UFR STGI BELFORT-MONTBÉLIARD

UNIVERSITÉ DE FRANCHE-COMTÉ

Master's Degree in Energy

Major in Thermal Energy and Engineering

> Are you passionate about Science and Energy ?

> Do you want to design Efficient Energy Systems ?

This training is for you !

UFR STGI BELFORT-MONTBÉLIARD
UNIVERSITÉ DE FRANCHE-COMTÉ

Master's Degree in Energy

Level of the validated degree

Baccalauréat +5
Master's degree

Internship period

4 to 6 months
(from March to August)

Training program location

Département
Sciences et Énergies
UFR STGI BELFORT
2 rue Chantereine

Registration

http://formation.univ-fcomte.fr/master/energie-ingenierie-thermique-et-energie

Contact

Student affairs office:
03.84.22.90.09
scolaritemastersciences.stgi@univ-fcomte.fr

Head of the Master's degree:
François LANZETTA
francois.lanzetta@univ-fcomte.fr

Apprenticeship Contract Manager:
Sylvie BÉGOT
sylvie.begot@univ-fcomte.fr

Major in Thermal Energy and Engineering

Objectives of the training program

The Master in Thermal Energy and Engineering (ITE) aims to train high-level executives in the field of thermal energy and energetics.This master is designed for engineer positions in widely diversified industrial sectors such as : energy, construction, transport, automotive, rail and aeronautics or even the food, medical and pharmaceutical industry, buildings...
They are specially trained for all trades related to transition and energy efficiency. They perform duties as much in SMEs as in large industrial groups, as well in production as in research and development or in design offices.

The Master in Energy is backed by two top CNRS ranking research laboratories, Femto-st Research Lab and Belfort Fuel Cell Laboratory FCLAB. Students can enroll in selective training oriented towards research and innovation :
>Master of Engineering H3E Hydrogen Energy & Energy Efficiency (CMI)
>EIPHI Graduate School / International integrated MSc/PhD EIPHI Program in Hydrogen, Energy, Energetic Efficiency (EIPHI standing for "Engineering and Innovation through Physical Sciences, High-technologies, and cross-dIsciplinary research.)

Target audience

Bachelor's degree in the same field or equivalent for entrance into M1, Master's degree in the same field or engineering diploma for access to M2. Possibility of V.A. (validation of professional experience) / V.A.E. (validation of prior experience).

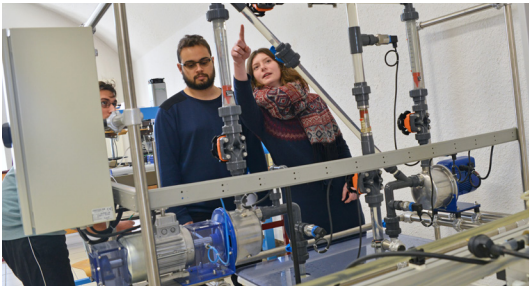
Master in initial and work-study training. The work-study students are present 40 weeks at UFC and 64 weeks at the company.

Job opportunities

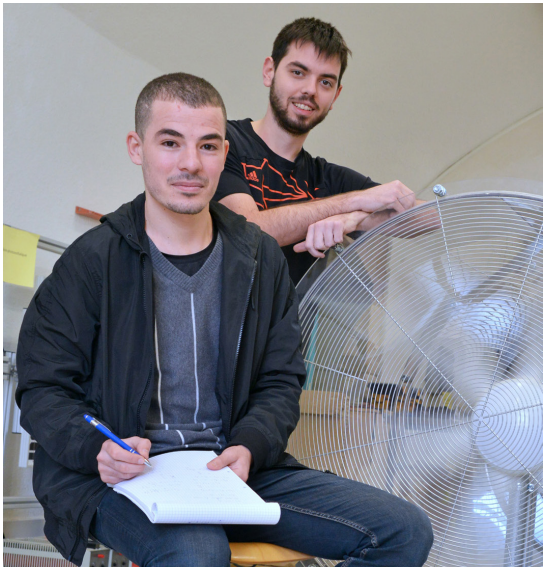
-Engineering responsibilities (studies, calculations, research, R&D, testing, consulting),
-Project management responsibilities (project manager or «chargé d'affaires»)
-Academic and industrial research.

Major in Thermal Energy and Engineering

Semester 07	CM	TD	TP
UE1 - Fluid dynamics	36	18	8
Aerodynamics	8	4	4
Compressible flows	12	6	4
Flow and Thermal Metrology	6	4	
Turbulence	10	4	
UE2 - Thermal fluid metrology	40	20	16
Forced and natural convection	14	10	8
Heat exchangers	12	4	4
Two-phase thermal transfers and material transfer	14	6	4
UE3 - Industrial world		38	
English		20	
Expression and communication		18	
Integrating project			
UE4 - Engineering Sciences	36	16	9
System acoustics and vibration	34	14	12
Mathematical Tools for Engineers	37	17	6
UE5 - Thermodynamics of machines	26	19	16
Refrigeration cycles and heat pumps	10	9	8
Turbomachinery	16	10	8
UE CMI - Energy systems and hydrogen energy	*22*	*9*	*9*
Energy sector	*8*	*2*	
Fuel Cell	*8*	*4*	*3*
Thermics of electrical machines	*6*	*3*	*6*



Semester 08	CM	TD	TP
UE6 - Human and Social Sciences	42	32	
English		20	
General knowledge and Personalized Professional Project (PPP)	12	6	
Occupational risk management and safety	12	6	
Innovation management	18		
UE7 - Power generation	36	16	16
Combustion	16	8	
Thermal power plants	14	4	16
Thermal engine technologies	6	4	
UE8 - Energy modelling	14	4	38
Computational Fluid Dynamics (CFD)			23
Finite element calculation codes			15
Numerical methods in energy	14	4	
UE9 - Energy efficiency	46	16	16
Energy efficiency in buildings	16	4	
Renewable energies, life cycle analysis and carbon footprint	18	8	12
Exergy	10	7	4
UE10 - Project ITE1			
UE CMI - Energy storage and conversion	*36*	*12*	*12*
Energy conversion and energy efficiency	*12*	*4*	*4*
Energy networks	*12*	*4*	*4*
Energy storage	*12*	*4*	*4*



Semester 09	CM	TD	TP
UE1 - Human and Social Sciences	6	44	
English		20	
General knowledge and C2I2 (IT and internet Certificate)	6	12	
Entrepreneurship		12	
UE2 - Thermal systems	40	16	36
Thermal power plants	8	4	
Fluid and energy management	12	4	
Technical and economic optimization	10	6	
Refrigeration systems	8	5	
Technological Thermal Systems Laboratory (Aragon)			36
UE3 - Digital Engineering			78
CAD-CAM			12
Calculation codes for thermal and fluid dynamics			42
Dynamic thermal simulation			24
UE4 – Energy-efficient Building	38	18	16
Heating ventilation and air conditioning	14	8	4
Business management in energy	14	4	
Housing thermal	10	6	12
UE5 - Advanced Energy	38	16	8
Advanced Metrology	14	6	
Innovative energy machines	12	4	
Advanced thermodynamics	12	6	
Energy Laboratory Techniques			8
UE CMI - Clean and sustainable energy production	*30*	*12*	*18*
Advanced cogeneration	*10*	*4*	*6*
Advanced PAC systems	*10*	*4*	*6*
Macroscopic energy representation	*10*	*4*	*6*
Semester 10	**CM**	**TD**	**TP**
UE6 - Integrator project			
UE7 – Internship			
UE CMI - Socio-economic environment	*24*	*6*	
Corporate culture	*12*	*3*	
Management	*12*	*3*	

UFR STGI BELFORT-MONTBÉLIARD
UNIVERSITÉ DE FRANCHE-COMTÉ

Master's Degree in Energy

Major in Thermal Energy and Engineering

UFR STGI
Département Sciences et Energies
2 rue Chantereine
BP 50547
90016 Belfort cedex

+33 3 81 99 46 62
ufr-stgi@univ-fcomte.fr

stgi.univ-fcomte.fr

JOIN US !

http://formation.univ-fcomte.fr/master/energie-ingenierie-thermique-et-energie