HYDEO

HYDROGÈNE DÉVELOPPEMENT OCCITANIE

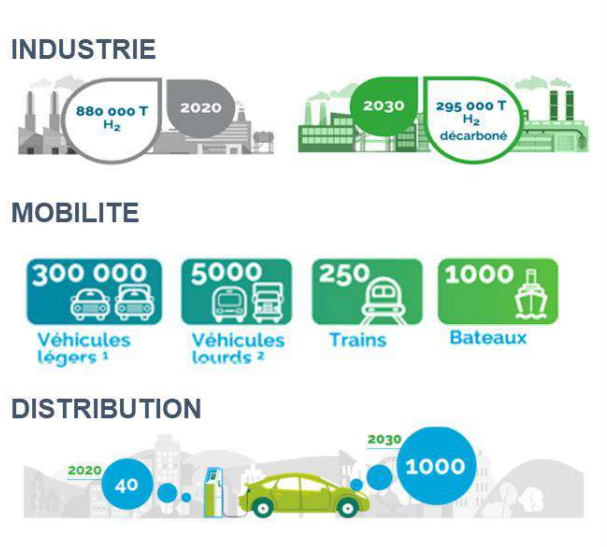
HYDROGEN SECTOR IN OCCITANIE

The French Hydrogen strategy

Responding to energy, climate and industrial challenges

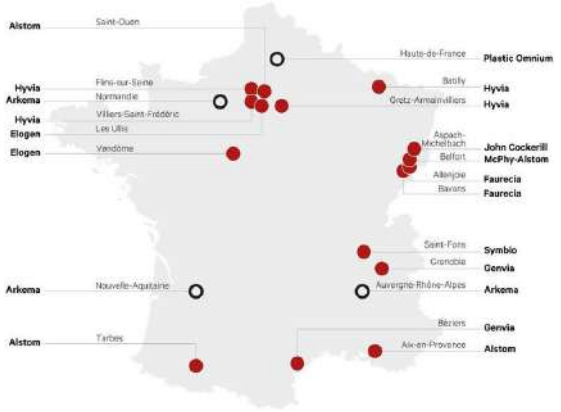
7,2 Mds € for the development of low-carbon hydrogen in France

- **54%** - Decarbonization of industry
- **27 %** - Development of professional H2 mobility
- **19%** - Support for research and skills



2 Mds € to become the leader in green hydrogen.

Investment in gigafactories to accelerate the industrial scale-up of production units and all the technologies needed for its use



2030 MAIN OBJECTIVES

6,5 GW* d'électrolyse déployés

* 5 MW d'électrolyse déployés en 2020

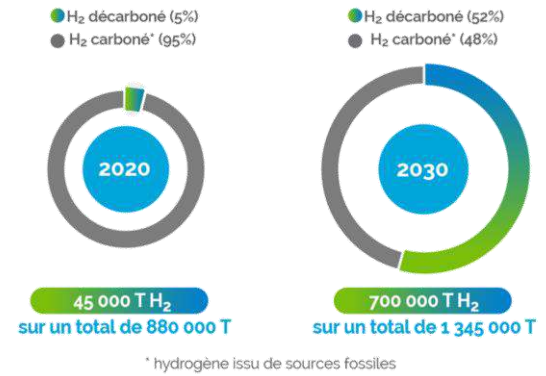
6 000 000 T CO_2* évitées par an

* soit les émissions de la Ville de Paris sur une année

Créations d'emplois dans la filière hydrogène

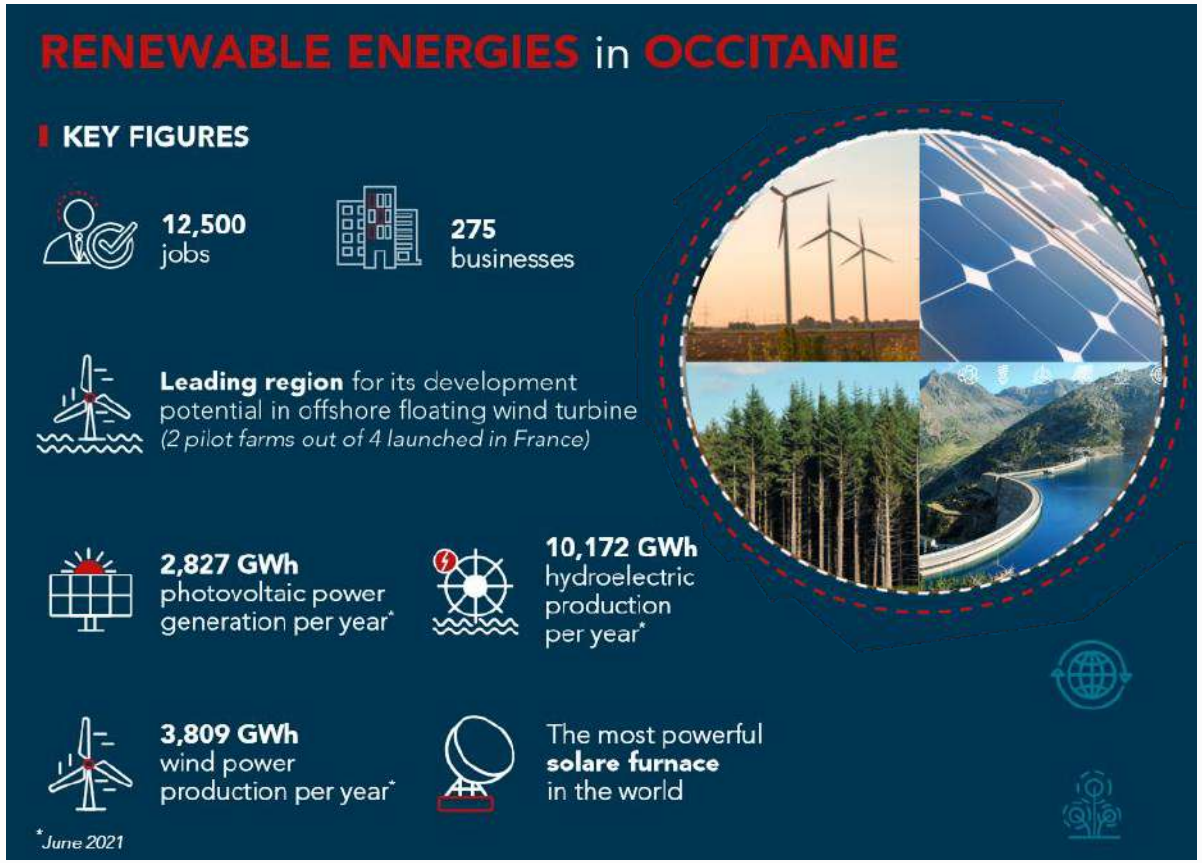
- 2020 : 2 000 emplois
- 2030 : Plus de 100 000 emplois

Développement de la production d'hydrogène pour l'industrie et les nouveaux usages



* hydrogène issu de sources fossiles

Occitanie, the positive energy Region



Occitanie, leader in the hydrogen sector

A sector supported for more than six years

Occitanie, leader in the hydrogen sector

The Occitanie Region and its agencies are at the heart of many innovative projects in many fields

liO Toulouse-Montréjeau-Luchon :
Deployment of 3 dual-mode Regiolis trains on the Toulouse-Montréjeau-Luchon line

HyDrOMer :
Construction of a hybrid H2/diesel dredge In partnership with LMG Marin and Piriou shipyards

liO autocars H2 :
Deployment of 15 retrofitted coaches in connection with the Corridor H2 project.

Corridor H2 Occitanie
€110 million of investment for the decarbonization of the truck transport of goods and fresh products in Europe.

- 2 renewable hydrogen production sites,
- 7 hydrogen refuelling station,
- 40 trucks
- 62 refrigerated units for trucks

Occitanie, leader in the hydrogen sector

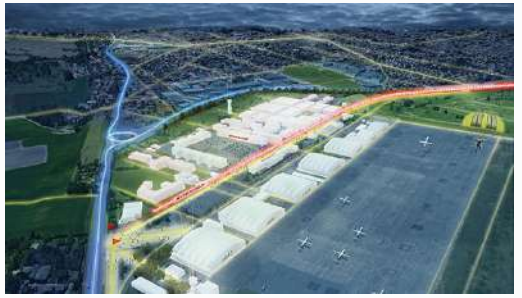
The Occitanie Region and its agencies are at the heart of many innovative projects in many fields

HyPort : Hydrogen mobility ecosystems in the airport areas of Toulouse and Tarbes

Hyd'Occ: Mass production unit of renewable hydrogen in Port la Nouvelle

Genvia:
Joint venture for the industrialization of high temperature solid-oxide electrolyser in Béziers

Techno Campus H2 Francazal :
10,000 m² planned to accommodate the largest European center for research, testing and technological innovation dedicated to renewable hydrogen.



Occitanie, leader in the hydrogen sector

Regional players across the entire value chain

Industrial value chain

30 companies
produce components, technological bricks and hydrogen system

ACTIA, LIEBHERR, SAFRAN, ALSTOM, AIRBUS, HYCCO, GENVIA, BOSCH, NEXEYA, Safra, Universal Hydrogen, CIRTEM, vitesco TECHNOLOGIES, bulane, DAM GROUP, CRYO STAR, DELAIR, ZEROAVIA, polymem, FACT, TOP INDUSTRIE, enosis, beyond AERO, CHEMDOC, ETE, H2Dynamics, BLUE SPIRIT AERO, comeca

ALSTOM

Tarbes / Fuelcell traction system of Coradia iLint and Régiolis H2. Notified IPCEI Hy2Tech

SAFRA

Albi / Hydrogen bus manufacturer, hydrogen coaches retrofit

NEXEYA A Hensoldt Company

Toulouse / Pressurized storage container and autonomous hydrogen system

HYCCO BIPOLAR PLATES

Toulouse / Industrialization of bipolar graphite plate, key component of hydrogen fuelcell.

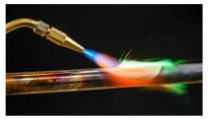
BOSCH

Rodez / fuel cell system for refrigeration unit transporting fresh products

GENVIA

Béziers / Industrialization of Solid-Oxide electrolyser at high temperature. Notified IPCEI Hy2Tech

bulane



Fabrègues / manufacturer of electrolyzers for combustion systems: welding, industrial process, heating

HYDROGEN IN AERONAUTICS

AIRBUS, SAFRAN, ATR, H2Dynamics, Universal Hydrogen, DELAIR, ZEROAVIA, BLUE SPIRIT AERO, beyond AERO, ASCENDANCE

Many players are developing the hydrogen aviation of tomorrow in Occitanie.

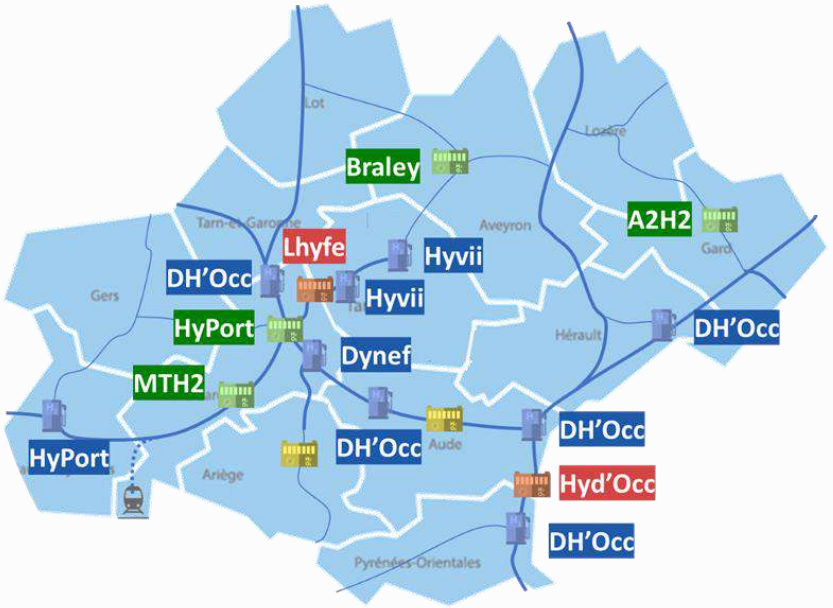
Occitanie, leader in the hydrogen sector

Regional players across the entire value chain

Energy value chain

24 companies
are developing hydrogen production and distribution projects

Air Liquide · Amarenco · arkolia · Bouygues Energies & Services · Braley · Dhamma Energy · ENGIE Solutions · HydOcc · hynamics · HY PORT · Lhyfe · Linde · Ondulia · Qair · 7 Seven · Terega · Trifyl · Valorem · Vinci Autoroutes · Air Products



Production · Production and refuelling · Refuelling

Projets en cours de développement :

Hylan,in Lannemezan, by QAIR and DH2
- 100 MW electrolyser
- Outlets = production of eSAF

H2V, in Porte du Tarn, by H2V
- 100 MW electrolyser
- Outlet = mobility refueling network

Eneralys, in Quissac-Liouc
- 10 MW electrolyser
- Outlet = mobility

Shell, in Nimes, by Shell and Hyundai
Refuelling station for trucks

Avia, in Monbartier; by Avia and Lhyfe
Refuelling station for trucks

Occitanie, leader in the hydrogen sector

Regional players across the entire value chain

Service and support

26 structures
support the development of hydrogen solutions and projects

H2PULSE, CEA tech, LMG Marin France, SEIYA consulting, STR Engineering, h2team, EURETEQ, atesyn, GIE Qualité Industrielle, Banque des Territoires, FOSELEV, SPIE, Banque Populaire Occitane, elcimaï, INGÉROP, DREAMTECH, WiSEED, SYSTRA, IMING, Afpa, Capgemini engineering

LMG Marin France

Toulouse / Naval architect specialized in H2 integration for maritime and fluvial

h2 team

Albi / Engineering specialist safety and vehicle certification and H2 station

EURETEQ

Tarbes / Specialist engineering for gas pipelines.

GENHYO
Génération hydrogène Occitanie

More than 30 partners including the Occitanie Region, the Ministry of Education, and Universities come together to:

- Create training modules for different audiences;
- Train 1500 trainers in 5 years
- Promoting professions in the H2 sector
- Assess the changing needs of the sector

RHyO
RECHERCHE SUR L'HYDROGÈNE EN OCCITANIE

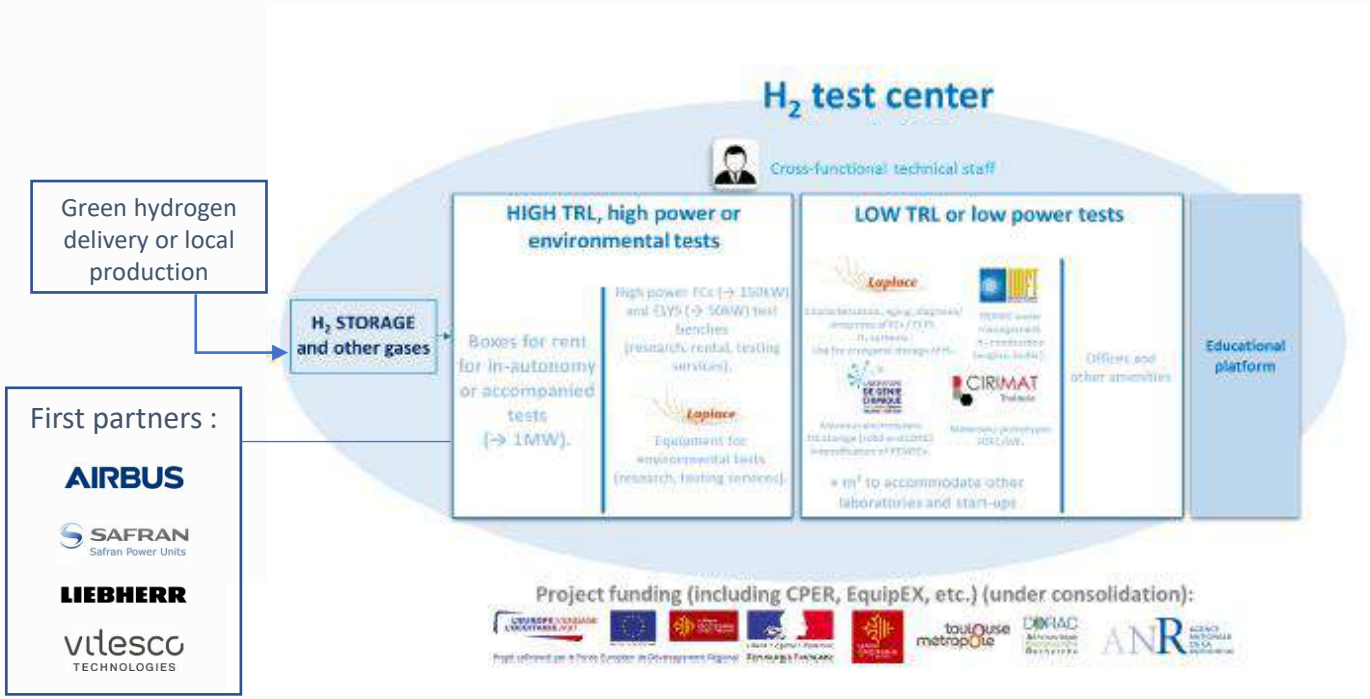
Research center resulting from the "Key Challenges" initiative of the Occitanie Region.

- 20 higher education establishments and 30 research laboratories
- 130 researchers, teacher-researchers, study and research engineers, technicians, doctoral students and post-doctoral students
- 200 theses defended in 10 years
- More than 100 hydrogen-specific test resources

ICGM, Laplace, INRAE, LCC, Primes, tbi, ENAC, cirad, PROMES, ONERA, LPCNO, LAAS CNRS, LMDC, ICA, CEA tech, ISAE SUPAERO, FRAMESPA, Charles Coulomb, tbs

Focus : Occitanie Hydrogen Technologic Campus

Research and testing center for hydrogen and the mobilities of tomorrow



10,000 m² research center dedicated to hydrogen technologies.
Total investment of **55 million euros** co-financed by the State, the Occitanie Region, Toulouse Metropole and the CNRS for **commissioning in 2025**.

Meeting of the **hydrogen activities of four regional laboratories**

- Plasma and Energy Conversion Laboratory (Laplace)
- Materials Research Center (Cirimat)
- Chemical Engineering Laboratory (LGC)
- Institute of Fluid Mechanics of Toulouse (IMFT).

Combined with unique **test resources available for companies for the development of hydrogen technologies**. A dozen boxes available for hire, as well as storage spaces and two secure bunkers suitable for high-power testing, up to one megawatt.