

HYDROGEN TERRITORY

hydrogen starts here

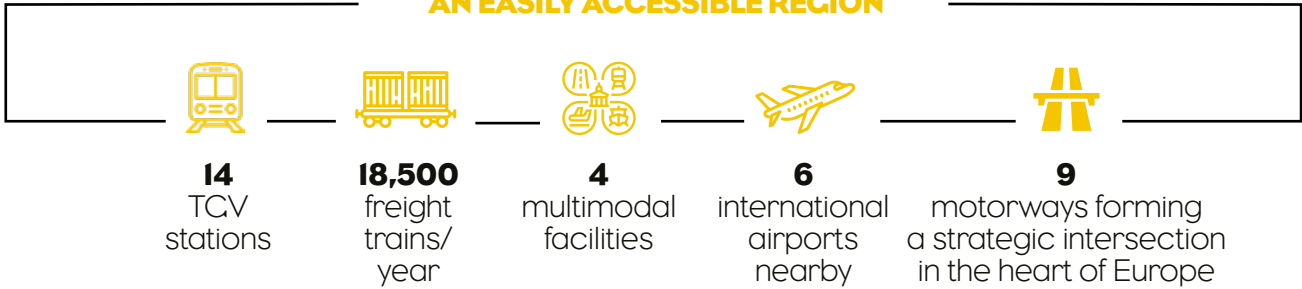
RÉGION
BOURGOGNE-
FRANCHE-COMTÉ



A STRATEGIC POSITION IN EUROPE

With its business parks, infrastructure and business services, Bourgogne-Franche-Comté creates ideal conditions for the successful completion of your projects.

AN EASILY ACCESSIBLE REGION



POPULATION

2.8 MILLION
42 MILLION
WITHIN 4 HOURS' REACH



EDUCATION

80,000 STUDENTS
30,000 YOUNG
APPRENTICES



BUSINESSES

367,200 BUSINESSES
19,300 INDUSTRIAL ESTABLISHMENTS



JOBS

1.3 MILLION PEOPLE IN THE WORKFORCE
23% OF EMPLOYEES IN INDUSTRY



No.1

INDUSTRIAL REGION
IN TERMS OF JOBS
(1 IN 5 EMPLOYEES)

2nd





BEST REGION FOR
SHARE OF INDUSTRIAL
ADDED VALUE

3rd

LARGEST
EXPORTING REGION

81.7

€81.7 BILLION
GDP

-  European main roads and high speed trains
-  International airports
-  Capital cities
-  Main cities

Reference data:
figures available in 2024



REGIONAL SUPPORT FOR HYDROGEN

The objective of Bourgogne-Franche-Comté is to become a Positive Energy and carbon neutral region looking forward to 2050. The Hydrogen roadmap, developed in conjunction with all those involved in the hydrogen ecosystem, confirms the Bourgogne-Franche-Comté region's commitment to embracing the challenge of ecological and energy transition. The projects and territories committed to hydrogen in Bourgogne-Franche-Comté have received more than €800 million in support from the French State and the Region.

SUPPORT FROM THE REGION



research



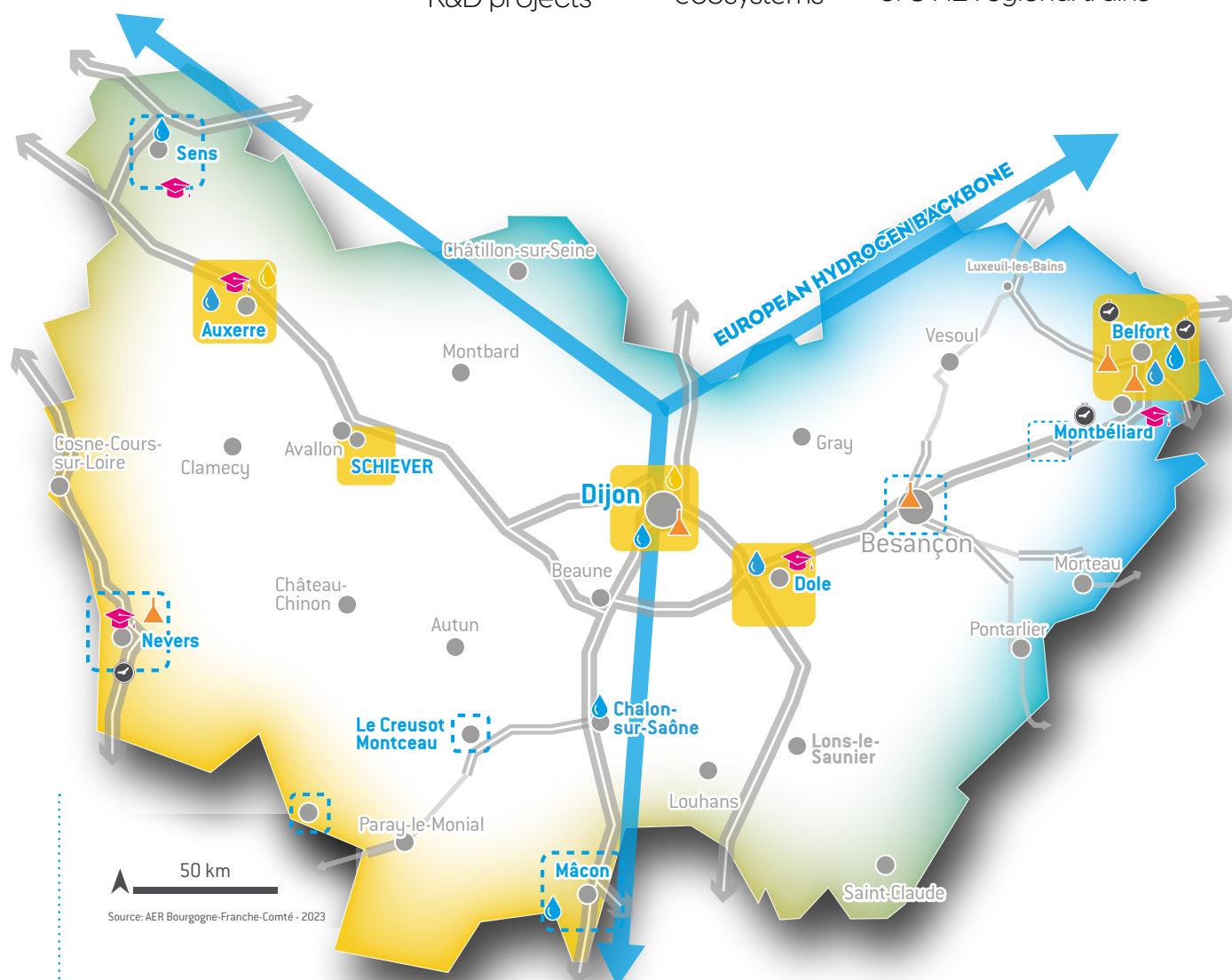
businesses'
R&D projects



regional
ecosystems



acquisition
of 3 H₂ regional trains



H₂ ecosystem projects



H₂ mobility ecosystems



H₂ station planned or under construction



H₂ operational station



Fuel cell and storage test centres



Laboratories, research




H₂ stations and vehicles in 5 high schools



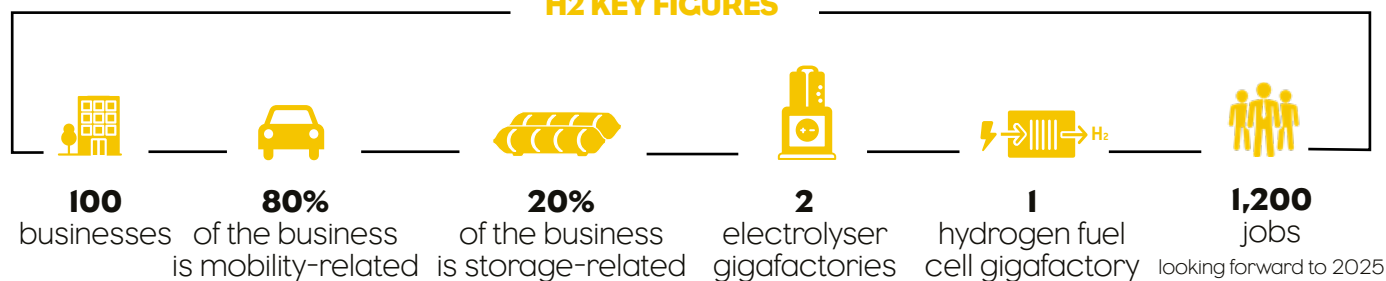
Highways

STRONG PRESENCE OF BUSINESSES ALONG THE ENTIRE H2 VALUE CHAIN FROM PRODUCTION TO USES

As part of its regional strategy, Bourgogne-Franche-Comté is building an industrial ecosystem to cover the Hydrogen value chain as extensively as possible, from production and storage to the various uses (mobile or stationary, etc.).

TRAINING <small>(find out more on pages 10 and 11)</small>		RESEARCH		
		ENERGY SUPPLIERS	ENGINEERING CONSULTANCY FIRMS	STORAGE
UBFC - University of Bourgogne-Franche-Comté university of Bourgogne university of Franche-Comté University of Technology of Belfort-Montbéliard Vocational and technological <i>lycées</i> UIMM CNAM AFPA SupMicroTech - ENSMM H2 School FORVIA Bureau Veritas		Dynamics Engie Total Energies Avia DATS24 Air Liquide H2sys Hydrogen-fuelled hybrid electric generators for a power range from 5 kVA to 130 kVA INTHY FluidExpert	H2sys Gaussin Segula Bertrandt Synops DYG Energy AKKA Bureau Veritas	FORVIA Faurecia Complete gaseous and liquid hydrogen storage tanks and systems, for mobile and stationary applications Mahytec Hensoldt Hydrogen tanks and storage technologies for mobile and stationary applications Sundyne Mincatec Energy Schrader Pacific High-technology valves and safety devices for high-pressure storage systems ISTHY
SUPPORT AND MENTORING STRUCTURES COMPETITIVENESS AND PERFORMANCE				
   				

H2 KEY FIGURES



BUSINESSES *

COMPONENTS
AND SPECIALITIES

HYDROGEN FUEL CELLS

ELECTROLYSERS

VÉHICULE INTEGRATION AND SOLUTIONS

Presse Etude

Delfingen
Fluid transfer
solutions for
adaptation
to Hydrogen
applications

Adhex

Suntec
H2 gas/natural gas
mixer

Streit
Design, machining
and assembly
of mechanical
components,
including
components for
hydrogen fuel cell
systems

Technitube

Gen-Hy
Patented electrodes/
membranes

Laser Cheval

FluidExpert

H2sys

Inocel
High-power fuel
cells (300 kW and
more)

Clhynn

McPhy

Gen-Hy
AEM electrolyzers

Oreca

FPT Iveco

Danielson

Avionéo

RH2
H2 thermal
retrofitting

Valmétal

Fruehauf
H2-powered
autonomous trailer

Avions
Mauboussin

Texy's Group
H2 motorbikes

Alstom

Development
of a Hydrogen
version of its new
Prima H4 locomotive

Stellantis

Gaussin
Custom industrial
logistics solutions,
Hydrogen/battery
technology
for 250 kW of power

Packmat System

Vaison Sport
H2-powered buggies

H2Sys
Special vehicles

TESTBEDS,
TESTS AND
CERTIFICATION

ISTHY

FCLAB

FORVIA Faurecia

Emitech Groupe

Oreca

Gen-Hy
Service life and
operating point
testbeds

HYDROGEN IS IN OUR GENES!

The earliest work on Hydrogen Fuel Cell systems in Bourgogne-Franche-Comté began in 1999 with the members of the FC Lab research federation (later known as UAR FC Lab), associated with the CNRS (National Centre for Scientific Research).

In 2016, the region was certified as a "Hydrogen Territory" following a number of major demonstration projects putting the Hydrogen energy vector into practice in the region.



2002

1st research facility dedicated to Hydrogen Fuel Cell systems

2011

1st French registration of an approved Hydrogen vehicle: the F-City H₂

2015

Creation of the **1st Master of Engineering course: Hydrogen Energy and Energy Efficiency** at uFC, ONE OF A KIND IN FRANCE

2017

Creation of the H2SYS spin-off

Marketing of the **1st H2 power generators** by H2SYS

1st financing for ENRgHy projects

1999

1st research activities related to Hydrogen Energy and Hydrogen Fuel Cells

2008

Start of Hydrogen-related activities at **MAHYTEC**

2014

1st "Moby Post" and "MobilHy Test" experiments in Bourgogne-Franche-Comté

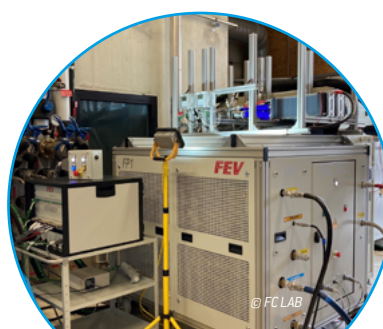
2016

"Hydrogen Territory" certification for Bourgogne-Franche-Comté with ENRgHy

2019

Rougeot Energie company founded (now INTHY) to implement the **ISTHY project (International test and trial facility for qualification of H2 storage solutions)**

HYBAN project: France's only testbed for high-power hydrogen fuel cells, supported by FCLAB





2019

Auxerre winner of ADEME's nationwide H2 ecosystem calls for projects in 2019 and 2020

Nord-Franche-Comté, **winner of the Territoires d'Innovation call for projects** as part of the Programme d'Investissements d'Avenir (Investing in the Future Programme): €70 M

Hydrogen stations and vehicles in 5 *lycées*

Application submitted for experimentation of the first H2 train

Launch of the Dijon mobility ecosystem (H2 station, buses and refuse collection vehicles)

2020

Inauguration of the **FAURECIA centre of global expertise on H2 tanks**

Faurecia plant announced for production of fuel tanks in the Belfort-Montbéliard urban area

Launch of **Hydrogen airport logistics vehicles** by GAUSSIN



2021

Opening of new H2SYS premises: transition to the industrial phase

Announcement of a **McPhy site** coming to Fontaine, Belfort: the 1st alkaline electrolyser factory in France

Inauguration of Auxerre's **AuxHyGen** station and introduction of the 1st H2 buses

Completion of FAURECIA's H2 tank production factory

Success of the 1st **Hydrogen Business For Climate Forum** in Belfort



2022

Setting up of GEN-HY in Technoland, France's 1st H2 electrolyser plant featuring its AEM technology

GAUSSIN's H2 lorries at the 2022 Dakar rally




2023

Inauguration of the **FORVIA plant for the mass production of hydrogen tanks** in Allenjoie

Opening of the Danjoutin H2 station (Belfort)

Setting up of the INOCEL gigafactory to manufacture hydrogen fuel cells in Belfort



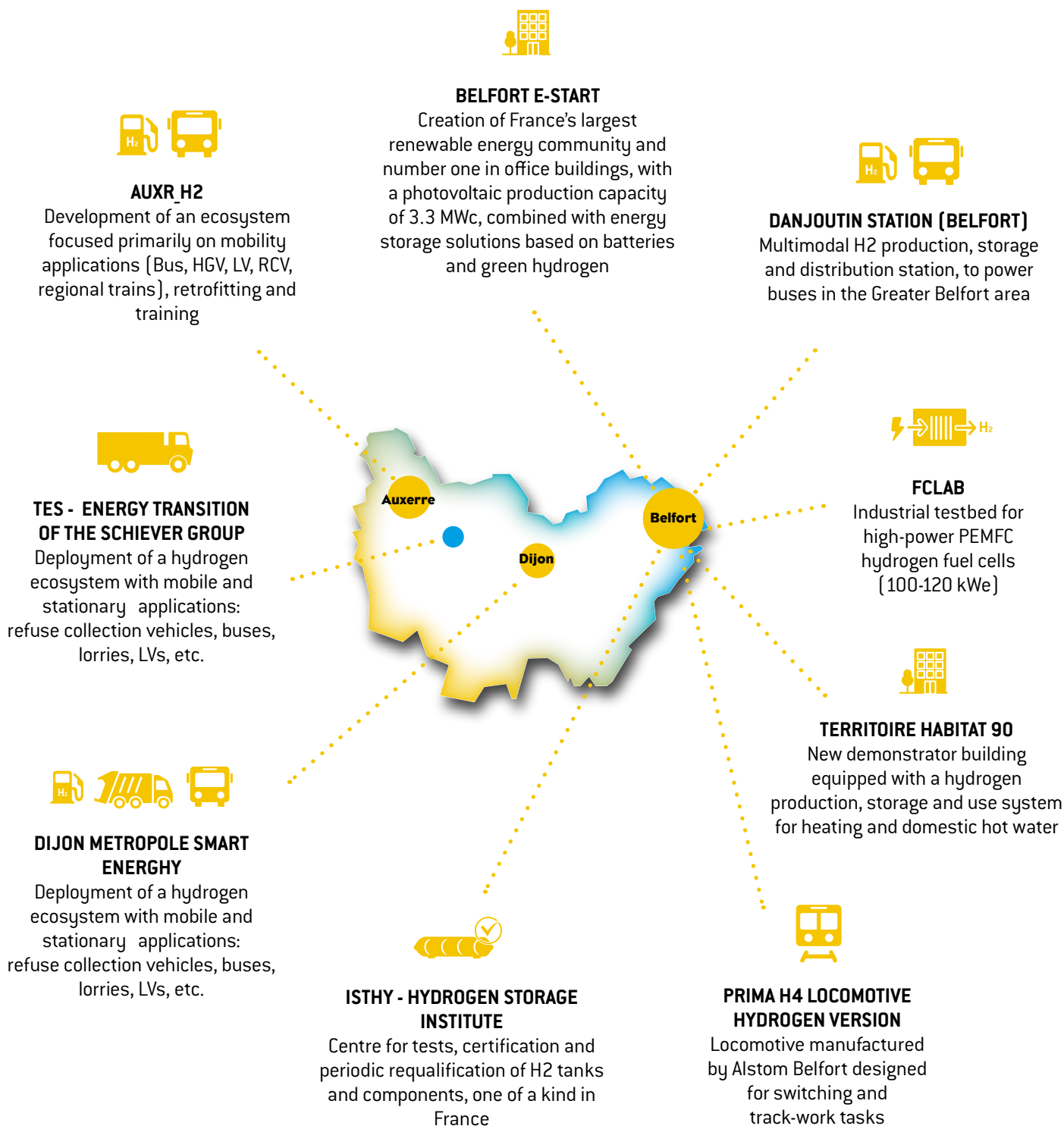

@ Inocel



@ MahyTec

MAJOR OPERATIONAL PROJECTS

Since Bourgogne-Franche-Comté became a certified Hydrogen Territory in 2016, many projects have been funded and deployed across the region, including the following*...



INDUSTRIAL EXPERTISE ESSENTIAL TO THE SECTOR

The local presence of an industrial network specialising in **metals and materials processing** and expertise in **surface treatment** are valuable assets for providing **complete manufacturing of the Hydrogen systems of tomorrow**.



Please contact us
to find out more

RESEARCH & INNOVATION

In Bourgogne-Franche-Comté, there is a very high level of synergy between research and businesses. This close connection is maintained by those involved therein.

COMPETITIVENESS CLUSTERS INVOLVED IN HYDROGEN PROJECTS



This competitiveness cluster for vehicles and mobility solutions supports projects and their deployment in the Hydrogen field (stationary, mobile application, energy, carbon intensity reduction in industry), coordinates the H2BFC Club and organises the H2BFC Forum.



Cluster of industrial and academic stakeholders involved in the design and manufacture of low-carbon solutions (hydrogen, renewable energy, nuclear, etc.) and the reduction in the carbon intensity of industrial activities and uses



MECATEAMCLUSTER

Cluster specialising in the design, development and maintenance of heavy-duty railway machinery and infrastructure, studying electrification solutions.



Competitiveness cluster dedicated to rubber, plastic and composites supporting H2 storage and transport reduction solutions as well as innovative new materials for electrolyzers.



Agribusiness and agricultural equipment competitiveness cluster relating to the H2 sector: vehicle fleets, agrivoltaism, carbon intensity reduction in industry

CUTTING-EDGE PUBLIC RESEARCH



FEMTO-ST INSTITUTE

Internationally renowned research laboratory (CNRS, uFC, SUPMICROTECH-ENSM, UTBM)
=> 120 researchers in H2 energy



FC LAB UAR

European Support and Research Unit on hydrogen fuel cells



HYDROGEN ENERGY FACILITY

One of the largest European public facilities devoted to research, testing and the industrial transfer of H2 system



ISAT'S DRIVE LABORATORY

Optimisation of thermal and hybrid propulsion energy, composite materials and durability, vibratory and acoustic behaviours.



ICB LABORATORY

Research into materials for hydrogen fuel cells, high-temperature electrolyzers and solid storage

SPECIALIST TRAINING

CMI H3E - A MASTER OF ENGINEERING COURSE THAT'S ONE OF A KIND IN FRANCE

The Hydrogen Energy and Energy Efficiency (H3E) CMI offered by the university of Franche-Comté is a 5-year programme in the energy production and management engineering trades for students who will become experts in the fields of energy efficiency and clean energy, with specific expertise in Hydrogen Energy (production, transport and stationary applications, etc.).



From the BUT (university Bachelor of technology) to Master's level, UFC delivers courses focused on renewable energies and energy efficiency.

26 courses focusing on hydrogen and 1 Hydrogen Energy and Energy Efficiency (H3E) CMI



uB schools of engineering deliver courses focused on the physics of materials, civil engineering, mechanics (POLYTECH Dijon) and courses on the design, production and operation of vehicles (ISAT).



RÉGION ACADÉMIQUE
BOURGOGNE-
FRANCHE-COMTÉ
*Liberté
Égalité
Fraternité*

RÉGION
BOURGOGNE
FRANCHE
COMTÉ



Specialised Master's in Hydrogen Energy courses: Energy production, Networks, conversion and storage, Transport and embedded energy systems, Electrical engineering by apprenticeship

1 Master's Degree course in Electrical Energy

VOCATIONAL

AND TECHNOLOGICAL LYCÉES

In 2024, seven *lycées* in Bourgogne-Franche-Comté will offer vocational **Baccalauréats** and BTS (senior technician diplomas) with a focus on hydrogen (Renewable energy installer, Electrical professions and related environments, Energy efficiency and maintenance, Maintenance of production systems, Vehicle maintenance, Motor drives, Chemical and water processes, etc.).

RÉGION
BOURGOGNE
FRANCHE
COMTÉ

Since 2023, a training module dedicated to risks of explosion (ATEX) is delivered to all jobseekers trained by the Region in industrial professions: welding/boiler-making/pipe assembly, industrial production and maintenance operator.



2 BTS courses in maintenance of H2 systems Master's degree in Quality, Health, Safety, Environment with a focus on Hydrogen maintenance

le cnam
Bourgogne - Franche-Comté



CNAM vocational bachelor's degree in maintenance of H2 energy systems



H2-related "Skills incubator" Training courses dedicated to the installation and maintenance of hydrogen equipment Senior Technician in industrial maintenance with a focus on H2



Studies in mechanical, industrial, and energy engineering

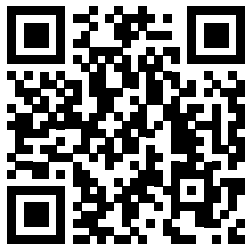


Schools of engineering specialising in mechanics and microtechnology

HYDROGEN SCHOOL PROJECT

Submission for the France 2030 Compétences et Métiers d'Avenir AMI [call for expression of interest]

SCAN
TO WATCH THE H2 VIDEO



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THE REGIONAL ECONOMIC AGENCY OF BOURGOGNE-FRANCHE-COMTÉ

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



Business project
engineering
for each regional
strategic sector



Financial
engineering



Innovative
project
engineering



Economic
changes



Promotion and
communication