Press release
Paris, 6 November 2023

Calogena takes another step forward by filing three patents in the field of SMR

Calogena is a project born through the association of the GORGÉ industrial group and a team of twelve nuclear experts to develop a small water-cooled SMR (Small Modular Reactor) designed to meet the major challenge of decarbonizing district heating networks as quickly as possible.

The project has reached a new milestone with the filing of three patents for its low-power heat generation module. Thanks to its simple concept and its innovations in the field of safety, Calogena will offer a system with a particularly high level of safety.

Patents focused on nuclear safety to facilitate SMR's acceptability in peri-urban environments

By design, the Calogena module will operate at low pressure (around 5 bar, i.e. less than the pressure of a domestic water heater) and low temperature (around 100° C)[1]. The direct use of heat and the very limited number of auxiliary systems make Calogena an intrinsically simpler and safer concept than any reactor currently in operation or planned.

The three patents cover innovations applied to technologies that have been mastered and proven for several decades, on which the Calogena project is based. They will enable a particularly high level of safety to be achieved, thus facilitating the acceptability of a nuclear installation in industrial zones in peri-urban environments. These patents, registered with the French National Institute of Intellectual Property, cover the three major safety functions required by regulations:

- **Reactivity control**: physical impossibility of reactivity accidents including during loading - unloading operations.
- **Core cooling control**: guaranteeing completely passive cooling of the reactor.
- **Containment of hazardous materials:** absence of harmful releases, even in extreme situations

[1] By way of comparison, the large nuclear power reactors currently in service operate at a pressure of 155 bar and a water temperature of over 300 degrees Celsius.

Thanks to its compact, simple and safe design, the Calogena module can be installed in industrial areas on the outskirts of towns.

Calogena, carbon-free district heating for sustainable cities

Driven by the challenge of energy transition, Calogena offers a solution designed to decarbonize district heating networks in Europe, which are currently powered at 60% by fossil fuels (gas, coal, fuel oil) and were responsible for 7% of global emissions in 2021.

The main benefit of Calogena is the significant reduction in CO_2 emissions to produce heat for the networks thanks to nuclear energy. With a power of 30 thermal MW and a very compact design (the core measures less than one cubic meter), each Calogena module will be able to supply 12,000 homes, starting in 2030.

To achieve these ambitious goals, Calogena benefits from a dual expertise:

- That of the Gorgé group in **industrial deployment**, with the emblematic example of its subsidiary Exail Technologies, which has become a world leader in high-tech fields such as autonomous robotics. The group already has a significant presence in the nuclear sector through two of its other subsidiaries: Baumert, an expert in technical doors dedicated to the protection of nuclear sites, and Seres Technologies, a specialist in risk control and the design of complex systems.

- That of a team of twelve **experts in nuclear projects** including Dominique Vignon and Alain Vallée, former CEO and CTO of Framatome, and Jan Bartak, former Nuclear Development Director at Engie.

Partly financed by its own funds, Calogena is a candidate for the "Innovative Nuclear Reactors" call for projects in the France 2030 plan.

Calogena is aiming for deployment as early as 2030, offering cities a heating solution that is ecological, safe, cheap and popular with the general public. Calogena's teams are today demonstrating their determination with the filing of these three patents, enabling the project to take a new step forward.

About CALOGENA

Calogena was founded in 2021 with a unique mission to contribute to the challenge of energy transition: to decarbonize district heating networks. To provide an extensive solution, deployable on a large scale, Calogena is developing a low-power boiler powered by nuclear energy. Its main benefit is a significant reduction in greenhouse gas emissions for heat production. Thanks to its compact, simple and safe design, Calogena is aiming for the fastest possible deployment, as early as 2030.

More information on www.calogena.com

About GORGÉ SAS

Gorgé SAS is a diversified industrial group, specialized in high-tech businesses and driven by a strong entrepreneurial culture. The group operates industrial and technological activities in several cutting-edge fields: navigation systems and maritime robotics, through the listed company Exail Technologies; protection of high-risk sites; engineering and risk management consulting; 3D printing, through the listed company Prodways Group. Gorgé SAS is also involved in private equity investments to support entrepreneurs in their expansion phase. The Gorgé group companies generate revenues of €500 million and employ 3,300 people.

More information on www.gorge-entreprises.com

Media contact
PLEAD agency
Victor Fraichard
Tel. +33 (0)6 42 02 28 46
victor.fraichard@plead.fr