ONBOARD POWER CALCULATION FOR BOATS USING HYDROGEN
Monaco Energy Class

The Technical Committee is displaying the calculation below for the use of the Monaco Energy Class Teams:

Example of a configuration of a boat:

- Propulsion
- o a propeller
- o an electric motor

- Energy storage
- o 20 litre h² bottles
- o 5kWh battery

- Energy generation and conversion
- o 3m² solar panel, pmax = 450W
- o Fuel cell with a maximum efficiency of 0.4
- o Motor efficiency given by the manufacturer: 0.9

The maximum energy at the propeller must not exceed 10kWh.
- The energy in the battery is 5kWh
- The maximum energy allowed in the H2 cylinders is therefore 5/0.4 = 12.5 kWh
- The maximum pressure allowed in the H2 cylinders is therefore 267 bar. (at 25°C)

Battery energy	5.0 kWh
H2 energy (arriving to the engine)	5.0 kWh
Max allowed H2 energy stored	12.5 kWh
Max H2 pressure	267 bar
Total motor energy	10.0 kWh

The efficiency of the motor is not taken into account.

The energy produced during the race is not considered (in this case the solar panels). If other energy production systems are on board they are not counted if the energy is produced during the race. It is not allowed to have a storage capacity of more than 10kWh. In this case, a system that would allow the pressure of the cylinders to rise above 267 bar is not allowed.