

# Thermal Energy Engineering Master 2024-2025

[www.upc.edu/masters-sessions](http://www.upc.edu/masters-sessions)



UNIVERSITAT POLITÈCNICA  
DE CATALUNYA  
BARCELONATECH



Register  
to the information  
sessions

# Now, UPC masters degrees!





UNIVERSITAT POLITÈCNICA  
DE CATALUNYA  
BARCELONATECH

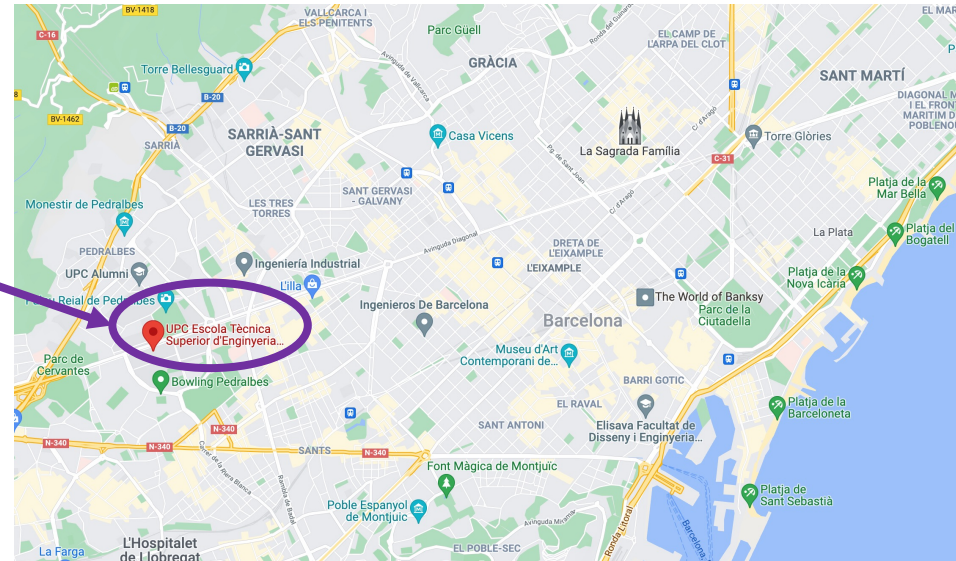
29.812 estudiants  
3.523 PDI  
2.074 PAS  
65 graus  
84 màsters  
45 programes de doctorat

18 centres docents  
275 programes de formació permanent  
19 patents el darrer any  
348 M pressupost 2023  
72,7 M ingressos per R+D+I (2021)  
70.151 Alumni



16 Departments  
2 Institutes  
2 Bachelor degrees (GETI, GETIAE)  
15 Master's programs  
3379 Students  
446 Teaching and Research Staff (PDI)  
126 Administrative and Support Staff (PAS)





## ETSEIB: Escola Tècnica Superior d'Enginyeria Industrial de Barcelona

Over 170 years of educating professionals with a very strong scientific and technical foundation



<https://etseib.upc.edu/>

# Thermal Energy Engineering Master



First semester Lectures in the afternoons

Second semester Master Thesis

Barcelona School of Industrial Engineering (ETSEIB)

60 ECTS

100% English

Compulsory credits	20
Optional credits	10
Credits - Master's tesis w/o internship	30



# Thermal Energy Engineering Master



- Solar and Renewable Energy
- Heating Ventilation Air Conditioning & Refrigeration
- Computational Fluid Dynamics & Heat Transfer
- High Performance Computing
- Numerical and Experimental methods in Thermal Engineering
- Recent advances in Heat and Mass Transfer

The aim is to produce scientific and technical experts with the knowledge and skills needed to analyse any engineering problem in the fields of thermal energy and fluid dynamics



# Thermal Energy Engineering Master



## Mandatory courses

- Thermal Equipments for Heat and Cold Generation
- Computational Methods in Thermal Engineering
- Energy Resources
- Intensification on Heat and Mass Transfer

## Elective courses

- Turbulence
- Heat Exchangers
- Experimental Measurement Techniques
- Heat Engines

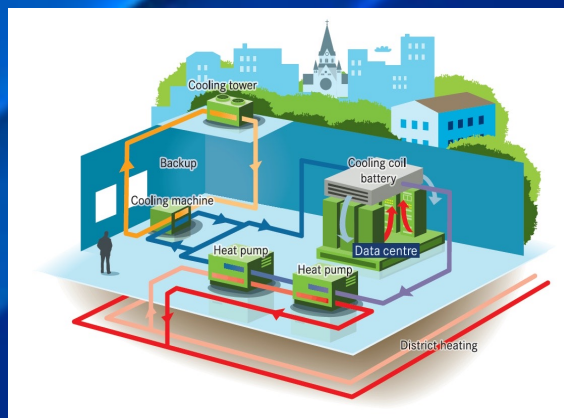


# Thermal Energy Engineering Master

- Generation, transport, storage and use of energy.



- Domestic, commercial, industry and transport sectors.

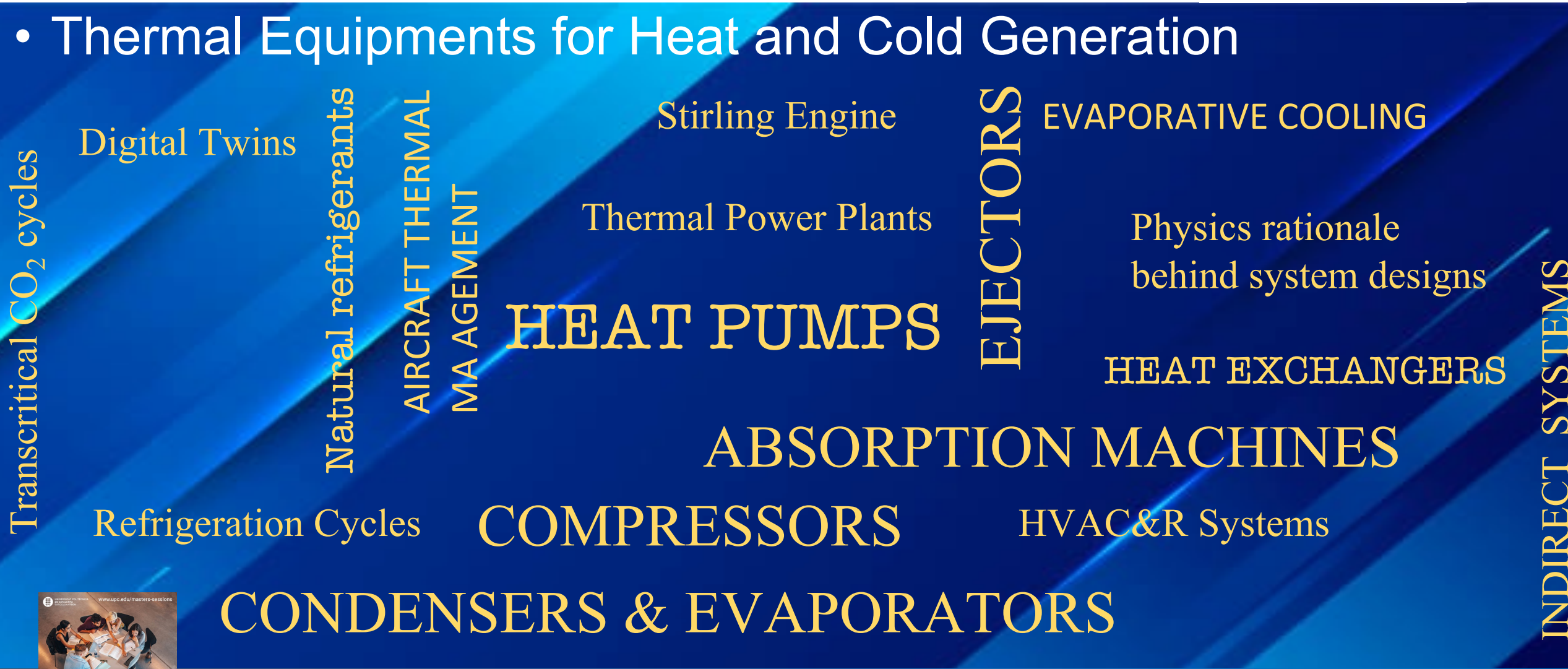


www.upc.edu/masters-sessions

Now, UPC masters degrees!

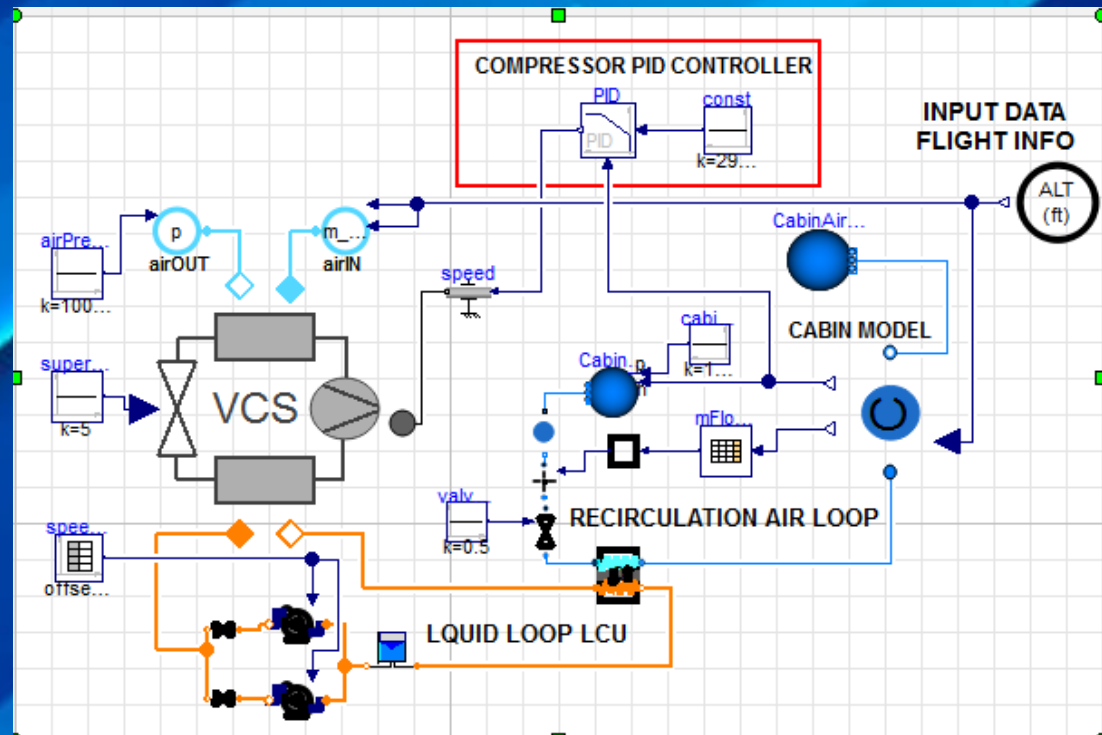
Register for the information sessions

# Thermal Energy Engineering Master





- Thermal Equipments for Heat and Cold Generation



*Thermal management of an aircraft*



# Thermal Energy Engineering Master



- Computational Fluid Dynamics and Heat Transfer

Euler Lagrange

Fluid Particle

Parallel Computing

Combustion Kinetic mechanism

Two Phase Flow

Natural Convection

Euler Euler

Solid Fluid Interaction

TURBULENCE

Conjugate Heat Transfer

RANS modelling

Navier Stokes Equations

Magneto Hydrodynamics

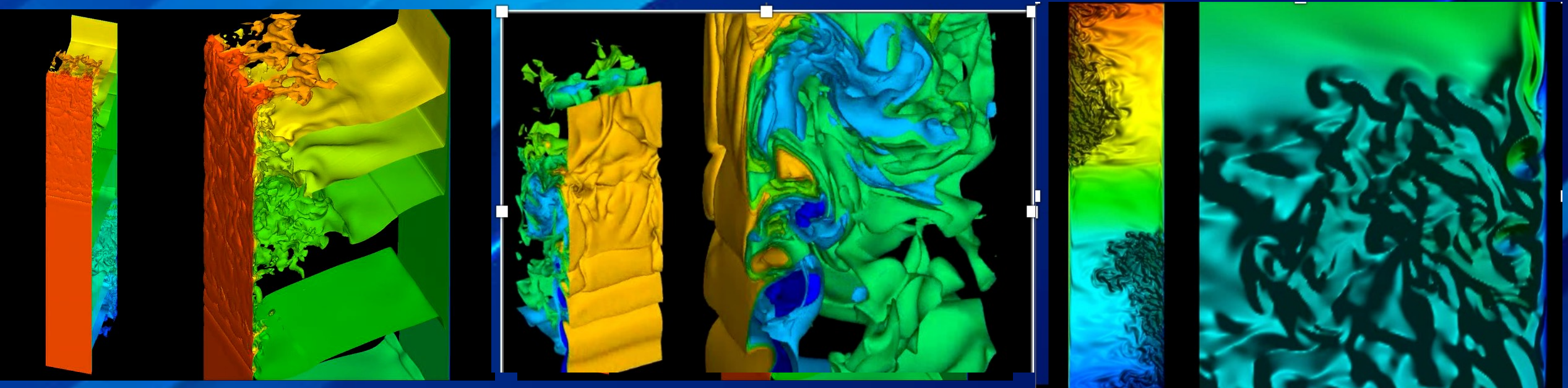
Large Eddy Simulation

HIGH PERFORMANCE COMPUTING



# Thermal Energy Engineering Master

- Computational Fluid Dynamics and Heat Transfer



*Direct Numerical Simulation DNS of Differential Heated Cavity*

[www.upc.edu/masters-sessions](http://www.upc.edu/masters-sessions)

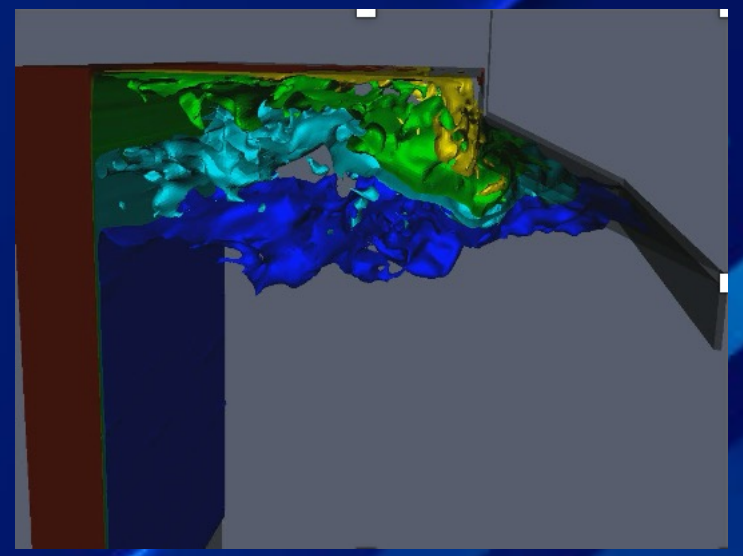
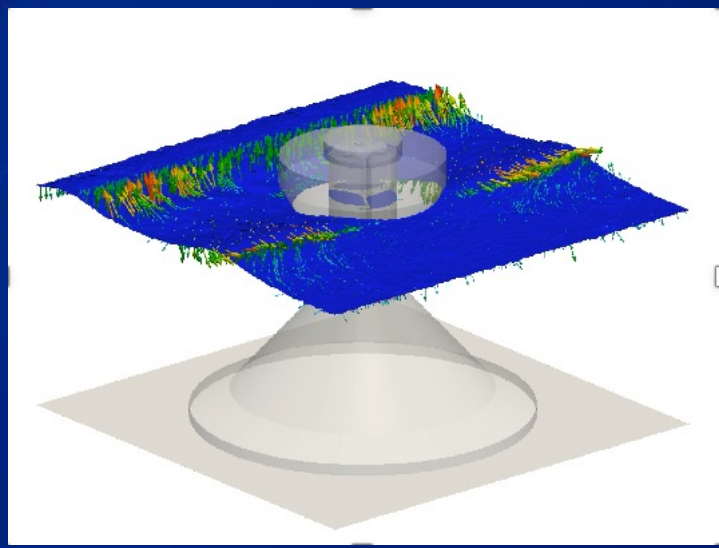
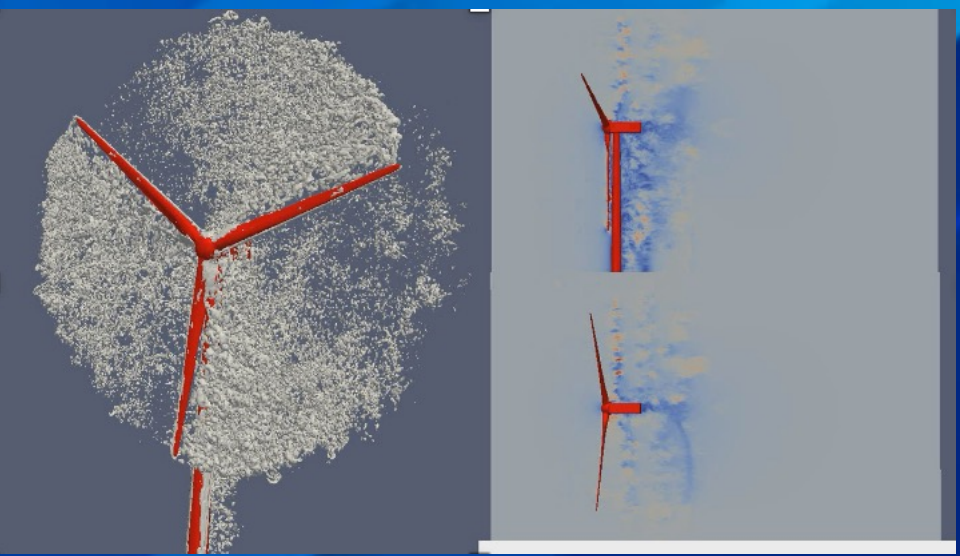


Now, UPC  
masters  
degrees!

Register  
for the  
information  
sessions

# Thermal Energy Engineering Master

- Computational Fluid Dynamics and Heat Transfer

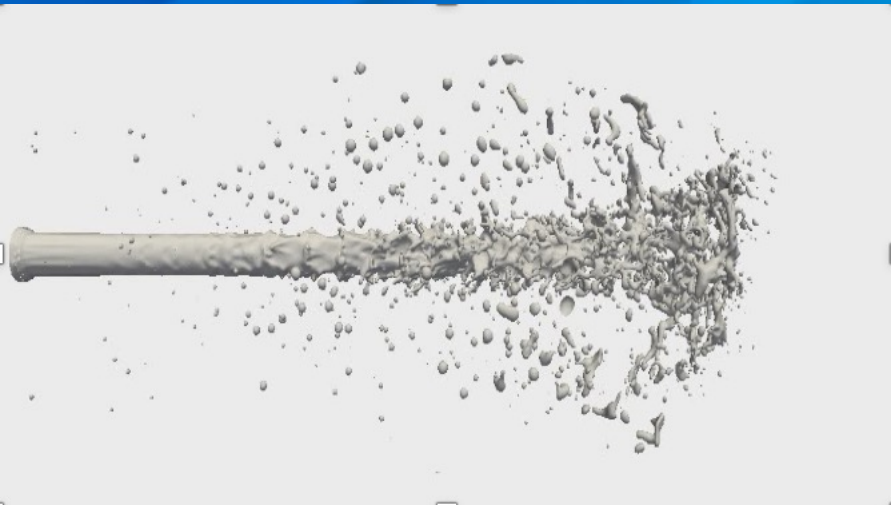


*Thermal and Fluid Dynamic Simulation on Energy generation*

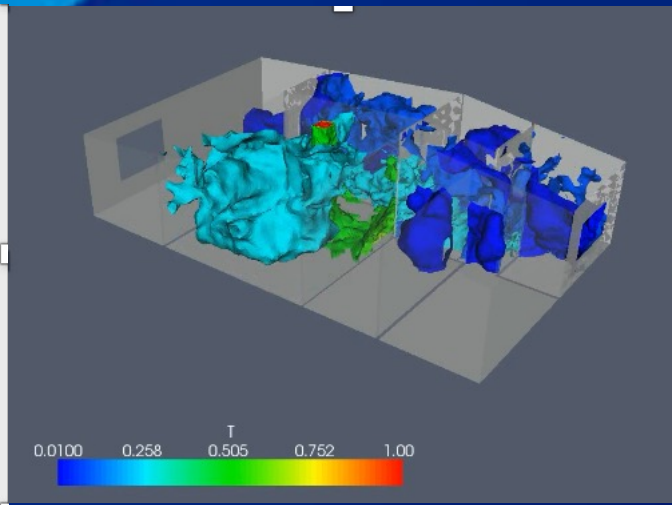


# Thermal Energy Engineering Master

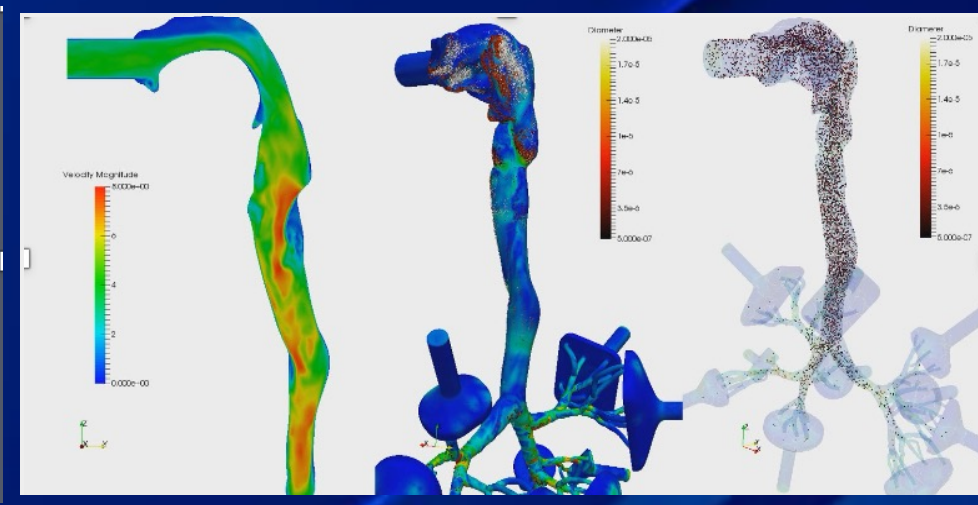
- Computational Fluid Dynamics and Heat Transfer



*Jets*



*Air Conditioning*



*Inhale medicins*

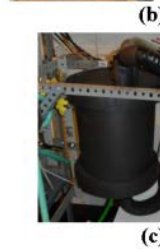
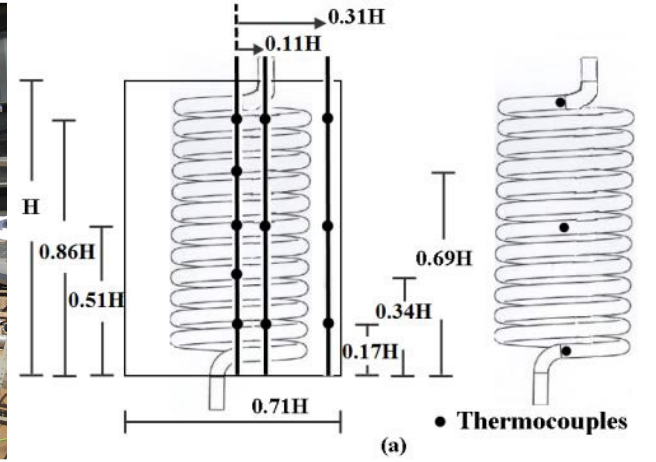
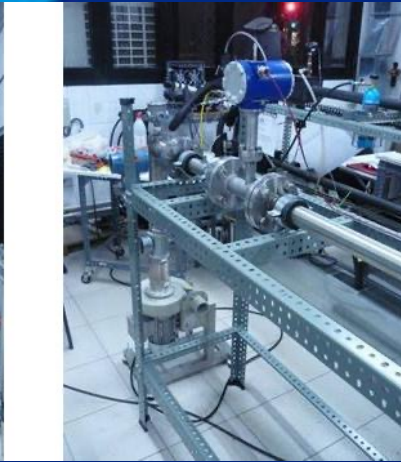
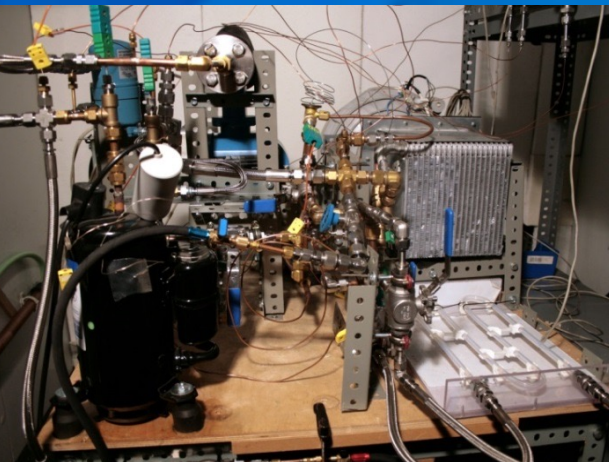


Now, UPC  
masters  
degrees!

# Thermal Energy Engineering Master



- Experimental Measurement Techniques



*Heat Pumps*

*Heat Exchangers*

*Solar Collectors*

*Storage Tanks*

*Laboratory Facilities*



# Thermal Energy Engineering Master



- Current Research Projects (top 10)
  1. Thermal management of automotive electric axial motors
  2. New concepts of Hydrogen storage tanks for zero-emission aircraft
  3. Pollutant and Greenhouse emissions monitoring
  4. Design and development of an electric vehicle public charger
  5. Thermocline concepts for thermal energy storage in Concentrated Solar Power
  6. Ejectors modelling oriented to thermal systems dynamic operation
  7. Numerical modelling and experimental validation of H2 fuel implementation in sanitary kilns
  8. Development of transport refrigerated units with low GWP refrigerants
  9. Development of Digital Twins for aircraft ECS architectures
  10. Advanced numerical algorithms for 3D-printing heat exchangers design



# How to apply

( <https://etseib.upc.edu/en/Academic%20programmes/academic-procedures/acces/application-msc-programmes> )

- **Application**  
Deadline: 13th of May 2024
- **Acceptance (Academic Comission)**  
June 2024
- **Provisional listing of accepted students**  
Before the end of June 2024
- **Students' acceptance**  
Up to 7 days from the publication of the listing
- **Definitive listing of accepted students**  
Mid-July 2024
- **Enrolment**  
Check information at website [etseib.upc.edu](http://etseib.upc.edu)





# How to apply

( <https://etseib.upc.edu/en/Academic%20programmes/academic-procedures/acces/application-msc-programmes> )

## How to apply:

Apply UPC Admissions:

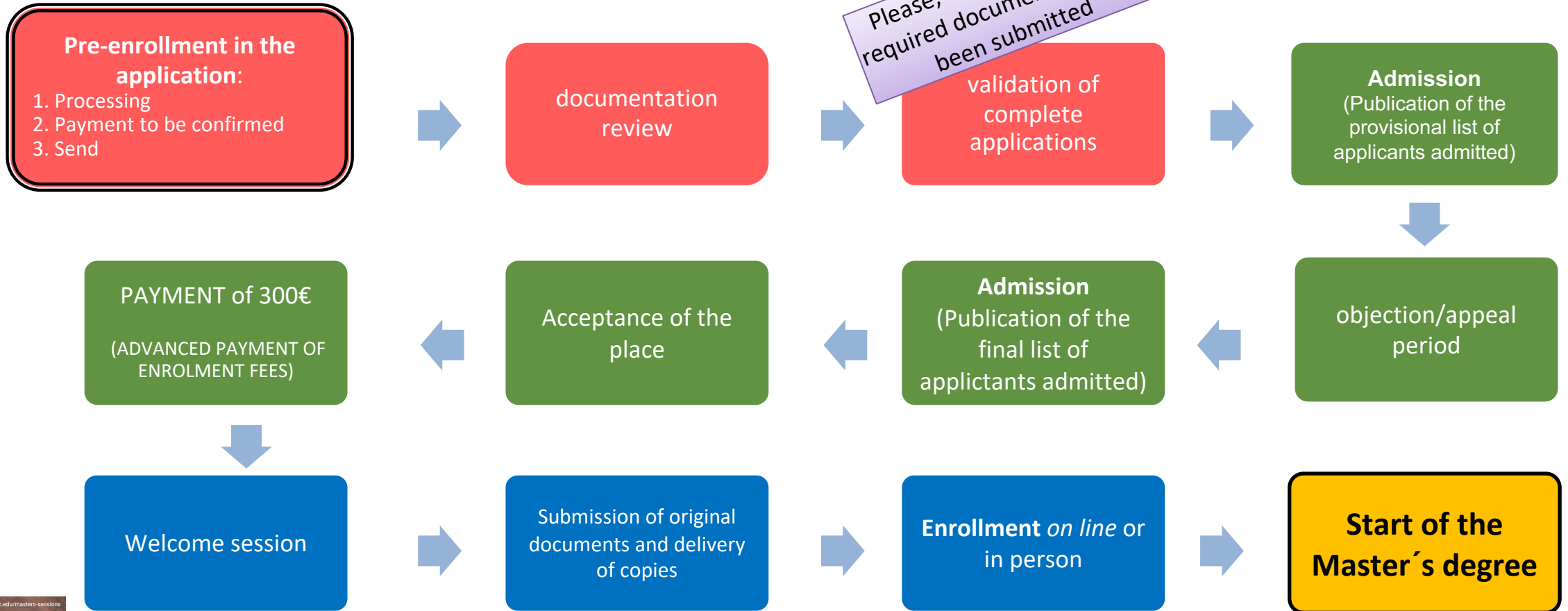
[Application](#)

To validate the request, it is necessary to complete the information for every field:

- Personal data
- Academic details
- Required documentation [Required documents](#)
- Application (\*) ( choose 3 specialty options for the master required)
- Data protection
- Pre-enrolment fees (General information about UPC" on this [page](#))



# Admission and enrollment process



# ... further information

## FAQ's

Check the most frequently asked questions in [this document](#) .

### International Relations and Admissions Office

Face-to-face opening office hours:

from Monday to Friday 11 am to 1:30 pm

and Tuesday 3.00 pm to 17.30 pm

Information request: <https://demana.upc.edu/etseib/>

 +34 93 401 59 27



**ETSEIB**

Escola Tècnica Superior  
d'Enginyeria Industrial de Barcelona

**Escola de referència:  
Formació i recerca  
de màxim nivell  
científic i tecnològic.**



**Thank you for your  
attention**

[admissions.etseib@upc.edu](mailto:admissions.etseib@upc.edu)

