Can your school's team be the fastest under the sun and on the water?

TORONTO SOLAR BOAT RACE

AUG 22-23 2020

THE TORONTO SOLAR BOAT RACE **TORONTO WATERFRONT SUMMER 2020**

TORONTO SOLAR BOAT RACE
AUG 24-25 2019

WHAT?

Races between university/college teams to see who can create the best solar-powered electric boat competing in three categories: Speed • Slalom • Endurance

WHEN?

August 22/23 2020

WHERE?

Toronto Harbour, right along the waterfront, a 1 km course from the Jack Layton Ferry Terminal to H^{T}O Park at Queen's Quay and Bathurst Street

WHO?

Six Canadian university/college teams. Event presented by the Canadian Electric Boat Association and the Solar Sport One international solar boat authority which has overseen the races in Netherlands and Monaco since 2012.

WHY?

Join top engineering schools from around the world and pit your best ideas and execution against the best ideas and execution of other Canadian teams while being part of an international open source clean propulsion program

HOW?

Build a composite boat using an aqua-dynamically optimized mold from the world's leading solar boat designer and customize your own solar electric propulsion system

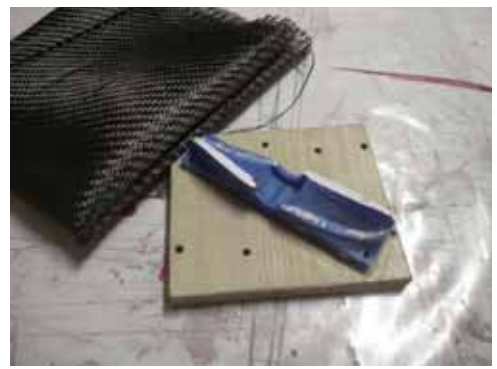
THE BOAT

www.torontosolarboat.com

A 5 meter hull designed by the world's solar boat authority
Your power and propulsion innovations make the difference

International solar boat organization Solar Sport One will be unveiling a new design the first week of October 2019 that has been created especially to allow university and college teams that do not have a naval architecture element to compete in the races. The plug/mould for composite construction – with hydrofoiling and non hydrofoiling hull options – will be the same for all teams, putting the emphasis on the electric/mechanical engineering






THE TEAM YOU'LL NEED

www.torontosolarboat.com

A variety of engineering disciplines
International teams range from 7 members to 30+

The average team in the Solar Sport One and Monaco races has 12 members. Core disciplines are mechanical, electrical, industrial/construction engineering and software development/ management. The larger teams usually include associates working on things like marketing and financial management. Some teams have the core members do everything while others have division leaders with small crews working under them. A faculty member is also involved.

Monaco Champion Delft Techn'l University

Sinnergy Team: ROC Friesepoort

Universitas Indonesia Solar Boat Team

Solar Team Emden, Germany

SS1 Champions Dutch SBT

AGH Solar Boat Team - Poland

Instituto Tecnico - Lisbon Portugal

THE NETWORK YOU'LL JOIN

www.torontosolarboat.com

Schools in Holland, France, Hungary, Italy, Poland, Indonesia & more
International online forum and almost 50 open source 'Tech Talks'

You will have access to all of the 46 Tech Talks presented at the Monaco solar and electric boat races, as well as be part of the Solar Sport One forum where teams from around the world ask and answer questions on topics such as: Electric System, Propulsion, Hull Construction, Foil Construction/Design. In Canada you will have access to a directory of interested suppliers for composites, motors, batteries, controllers and more.

Click on any team logo to visit their website or facebook page

THE RACES

Toronto Harbour/Port of Toronto
Competitions in Speed, Slalom and Endurance

The races will take place on the weekend of August 22/23 (weekend before Labour Day) along the Toronto waterfront with race headquarters at the Harbourfront Centre. About 100,000 people come to the waterfront each summer weekend, so there will be lots of excitement. The course itself is a half kilometre long. On Saturday boats will do a full lap in speed and slalom races to make up a 1 kilometre race. The endurance event on Sunday will test how many laps each boat can do on one charge.

THE TIMELINE

www.torontosolarboat.com

Hull construction is estimated at less than 200 person hours
Power train, energy management and other systems are up to you

The one common element for all teams is the hull. The electric motor(s), drive train and propellers, steering linkage, energy management, software, chargers and controllers are where each team adds its own expertise and innovation. Is it best to optimize for the straight speed race, the slalom race or the endurance race? Or maybe an option is to score well in each division and try to capture the overall points championship. Your call.

OCTOBER: New hull revealed

NOVEMBER

DECEMBER

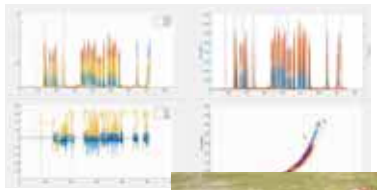
JANUARY

FEBRUARY

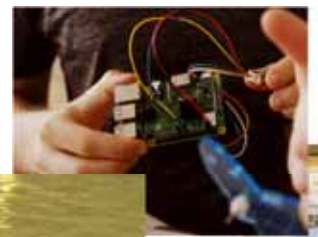
MARCH

OCTOBER 15/2019 to AUGUST 21/2020

11 MONTHS
44 WEEKS
312 DAYS



APRIL



MAY

JUNE

JULY

AUGUST

THE RULES & REGULATIONS

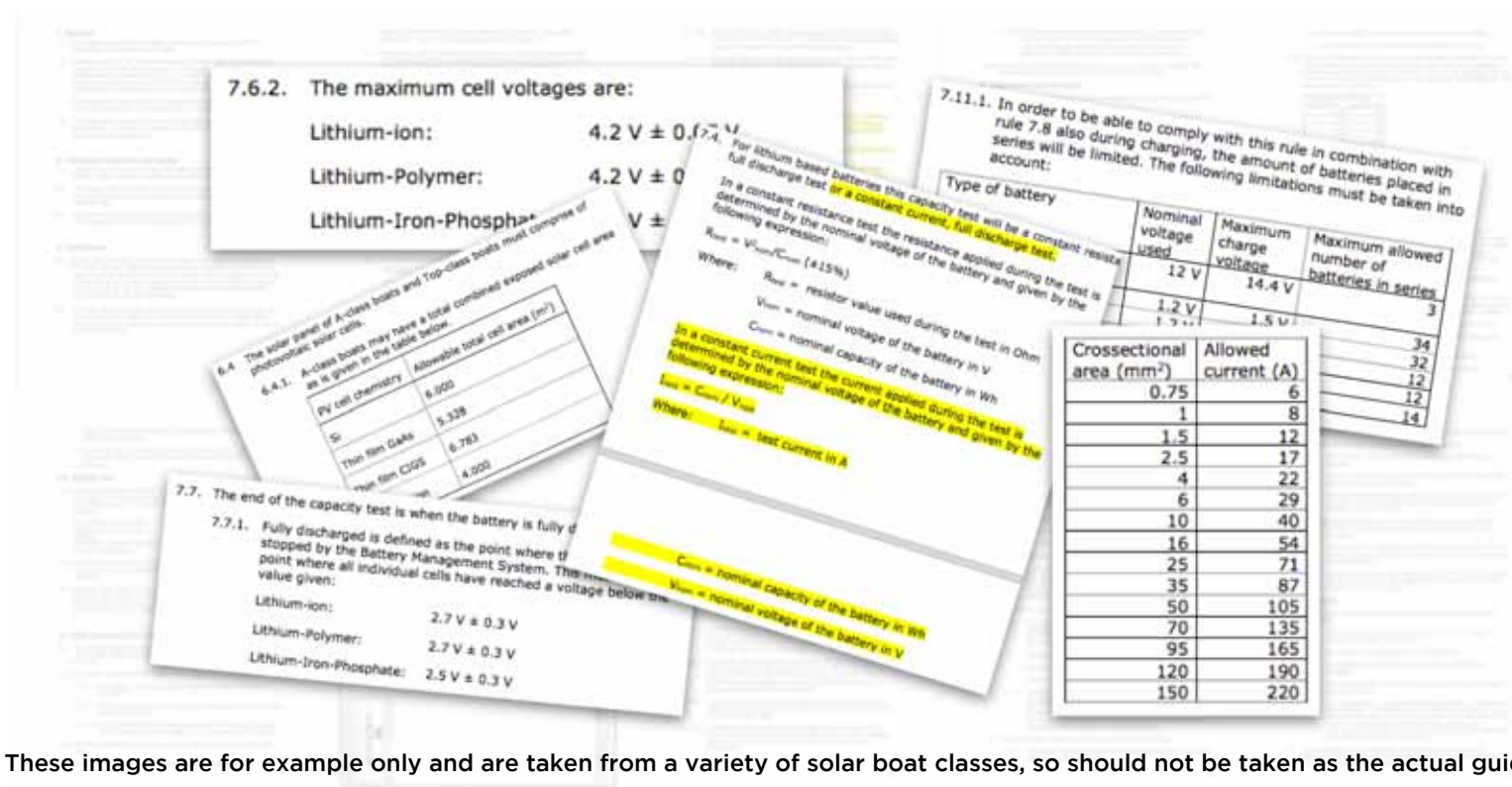
www.torontosolarboat.com

Extensive documentation that outlines: Solar panels, batteries, electronics and drive trains

WIth all teams using the common hull design as the starting point, guidelines and parameters are provided for the energy and propulsion aspects of the boat including the different compositions and chemistries for solar panels and batteries. These international regulations allow wide latitude for optimization while assuring team and individual safety.

TECHNICAL REGULATIONS 2020

1. General
2. Technical condition and safety
3. Definitions
4. Categories
5. The Boat
6. Solar panels
7. Electronics
8. Appearance of the boat
9. Inspections
10. Racing test
11. Pilot requirements and communications



7.6.2. The maximum cell voltages are:

Lithium-ion: 4.2 V ± 0.05 V

Lithium-Polymer: 4.2 V ± 0

Lithium-Iron-Phosphate: V ±

7.7. The end of the capacity test is when the battery is fully d

7.7.1. Fully discharged is defined as the point where th stopped by the Battery Management System. This point where all individual cells have reached a voltage below the value given:

Lithium-ion: 2.7 V ± 0.3 V

Lithium-Polymer: 2.7 V ± 0.3 V

Lithium-Iron-Phosphate: 2.5 V ± 0.3 V

7.11.1. In order to be able to comply with this rule in combination with rule 7.8 also during charging, the amount of batteries placed in series will be limited. The following limitations must be taken into account:

Type of battery	Nominal voltage used	Maximum charge voltage	Maximum allowed number of batteries in series
	12 V	14.4 V	3
	1.2 V	1.5 V	34
			32
			12
			12
			14

Crossectional area (mm²)	Allowed current (A)
0.75	6
1	8
1.5	12
2.5	17
4	22
6	29
10	40
16	54
25	71
35	87
50	105
70	135
95	165
120	190
150	220

NOTE: These images are for example only and are taken from a variety of solar boat classes, so should not be taken as the actual guidelines.

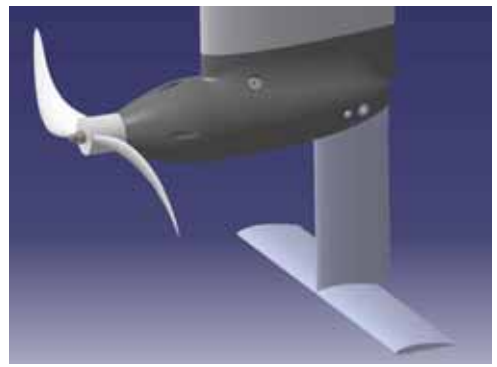
THE COST

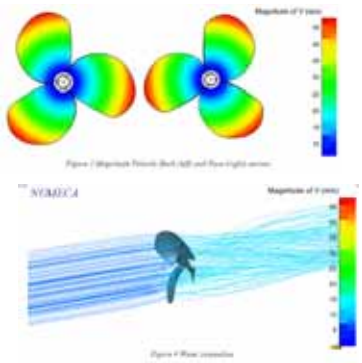
www.torontosolarboat.com

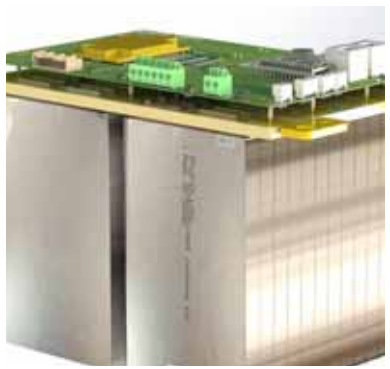
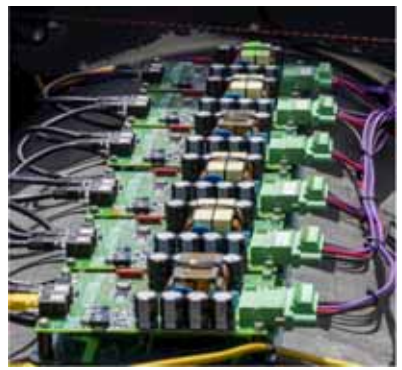
Planned and designed to be <$15,000
Sponsors are available to help reduce and offset costs

The Toronto Solar Boat Race is working with a number of consumer companies to sponsor teams and offset the majority of the costs for the hull plug and moulds. Teams are responsible for designing the electrical and mechanical systems including solar panels, motors and controllers and in this regard we have established relationships with Canadian and international suppliers and will assist, where possible, in procuring your desired elements.







VIDEOS & LINKS

Links to the Solar Sport One races and events as well as the Monaco Solar and Energy Boat Challenge and Tech Talks

There are also extensive photos, videos and other information available on the wesite and facebook pages of the participating team (see page ‘THE NETWORK YOU’LL JOIN’)

2019 - Day One

2019 - Day Two

2019 - Final

2019 - Solar Sport One

2018 - Solar Sport One

Link to all 2019 Tech Talks

www.torontosolarboat.com

TORONTO SOLAR BOAT RACE

THANK YOU - FOR MORE INFORMATION:

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