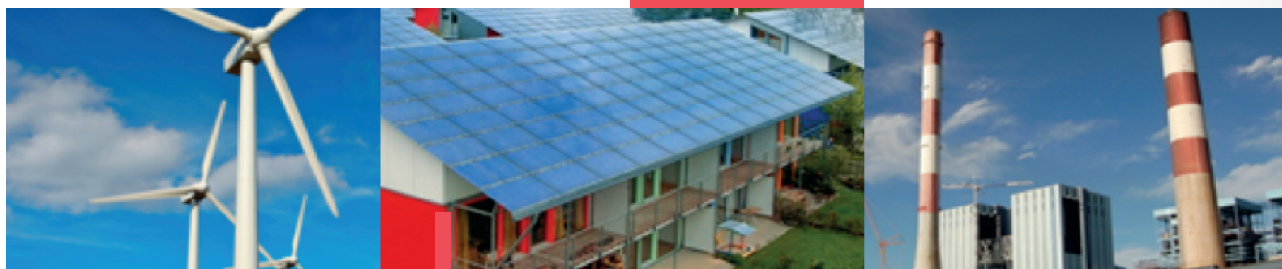


2ND AND 3RD YEAR SPECIALISATION

ENERGY PRODUCTION AND MANAGEMENT

Training future engineers to deal with cross- and multi-disciplinary issues linked to energy.

Fields covered: conventional energy production (thermal, nuclear); renewable energy production (wind, solar power etc.); energy management, transport and storage; efficient use of energy (in industry and construction); consideration of the environmental constraints linked to energy (depollution of energy production systems).



COURSE CONTENT

- > Combustion and pollutant emissions
- > Turbomachinery
- > Applied thermodynamics
- > Thermodynamic of engines
- > Conventional energies
- > Low-carbon energies
- > Transport - storage - conversion and energy management
- > Practical work
- > Thermal performance of buildings
- > Heat and air-conditioning systems
- > Solar captation
- > Carbon balance and energy auditing
- > Project



INDUSTRY SECTORS

- > Energy production (traditional and renewable)
- > Energy transport
- > HVAC sector

CAREER PROSPECTS

- > Engineering consultancy
- > Energy consultant
- > Design engineer / R&D
- > Project manager

TEACHING STAFF

HEAD OF SPECIALISATION:

Alain Maiboom

CENTRALE NANTES LECTURERS:

David Chalet, Pascal Chessé,
Jean-François Hétet, Thierry Jaszay,
Alain Maiboom, Vincent Berthome, Xavier Tauzia

EXTERNAL SPEAKERS:

EDF, Cohérence énergies, Valéo, IFPEN, RTE, ENGIE,
GRT Gaz, CEREMA, INDIGGO, Saunier Duval
EM2C, LHEEA, IMN

CONTACT:

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EXAMPLES OF PREVIOUS PROJECTS

- > Design, production and testing of a thermal solar collector
- > Choice, purchase, and installation of a 1kWc photovoltaic plant on the school campus - instrumentation and measurements
- > Instrumentation and experimental study of air-water heat pump for an individual house
- > Study on inter-seasonal heat storage
- > Study on concentrated solar power
- > Thermal study of housing - steady-state calculation and dynamic thermal simulation. (INDIGGO)
- > Photovoltaic-Diesel Hybridization (JP Energie Environnement)
- > Pre-design and parametric study of a cogeneration system.
- > Study of an ocean thermal energy system
- > Electricity storage by the Power to Gas process.
- > Coupling of CO2 storage and geothermal energy.
- > Development of the rotating machines used in STEP systems.

EXAMPLES OF PREVIOUS INTERSHIPS

- > Dynamic thermal modelling of a block of buildings by state-space representation: detailed and reduced models (EDF)
- > Managing the energy performance of hospitals (AIA Ingénierie)
- > Simulation and optimization of vehicle energy arbitrage (PEUGEOT CITROEN AUTOMOBILES SA).
- > Design of a tool to improve reduction strategies (Smart Grid Energy).
- > Photovoltaic-Diesel Hybridization (JP Energie Environnement)
- > Consultant in Carbon and Energy Transition Strategy (Carbone 4)
- > Study and improvement of tomorrow's power grid (RTE)
- > Integration of wind turbines into the electricity market (Maïa Eolis)
- > A feasibility study on the use of an electricity storage solution in the form of hydrogen for the residential and tertiary sectors (ENGIE).
- > Thermo-hydraulic & Structural Analysis of ITER Vacuum Vessel & Cryostat Thermal Shield (Panels & Manifolds) (ITER).
- > Development of an economic framework for multi-energy systems modelling in the German context (EIFER - Germany).
- > LCA and Responsible Sourcing in Construction (BRE - UK)
- > Development of a marine current power control system (Tidal Stream Limited - UK).

