April 24th, 2025

Call for Expressions of Interest

Jupiter 1000 becomes a territorial platform dedicated to the development of hydrogen, CO2, and green fuels

Call for Expressions of Interest

« towards a shared use of Jupiter 1000 »

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1. Objective of the Call for Expressions of Interest « Towards a shared use of Jupiter 1000 » (CEI)

1. Overview of the Key Principles of the Initial Phase of Jupiter1000

Contracted in 2016, the initial Jupiter 1000 project enabled the development of the first industrial-scale Power to Gas demonstrator in France. It completed its initial phase in 2024, successfully commissioning its equipment and conducting full-scale operational tests, including **hydrogen production**, its injection into a gas transport network, and the **production of synthetic methane**.

Led by NaTran and a consortium of industrial and academic partners, JUPITER1000 explores energy storage and gas decarbonization through its various components. The installation includes two electrolyzers of different technologies to compare their performances. It also evaluates the use of CO_2 captured from nearby industrial facilities to produce synthetic methane.
For more information: www.jupiter1000.eu

2. End of the Experimentation and Future of the Project

Jupiter1000 completed its initial phase in 2024, in accordance with the clauses established in the initial collaboration agreement, successfully commissioning its equipment and conducting full-scale operational tests, including hydrogen production, its injection into a gas transmission network, and the production of e-methane (or synthetic methane). The plant is currently **continuing tests necessary for the deployment of hydrogen and synthetic methane production sectors**, on behalf of NaTran or for collaborative projects, and even for third-party needs.

At the end of this phase, all equipment becomes the property of NaTran. **This transition paves the way for the launch of this Call for Expressions of Interest (CEI) led by NaTran, which aims to leverage this industrial asset.**

This consultation aims to elicit economic and/or innovative proposals, in line with the development challenges of the power-to-gas sectors (hydrogen and synthetic methane production). The contributions collected will help guide reflections and define the site's future development perspectives, in collaboration with stakeholders.

NaTran aims through this CEI to understand the needs and expectations of the ecosystem regarding the Jupiter 1000 site, and to identify the best future uses of the site, such as:

1. **Providing technical access to the equipment**
   - Accessing the equipment for trials/tests/developments
   - Testing complementary equipment on the site
2. **Participating in the site's uses**
   - Raising awareness among personnel about handling hydrogen, training
   - Seeking synergies to facilitate the implementation of neighboring projects
   - Joining NaTran's teams on future site usage hypotheses, new projects (see part 4.)
3. **Imagining other forms of collaboration**
   - Integrating site management
   - Acquiring equipment
   - Proposing collaborations on various future uses
   - …

2. Presentation of NaTran

NaTran is a European leader in gas transport and a global expert in gas systems. In France, the company operates more than 32,000 km of buried pipelines to transport gas from suppliers to consumers connected to its network.

NaTran carries out public service missions aimed at ensuring the continuity of natural gas delivery. With its subsidiaries Elengy, the leader in LNG terminal services in Europe, and NaTran Deutschland, operator of the MEGAL transport network in Germany, **NaTran** plays a key role on the European gas infrastructure scene.

The company also exports its expertise internationally through **NaTran R&I** (Research & Innovation).

As an operator of gas infrastructures serving the public interest, **NaTran** contributes to the balance, security, and performance of the energy system, and to access to increasingly renewable and affordable energy.

France has committed to carbon neutrality by 2050. **NaTran**, through the development of renewable gas sectors (methanisation, pyrogasification, hydrothermal gasification, Power to Gas, and methanation of hydrogen and CO2) and hydrogen, is part of this trajectory. As a player in the energy transition, **NaTran** invests in innovative solutions to accommodate as much renewable gas as possible on its network, support these new sectors, and thus contribute to achieving carbon neutrality. **NaTran** is also developing future hydrogen and CO2 networks.

Faced with the climate challenge and associated industrial issues, the company prioritizes listening to its stakeholders, dialogue, and consultation to collectively build responses to the challenges of constructing a safe, affordable, and climate-neutral energy system

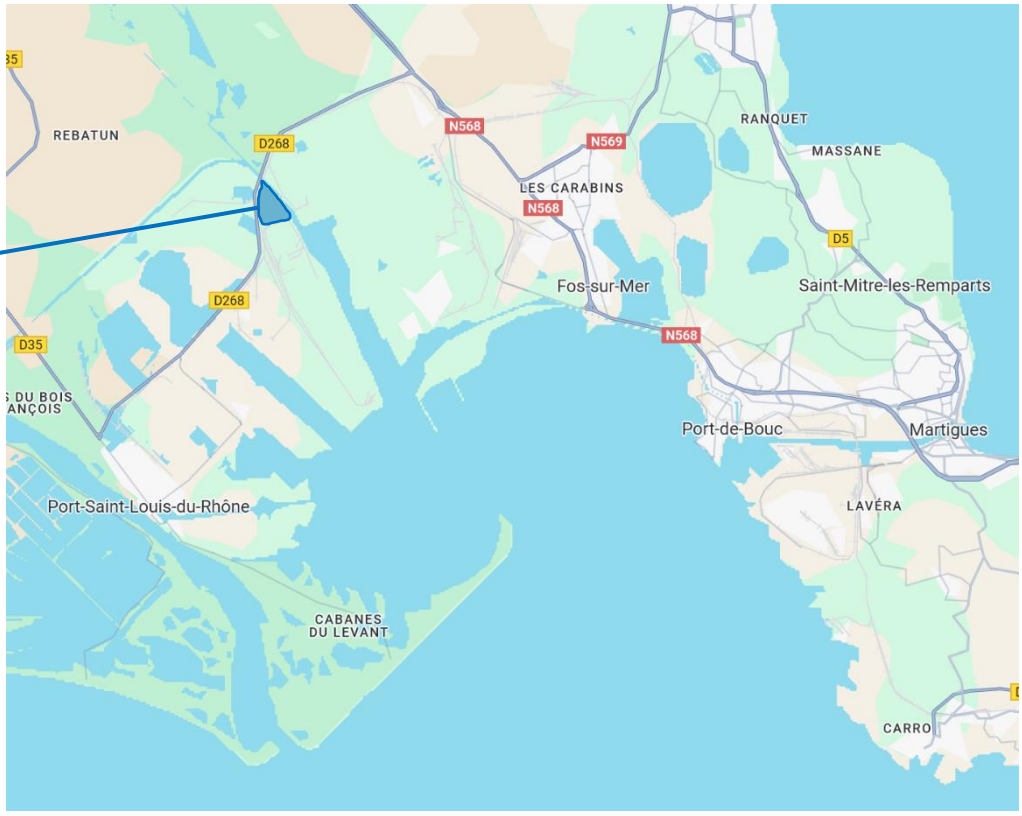
3. Presentation of the Jupiter 1000 Project

Built on the INNOVEX platform of the Grand Port Maritime de Marseille, at the heart of the Piicto industrial association, the JUPITER1000 project is the first French industrial Power-to-Gas demonstrator. This pilot consists of a 1 MWe hydrogen production facility by electrolysis. The demonstrator also includes a CO2 capture unit from the chimneys of a neighboring industrial plant and a methanation unit to convert the produced hydrogen and the recycled CO2 into synthetic methane.

These various carbon-neutral gases are injected into the gas transport network. An injection/mixing station ensures the compliance of the synthetic gas. The electricity consumed is produced by nearby wind turbines.

The JUPITER 1000 Project is located on the Innovex platform.

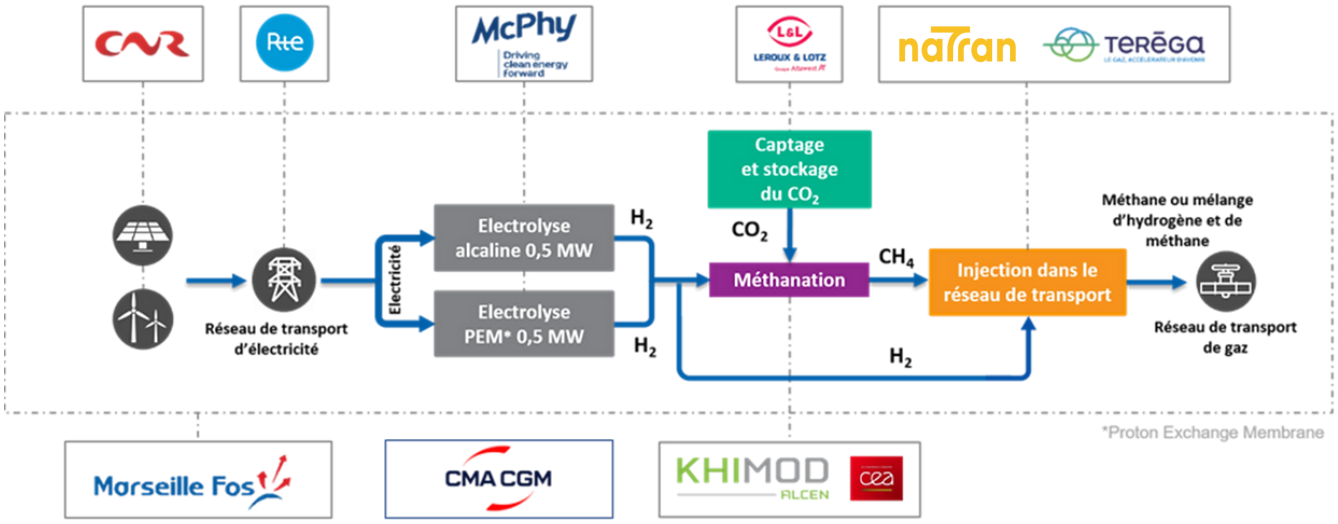
The INNOVEX platform is located at the heart of the industrial-port area of Marseilles - Fos



The Innovex platform

This project brought together the expertise of the following partners:

- **NaTran** managed the project, integrated the elements, and provided overall engineering and site operation.
- **McPHY Energy** supplied the electrolyzers.
- **Leroux & Lotz Technologies** built and operated the CO2 capture unit.
- **Khimod** provided the methanation process.
- **La Compagnie Nationale du Rhône** supplied renewable electricity and is interested in Power-to-Gas management methods.
- **RTE** participated in general studies related to Power-to-Gas.
- **CEA Liten** managed the tests.
- The **Grand Port Maritime de Marseille** developed the Innovex platform and built the CO2 pipeline.
- **Teréga** supplied compression and measurement equipment.
- **CMA-CGM** joined the project in 2022 and contributed its vision of future transport and logistics needs.



The experimentation program in which Jupiter1000 is involved, validated and jointly funded by ADEME, the Sud Region, the FEDER fund, and supported by the French Energy Regulation Agency (CRE), delivered its results in 2024.

The project was labeled by the Capenergies competitiveness cluster in 2018.

For more information about the project: www.jupiter1000.com

Pre-industrial scale equipment suitable for new tests:

- ☐ **2 electrolyzers** with a total electrical power of **1 MW**, offering a maximum production capacity of 200 (n)m³/h of hydrogen.
- ☐ **A methanation unit** with a production capacity of 25 (n)m³/h of methane.
- ☐ **A gas injection station** into the network.
- ☐ **A gas analysis laboratory**.
- ☐ …

Other available utilities:

- ☐ **Oxygen** produced by electrolysis (maximum about 100 (n)m³/h),
- ☐ **Hydrogen compressor** (Outlet pressure 70 or 200 bars)
- ☐ **Methane compressor** (Outlet pressure 70 bars)
- ☐ Local **Hydrogen storages** (30, 70 and 200 bars)
- ☐ **Utilities** (compressed air network, industrial water, heat exchangers, etc.),
- ☐ A plant designed to host these tests under the **best conditions**:
  - A control room.
  - Data processing.
  - A showroom to enhance our partners.
  - Facilities, meeting rooms, a living base, etc.
  - A protected plant (anti-intrusion, fire safety, etc.).
  - Space to accommodate shelters if necessary.
  - …

Note : the CO2 capture equipment is located on another plant. CO2 is transferred via a pipeline.

4. Usage Prospects of Jupiter 1000: Possible Collaborations and Synergies

This list is not exhaustive. It opens up fields of possibilities. Feel free to express other proposals.

3. Test and experiment

NaTran can conduct tests either **as a service or through the setup of collaborative projects**. It is also possible **to set up specific test benches**. The site can accommodate various equipment:

- Electrolyzers:
  We can install an electrolyzer in place of one of the existing ones. It can have an electrical power of up to 1 MWe and can be tested with its specific utilities: water preparation package, electrical rectifiers, gas purification, automation, and regulation.
- Methanation units
- Detectors, analyzers, and various measurement tools
- Network equipment (valves, regulators, compressors, etc.)
- Equipment using hydrogen
- …

Upon request and throughout the entire CEI phase, NaTran can organize discussions on the various technical, mechanical, and IT interfaces with interested project leaders.

4. Raise awareness

NaTran can offer awareness/training modules:
- Awareness of hydrogen risks
- Operation of equipment

Partners who will install equipment on the plant could also offer training to their clients, in partnership with NaTran. NaTran could also host training provided by third parties.

5. Pooling and Synergies

Innovex is an incubator operated by the GPMM. It is intended to host demonstrators serving the energy transition.

Synergies with Jupiter 1000 will be studied with project leaders.

Candidates will also benefit from the high visibility of Jupiter 1000. The plant receives between 250 and 300 visitors each year, from many countries.

Projects that **produce synthetic methane or biomethane, regardless of the process (hydrothermal gasification, pyrogasification, power-to-methane, etc.)**, can find synergies with the Jupiter 1000 platform:

- Injection into the gas network via the Jupiter 1000 station
- Connection to the existing gas analysis laboratory
- …

Examples (non-exhaustive list):

- Projects that produce biomethane or synthetic gas (e.g., pyrogasification, hydrothermal gasification) for injection into the gas network.
- Projects related to gas separation: hydrogen and methane.
- Projects related to CO2 capture. Jupiter 1000 and its methanation process can offer an outlet.
- …

It could also be considered **to contribute to R&D projects setting up on the Innovex platform** (subject to conditions compatible with NaTran's status as a gas transporter or adaptation of Jupiter 1000's status).

Examples (non-exhaustive list):

- Projects transforming hydrogen into other products (e.g., e-methane, e-fuels for maritime or aviation use).
- Projects related to hydrogen use (fuel cells).
- Projects related to hydrogen storage.
- Equipment testing.
- …

The project leader could benefit from a number of other services/facilities provided by the Jupiter 1000 site (non-exhaustive list):

- Natural gas supply via the Jupiter 1000 station.
- Expertise provision.
- …

6. Your other suggestions?

The above proposals are just a guide. If your expectations are not included in these proposals, please let us know. They can help redirect ongoing discussions.

5. Types of Actors Eligible to Apply

- Companies alone or in collaboration, of all sizes (start-ups, SMEs, micro-enterprises, mid-sized companies, large groups)
- Research organizations and academic entities alone or in collaboration
- For public institutions, eligibility will be analyzed on a case-by-case basis

6. What form of collaboration would you consider?

NaTran considers all possible avenues of collaboration with different branches of its activities:

- **The R&D center, NaTran R&I,** can offer tests following protocols that meet our clients' needs.
- **NaTran's experienced gas technicians**, who know how to operate industrial installations under the best safety conditions:
  - They can organize, prepare, and conduct test services on the site.
  - They can perform analyses and write reports.
  - Etc.

7. Requests for services from NaTran

NaTran provides offers to conduct equipment tests, training, etc. NaTran is not a seller of hydrogen, due to its status as a transporter. However, forms of collaboration can be explored to make hydrogen available on the plant for research operations (and not for commercial purposes), subject to validation by the Energy Regulatory Commission. The cost of this provision would be borne by the benefiting company or project. (The terms remain to be defined).

8. Partnership / Co-financing

- Propose R&D projects on the Jupiter 1000 site related to hydrogen, CO2, etc.
- Contribute to projects to be defined as needs arise, as a co-financer.
- Contribute to projects by providing resources (human, technical, etc.).
- Benefit from knowledge sharing, sharing of Intellectual Property, etc.

9. Synergy with a neighboring project

Propose a neighboring project on Innovex and benefit from technical synergies with the Jupiter 1000 site or access specific equipment. For example:

- The gas analysis laboratory
- Use the site's showroom for other purposes
- Etc.

10. Active participation in the "Jupiter 1000" plant activity

Some partners may wish to create a Jupiter 1000 consortium with partner members, co-decision-makers, and co-financers. Participation could motivate companies that wish to benefit from the tests carried out on the site.

The entity could thus ensure the production of hydrogen and its supply to third-party projects or other uses. In such a case, NaTran's participation must be evaluated in light of the provisions of the energy code and the doctrine of the CRE.

11. Acquisition of equipment can be discussed

Some actors might acquire equipment present on the plant and offer a gas production service, or even relocate this equipment to other sites for the benefit of other projects.

- For example, some actors might wish to acquire an electrolyzer (one of the two units currently in place may become available)
- or become owners of a complete production module on the Jupiter 1000 site.

7. What next?

This CEI allows NaTran to consider the future of Jupiter 1000, in terms of its uses and legal form. NaTran will rely on the expectations of third parties and the diversity and richness of the responses.

NaTran will provide feedback to respondents on the results of the CEI.

8. The Process of the CEI

Response procedures: please send responses to sylvain.lemelletier@natrangroupe.com + claire.le-berre@natrangroupe.com

Opening date: **April 24th 2025**
Response deadline: **June 23th 2025**

Responses should be submitted via the attached form, supplemented if necessary with additional documentation. Responses submitted solely in free form may not be utilized if they do not provide sufficient information.

9. Contacts

All requests for clarification and additional information can be sent to:

Sylvain LEMELLETIER
Project Director Jupiter 1000
NaTran R&I
sylvain.lemelletier@natrangroupe.com

10. Confidentiality

NaTran and its internal and external service providers involved in the management of the CEI commit to respecting the criteria of neutrality, non-discrimination, and data confidentiality.

By responding to this CEI, project leaders agree to transmit their data and responses to NaTran and its service providers involved in the management of the CEI, and that this information will be used solely by them.

The information will be synthesized in an aggregated and anonymized manner, based on all respondents, while ensuring the confidentiality of the information. This synthesis will be shared.