BUSINESS FOR CLIMATE

Hydrogen BFC CONNECT

13–14 January 2021

BOURGOGNE-FRANCHE-COMTÉ

PRESS PACK

Expanding the Hydrogen sector: new mobility solutions and regional ecosystems

After 20 years of efforts and experimentation involving hydrogen, the evidence is clear: this energy vector – which France needs now more than ever – can only be successfully rolled out if it is part of an ecosystem, in an area where local production serves local use in a circular economy approach.

The Bourgogne-Franche-Comté region is now a certified “Hydrogen Territory” and a major pioneer in the field. Building on its experience, it is opening a new chapter and, by developing new mobility solutions and regional hubs, is making every effort to become the national benchmark in the sector and the first net-positive energy region in France by 2050.

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FIVE EDITORIALS
ON HYDROGEN IN BOURGOGNE-FRANCHE-COMTÉ

"Our region stands out when it comes to development of the hydrogen sector in France: in fact, we're the leaders!" explains **Marie-Guite Dufay**, President of Bourgogne-Franche-Comté Regional Council. *"We were the first to launch research projects with FC Lab 20 years ago, and we were among the first to set up mobility ecosystems that have been decisive as we have continued to roll out projects. We are pursuing with our initiatives now more than ever, and reaffirming our commitment with one main goal: becoming the national benchmark for hydrogen and the first net-positive energy region in France."*

"Bourgogne-Franche-Comté was France's leading industrial region in the past, and it remains so today," adds **Jean-Marie Girier**, Prefect of the Territoire de Belfort département. *"This industrial culture and our love of industry give us full legitimacy to become the leader for hydrogen, not only in France but in Europe too."*

"One of the lessons we have learned over our 20-year-long hydrogen adventure is how important local authorities are in creating mobility ecosystems," explains **Damien Meslot,** Mayor of the City of Belfort and President of the Greater Belfort urban community. *"Hydrogen is ideal for use in closed ecosystems and by creating those ecosystems, we will gradually form a national network. At the heart of our region, our local authorities have access to all kinds of expertise and therefore play a crucial role in creating the value chains necessary for hydrogen."*

For **Arnaud MARTHEY**, President of the Regional Economic Agency of Bourgogne-Franche-Comté: *"The successful expansion of hydrogen in Bourgogne-Franche-Comté and our excellence in the field can no doubt be explained by our industrial culture, but also – and above all – by our love for our industry. We love industry and we're not afraid of it, which is why the public are ready to accept industrial projects. We are firmly committed and fully intend to make this sector the driver of a new economic impetus for our region."*

"Bourgogne-Franche-Comté has long been an industrial region, it lies at a geographic crossroads at the heart of Europe, and there is the will and the commitment – the region ticks all the boxes for transforming a sector into a driver of economic development," concludes **Marc Becker**, President of the Pôle Véhicule du Futur Competitiveness Cluster. *"However, what underpins our region's excellence is the fact that we have successfully got research, business and training facilities working together within the ecosystem led by the Cluster to contribute to this momentum. This has been one of the keys to success, and will remain so long into the future."*

HYDROGEN IN BOURGOGNE-FRANCHE-COMTÉ: 20 YEARS OF HISTORY

How it all began: hydrogen in the genes

The Bourgogne-Franche-Comté region has long been committed to developing the hydrogen sector. Back in 1998, the first research project involving the fuel cell was launched by the University of Franche-Comté and the Fuel Cell Lab (FC Lab), one of the leading hydrogen-focused research centres in Europe.

In 2005, the Pôle Véhicule du Futur Competitiveness Cluster was created to coordinate the momentum around hydrogen and fuel cells in Franche-Comté, and later Bourgogne, and to speed up and intensify the hydrogen industry.

Things were very quickly set in motion and the first experiments began: in 2011, the first hydrogen-powered vehicle (the F-City H2) was approved and in 2014, two trials – "MobyPost" and "MobilHyTest" – were launched.

In 2016, capitalising on a breeding ground ripe for the development of a fully-fledged hydrogen industry, Bourgogne-Franche-Comté was awarded "Hydrogen Territory" certification in recognition of the many large-scale demonstration projects putting the hydrogen energy vector into practice across the region.

A turning point: the mobility ecosystem

This label became a turning point. With all these experiments, especially in the field of mobility, real awareness emerged: focusing solely on light mobility, without considering captive fleets and heavy mobility from the outset, is not the way to let hydrogen express its full potential: the idea of creating mobility ecosystems thus formed.
A network of research centres, businesses and training facilities thus developed, focused on hydrogen, with support from the local authorities and the clusters linked to the industry.

From hydrogen production to mobility or stationary uses, entire value chains have been formed around these regional success stories.

Large companies in Bourgogne-Franche-Comté have invested in hydrogen, including FAURECIA (global research and development centre focused on H2 storage systems and high-pressure storage tank production plant), Alstom (Prima H4 locomotive), Gaussin (industrial logistics), Schrader (valves), Valmétal (special vehicles), and Delfingen (fluid transfers).

New companies have been founded, like Mahytec, which designs two types of hydrogen storage technology for mobile, nomad and stationary applications, JUSTY, an independent engineering firm working on the energy transition, H2SYS, which makes a completely silent, clean generator to generate electricity anywhere at any time, Xydrogen, involved in hydrogen systems engineering, and Rougeot Energie, which assists local authorities and companies with the roll-out of hydrogen-powered mobility solutions.

HYDROGEN IN BOURGOGNE-FRANCHE-COMTÉ: 20 YEARS OF HISTORY

And next? Zero-carbon hydrogen

Since 2016, the Bourgogne-Franche-Comté region has mobilised a total €12 million with some very tangible results: automotive parts supplier Faurecia has recently opened its global research and development centre focused on hydrogen storage systems at Bavans, while a National Hydrogen Storage Institute is being set up in Nord Franche-Comté.

Yet this is not enough. To consolidate hydrogen use and make the sector a driver of economic development, we need to encourage a rapid increase in demand to develop production, distribution and consumption circuits. The widespread dissemination of technologies will lead to a fall in costs, thus making hydrogen affordable to as many people as possible.

To achieve this, the Region has adopted a roadmap where hydrogen is an opportunity for the energy transition, while encouraging innovation and developing use. It has thus speeded up investment, mobilising €90 million for 2020-30. This regional funding aspires to have a significant leverage effect for private investment (companies) and local public investment (local authorities).

The ultimate aim? Making the hydrogen sector a growth driver for the region, and an instrument for its energy transition, to establish the Bourgogne-Franche-Comté region as the first net-positive energy region in France.

What types of hydrogen are backed?

Today, 95% of the hydrogen produced in the world comes from hydrocarbons (natural gas steam reforming).

To contribute to the energy transition, we need hydrogen to be an energy vector that can help us reach our renewable energy and carbon-neutral objectives, while maintaining the balance between supply and demand at all times. The difficulty lies in measuring the contribution made to the energy transition by hydrogen that is produced using mixed energies, industrial co-products, burning household waste, and so on.

This is why the Region only backs green and sometimes low-carbon hydrogen projects (co-products, waste) where the origin can be guaranteed.

A ROBUST, MULTIFACETED

ECOSYSTEM

The commitment and lead shown by the Bourgogne-Franche-Comté region in the field of hydrogen can be explained by a number of stand-out features, namely a strong industrial culture, a strategy built around three complementary lines of action, unique geography, exceptional know-how, and social and urban acceptability.

Industrial culture

Bourgogne-Franche-Comté is France's leading industrial region. In such an environment, two industries have emerged as the catalyst for today's hydrogen technology developments: the automotive and rail industry, and power-generation equipment manufacturing.

Energy and mobility have been specialities across the region for a long time now.

However, what really makes the difference is the business involvement in this ecosystem. From the outset, Bourgogne-Franche-Comté has worked hard to develop hydrogen solutions with demonstrable economic potential only. With the ENRgHY project, for example, it has assembled "building blocks" that will benefit the entire national sector. The desire to fully engage in the energy transition has been coupled with a willingness to assist companies with entering new markets which provide and create further employment. The highly industrial component of our region, built around large groups (PSA, Alstom, Faurecia, etc.) and a network of SMEs and quality start-ups, is a major asset for supporting the hydrogen sector in the region across the long-term.

The latest directions set out in the region's hydrogen roadmap bolster this approach with a shift towards the development of green or low-carbon hydrogen for industrial use. This is more than a strategic choice: it is an opportunity to create and anticipate markets rather than waiting for them to emerge. It is also about innovation as a way of remaining competitive, which is evermore crucial in the field of hydrogen.

The key to success: a threefold strategy

For many years now, regional stakeholders have been investing the hydrogen sector, naturally generating synergies between local authorities, researchers and local industry.

The success of this value chain is explained by a strategy that combines research, training and business.

On the research side, FC Lab (FC for Fuel Cell) in Belfort is a major asset for the Bourgogne-Franche-Comté region. The FC Lab services and research unit forms the link between six national laboratories specialising in Hydrogen Energy. Armed with its own test and trial facility, FC Lab focuses its research on hydrogen energy and the fuel cell system, and produces 80% of the country's publications on fuel cell systems.

FC Lab has also helped shape a unique training offer (CMI Hydrogen Energy engineering course, Master's, Engineering qualifications, PhDs, etc.). More generally, the region provides a large and varied range of qualifying, targeted training courses set up to meet precisely identified needs. The content and pace of learning are designed to continually adapt to scientific and technological developments.

Manufacturers are supported by the Pôle de Véhicule du Futur Competitiveness Cluster, the Wind for Future Cluster and the Mecateam railway maintenance cluster, and by the Regional Economic Agency (AER) of Bourgogne-Franche-Comté.

Pooled together, all this expertise creates extremely fertile ground for the sector's expansion in the region.

A ROBUST, MULTIFACETED

ECOSYSTEM

Geography

Located at the crossroads between Switzerland (France's longest border with its neighbour) and Germany, Bourgogne-Franche-Comté is naturally European. It is served by nine motorways, six airports and 451 km of HSR lines. On top of that, it is fully engaged in the North-South-Europe Hydrogen Corridor, making the region a natural hub for hydrogen development at national and European level.

Exceptional know-how

As a pioneer, we have a head start. And a strong conviction that boosts projects and speeds up deployment. The hydrogen adventure began in Belfort before the turn of the millennium and subsequently expanded to the entire region, most notably thanks to the involvement and support of local authorities.

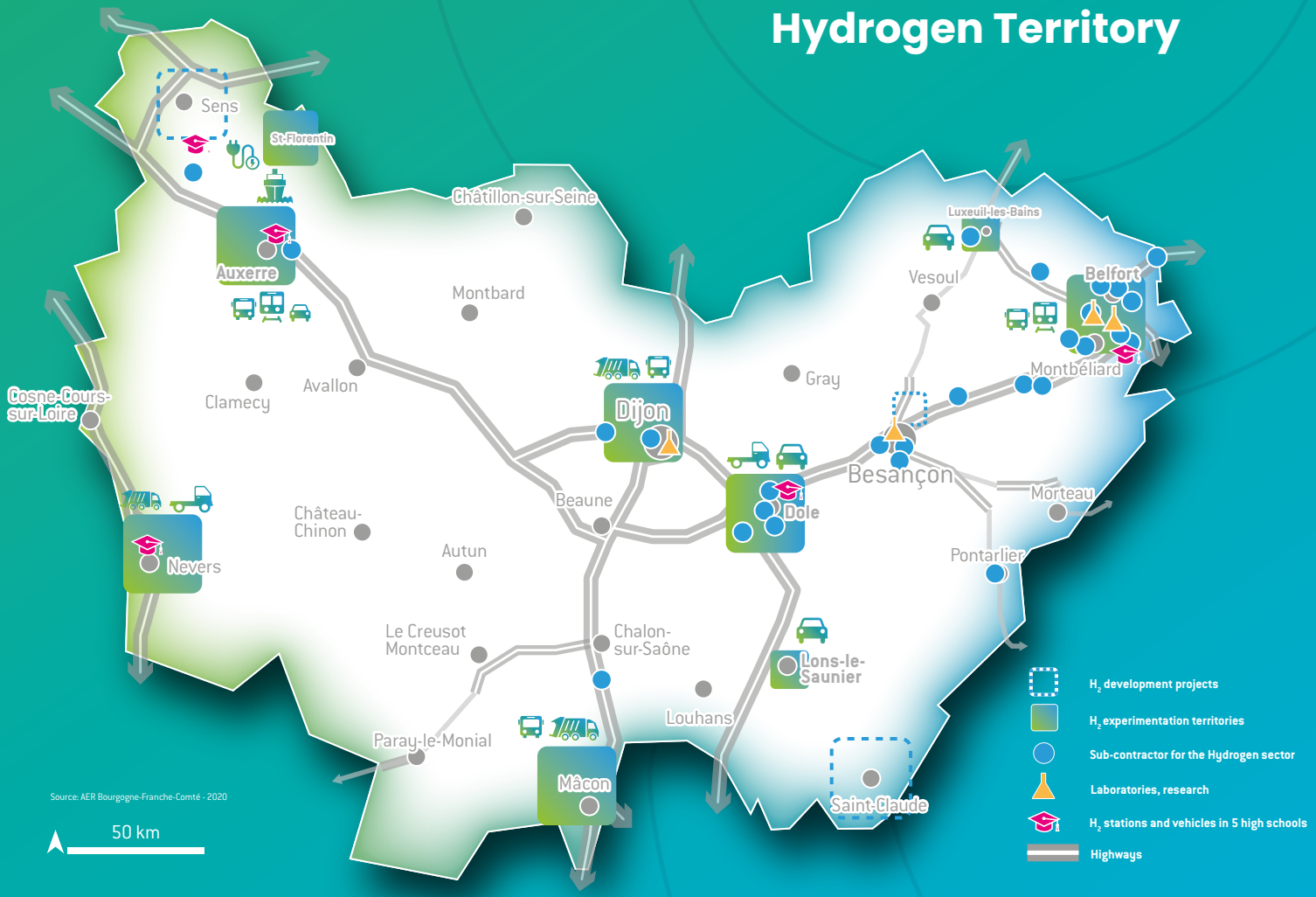
Social and urban acceptability

Although hydrogen is gaining ground as a useful instrument in the transition to low-carbon energies, it continues to suffer from low public awareness and misconceptions, particularly beliefs that it is dangerous. Nonetheless, decades of research, to which regional stakeholders have widely contributed, have enabled the development of safe and reliable solutions. Communication and social and urban acceptability are thus crucial to the wider deployment of the hydrogen sector.

For many years now, the region has run a series of publicity operations to raise public awareness, especially in secondary schools and training colleges, and is working hard to step up its communication on the topic.

The Hydrogen Business For Climate Forum, an event set to become a permanent fixture on the calendar, is part of this action.

Hydrogen Territory



BOURGOGNE-FRANCHE-COMTÉ

LARGE-SCALE PROJECTS FOR A DEMONSTRABLE HYDROGEN ECONOMY

Over the last 20 years, there have been multiple initiatives and trials across the region, all with the same objective: prioritising economically viable projects to demonstrate the value of the hydrogen economy.

Dijon Métropole Smart Energhy

The Dijon Métropole Smart Energhy project aims to develop a hydrogen ecosystem for the Dijon metropolitan area, using mobile and stationary applications. Goal for 2028: 210 buses, 45 dumper trucks and 1,000–2,000 light-duty service vehicles.

Inovyn

Inovyn produces around 1 million metric tonnes of chemicals per year at the Tavaux site (chlorine, VCM, caustic soda, organic chlorinated chemicals), including nearly 250,000 tonnes of PVC. These products are all derived from chlorine obtained by the electrolysis of salt and water. Through this process, about 10,000 tonnes per year of “clean” hydrogen are generated and reused by INOVYN at its facility. INOVYN is now looking at the possibility of using hydrogen more widely to help remove harmful air pollutants released in towns and to supply homes and businesses.

The Vhyctor solution

The VHycTor project recovers the decarbonated Hydrogen coproduced on a large scale by Inovyn and subsequently distributes it in stations. It is stored under high pressure in tanks designed and adapted for easy transport and distribution. The development of this new chain will allow simpler distribution: hydrogen will be produced and compressed in the same place. Shortening this chain means the station can be simplified and thus becomes scalable according to demand, with no need for a change of infrastructure.

Lavoir des Chavannes at Montceau-les-Mines

Energies from the past in the spotlight – thanks to energies of the future! As part of an overall renovation project run by the Montceau-Les-Mines municipal council, one of the buildings that testifies to the former mining industry, the Lavoir des Chavannes coal preparation plant, will be lit up using hydrogen. At the site, batteries will store electricity and there will be 60 m² of solar panels. The panels will generate power for the electrolyser, which will separate water atoms into hydrogen and oxygen. The hydrogen will be captured and stored, then reinjected into a fuel cell. There, it will undergo oxidation. The reaction will produce water and electricity.

Faurecia Centre of H2 Expertise

A major player in the automotive industry, FAURECIA is setting up its own centre of global expertise dedicated to the development of hydrogen storage systems at its R&D facility in Bavans, near Montbéliard. With this project, Faurecia intends to invest in research and development of lighter, higher-performance next-generation high-pressure tanks, and in a characterisation test centre for these tanks. The centre has been up and running since October 2020 and will employ 60 engineers and technicians. It has already been awarded a contract for 1,600 Hyundai trucks in Switzerland and will equip the future Jumpy, Vivaro and Expert hydrogen vans for PSA. In 2023, Faurecia will open its local hydrogen tank production plant.

Hycaunais: The 1st project to combine anaerobic digestion and methanation

A project for upcycling the waste CO_2 present at the Saint-Florentin (89) landfill site by means of methanation. The hydrogen needed for this process is itself a product of wind power production.

At the same time, the region is developing a hydrogen mobility project, including use in river-based applications (a marina).

BOURGOGNE-FRANCHE-COMTÉ

LARGE-SCALE PROJECTS FOR A DEMONSTRABLE HYDROGEN ECONOMY

TTI: Transforming an Industrial Territory

In Nord Franche-Comté, the TTI project (Transforming an Industrial Territory) includes the deployment of hydrogen technologies for mobile and stationary applications, along with activities to support the development of industrial offerings. Major accounts like Alstom, Faurecia and PSA are involved. In Belfort, six hydrogen buses will be operational by 2021 to provide zero-emission interurban links between Belfort and Montbéliard. A multimodal zero-carbon hydrogen production and distribution station will be built in the immediate vicinity of the bus depot.

ISTHY: the Hydrogen Storage Institute

Backed by the Rougeot Energie company, ISTHY will be France's centre for testing, certification and periodic requalification of tanks and components in the Hydrogen cycle. It will also serve as a training and R&D centre to help anticipate technological developments.

AUXR-H_2

A multimodal hydrogen production (through water electrolysis), storage and refuelling station supplied by renewable energy will be built and commissioned in Auxerre by September 2021. Benefiting from European certification, the project will put five hydrogen-powered buses on the road in the initial phase, plus ten utility vehicles. The ambition is also to develop rail, river and industrial uses. A H2 environment cluster will also be created.

Prima H4 – hydrogen version: a locomotive manufactured by Alstom Belfort

Alstom's Prima H4 bimodal locomotive is designed for switching and track-work tasks. Currently powered by an electric drive system and two diesel generators, the teams at Alstom Belfort are currently working on a version that can run on a hydrogen fuel cell.

HYDROGEN IN BOURGOGNE-FRANCHE-COMTÉ: KEY FIGURES

50 businesses

500 jobs

5 laboratories

1 fuel cell facility

1 competitiveness cluster tied to the sector

2 clusters

1 hydrogen-energy training course

4 engineering schools linked to the industry

HYDROGEN BUSINESS FOR CLIMATE CONNECT

THE AGENDA

An agenda designed to address present-day issues and the scaling up of hydrogen.

13 January

Virtual round table #1 – 10:30-12:30
Chaired by Laurent Meillaud
PUBLIC AND PRIVATE STRUCTURAL ECOSYSTEMS

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We need to build ecosystems if we are to scale up hydrogen. We need to think in terms of large groupings to ensure decentralised production, distribution and to meet all requirements (for industry, mobilities and stationary uses).

With contributions from:
Christophe Aufrère (CTO of Faurecia), Yannick Bonin (Programme Manager at Storengy), Philippe Boucly (Chairman of France Hydrogène), Valérie Bouillon-Delporte (Chairman of Hydrogen Europe), Zoé Buyle-Bodin (Project Leader, Normandy Regional Council, S3 Partnership) and Francisco Vigalondo (Aragon region, S3 partnership), Pierre-Etienne Franc (Vice-President of Air Liquide and Secretary of the Hydrogen Council), Mathieu Gardies (Founder of Hype), Ronald Gassmann (Vice-President of Hyundai), Hervé Gilibert (CTO of Ariane Group), Matthieu Guesne (CEO of Lhyfe), Arnaud Leroy (Chairman of ADEME), Jon André Lokke (CEO of Nel), Nobuo Tanaka (former executive director of the IEA) and more, to be announced.

B2B meeting – 13:00-17:00
1 pre-scheduled B2B meeting
to spark cooperation in France and abroad

Programme for the public and entrepreneurs – 17:00-18:30
UNDERSTANDING THE "H2 REVOLUTION"

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14 January

Virtual round table #2 – 10:30-12:30
Chaired by Laurent Meillaud
FRANCE AND GERMANY, DRIVING A HYDROGEN-POWERED EUROPE?

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France and Germany lead Europe and are also showing the way for green hydrogen. The two countries intend to cooperate to expand this energy vector more effectively and thus contribute to carbon neutrality.

With contributions from:
Bertrand Amelot (Executive VP of McPhy), Olivier Arthaud (Deputy Chief Strategy and Development Officer at Storengy), Antoine Aslanides (CEO of Hynamics Deutschland) Jean-Luc Brossard (R&D and Programme Director for the Automotive Strategic Council), Armin Diez (Vice-President of ElringKlinger), Julien Etienne (Senior Director, Business & Programmes at Plastic Omnium), Nikolas Iwan (CEO of H2 Mobility Deutschland), Yannick Legay (Technical and Commercial Director at Alstom), Christelle Rouillé (CEO of EDF Hynamics), Dr Lars Peter Thiesen (Hydrogen & Fuel Cell Strategic Deployment at Opel), Jan Wegener (European Programme Manager at NOW GmbH), and more, to be announced.

About Hydrogen Business For Climate

The Hydrogen Business for Climate Forum is a transnational event organised by the Pôle Véhicule du Futur Competitiveness Cluster, with support from the French State, the Bourgogne-Franche-Comté region, the City of Belfort and Grand Belfort, in partnership with the AER BFC (the Regional Economic Agency of Bourgogne-Franche-Comté), the ADN FC (the Economic Development Agency of Nord Franche-Comté), the CCI, the EEN (Enterprise Europe Network), FC Lab, the ADEME, France Hydrogène (formerly Afhypac) and Hydrogen Europe.

Its mission is to bring about the hydrogen energy transition in France and Europe. Hydrogen Business For Climate is in line with international events such as the European Hydrogen Energy Conference.

To learn more, visit: http://hydrogenbusinessforclimate.com

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