UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Escola Superior d'Enginyeries Industrial,
Aeroespacial i Audiovisual de Terrassa

Degree:
Bachelor's Degree in Aerospace Technologies Engineering

Author:
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Numerical study of current wing-tip devices for commercial aircraft

Budget

Director:
Robert Castilla López

Summons year:
2018-2019 Q2

The budget of this study will take into account three different fields: human resources, computing resources and energy resources. As long as nothing has been built, no materials list will be developed.

- **Human resources:** The desired price for a junior aerospace engineer is about 15 €/h. As says the calendar this study has taken 430 h which makes a total cost of 6450 €.
- **Computing resources:** For all tasks of this study a computer has been used. An ASUS^{TM} N56J-Series with and Intel^{TM} core i7-4710HQ processor, 8Gb of RAM memory and 4Gb of graphic memory valued in 1200 €. This computer has been used for 5 years, and the duration of this study has been 6 moths. This makes an amortization price of 120 €.
- **Energy resources:** For doing all the study, including simulation time, it is estimated a work of 1200h by the computing resources. The power of the computer is about 250W what makes a consumption of 300 KWh. The price of electricity in Spain on 2019 stays around 0,17 €/KWh, so the cost is 51 €.

All software (OpenFOAM, SolidWorks) used is free access or has student license so has no extra cost on this study.

Concept	**Cost**
Human resources	6450 €
Computing resources	120 €
Energy resources	51 €
TOTAL	6621 €

Finally, the total cost of this study has been **6621 €**.