# Prototypage and performance of a servomechanism

## Concept

Every year, the Hydrocontest EPFL Team participates to this prestigious competition at the end of the summer. Two boats are presented each year to this contest. The purpose of this project was to design an operational PCB board that is cable of settling a voltage supply problem on board of one of the boats. Indeed, the servomechanisms require a supply voltage of 7.4V whereas the battery of the boat furnishes 36V (Contest Rules).

## The light boat

![Light Boat Image](image)

## PCB design

- 2 layers PCB, components mostly THM
- Microcontroller ATMEGA168-20PU
- Voltage regulator with $V_{in}$ from 7 to 25V and $V_{out}$ at 5V in order to supply the Atmega

## Heating

- Important current on the H-bridge
- Choice of mosfets with low $R_{on}$ $\approx$ 5.6 mΩ
  \[ \Delta T_{max} \approx 5° \]
- Width tracks dimensionning

## Final product

![Final Product Diagram](image)

## Possible improvements

- Miniaturization by using the TQFP package instead of the PDIP
- SMD components could have been used
- The PCB layout could be improved to gain space
- Performances have not yet been tested rigorously