

# Gen-IV nuclear energy: *newcleo* and NAAREA announce the creation of a strategic and industrial partnership



**Paris, France – 11 January 2024** – *newcleo* and NAAREA are pleased to announce the creation of a strategic and industrial partnership dedicated to Generation IV (Gen-IV) nuclear energy.

This initiative is designed to meet the specific needs of the Gen-IV reactors currently under development. The aim is to support all players in their industrial, technological, scientific and regulatory development. It is part of a complementary approach to the essential industrial SMR alliance, soon to be launched by the European Commission.

*newcleo* and NAAREA, the first two winners of the France 2030 call for projects for innovative nuclear reactors, are joining forces to accelerate the development of their technologies - *newcleo* is developing a lead-cooled fast neutron mini-reactor (30MWe then 200MWe) and NAAREA a molten salt fast neutron micro-generator (40MWe, 80MWth). Whilst different technologies, both Gen-IV solutions make it possible to use spent fuel from conventional reactors, ensuring complete closure of the fuel cycle. Both *newcleo* and NAAREA plan to bring their solutions to market by 2030.

This strategic and industrial partnership is intended to be open to all players involved in the industrial design and deployment of Gen-IV fast neutron reactors, in the following cooperation areas:

1. **The fuel cycle:** access to spent nuclear fuel (in particular the separation of transuranic elements (plutonium and americium)), and the development and implementation of a supply chain for the reprocessing of spent fuel
2. **Financing fuel cycle infrastructure:** through the development of public-private partnerships
3. **Research:** the development of a joint research and development platform (heat exchangers, materials, etc.) and the facilitation of funding at European level
4. **Industrial development:** by optimising and supporting procedures with the safety and security authorities, providing access to scientific computing tools particularly for safety demonstrations, making test centre sites available for future prototypes (including associated laboratories), and developing and implementing shared test facilities.

This integrated industrial, technological, scientific and regulatory collaboration will enable *newcleo* and NAAREA, and subsequently other players, to pool their efforts to

accelerate innovation in the field of Gen-IV nuclear energy, and also gain in efficiency, while retaining their two technologies and their specific features.

Under this partnership, joint initiatives can be developed with the entire French nuclear ecosystem to facilitate the decision-making needed to successfully complete the energy transition through a mix that includes sustainable and innovative nuclear energy.

**Stefano Buono, newcleo Chairman and CEO:** *"By joining forces, newcleo and NAAREA are further encouraging the development and deployment of Gen-IV nuclear technology in Europe. This collaboration reinforces our shared commitment to innovation and sustainability in the nuclear sector."*

**Jean-Luc Alexandre, Chairman and founder of NAAREA:** *"Through this industrial partnership, NAAREA and newcleo are creating momentum to accelerate their development by providing a joint and coordinated response to the demands of public authorities for a unified voice to express common needs. Our two companies want to simplify the work of public authorities and ultimately promote the development and deployment of Gen-IV nuclear power in Europe, against a backdrop of strong global competition."*

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To find out more about newcleo and its project, visit [newcleo.com](https://newcleo.com)

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## Note to editors

### About *newcleo*:

Privately funded and headquartered in London, *newcleo* was launched in 2021 – and since raised a total of EUR 400m – to be an innovator in the field of nuclear energy. Its mission is to generate safe, clean, economic and practically inexhaustible energy for the world, through a radically innovative combination of existing, accessible technologies.

With visionary co-founders, *newcleo* capitalises on thirty years of R&D activity in metal-cooled fast reactors and liquid-lead cooling systems, and our senior management and advisory team can boast hundreds of years in cumulative hands-on experience.

Counting around 600 highly skilled employees across Europe, *newcleo* has business, scientific, operations and industrial manufacturing capabilities in a vertically integrated model designed to deliver its ambitious timeline for its plan-to-market.

*newcleo*'s technology, mostly comprising a novel approach to already qualified solutions, addresses equally well the three challenges affecting the nuclear industry to date: waste, safety and cost.

- **Waste:** fast reactors are capable of efficient “burning” (i.e., fission) of depleted uranium, plutonium and Minor Actinides. When operated with MOX fuel generated from reprocessed nuclear waste, *newcleo*'s reactors not only ensure sustainability by closing the fuel cycle, but can also boost energy independence.
- **Safety:** lead-cooled reactors operate at atmospheric pressure. The properties of lead (thermal properties, boiling point, chemical and shielding properties) together with *newcleo*'s passive safety systems ensure very high levels of safety.
- **Cost:** *newcleo*'s reactor design has been optimised over the last 20 years leading to the concept of an ultra-compact and transportable 200MWe module with improvements in energy density compared to other technologies. Costs are kept low by means of simplicity, compactness, modularity, atmospheric pressure operation and elevated output temperature.

*newcleo* is also working to significantly invest in MOX fuel manufacturing in developed countries, extracting energy from the current nuclear industry by-products.

*newcleo* is ready to develop a new, sustainable, and completely safe way of generating nuclear energy that will help humanity reach zero emissions, and mitigate of global warming.

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**About NAAREA:**

NAAREA (Nuclear Abundant Affordable Resourceful Energy for All) was founded in 2020 by Jean-Luc Alexandre and Ivan Gavriloff to help meet the objectives of energy sovereignty, decarbonization and improving the energy mix. NAAREA is developing a groundbreaking energy solution that will completely close the fuel cycle: the XAMR® (eXtrasmall Advanced Modular Reactor), a molten salt fast neutron microreactor capable of producing electricity (40 megawatts electric) and heat (80 megawatts thermal) that will burn plutonium and the most highly radiotoxic waste (with a lifetime of over 100,000 years) produced by nuclear power plants. The XAMR® is designed to be industrially mass-produced and installed in close proximity to consumers, namely in the mobility sector, electro-intensive industries and remote areas. NAAREA benefits from the support of the French Alternative Energies and Atomic Energy Commission (CEA) and French National Centre for Scientific Research (CNRS), as well as industry players such as Assystem, Dassault Systèmes, Orano and Framatome. A carbon-free and nonintermittent energy source planned to be on the market by 2030, the NAAREA XAMR® is opening the way for sustainable and innovative nuclear energy that supports energy independence, increased resilience and the circular economy. NAAREA is a winner of the “Innovative Nuclear Reactors” call for proposals under the

France 2030 investment plan and a beneficiary of the French Tech 2030 support programme. Learn more at: [www.naarea.fr](http://www.naarea.fr)

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