.ch))
  - Lucas Froidevaux ([lucas.froidevaux@edu.hefr.ch](mailto:lucas.froidevaux@edu.hefr.ch))
- Electrical equipment manager :
  - Daniel Oberson ([daniel.oberson@hefr.ch](mailto:daniel.oberson@hefr.ch))

Teams are also invited to ask their questions in the dedicated Facebook group « Hydrocontest Community » and on the Discord server « Hydrocontest++ ».

### 3.2 *Participants*

HydroContest-X is open to any university or engineering school, or a group of schools or universities such as :

- Legally and administratively represented by a teacher or an academic referee.
- Comprised of a Team, which may have an unlimited number of students.

Registration is free of charge.

Each Team will take on one or several people with the following roles :

- **Team Manager :**  
He/she will be in charge of the Team and will be the Team's main contact with the Organization.
- **Communication officer :**  
He/she will interface with the Hydrocontest's communication department. To this extent, he/she will be the Team's spokesperson. He/she will represent the Team officially with regard to the media. He/she will forward the Team's audio-visual content.
- **Logistics officer :**  
He/she will be the direct contact with the Hydrocontest's logistics department. To this extent, he/she will be in charge of any administrative, logistic and financial matters relating to Team travel, to the transport of the boat(s), the engine and of any of the Team's equipment.

The Team Manager, the Communication Officer, the Logistics Officer, and the boat pilots must be students over 18 and under 30 years of age on the first day of the event.

### **3.3 Race Management**

Inspection of the boats for technical compliance with these Rules, and the compliance of the racing, shall be under the aegis of an ad hoc Committee.

In the case of the technical boat inspection, this committee will be composed of all the Teams Managers, accompanied by representatives of the Organization.

Concerning the compliance of the qualifying and races, the committee will be composed of one representative per Team, and renewed every half day. Several functions will be performed by this committee :

- Control of ship loading
- Distribution and reception of SD cards for data recording
- Timing during qualifying and races
- Recording of time and energy consumption

Each function will be performed by two representatives, and under no circumstances may a representative of a Team supervise his own Team.

These committees are referred to herein as « the Race Management ».

## **Art. 4. Rules**

These rules were published on the 23<sup>rd</sup> of May 2019. The Organization reserves the right to :

- Amend these rules up until the awards ceremony.
- Postpone or cancel the Event or to change the dates notified and set out in the calendar in the event of exceptional weather conditions (strong wind and/or rain, excessive heat) and/or in any other situation that might endanger the safety of the participants and/or the public.
- Postpone one or several legs or races or any other part of the Event if the weather conditions represent a danger for the Teams and/or their boats, and/or if the wave height exceeds 30 cm.

The Organiser reserves the right to refuse the participation of a Team if it fails to satisfy all of the conditions required under these Rules.

The Organiser alone shall decide whether to start, postpone or cancel a race.

In the event of differences with regard to the interpretation of these Rules, the French language and the French version hereof shall prevail.

Each Team shall be responsible for reading, understanding, and complying with these Rules. In registering to take part, each Team accepts to comply with the Hydrocontest Rules and with the Organiser's decisions.

## **Art. 5. Registration**

Participants effect their pre-registration via the online registration platform, accessible in the Team Area of the following website (**TO BE DEFINED**).

The following documents are to be uploaded onto the platform :

- A letter of support from the school, bearing the name of the professor/academic referee.
- A description of the Project including :
  - A description of the Team and its structure (in particular, the Team Manager, the Communication Officer, the Logistics Officer)
  - The Team's tools, resources and partners
  - The innovations in the development of your Project
- A photo of the Team
- A list with a copy of an identity document of all the students who will be physically present at the Event.

The deadline for submitting pre-registration applications is the 31<sup>st</sup> July 2019. A maximum of 16 Teams will be accepted.

The organiser reserves the right to refuse a Team's application if the quality and the rigour of the application are considered insufficient.

## **Art. 6. Liability**

The Organisation's liability shall be limited to assembling the means necessary for the HydroContest-X to take place in accordance with these rules.

The Participant undertakes to take full responsibility for his/her participation in the HydroContest-X, be it for his/her Team or boat(s), throughout the preparation and during the Event.

The Organisation disclaims any liability in the event of injury or damage caused by the Participants to their own team members or to third parties, whether during the preparation for the HydroContest-X or during the Event itself.

## **Art. 7. Insurance**

Each Participant shall take out a Third Party Liability Insurance issued by a recognised agency.

The Organization shall not be held liable for damage caused by a Participant to another Participant or to a third party.

Each Participant shall take out insurance providing repatriation cover in the event of injury, illness or accident to one or several members of the Team. The Organization shall not be held liable in this regard.

## **Art. 8. Organization, communication and promotion**

The Participant warrants and represents that the project submitted in the competition (« the Project ») will be original and created legally and that it will not violate any third party rights with regard to intellectual property, advertising or other legal or moral rights.

The Participant hereby certifies that he/she holds all the rights connected with the Project, including, without limitation, the intellectual property rights attaching thereto.

In submitting his/her Project to take part in the HydroContest-X, the Participant irrevocably grants the Organization and its beneficiaries, the right and the permission to to publish, post, broadcast, use or re-use any image for conceptual or marketing purposes, without limitation in time or geographically, and without the prior consent of the Participant.

The suscription to the contest is taken into account as an agreement to share, without asking for further autorisation, all of its material (photos, videos...) with the other Teams.

Each team can communicate in any way he wants about the contest, taken into account the values held by the contest.

## Art. 9. **Racing**

Each Team will be by default registered in the four competitions :

- The Mass Transport Race
- The Lightweight Transport Race
- The Agility Race
- The Long-Distance Race

By participating to the Mass and Lightweight Transport Races, Teams will automatically be included in an energy efficiency ranking, celebrating the Teams minimizing simultaneously energy consumption and qualification time.

Each team will be able to use one or two ships for the Races listed above. If, during the course of the HydroContest-X, one of the two boats were to become unusable, the Participant will be authorised to use one boat for all four competitions.

Should a team not want to participate in one of theses Races, it will automatically be considered as a DNS an no further action will be taken.

The Organization reserves the right to add other competitions, such as speed races, for example.

### **9.1 Courses**

Racing will be organised over several courses :

- Mass Transport : Courses of approximately 400 metres, favouring long segments.
- Lightweight Transport : Courses of approximately 600 metres, favouring short segments.
- Agility : A twisty short course (to be defined during the Event).
- Long-Distance : A course of approximately one hour, favouring long segments.

The shape of the courses will be announced in an amendment to these rules.

### **9.2 Race formats**

The precise racing programme will be announced in an amendment to these rules.

**Qualifications :**

The qualifications will determine how the 16 Teams will access the four races.

Qualifications will be held according to the following conditions :

- Each Team has to take part in the qualifications, and validate at least one time for each of the two categories Mass and Lightweight Transport to access the Races.
- Qualification time will result from the addition of the times on two circuits (one turning to port, the other to starboard).
- Run against-the-clock.
- Each Team can make as many qualification attempts as it wishes, within the limits of the programme reserved for qualification.
- There are no reserved time slots for the qualifications, nor is there any set running order.
- Each run of the course will be timed.

For each of the two categories Mass and Lightweight Transport, the best course time of each Team will be used to establish the qualification ranking.

In parallel, still for these two categories, the best course time of each Team will be multiplied by the energy consumed to carry out this time, in order to establish a second ranking on the basis of which the energy efficiency prize will be awarded.

**Mass Transport and Lightweight Transport Races :**

For each of the two categories, the racing is divided into 4 stages :

- Round of 16
- Quarter-finals
- Semi-finals
- Final rounds

All racing will be run in accordance with the following :

- According to a programme drawn up by the Organization.
- In parallel, two Teams on each circuit will set out at the same time.
- At the end of each round, the Teams will change circuit.

The races of the Round of 16 will be run in accordance with the following :

- The 16 Teams will be divided into a tournament type table, with 8 Heats.
- In each heat, 2 Teams will race against one another, on the two separate circuits.
- The first Team to win 2 races will go through to the quarter-finals. The other Team will be knocked out.
- If less than 16 Teams are qualified, the Teams who find themselves without competitor in their Heat will be directly qualified in the quarter-finals.

The races of the quarter-finals will be run in accordance with the following :

- The 8 Teams will be divided into 4 Heats.
- In each heat, 2 Teams will race against one another, on the two separate circuits.
- The first Team to win 2 races will go through to the semi-finals. The other Team will be knocked out.



The races of the semi-finals will be run in accordance with the following :

- The 4 Teams will be divided into 2 Heats.
- In each heat, 2 Teams will race against one another, on the two separate circuits.
- The first Team to win 2 races will go through to the final. The other Team will go through the small final.

The races of the small final will be run in accordance with the following :

- The 2 Teams who lost their semi-final will race against one another, on the two separate circuits.
- The first Team to win 3 races will be declared third in the category.

The races of the small final will be run in accordance with the following :

- The 2 Teams who won their semi-final will race against one another, on the two separate circuits.
- The first Team to win 3 races will be declared winner of the category, the other Team being ranked second.

For each of the two categories, the Organization reserves the right to withdraw the small final from the programme.

### ***Agility Race :***

On the day of the Agility Race, an original circuit will be defined by the Race Management (Team Managers Committee), which will be revealed to all Teams during the following briefing.

Each team is free to participate or not in the Agility Race.

The Agility Race will be run in accordance with the following :

- Each Team presents itself alternately on the starting line, in reverse order of qualifications (Lightweight Transport category), by hiring the boat of its choice to represent it (the Mass Transport boat or the Light Transport boat).
- Each boat shall at least carry the load of the Lightweight Transport category, as set out in Art. 11.
- Each Team will complete, alone on the circuit, one lap of the course shape presented at the briefing, as fast as possible, without the possibility of training laps.
- Once all Teams have recorded one time (1<sup>st</sup> Round), the Race Management decides the possibility of a second and a third round.
- The Teams then take turns in the second or even third Round, still in the reverse order of qualifications.
- Each Team's best time (over all Rounds) around the course will be retained in drawing up the Agility rankings.
- The winning boat will be the one that completes the fastest lap.

A Team that is not ready to start within the 5 minutes after the previous Team's lap may not take part in the current round.

In case of unfavourable weather conditions over the week, the Organization reserves the right to modify or cancel the race (reserve day).

**Long-Distance Race :**

The Long-distance Race is a fleet race in which all Teams will race against one another simultaneously on a single course. The objective is to cover the longest possible distance in one hour.

Each team is free to participate or not in the Long-Distance Race.

The Long-Distance Race will be run in accordance with the following :

- Each Team shall enter one boat to represent it : either the Mass Transport boat or the Lightweight Transport boat.
- Each boat shall at least carry the load of the Light Transport category, as set out in Art. 11.
- The Teams' starting order will be based on the energy efficiency ranking (from the first to the last in the Mass Transport category), with each Team starting every 3 seconds.
- It is strictly forbidden to replace the battery during the race, available energy being limited to 7Ah.
- Technical interventions are allowed:
  - at the piloting pontoon, if they are carried out without tools, without assistance to the Team members allowed on the pontoon, and if they do not interfere in any way with the other Teams racing ;
  - otherwise ashore with the boat out of the water.
- Counted laps are the laps entirely completed and in a completely autonomous manner.
- When the final horn is sounded, engaged lap can be completed and will be counted, as long as it's done in a completely autonomous manner.
- The winning boat will be the one that clocks up the greatest number of laps of the course in one hour.

The Organiser reserves the right to modify the duration of the race, and the amount of energy allowed, in case of inclement weather.

**Tests :**

Each Team will be free to test its out-of-competition boats as long as they do not interfere with the races in progress.

However, the Teams are prohibited from training on the Agility Race circuit on the day of the Agility Race.

**Art. 10. Calendar**

A calendar will be provided in an amendment to these rules. The final program may be modified by the Organization and will be confirmed each morning during the compulsory briefings to the Teams (2 people per Team).

## Art. 11. Race rules

The Organization will publish, during the preparation time but also during the Event, numerous documents that may help teams.

### 11.1 Aim of the competitions

Each boat will run on a given course with a pre-defined engine power and limited energy available.

### 11.2 Boat(s)

#### **Dimensions :**

Each boat must fit into the rectangular « dimensions box », of rectangular parallelepiped shape, whose inner dimensions are

- 2,0 m x 2,5 m x 2,5 m.
- These dimensions must include all parts of the boat, as it will be used during racing. This must be complied with in all of the boat's geometrical configurations, if it has several configurations, including the phases during which it changes configuration, if the change takes place during racing.
- No part of the boat must endanger the Teams or the other boats.

#### **Construction materials :**

Each Team is free to use any materials they wish.

#### **Towing :**

Each boat must be fitted with a fixed towing ring able to withstand 2'000 N (about 200kg), in order for it to be towed.

#### **Engine :**

The boat(s) must be powered by the Watt&Sea POD 1'200W engine. The technical specifications of the engine will be specified in an appendix to these rules. Other engines are not authorised.

The engine must operate in water for cooling purposes.

Each Team may modify the fairing of the POD according to the following conditions :

- Without any modification to any of the parts of the POD provided by the Organization, nor their position and means of fixation.
- By the addition of any material in order to improve its hydrodynamics without damaging the engine.

Teams are reminded that it is forbidden to open the engine. The mast can be altered in any way. Fitting of external control(s) is authorised. No intervention other than those described above shall be authorised.

In addition to the engine which can be supplied by the Organization (Art. 15), each Team will be able to use a second engine during the Event. However, the simultaneous use of two engines on the same boat shall remain forbidden.

Each Team wishing to purchase a second engine must contact the company Watt&Sea (contact@wattandsea.com), and inform the Organization as soon as possible by conveying it the serial number. This second engine must correspond to the references of the official engine of the Event, and the cost is to be borne entirely by the Team (purchase, transport, etc.).

### ***Means of propulsion :***

Teams are free to choose whatever means of propulsion they wish. The Organiser will not provide any propeller to the Teams.

### ***Power :***

Each Team is responsible for purchasing and maintaining its own batteries, which will respect the following characteristics :

- Chemistry : Li-ion – NMC
- Maximum nominal tension : 36 V
- Minimum nominal capacity : 7.0 Ah
- Configuration : free

Teams can install the battery wherever they wish.

The amount of energy available in the propulsion battery shall be limited by the Organization to 7Ah, for each race, by means of an energy meter.

The battery cannot be replaced during any stage of the race.

During racing, it shall be forbidden to use propulsion batteries other than those recommended above.

It shall be forbidden to use other batteries, except to provide power for any visualisation, satellite positioning and telemetry equipment.

Any other source of energy will be prohibited (wind, photovoltaic, hydraulic, thermal, pneumatic and/or kinetic).

### ***Electronics :***

The electronics must be housed in a watertight compartment. The recommended compliance criterion is the standard IP67.

The engine will be controlled by the following element : Watt&Sea1200W 36V Controller HydroContest-X 2019.

This speed controller will allow for a water-cooling system and will include anti-spark battery connectors.

The technical specifications of the controller will be specified in an appendix to these rules. The speed-controller must be water-cooled and each Team shall provide the pump and tubing needed for the system to function.

The following connectors must be used, including for extension :

- AMASS MT60 for the speed-controller – engine connexion
- AMASS XT90-S for the speed-controller – battery connexion

Several settings of the controller will be locked by the Organization to prevent damage to the controller, battery and engine. The acceleration rate will be set to a value between 1000 ms and 2000 ms in order to smooth the power peaks during the accelerations.

Teams are reminded that they are not allowed to open the speed-controller box.

No other speed controller may be used during the racing.

All of the electrical circuits on board the boat must be protected in order to avoid personal injury and short circuits. Protection may take the form of limitation or interruption of the current, circuit breaker(s) or by the insertion of individual circuit fuses.

It shall be forbidden to use undersized switches or connectors with regards to the current ( $I_{max} < 40$  A). It is highly recommended not to use screw terminal block strips and banana plugs.

It is recommended to use oversized modelling golden plated connectors (AM-1001C for instance).

Each boat shall have, on its outside, a visible and easily accessible emergency stop button. for the power supply. It shall also be possible to remotely cut off the engine power supply with the remote control.

This emergency stop button will have the following specifications :

- Two switching circuits (NO/NC)
- NO (Normally Open) = on/off logic controller (cf. controller datasheet)
- NC (Normally Closed) = auxiliary power supply (servos)

Each Team shall set up the radio receiver of its boat(s) so that the throttle is automatically shut down in the event of a signal loss by the receiver.

An electronic compliance inspection may be carried out by the Organization at any time.

### ***Energy meter :***

In order to limit the problem of heterogeneity in the batteries used during the HydroContest-X competition, a single energy meter for all teams is created and provided by the Organization. This energy meter will measure in real time the energy used by boats during competition races.

The energy meter must be connected directly between the battery pack and the boat's electronic systems

The technical specifications of the energy meter and its use will be specified in an appendix to these rules.

Each time a Team appears for qualifying or racing, the Race Management will provide them with an official SD card. The Team will install the card itself in the energy meter and return it to the Race Management immediately after completing its course.

Once the card is installed, the teams will also start the required registration mode (the « speed race » mode for qualifications, for the Mass Transport Race, for the Lightweight Transport Race and for the Agility Race, or the « endurance race » mode for the Long-Distance Race).

If this operation is forgotten, the course run by the Team will be invalidated by the Race Management.

Regardless of the recording mode, once activated, the available amount of energy is limited to 7000mAh. When this amount of energy is exceeded, the metre energy opens physically the contact, and the power supply to all the boat's control and power electronics is interrupted. Teams must take into account that their boat will then no longer be steerable and take the necessary measures to avoid any accident. This can be done by monitoring the evolution of the consumption using the DAC output available on the energy meter.

***Movement :***

Each boat must be able to move and be manoeuvrable in forward and reverse gear.

***Markings :***

Compulsory markings on each boat will be set out in an amendment to these Rules.

A boat will not be authorised to start a race if the markings have not been complied with.

The Organization reserves the right to refuse a boat that displays marking judged contrary to the values and the message of the Event.

Each Team must leave free from any marking, and at the disposal of the Organiser, the forward 50% of its boat(s), on all surfaces, be they on deck, on the outer and/or inner sides.

The Organiser may choose to affix any markings aiming to promote the messages of the Event, and/or its partners.

Each boat must carry a race number on the highest part of the boat.

Teams will be supplied with all of these elements upon their arrival at the Event and will be fitted by the Organization.

***Video images :***

The Organization reserves the right to mount a camera on each boat.

***Stability :***

It is recommended that each Team ensure the stability of its boat(s). Regardless of the type and configuration of the race, it is advisable to check that the boat rights up for a roll angle of 30°.

***Handling :***

Each Team is responsible for moving and parking its boat(s) safely and independently. No handling equipment will be provided by the Organization.

### **11.3 Loads to be carried**

#### **Mass Transport Boats :**

In this category, boats will have to carry 20 load elements (representing containers), whose the characteristics are :

- unit weight : 10 kg.
- dimensions per unit : L 500 mm / l 120 mm / H 100 mm.

#### **Lightweight Transport Boats :**

In this category, boats will have to carry 2 load elements (representing containers), whose the characteristics are :

- unit weight : 10 kg.
- dimensions per unit : L 500 mm / l 120 mm / H 100 mm.

#### **General information :**

The load elements will be given to the Teams upon their arrival at the Event. Only the sets of ballast supplied by the Organization may be used during racing.

The loading of the load elements shall be carried out with the boat afloat and following the vertical Z-axis, where the Z-axis is normal to the water plane.

### **11.4 Piloting**

#### **During races :**

When piloting the boats, the following conditions must be complied with :

- There must be no human contact with the boat during racing, i.e. between the start line, less one boat length and the finish line, plus one boat length.
- No more than 3 persons from any one Team may be present on the piloting pontoon.
- There shall be no piloting, directly or indirectly, from or by any aircraft or boat.
- Automatic pilots may be used if the human pilot is able, at any time and in any situation, to take over control.
- Data flow between the boat and the pilot(s) is authorised.
- Pilot(s) must wear :
  - o a lifejacket if piloting is carried out close to the water.
  - o shoes which provide electrical insulation.

#### **Generally :**

The following conditions must be met at any times :

- Team members must wear a lifejacket each time the boat is handled in the water : launch, trial runs, waiting for the starting signal, hauling out, loading of ballast and loads, etc.
- Team members must wear gloves when handling the ballast.

Failure to comply with these safety rules may give rise to a Participant being excluded from qualifications or racing.

## **11.5 Incidents arising during racing**

### **Fire :**

In the event of fire on board a boat during a race, or in any circumstance representing a danger for a Team member or any other person, the Organization reserves the right to intervene in order to avoid an incident from turning into a safety issue.

### **Failure :**

In the event of temporary failure, the pilot will have 30 seconds in which to restart the boat but cannot carry out any physical intervention on his/her boat.

In the event of a major breakdown or of an accident arising on the course, the pilot must distance his/her boat from the course if able to do so.

In the event of a breakdown requiring intervention on the boat, the pilot shall :

- Cut the supply of electrical power to the engine by remote control.
- Then ask the Race Management to have a safety boat remove the boat from the race area.

Except for the Long-distance Race, no intervention or repairs can be carried out on a boat during a race.

In the event of a failure on a boat supposed to take part in the next race, the Team will be granted, from the moment the boat reaches the piloting pontoon :

- 1 minute to fix it without tools
- 5 extra minutes with tools, subject to the agreement of the Race Manager
- 5 extra minutes, subject to the agreement of the opposing Team(s)

If the Team is not be able to fix the failure within the allocated time, it shall be classified as DNS (did not start).

In the event of damage caused by another boat, and if the boat is supposed to take part in the next race, the Race Management reserves the right to postpone the race so that the Team can carry out the necessary repairs.

## **11.6 Protest**

Only Team Managers are allowed to lodge a protest.

Protests must be made in writing and lodged with the Race Management within 30 minutes following the crossing of the finish line or following the retirement of all boats from the race.

The decision of the Race Management shall be final.

The decisions will be displayed on the "Official Noticeboard".

Elles seront affichées sur le « Panneau officiel ».



## **11.7 Briefing sessions**

They will be held each morning during the Event.

All Teams must attend.

Each Team must be represented at least by the Team Manager and the members who are to pilot that day.

## **11.8 Rules of conduct**

The Organization may at any time penalize or exclude a Participant if he/she considers that the Participant's conduct does not comply fully with the rules of the Event, and in particular :

- the race rules;
- the rules of conduct such as they apply to the Event : being under the influence of alcohol or illegal substances;
- the requirement that each member of the Team must wear shoes.

The Organization reserves the right to :

- prohibit handling or manoeuvring the boat in the water, if bathing is prohibited by the authorities with jurisdiction in this matter ;
- apply specific safety measures to avoid any danger being caused when boats are being handled in the water, and in particular, any danger regarding the boat's propellers ;
- to apply racing penalties to Participants who hinder the smooth running of the HydroContest-X by their lack of preparation, late presentation or the lack of compliance of the documents requested, or arriving late at the start of the Event, as well as being late for the start of a race.

## **Art. 12. Safety**

The HydroContest-X Race Management shall call the Team Managers to one or several safety briefing sessions before the start, and if necessary, during the Event. Attendance at these briefing sessions is compulsory. The Race Management will display the Race Rules, the Sailing Instructions and the Safety Rules of the Event on the "Official Noticeboard".

Team Managers must notify the Race Management as soon as possible of any functional anomaly on his boat(s) or of any problem regarding safety.

## **Art. 13. Technical document**

In addition to the documents related to the registration (Art. 5), Teams will be asked to send, at least 1 month before the event, to the Organization a poster on which they state their innovations, the work done during the year and any material they feel relevant to add. This poster could be used as a mean of advertising for the teams. The shape will be the A0. No canvas will be sent to the team, so they can express their creativity.

Teams shall at the same time send the frequencies they use to operate their ships, in an attempt to prevent any issues on piloting.

## Art. 14. Boat inspections

### **14.1 Inspection process**

Each Team's boat(s) will be inspected one after the other according to the following nomenclatures.

#### **Size of the boat(s) :**

Size of the boats, fully equipped and ready to sail, will be checked by inserting the boat in a « dimensions box ». During this inspection, the boat can be placed in the box in any way that suits the Team as long as no part of the boat goes beyond the inner part of the box.

#### **Stability :**

The Organisation reserves the right to carry out stability tests directly on the water if it considers that the boat is not stable enough to take part in races (as recommended under Art. 11).

#### **Electronics :**

The electronics of the boat must be easily verifiable and comply with the standard cited in Art. 11. The company supplying the motor and the drive reserves the right to carry out a technical inspection.

Electronic devices and questions to the boats' designers will be used to check for compliance of the electronics. The electronics of the boats' external control system may also be inspected (if applicable).

### **14.2 Technical compliance certificate**

After inspections and if the boat(s) comply with all of the technical rules of the HydroContest-X, an authorisation will be issued to the Team Manager.

Any changes to parts of the boat and/or its geometry during the Event must be submitted for approval to the Race Management.

A technical inspection may be carried out by the Race Management or by an « Inspector » at any time.

## Art. 15. Support to the Teams

### **15.1 Team communication support**

The Organization sets up a programme promoting the Teams, before, during and after the Event, including :

- All of the Teams will be presented on the Teams page on the website [www.hydrocontest-x.ch](http://www.hydrocontest-x.ch).
- Teams' preparation will be presented and kept up to date on the website and the social networks.
- Each project will be promoted with the media, professionals and the general public, in particular during the Event itself.

Teams are encouraged to provide the Organization with any useful content (videos, photos, articles, press review, etc.), about the team, the main lines of work or information about the conditions of preparation. This content will then be shared and promoted by the Organization. Teams with good visibility find it easier to find partners.

### **15.2 Financial support**

No financial support will be provided to the Participants of the Event.

### **15.3 Material support**

Upon request, the Organization will send the following items to each of the Teams :

- One Watt & Sea POD 1200 W engine;
- Technical description of the engine;
- One Watt & Sea 1200W 36V Controller Hydrocontest 2019-X.

Each Team will have the following facilities at their disposal during the Event:

- A stand under canvas with a worktable, electricity and lighting.
- Markings can be displayed on the stand walls promoting the boats, the Team, the school or the partners. Only adhesives may be used. Nails, screws or staples are forbidden.
- Internet access in the village.

The Organization will supply Teams with breakfast, lunch and dinner free of charge during the Event period.

## **Art. 16. Logistics**

The Organization will send the items as described in Art. 15 to each registered Team, the cost of which shall be borne by the Organization. These items will be sent upon request to the Teams listed once pre-registration has been closed.

The Organization shall retain title to the items sent.

Teams will take charge of the following with regard to transport :

- The administrative, customs and legal formalities according to the rules and regulations in their country, as well as those of Switzerland.
- Transport costs, both outside and within Switzerland, and customs of any forwarding agents and other costs relating to :
  - the forwarding of the items sent to them by the Hydros Foundation from their own country to the site of the Event ;
  - the forwarding of their boat(s) and various items of equipment necessary, from their country to the site of the Event, as well as from the Hydrocontest back to their country at the end of the Event.

Teams must have left the Event site with their equipment and boats no later than the first business day after the Award Ceremony.

## Art. 17. Property

At the end of the HydroContest-X, the Organization will recover the engine and the speed controller.

## Art. 18. Team undertaking

### **18.1 With regard to communication**

Each Team hereby undertakes to :

- become an Ambassador of the Hydros Foundation's message by promoting and spreading its message about energy efficiency and innovation ;
- publish on its website and other means of communication, a standard text that the Organization will send which presents the HydroContest-X.
- present its project at Pitch Session held during the Event. Every day, after the racing, several Teams are invited to present within a maximum of 5 minutes their project to other participants, professionals and the public. Emphasis should be placed on the technological innovations adopted in order to attain the best possible level of energy efficiency. The Organiser will send a framework to the Teams.

### **18.2 With regard to material support**

Each Team hereby undertakes to :

- return the whole engine and speed controller, in good condition, at the end of the Event ;
- leave all of the facilities used in the condition they were found.

The Organization reserves the right to charge for damage and/or loss of items put at its disposal during the Event.

## Art. 19. Prizes

At the end of the Event, a prize-giving ceremony will be organised. It will recognize the top three teams in each category offered during the Event, as well as the Teams that have particularly distinguished themselves in the various issues of tomorrow's maritime transport and nautical industry.

### **19.1 Racing prizes**

The winning Race categories will be :

- The HydroContest-X Mass Transport Grand Prix
- The HydroContest-X Mass Transport Efficiency Prize
- The HydroContest-X Lightweight Transport Grand Prix
- The HydroContest-X Lightweight Transport Efficiency Prize
- The HydroContest-X Agility Grand-Prix
- The HydroContest-X Long-Distance Race Grand-Prix

## 19.2 Off race prizes

The winning off race categories will be :

- **The HydroContest-X Mass Transport Innovation Prize :**  
It will be awarded to the Team in the Mass Transport category which has applied the best technological improvements and the most visionary and relevant innovations, if they can be adapted to the industrial world and have real economic impact.
- **The HydroContest-X Lightweight Transport Innovation Prize :**  
It will be awarded to the Team in the Lightweight Transport category which has applied the best technological improvements and the most visionary and relevant innovations, if they can be adapted to the industrial world and have real economic impact.
- **The HydroContest-X Poster Pitch Prize :**  
It will be awarded to the Team that has prepared and given the most relevant and inspiring Poster Pitch during the HydroContest-X 2019.
- **Le Prix HydroContest-X Design Prize :**  
It will be awarded to the Team whose boat will feature the most original and consistent design in terms of aesthetics, ergonomics, building and finishing quality.
- **Le Prix HydroContest-X Ecodesign Prize :**  
It will be awarded to the Team that best incorporates the ecodesign dimension into its project, and that stands out for the efficiency with which the materials have been used, the processes applied, together with its scientific contribution and its commitment towards the other Teams in sharing good practices.

Off race prizes will be awarded according to a Teams voting process that will be described during the Event.