



In Bourgogne-Franche-Comté

Major French Hydrogen
Territory

RÉGION
BOURGOGNE
FRANCHE
COMTÉ

Hydrogène
BOURGOGNE
FRANCHE-COMTÉ

accessibility

Strategic positioning
in the centre of significant
European infrastructure

230

km of border shared with
Switzerland, preferential cross-
border cooperation

45

million inhabitants within 4 hours of
Bourgogne-Franche-Comté's barycentre

2

regional airports:
Dijon-Bourgogne and
Dole-Jura

1 hr 35

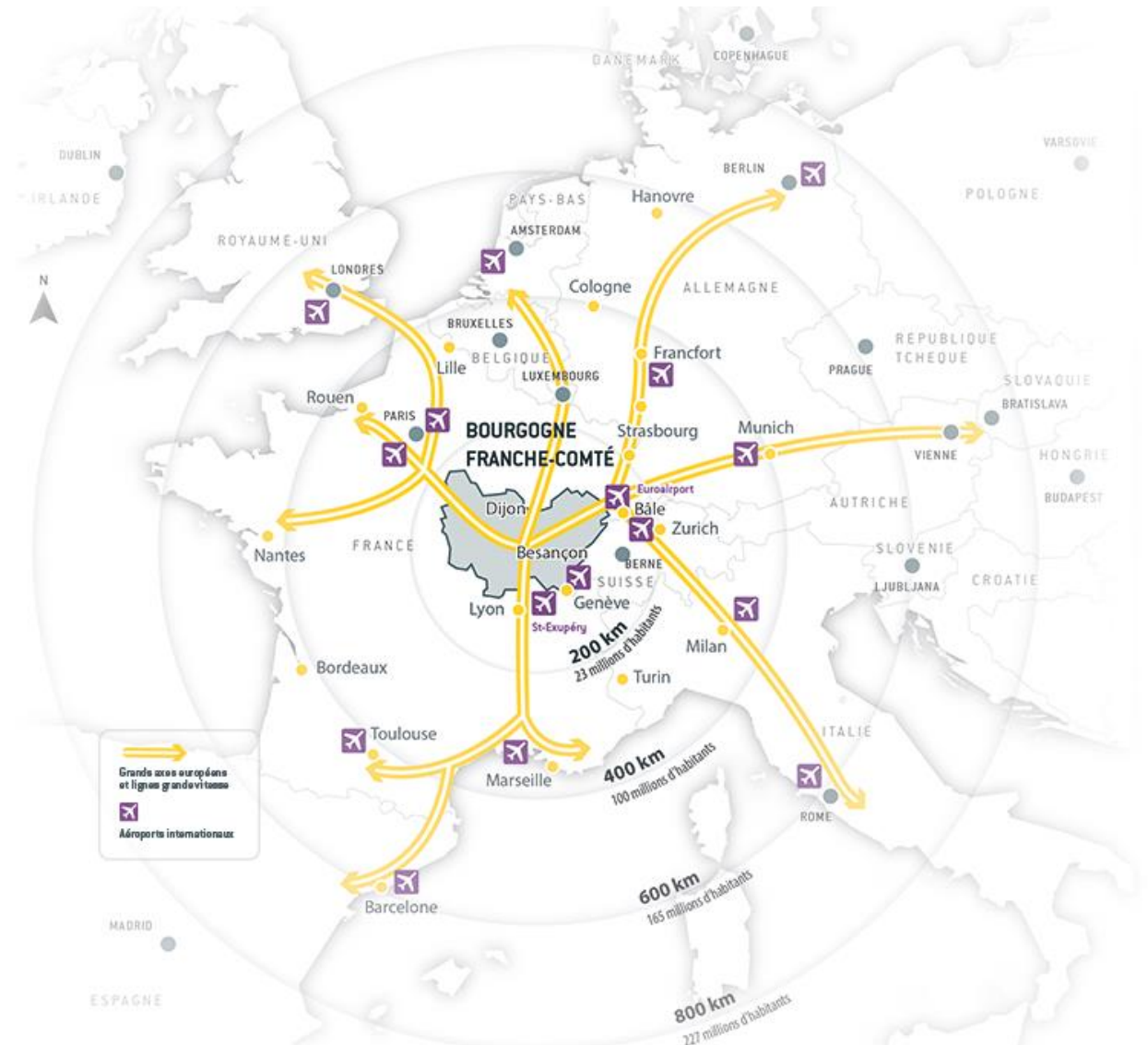
Dijon to Paris in 1 hr 35 min and
Besançon to Paris in 2 hrs 5 min
by TGV

14

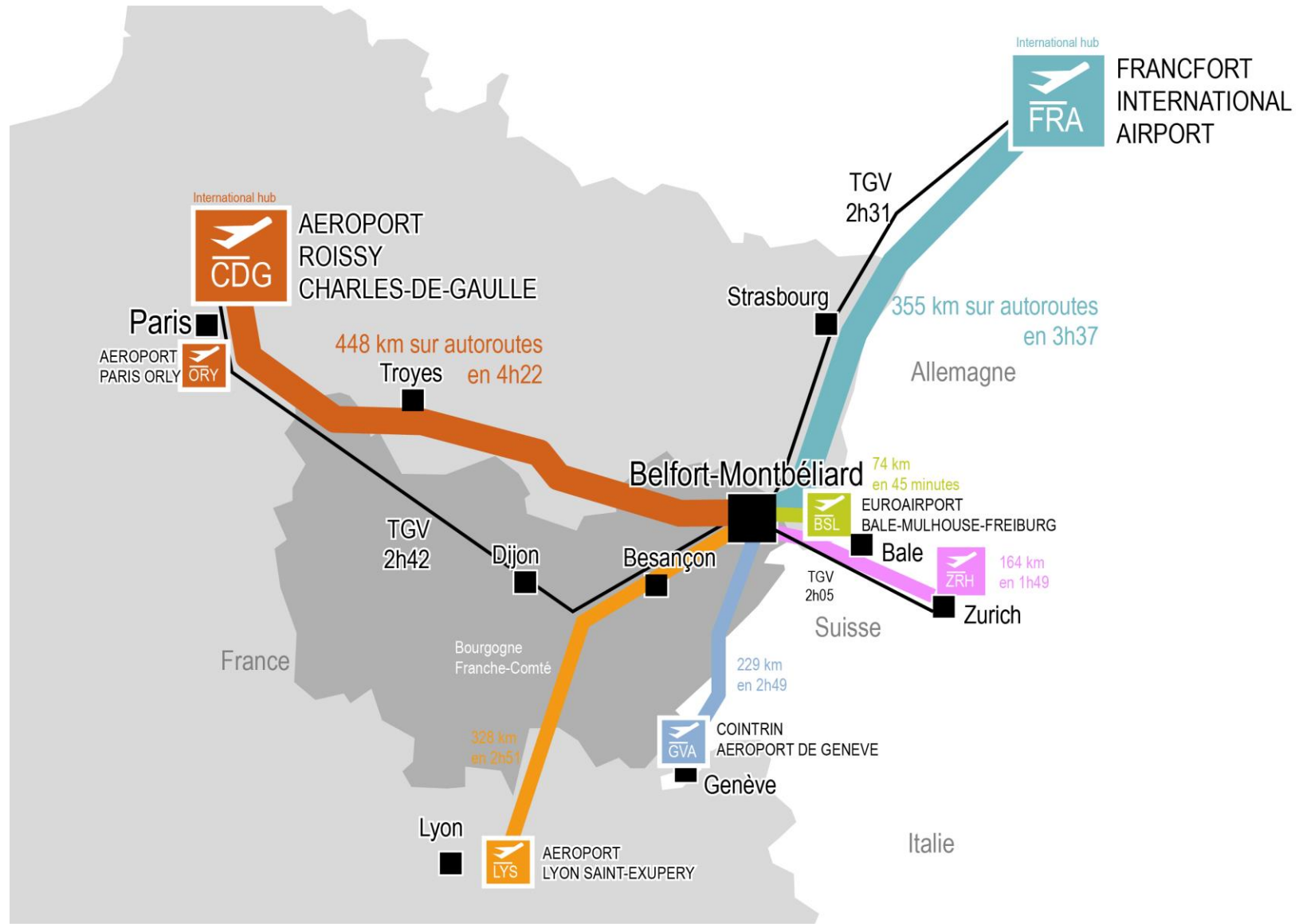
high-speed train (TGV)
stations on France's
densest rail network

9

national highways forming
a strategic intersection



Airport connections



20 Years of the Hydrogen Adventure in Bourgogne-Franche-Comté



100% OF THE H2 VALUE CHAIN REPRESENTED BY THE COMPANIES OF BOURGOGNE-FRANCHE-COMTÉ



ALSTOM, a step ahead in Hydrogen

ALSTOM has successfully designed and marketed in Germany Coradia iLint, the first passenger train in the world that uses Hydrogen as propulsion energy, a result of 5 years of development by its engineers.

At the regional level, the site ALSTOM in Belfort prepares the development of a Hydrogen version of its new Prima H4 freight locomotive in the frame of an R & D program.

Research & Development :

UTBM, FC lab (Fuel Cell Laboratory), Universities BFC (UTBM, ENSMM...) ...

Key components :

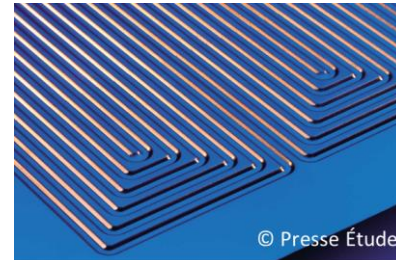
- Presse Etudes (bipolar plates), Streit Group...
- Schrader Pacific, Gaussin Manugistique,
- Alstom Ornans, DEPHIS, ...

Storage application:

FAURECIA Bavans, Plastic Omnium, Mahytec, SCHRADER PACIFIC, Rougeot Energie, ...

Integrators :

VALMETAL, Packmat Industries, Gaussin Manugistique, Alstom Belfort, Renault Trucks Defense...



Bourgogne-Franche-Comté

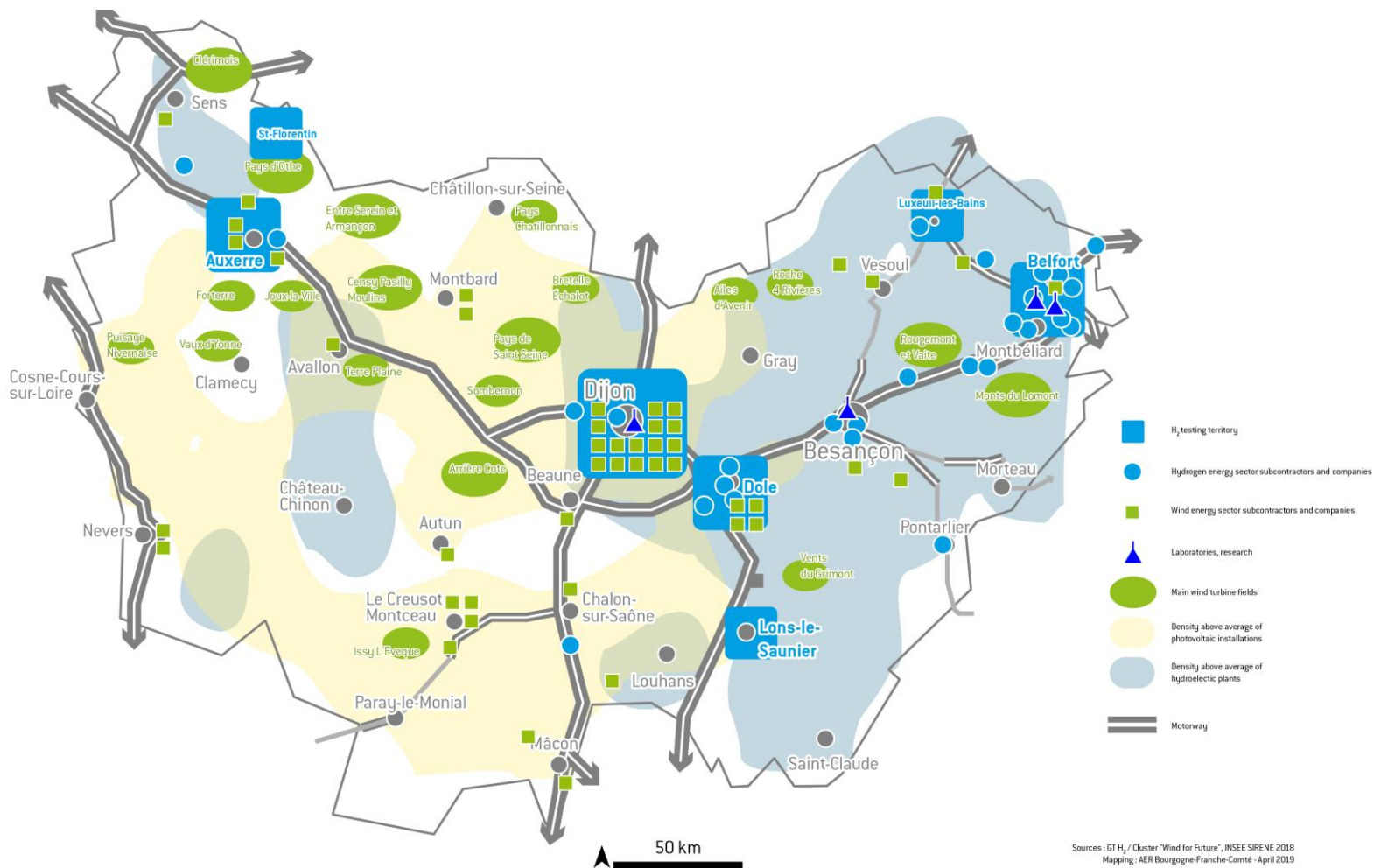
50

Establishments
involved in H2

400

Employees in H2
sector

certified "Hydrogen Territory" thanks to the regional dynamic



EXAMPLES OF COMPANIES LEADING THEIR INDUSTRIES



Captive Fleets or stationary applications with a local green hydrogen production

Dijon

The city strengthens its actions to reduce pollution atmospheric and sound by opting for a fleet of 8 dumpsters hydrogen. Two trucks and 14 utility vehicles will also be deployed by the partners of the project. Hydrogen will be produced locally from electricity from the Energy recovery of waste.

Auxerre

The city wishes to engage the exploitation of a fleet of 5 electric hydrogen buses in 2022. The project also includes the acquisition of a dozen hydrogen utility vehicles for the needs of a regional construction company. H2 will be produced by electrolysis (Wind Turbines and hydropower). First H2 Train is also expected

Belfort

The city is engaged in a major program to develop hydrogen for buses (20 buses as early as 2024), (university campuses) stationary applications (fully autonomous building) and even a multimodal station to allow testing of Alstom H2 locomotives

Hyaunais Project

Pilot stationary project at the national level in France: Valorisation of the fatal CO2 present on the landfill site using the methanation process. The H2 needed for this process comes from wind generation, the methane produced is reinjected into the domestic network



Focus on ISTHY European Storage Center

ISTHY is the future French center for certification of Hydrogen components and storage. It will be located in Belfort area, close to Faurecia Plant, global development center for developing and manufacture the tanks for automotive constructors.

Main Features:

- ✓ Testing services and certification for reservoirs and hydrogen components - Periodic requalification
- ✓ Single entry point for the industrial, R&D and production
- ✓ Regulations and standards CE / 2009/79, R134e, GTR13, etc.
- ✓ Tanks type 1 to 4, under high pressure (700 bar) or solid storage (hydrides)
- ✓ Volume of tanks : from 2 to 1000 liters, option 1600 liters
- ✓ Set of tests standardized by standards, gas tests and mechanical tests
- ✓ Extreme temperature range of tests : -40 ° / + 85 ° C, optional : -60 ° / + 120 ° C
- ✓ High-performance instrumentation for fast acquisition of data and images
- ✓ Consulting and engineering in storage, chemistry, metallic materials and composites, security.
- ✓ Independence, impartiality, quality, methods and productivity characterize this center

Additional services :

- ✓ Continuing education for professionals in the fields of hydrogen and electromobility
- ✓ Academic and industrial research: materials, processes, methods and new products

Focus on FC Lab - Belfort

FC LAB is a national CNRS research federation, with international visibility, gathering 6 partner research labs at the national level (including FEMTO-ST locally), the other laboratories are in Satory, Dijon, Nancy, Bron and Lyon:

- 180 researchers involved in the field of hydrogen-energy systems
- Largest public research organization in Europe on this topic
- Experimental platform at scale 1, up to 120kW electric. Coupling with renewable energies, water electrolyser + associated H2 storage.
- Research activities on hydrogen solid state storage
- Ability to evaluate and test H2 vehicles at scale 1 (up to the size of semi-trailers or buses)
- Vibration platform + climatic chamber (H2 compliant)
- Higher engineering training (unique French Master of Engineering in Hydrogen-Energy systems H3E)

In this context, with H2 storage Center ISTHY, there is a complete coverage of test needs in one place in Belfort Area.



education and training

to dream up and design the energy systems of tomorrow

60,000

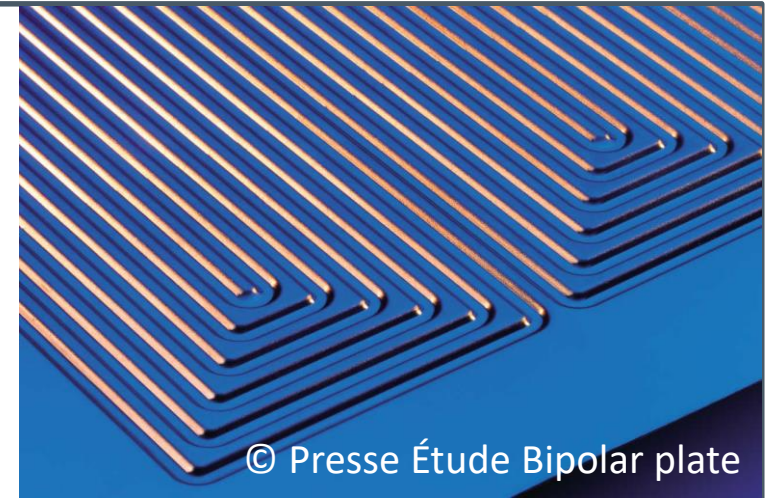
students

20,000

young people in
apprenticeship
training

- University of Franche-Comté (UFC), generalist university. It manages a unique Master of Engineering focused on Hydrogen Energy (opened in 2014).
- UTBM (Belfort-Montbéliard University of Technology): has an energy department that teaches electrical, thermal and mechanical engineering.

- ISAT NEVERS Institut Supérieur de l'Automobile et des Transports (Higher institute of automobiles and transport), specialist in designing and developing sustainable, multimodal mobility solutions.
- ENSMM BESANÇON - The École Nationale Supérieure de Mécanique et des Microtechniques (National Higher School for Mechanics and Microtechnology) provides courses for generalist engineers specialising in mechanics and microtechnology.
- ESIREM DIJON - The École Supérieure d'Ingénieurs en Matériaux (Higher School of Materials Engineers) offers two specialisation options: Sustainable Development/Materials and IT/Electronics.



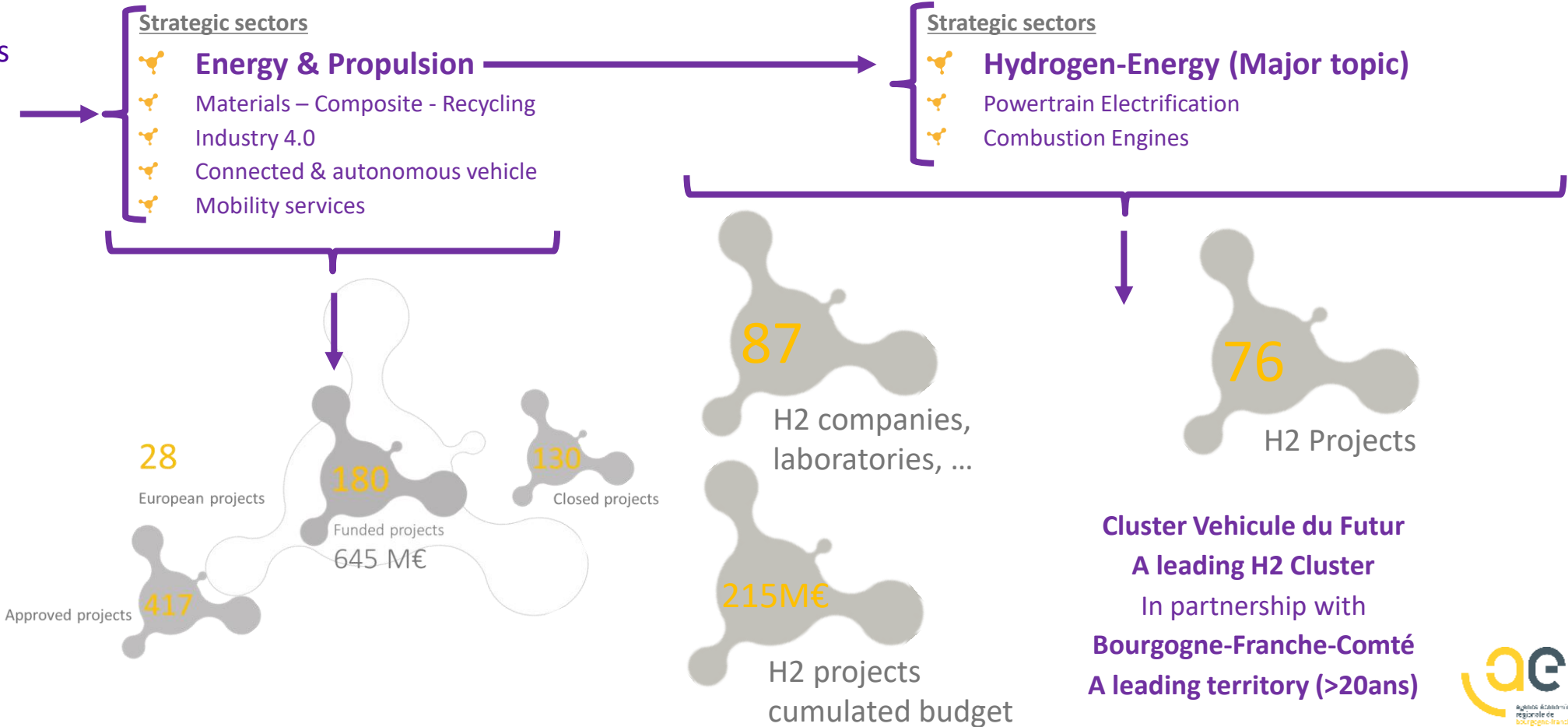
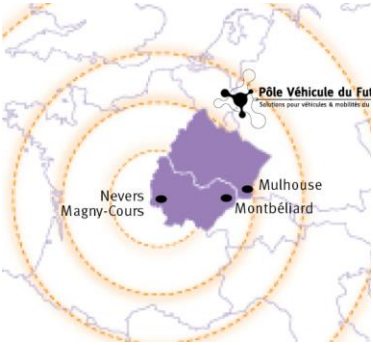
Focus on Vehicule du Futur Competitiveness Cluster

A dual initiative association (Innovation / Industrial Performance)

392 members

Enterprises, Research,
Training units, Partners

88 000 employees



The project and regional key features for hydrogen...

“The deployment of the Hydrogen sector is one of the strategic orientations of the Burgundy-Franche-Comté Region. For this pioneering region, it is a question of developing a concrete economy around Hydrogen, a vector of green energy presented as one of the solutions of the future. And she has all the assets to succeed ...!”

BURGUNDY-FRANCHE-COMTÉ REGION LABELED HYDROGEN TERRITORY IN 2016

- **Region with a focus on Hydrogen research since 1998 in Belfort** with the creation of the Fuel Cell platform
- **Fuel Cell Lab: 180 dedicated researchers, the largest CNRS research federation in France on fuel cell systems**
- **International visibility** - Proximity to Switzerland and Germany (project in progress)
- **A competitiveness cluster Vehicle of the Future** which envisaged of Hydrogen as a strategic field with Hydrogen since its creation in 2005
- **Major regional players, including car manufacturers** who are involved in the H2 sector on the territory : **PSA, ALSTOM, GENERAL ELECTRIC, INOVYN, SCHRADER PACIFIC, DELFINGEN, MANUGISTIC GAUSSIN ..**
- **And numerous companies recognized by the H2 industrial sector:** Mahytec, H2SyS, Presse Etudes, Streit Industries ...
- **100% of the H2 value chain represented by the companies of Burgundy-Franche-Comté**

an agency to support your growth

The AER BFC, Bourgogne-Franche-Comté Regional Economic Agency, provides its services to welcome new companies and to support investors in their business projects.

At each stage in a company's development, a single representative in the team provides confidential professional assistance and customised follow-up.

Business project engineering by regional strategic sector:

- ↳ Diagnosis of company needs
- ↳ Technical, Financial, Legal and HR Engineering
- ↳ Search for real estate and real estate companies
- ↳ Search for partners
- ↳ Connection with the public and private ecosystem of economic development and innovation





Nathalie LOCH

Project Manager

nloch@aer-bfc.com

+33 (0)6 32 83 00 49

<http://energhyflash.blogspot.com/>

Maison de l'économie

46 avenue Villarceau

25000 BESANCON

Maison Régionale de l'Innovation

64A rue Sully - CS 77124

21071 DIJON Cedex

www.aer-bfc.com