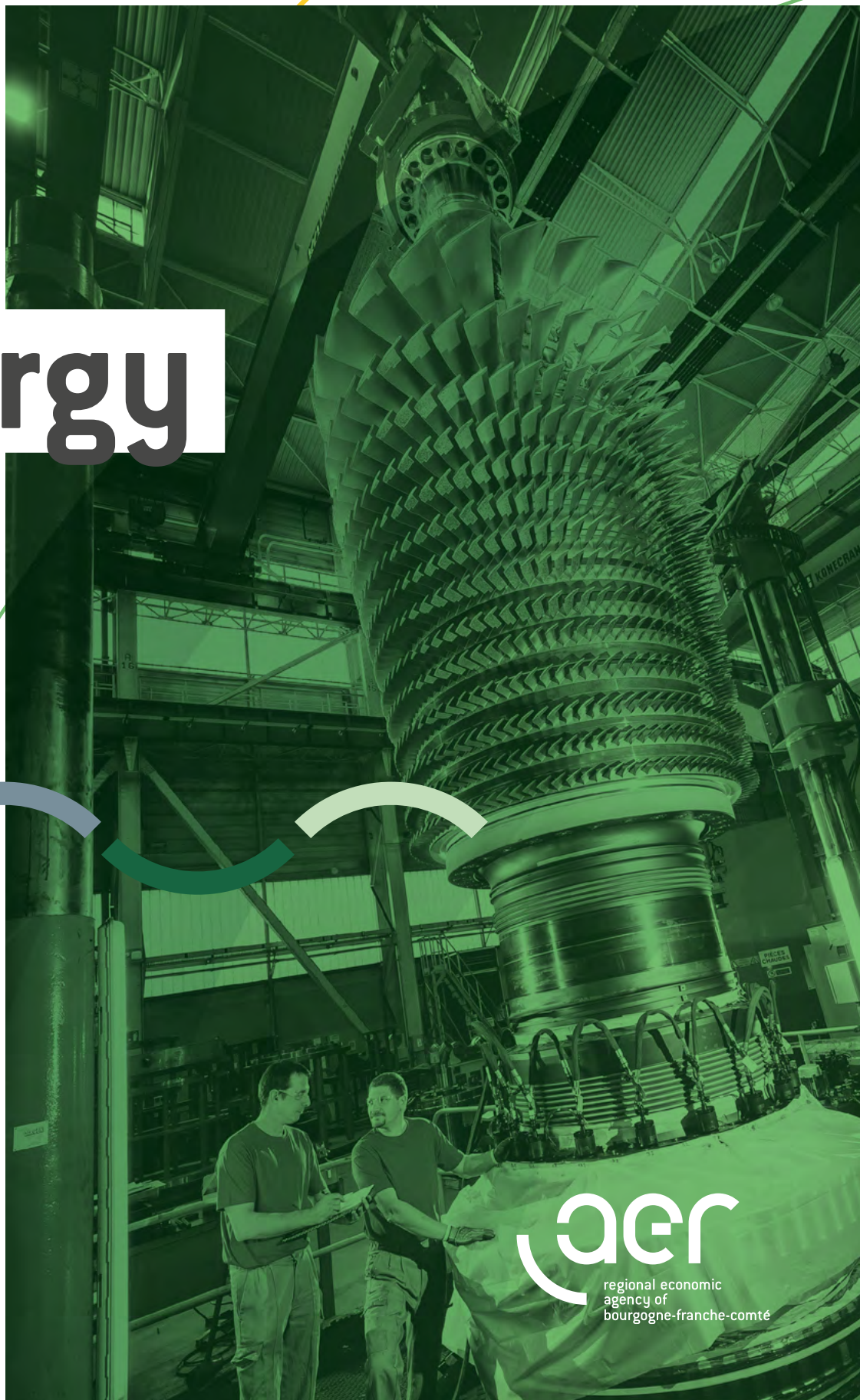


RÉGION  
BOURGOGNE  
FRANCHE  
COMTÉ

# Energy



# DO YOU HAVE A PROJECT? BOURGOGNE-FRANCHE-COMTÉ WELCOMES YOU!

## set up shop

With its business parks and road and airport infrastructure, Bourgogne-Franche-Comté has everything you need to jump-start your projects in an environment designed for entrepreneurial innovation.

**No. 1**

INDUSTRIAL  
REGION  
IN TERMS OF JOBS

**No. 1**

REGION FOR **POWER-  
GENERATION EQUIPMENT  
MANUFACTURING**

**No. 1**

REGION  
FOR PRIVATE R&D  
INVESTMENT

**6**

INTERNATIONAL  
AIRPORTS  
NEARBY

**9**

MOTORWAYS FORMING  
A STRATEGIC INTERSECTION  
IN THE HEART OF EUROPE

**451**

KM  
OF HSR LINES  
14 TGV STATIONS

## power generation in BFC\*

The region only covers 15% of its final energy requirements with its own power generation, but 85% of this comes from renewable energies.

### HYDROPOWER

**521**

MW INSTALLED

### PHOTOVOLTAICS

**241**

**3,000**

MW INSTALLED MW TARGET FOR 2030

### WIND POWER

**590**

**3,300**

MW INSTALLED MW TARGET FOR 2030

### METHANISATION

**40**

**30**

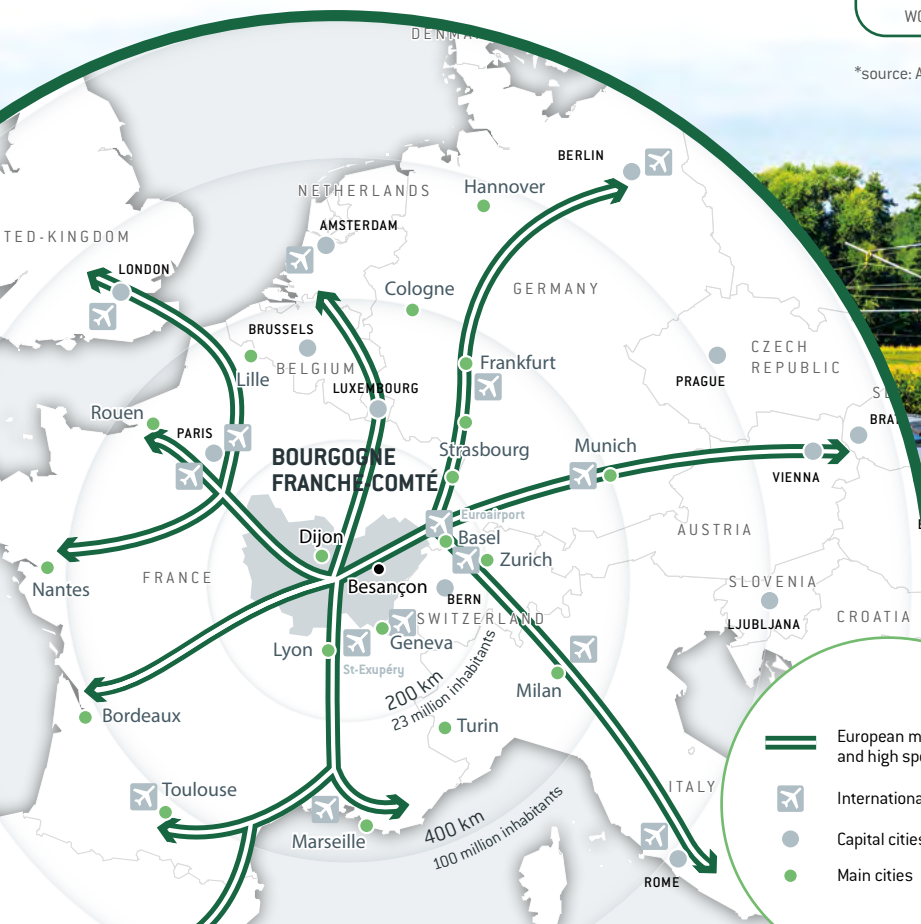
INSTALLATIONS PROJECTS UNDERWAY

### WOOD ENERGY

**894**

AUTOMATIC  
WOOD-FIRED GENERATORS

\*source: ADEME





Bourgogne-Franche-Comté has rich biodiversity and resources so is “naturally” committed to protecting the environment and ensuring the energy transition. It has set itself the goal of becoming a Positive Energy region by 2050.

## partners, hubs and a dedicated competitiveness cluster

### VALLÉE DE L'ÉNERGIE CLUSTER

At the heart of a dense and dynamic environment, the Vallée de l'Energie Cluster brings together stakeholders from the ecosystem to boost synergies and establish a **strategic platform connecting companies in the Energy sector, research laboratories and the academic world**. It promotes the know-how and expertise developed by a network of active members who contribute to national and international industrial excellence. Centred around a **strong base of contractors and suppliers**, the cluster fosters presence in multiple sectors;

#### 4 missions:

- > Creating synergies
- > Taking the energy transition forward
- > Boosting competitiveness through innovation
- > Consolidating know-how to facilitate employment



### NUCLEAR VALLEY CLUSTER

The **Nuclear Valley cluster** is the only government-certified competitiveness cluster dedicated to civil nuclear technology in France. It mobilises all the available resources (industrial, institutional, academic and scientific) to foster the emergence of innovative and competitive solutions for the civil nuclear industry.

#### 6 strategic focuses:

- > Design and production of equipment
- > Operation and Maintenance
- > Decommissioning, recycling and storage
- > Civil engineering and concretes for nuclear installations
- > Digital
- > Nuclear Medicine - Radiation protection



### WIND FOR FUTURE CLUSTER

Wind for Future (W4F) brings together companies involved in **wind power**, with expertise ranging from **research to maintenance and operation**.



## THE REGIONAL ECONOMIC AGENCY OF BOURGOGNE-FRANCHE-COMTÉ

The Regional Economic Agency cooperates closely with stakeholders in business development, innovation, training, and employment to:



**ASSIST**  
in maintaining  
and improving  
economic activity  
and employment  
in the region



**SUPPORT  
AND DEVELOP**  
innovation  
and eco-innovation



**BACK**  
the region's  
economic  
development  
strategies



**BOOST**  
the region's  
economic  
appeal

# BOURGOGNE-FRANCHE-COMTÉ AN ECOSYSTEM ABLE TO RISE TO TOMORROW'S ENERGY CHALLENGES

Bourgogne-Franche-Comté is the spearhead of French industry, and now a major player in the Energy sector:

- > engineering and equipment manufacturing for **conventional fossil energies** and **nuclear energy**
- > **renewable energies** (photovoltaics, hydraulics, wind power, etc.)
- > **wood energy**
- > **hydrogen\*** as a means of storing energy

Centred on some of the sector's world leaders, the industrial base offers a wealth of complementary expertise and high-level scientific research:

- > Engineering and machining of super-alloys and complex parts
- > Surface treatments
- > Mechanics and micro-mechanics
- > Specialist tooling and machines
- > Fluid mechanics
- > Electronics, electrics, automatic systems

All the expertise the sector requires can be found in the region:

- > **Precision work on very large parts**
- > **Small and medium-scale production runs**
- > **Project management, assistance**
- > **Technical support**

Tailored to the market's requirements, training programmes produce a qualified work force in line with manufacturers' requirements.

## STRENGTHS of the region

- ✓ **1 INTERNATIONAL CONTRACTOR => EDF**

EDF IN BOURGOGNE-FRANCHE-COMTÉ

90

SITES

3,000

EMPLOYEES

24

PRODUCTION  
SITES

3rd

LARGEST DAM IN  
FRANCE AT VOUGLANS

- ✓ **2 GLOBAL INDUSTRY LEADERS**

=> GENERAL ELECTRIC

=> FRAMATOME

- ✓ **20% OF THE WORLD'S STEAM AND GAS TURBINES ARE PRODUCED BY GENERAL ELECTRIC IN BFC**

- ✓ **A COMPETITIVENESS CLUSTER DEVOTED TO NUCLEAR ENERGY**

- ✓ **AN ENERGY CLUSTER AND A WIND POWER CLUSTER**

- ✓ **A CERTIFIED HYDROGEN TERRITORY**



- ✓ **A CHOICE OF DEDICATED TRAINING COURSES UNIQUE IN FRANCE**

## A FEW COMPANIES IN THE INDUSTRY



### CONVENTIONAL ENERGIES



2D DOMECA  
AE2I  
ALLYN INTERNATIONAL  
ASSYSTEM  
CITELE INDUSTRIE SA  
EST MACHINES TECHNIQUES  
DALKIA FRANCE  
ESSERT POLISSAGE SARL  
GAMMA INDUSTRIE  
GCC SAS  
GENERAL ELECTRIC  
INDUSTEEL  
LGE  
LUFKIN  
MACPLUS  
MECAPLUS S.A  
MILGRED  
TANDEM  
USIDUC  
WAMAR ENGINEERING



### NUCLEAR



APERAM  
FRAMATOME  
INDUSTEEL  
VALLOUREC



### HYDROGEN\*



DEPHIS  
FAURECIA  
H2SYS  
JUSTY  
MAHYTEC  
PRESSE ÉTUDE  
ROUGEOT ENERGIE  
SCHRADER PACIFIC



### WIND POWER PHOTOVOLTAICS



ELEC ENR  
ENERCON  
ENGIE  
EOLE RES  
H2ION  
INNERGEX  
JUSTY  
LUFKIN  
OPELE ENERGIES NATURELLES  
GROUPE PSA  
SENVION  
VESTAS  
VELOCITA



### WOOD ENERGY WASTE RECOVERY

Primary and secondary wood processing companies generate clean wood by-products such as bark, saw dust, wood shavings and chips that can be used to produce energy.

In 2016, **390,000 metric tonnes of wood-related products were recycled** (community and industrial boilers, wood pellet production) in Bourgogne-Franche-Comté.

\*see the Hydrogen sector brochure





## BUSINESSES

200

BUSINESSES

14,000

DIRECT  
JOBS

2

WORLD  
LEADERS



## RESEARCH & INNOVATION

4

LABORATORIES  
LINKED TO THE INDUSTRY



## PROJECT ASSISTANCE

1

DEDICATED  
COMPETITIVENESS  
CLUSTER

2

DEDICATED  
CLUSTER



## EDUCATION

2

TRAINING  
COURSES  
DEDICATED  
TO WIND POWER

1

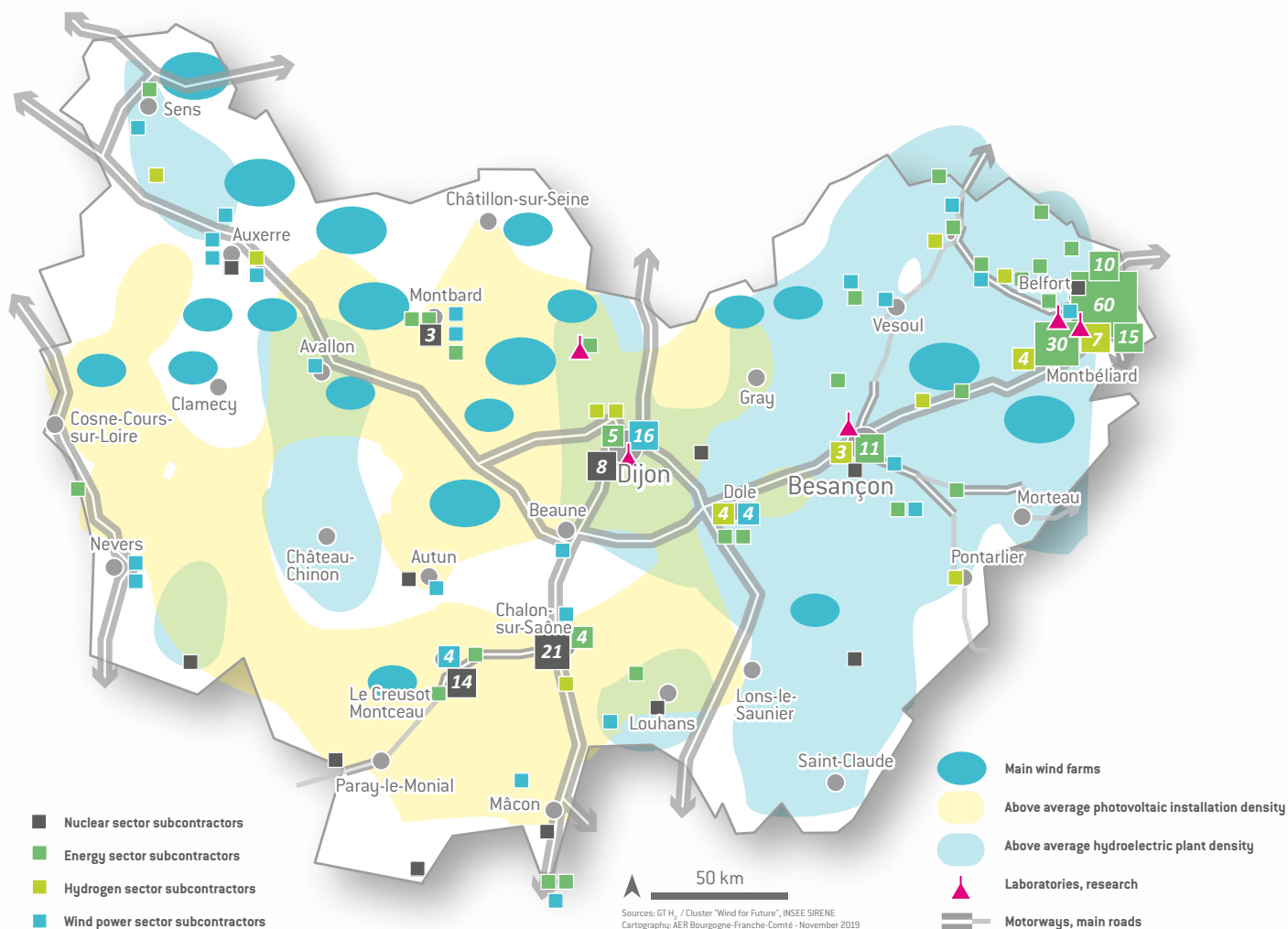
TRAINING  
COURSE  
DEDICATED  
TO HYDROGEN

over  
30

TRAINING  
COURSE  
DEDICATED  
TO ENERGY

5

SCHOOLS  
TRAINING  
ENGINEERS



BOURGOGNE-FRANCHE-COMTÉ

# A TRAILBLAZING SPIRIT

a cutting-edge scientific  
and technical environment

## FEMTO-ST INSTITUTE

ONE OF THE LARGEST CNRS JOINT RESEARCH LABORATORIES

Of the 700 people assigned to the laboratory by the UFC, ENSMM, UTBM and the CNRS, around a hundred work each day on **thermal and electrical power generation, conversion and storage**, with high-level expertise in **electrical hybrid systems for use in transport and stationary applications**. FEMTO-ST is the main academic user of the **hydrogen fuel cell facility** now managed and operated by USR FCLAB.

### ✓ USR FCLAB

HYDROGEN FUEL CELL SERVICES AND RESEARCH UNIT

This creates a link between six national laboratories specialising in **Hydrogen-Energy**. Supported by UTBM's Hydrogen Fuel Cell facility, it is **the only unit in Europe to combine highly advanced research and engineering** in this field at this scale in a public structure.

## LISPEN LABORATORY

ARTS ET MÉTIERS, CLUNY CAMPUS

LISPEN is the engineering laboratory for physical and digital systems (Laboratoire d'Ingénierie des Systèmes Physiques et Numérique) in the Arts et Métiers institute at Chalon-sur-Saône. It works to develop and operate **multi-physical and virtual dynamic systems for the industry of the future**. Some applications involve energy systems.

## ICB LABORATORY

METALLURGICAL PROCESSES, DURABILITY, MATERIALS

The ICB is involved in **developing advanced materials, studying their durability, and processes and reactivity phenomena at solid/solid and solid/gas interfaces**.

## THE UTBM ENERGY DEPARTMENT

UNIVERSITY OF TECHNOLOGY OF BELFORT-MONTBÉLIARD

The UTBM Energy department works with research teams from several laboratories, including the FEMTO-ST/CNRS Institute and the USR Lab. It has two technology facilities for training and research for its industrial partners:

- > the Energy facility
- > the Hydrogen fuel cell facility

### ✓ UTBM HYDROGEN FUEL CELL FACILITY

**One of Europe's largest public facilities for research, testing and industrial transfer** in the field of **Hydrogen Fuel Cell systems** (900 sqm of testing space to test powers ranging from a few watts up to almost 200 kW).

## CETIC

CENTRE FOR EXPERIMENTATION AND VALIDATION OF  
MAINTENANCE TECHNIQUES ON PRESSURISED WATER  
NUCLEAR REACTORS

The CETIC develops and qualifies maintenance operations implemented on nuclear reactors in France and abroad, and trains operators.

- > Full-scale representative environment with reactor components
- > 50 mock-up work stations or real components available for experimentation



## BOURGOGNE-FRANCHE-COMTÉ

# A CHOICE OF DEDICATED TRAINING COURSES UNIQUE IN FRANCE

## UNIVERSITY OF FRANCHE-COMTÉ

From the DUT (technology diploma) to Master's level, the UFC delivers courses focused on **renewable energy** and **energy efficiency**.

- > Master of Engineering in **Hydrogen Energy and Energy Efficiency**

with an educational facility  
focused on **Hydrogen Energy**

## UNIVERSITY OF BURGUNDY

From the DUT (technical diploma) to the Master's level, the UB provides courses in **the physics of materials** as well as **civil and mechanical engineering**.

## ENSM (BESANÇON)

A GENERAL ENGINEERING UNIVERSITY SPECIALISING IN MECHANICS AND MICROT TECHNOLOGY

- > Two engineering diplomas with the status of apprentice, with a speciality in Mechanics and a speciality in Microtechnology and Design.
- > Structural mechanics, Creation of connected objects, Materials and surfaces, Mechatronics and robotics, Engineering of production systems, Micromechanics, Innovation engineering, Process engineering

## ARTS ET MÉTIERS, CLUNY CAMPUS

- > Studies in **mechanical, industrial, and energy engineering**

## LYCÉE LOUIS ARAGON (HÉRICOURT)

PROFESSIONAL BACCALAUREATE, BTS SENIOR TECHNICIAN'S DIPLOMA AND APPRENTICESHIP

- > **Renewable Energies, HVAC and Fluids Engineering**

Partner of the Bourgogne-Franche-Comté Energy Cluster and of the Maison des Énergies in Héricourt.

## LYCÉE RAOUL FOLLERAU (BELFORT)

PRE-SERVICE TRAINING AND APPRENTICESHIPS FOR THE ENERGY SECTOR

**STI2D stream:** Science and Technologies for Industry and Sustainable Development: special courses: **Energies and Environment**, Technological Innovation and Eco-Design, Digital Information Systems

- > BTS **Systems Maintenance**, Production Systems option
- > Preparatory courses for prestigious specialist schools (PT, PTSI, PSI)

### Industrial boiler-making sector

- > BTS senior technician's diploma in Design and Production for Industrial boiler-making
- > Professional baccalaureate in Industrial boiler-making

## UTBM (BELFORT-MONTBÉLIARD)

BELFORT-MONTBÉLIARD UNIVERSITY OF TECHNOLOGY

- > **Energy Engineering:** Energy production, Networks, conversion and storage, Transport and embedded energy systems
- > **Electrical Engineering** by apprenticeship
- > **Master's Degree course in Electrical Energy**

with two educational facilities:  
Electromagnetic compatibility  
Energy and land transport

## ESIEM (DIJON)

HIGHER INSTITUTE FOR MATERIALS ENGINEERING

- > Materials: R&D or product industrialisation, from design to recycling (sustainable development)
- > IT/Electronics: specialisations in Embedded Systems, Network Security and Quality, Software and Knowledge Engineering
- > Robotics: modelling and simulation, functional and mechanical design, system autonomy, ...

## LYCÉE GUSTAVE EIFFEL (DIJON)

PRE-SERVICE AND CONTINUOUS PROFESSIONAL TRAINING ON ENERGY

- > STI2D stream: Industry and sustainable development, **Energies and Environment** options, Digital and Information Systems, Technological Innovation and Eco-design
  - > BTS senior technician's diploma - **Systems Maintenance, wind power option**
  - > BTS senior technician's diploma in **Electrotechnics** and preparatory courses
- Continuous professional training in liaison with the GRETA institute:
- > **Electrical network technician**
  - > **Onshore wind power farm maintenance technician**

Equipped with a 6-metre mast and nacelle

## LYCÉE EUGÈNE GUILLAUME (MONTBARD)

PRE-SERVICE TRAINING, APPRENTICESHIPS AND CONTINUOUS PROFESSIONAL TRAINING

- > CAP qualification in Production Plant Operation
- > Professional baccalaureate in: **Industrial boiler-making techniques, Industrial plant maintenance, Digital systems, the Electricity professions and the related environments**
- > Post-baccalaureate level: **Non-destructive testing, Photovoltaic plant operation and maintenance**



#### YOUR ENERGY SECTOR CONTACT

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