

Renewable Energy ENGINEERING

LORRAIN
INP Ensem

ÉCOLE D'INGÉNIEURS CRÉÉE EN 1900

**By completing the program
in renewable energy engineering
at ENSEM you will acquire scientific
and technical knowledge on various forms
of renewable energy (wind, solar, hydrogen,
hydropower)**

More specifically, you will have the opportunity to acquire
advanced knowledge in :
renewable energies, electrical and mechanical energy storage,
control, smart and micro energy grids, forecasting and
optimization of energy systems.

**Your training will be very hands-on and you'll have
access to specialized equipment :**

fuel cells, solar panels, wind turbines, hydropower
turbines, Grid Converters for Photovoltaic and Wind
Power Systems, Multiphase electric machines,
micro-grid integrated into our campus,
IoT simulator and sensor platforms
(LoRa).

COURSES

Sources and storage
Power to the grid
Optimization
Smart grids
Micro grids
Language, communication
and culture

ENERGY PLATFORM

COURSES (LECTURES, LABS AND PROJECTS)

SOURCES AND STORAGE 80H - 6 ECTS

- Introduction to hydrogen and fuel cells technologies
- Storage components (electric storage and generation)
- Solar photovoltaic design and installation

POWER TO THE GRID 80H - 6 ECTS

- Hydraulic and Wind Power
- Power generation system connected to the grid

SMART GRIDS - MICRO GRIDS 80H - 6 ECTS

- Electric power quality
- Energy management in microgrids
- Smart grid modeling and co-simulation

OPTIMIZATION 80H - 6 ECTS

- Optimal design of a local energy network
- Optimization of a heat network
- Control and optimization of energy systems

LANGUAGE, COMMUNICATION AND CULTURE 80H - 6 ECTS

- French language and culture
- Cross-cultural communication
- Energy economics: issues related to renewable energies

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