

# *newcleo* signs agreement with ENEA to develop safe and innovative nuclear systems

## *newcleo*'s Generation-IV reactors to be built outside of Italy

LONDON, UK, 16 March 2022 – *newcleo*, the clean and safe nuclear technology company developing innovative reactors, signed today an agreement for the development of safe and innovative Generation-IV nuclear systems with ENEA, the Italian national agency for new technologies, energy and sustainable economic development.

The goal of the framework agreement is to produce energy in a safe, reliable, sustainable way through innovative small-scale nuclear systems to be deployed outside of Italy (where no civil nuclear activity is permitted). Specifically, it foresees the development of advanced nuclear systems of small dimensions (Advanced Modular Reactors), cooled with lead instead of water making them much simpler and more reliable.

*newcleo* intends to build the first nuclear prototype in a nuclear friendly country within seven years, and subsequently market them internationally to gradually replace the current II- and III-generation reactors.

The collaboration envisions the construction of an electrical prototype of the Lead-cooled Fast Reactor (LFR) system, without the use of radioactive materials or nuclear fuel, to allow studying the thermo-dynamic, mechanical and functional performances. The joint activities also concern the design of Accelerator Driven System (ADS), which will make it possible to drastically reduce the volume of existing nuclear waste.

ENEA's Brasimone Centre infrastructure, skills and professionalism will be available for safety analysis, training and testing activities. Furthermore, as part of the agreement, new research infrastructures will be implemented, favouring wherever possible the use and refurbishment of the existing experimental halls and laboratories. Investments by *newcleo* towards all these could exceed EUR 50 million over a 10-year period. The company plans to employ a team of 25 to 30 engineers, who will work permanently for about 10 years at the Brasimone Centre.

Operationally, a working group will be set up with ENEA and *newcleo* personnel to exchange information and knowledge, and jointly develop equipment and technological codes. In addition to the close cooperation between scientific staff, the partnership includes the alignment of experimental programs on innovative nuclear systems, mutual assistance in the design, numerical simulation and construction of key components, systems and plants.

**Stefano Buono, *newcleo* CEO, commented:**

*"We are extremely happy with the agreement with ENEA, and above all with the collaboration already underway between us. newcleo has an important mission for the future of the planet's energy balance, and we have set ourselves an ambitious timeline to achieve it."*

*ENEA has accumulated a unique global know-how in the field of liquid lead. By working together with ENEA researchers and investing in the facilities at the Brasimone Centre, we will not only take important steps for the realisation of our project, but we will also contribute to the advancement of research in Italy.*

*I am proud of what we are doing both in Turin, where we already have about 60 scientists, and in Brasimone, where we are starting this path that will lead us to the construction of our prototype”.*

The President of ENEA Gilberto Dialuce highlighted:

*"In the last 20 years, ENEA has carried out a wide range of research studies and experiments in this sector, where it has reached a leading position at an international level. This agreement allows us to collaborate with the goal of ensuring the safe and long-term production of electricity in plants to be built abroad, but with significant repercussions on investments and employment at our local level.*

*Indeed, the activities targeted by the agreement with newcleo will be carried out in our Research Centre in Brasimone, on the Tuscan-Emilian Apennines, where other strategic projects are also underway together with the Emilia Romagna Region, such as the development of technologies for the fusion and production of radiopharmaceuticals for the diagnosis and therapy of tumors ”.*

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## Notes to editors

### About newcleo

*newcleo* is the clean and safe nuclear technology company. Privately funded and headquartered in London, UK, *newcleo* was launched in 2021 to be a disruptor in the field of nuclear energy. Its mission is to generate safe, clean and inexhaustible energy for the world, through a radically innovative combination of existing, accessible technologies.

*newcleo* is building the next generation system with the goals to: (1) eliminate the need for geological repositories by using a fast neutron flux avoiding production of long life radioactive elements; (2) develop an Accelerator Driven System (ADS) based on the intrinsically safe coupling of a particle accelerator and a sub-critical reactor; (3) accelerate the development of new fuel cycles, including thorium, that provide economical, clean, safe and inexhaustible energy from nuclei and the opportunity to burn the long-lived nuclear waste produced by the old generation of nuclear reactors.

With visionary co-founders, *newcleo* brings together a team of engineers with deep knowledge of nuclear energy with younger recruits with a fresh mindset, working to design an innovative micro Lead Fast Reactor with significant commercial applications, such as in shipping.

*newcleo* wants to be the first step toward the evolution of its industry to become fully respectful of people and the environment. *newcleo* is developing a new, sustainable, and entirely safe way of generating nuclear energy that will lead humanity to zero emissions, and to the mitigation of global warming.

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### About the ENEA Brasimone Research Centre

A centre of excellence for the development of advanced technologies in healthcare, and for environment and land protection. The ENEA Brasimone Research Centre is a national centre of excellence for the research, study and development of:

- Innovative energy systems
- Green technologies and environmental monitoring
- Technologies for nuclear safety and magnetic fusion
- Materials and ionising radiation technologies, and radiation protection
- Prototypes of systems and components for energy applications
- Liquid metal technologies and new materials
- Training and logistical support for the Italian National Research Programme in Antarctica
- Food safety and environmental security - Traceability Laboratory of the High Technology
- Network of Regione Emilia-Romagna

It is a research facility of great interest both for Emilia-Romagna and Tuscany, being strategically located in a border area between the two regions. Most activities are carried in cooperation with other international research institutions of those countries that are leaders in technology innovation (such as China, Russia, Japan, Canada, United States) in the fields of nuclear safety, material characterisation and the use of liquid metals. It has advanced experimental equipment and resources and welcomes researchers, fellowships holders, undergraduate and postgraduate students from other international institutes and universities.

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