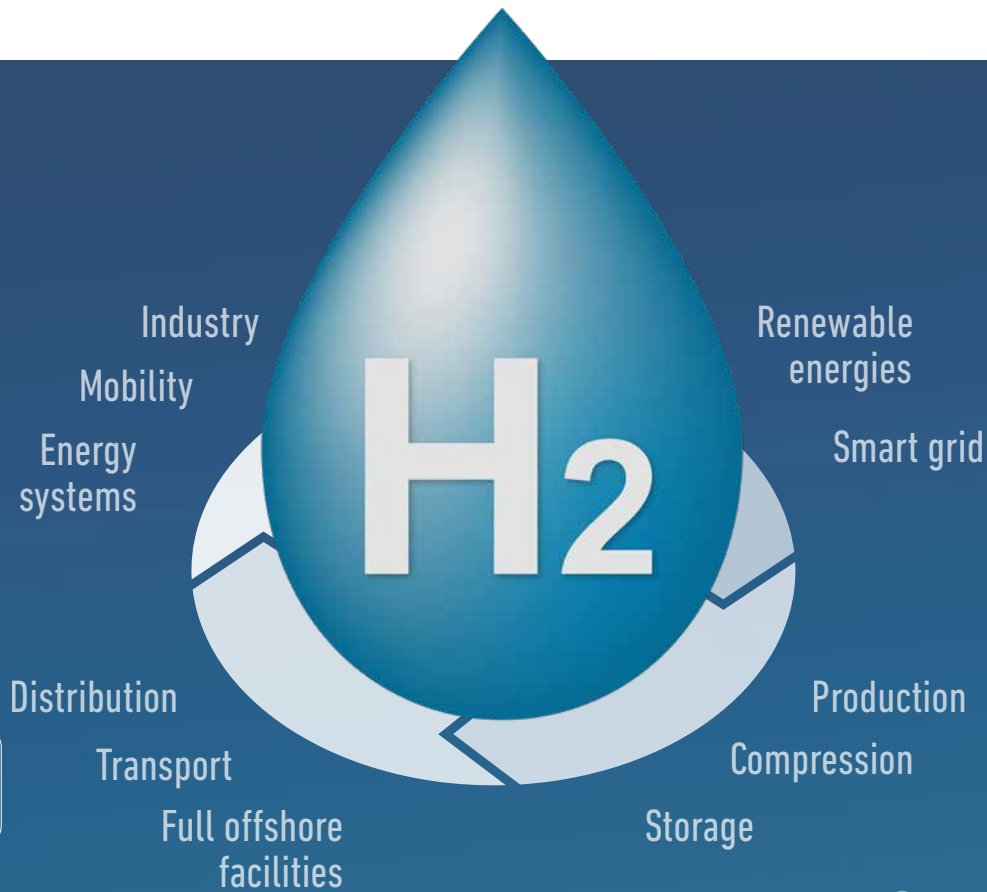


# Low-carbon hydrogen

Engineering solutions for your H2 projects - Decarbonisation



Energy transition  
Cutting-edge industry  
Multimodal mobility  
Resource efficiency

  
**ARTELIA**

## LOW-CARBON HYDROGEN

Engineering solutions for your H2 projects - Decarbonisation



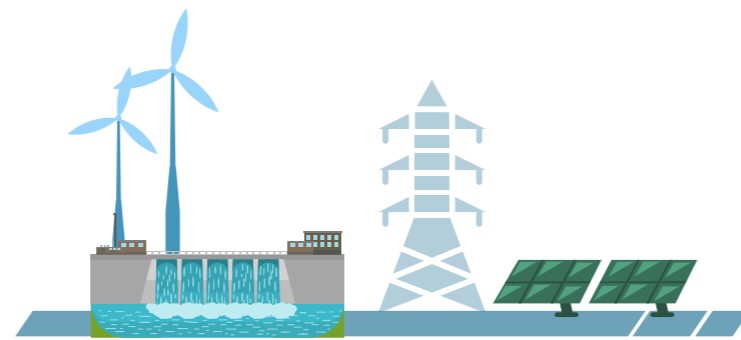
## Hydrogen, a formidable vector on the road to decarbonisation

In the transition to a low-carbon world, hydrogen will play a major role in the decarbonisation of the industrial sector, developing clean mobility solutions mainly for heavy goods transport, and managing renewables-based energy generation. Accelerating the deployment of H2 solutions is a formidable vector on the road to decarbonation.

This vast increase in the size of projects will make it easier to reach the required level of technological robustness and profitability to sustain a permanent business line. To optimise the value of your H<sub>2</sub> projects and deal with the uncertainties that arise in both production and use, Artelia provides all its specific knowledge on the hydrogen chain for your benefit: consulting, audits, studies and master plans, design or working design engineering, and project management.

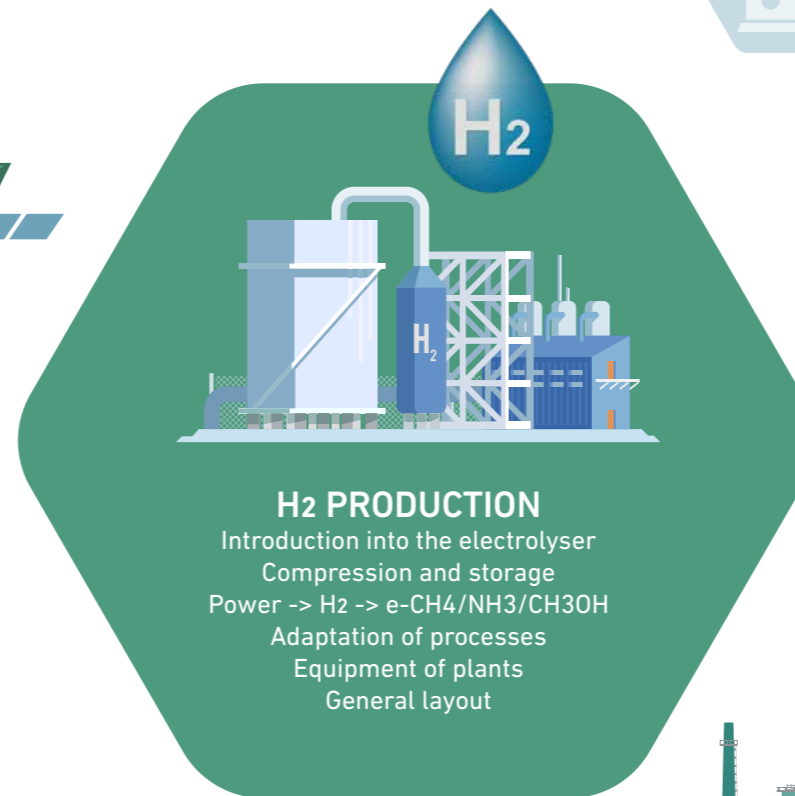
Entirely independent of technology suppliers, Artelia's structure enables it to assist with projects of all sizes for all clients: public authorities, energy developers, industrialists, mobility operators.

## We support you across the entire hydrogen value chain



### LOW-CARBON POWER AND SMART GRID

Hydroelectricity, solar, wind, high and medium voltage substations, grid stability and biomass.



### H<sub>2</sub> PRODUCTION

Introduction into the electrolyser  
Compression and storage  
Power -> H<sub>2</sub> -> e-CH<sub>4</sub>/NH<sub>3</sub>/CH<sub>3</sub>OH  
Adaptation of processes  
Equipment of plants  
General layout

### ARTELIA, MOBILITY SPECIALIST

For its clients (Shell, Air Liquide, H2 Mobility, Plug Power...), Artelia has assisted a programme of several hundred hydrogen filling stations across Europe, by offering project management (EPCM) services, asset management strategies, services in Health, Safety and the Environment, BIM services, training and operating manuals.

### CONSULTING AND REGIONAL/ LOCAL STRATEGIES

- Regional/local H<sub>2</sub> ecosystems
- Mobility plan optimisation and H<sub>2</sub> chain integration
- Assistance with carbon neutral projects
- Optimisation of regional/local low-carbon energy systems using dedicated software
- Optimisation of the overall cost of the project

### INDUSTRY, FLUIDS AND GAS SPECIALIST

A presence at all phases of your hydrogen project, whether this involves new production facilities or adaptation of your existing infrastructure.

## OUR ADDITIONAL AREAS OF EXPERTISE

### ENVIRONMENT

Risk assessments  
Permitting  
Impact studies

### WATER

Water resources  
Hydraulic structures  
Natural risks  
Water treatment

### MARITIME

Maritime transport  
Port infrastructure  
Specialised terminals and industrial sites in ports

Vessels and floating structures  
Marine energies

## SOME OF REFERENCES

### Hyliko

Preliminary design studies for an integrated site including hydrogen production by biomass thermolysis and a distribution facility for different ranges of vehicles (from 360 kg to 720 kg H<sub>2</sub>/day).

### Plug Power

Basic design for hydrogen logistics application in Spain (production, storage, distribution).

### Air Liquide

Project management assistance for the production of low-carbon hydrogen using CRYOCAP™ (CCS) technology at the Normandy industrial platform.

### Kuhlmann France

FEED and EPCM for construction of a chlorinated chemicals production plant using a membrane electrolyser, and associated plants.

### TotalEnergies

Optimal photovoltaic plant sizing and impact assessment to achieve the goal of a 100% renewable electricity mix.

### Aéroport de Marseille

Operational advice on energy optimisation for photovoltaic and hydrogen storage.

### Deutsche Bahn AG | Edolo

Feasibility study of hydrogen-powered train infrastructure for the future in Germany and Italy.

### Ademe | EDF-SEI

Study to identify the applicable hydrogen services in French overseas territories (not connected to the mainland grid), and economic assessment of the 12 most promising applications.

### Envirocat Atlantique

Preliminary studies on a solution for the recovery, purification and storage of hydrogen present in the off-gas from the production of sodium methoxide, for use in hydrogen-powered vehicles.

### Hyvia

Studies to confirm the upgrade of the hydrogen network to supply the fuel cell test benches at the Flin site.

### CC Rives de Moselle

Support local authorities in their efforts to decarbonation, identifying potential hydrogen consumers in mobility, industry and stationary industry, to assess the suitability of this energy carrier with a view to a feasibility study.

## CONTACTS

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## Artelia, an independent multi-disciplinary engineering and project management group

Consulting  
Master planning & feasibility  
Design & engineering  
Construction & project management  
Asset & facility management  
Turnkey solutions



**Mobility - Water - Energy - Buildings - Industry**

**ARTELIA**

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CERTIFICATIONS (depending on entities): ISO 9001 | ISO 14001 | ISO 45001 | MASE