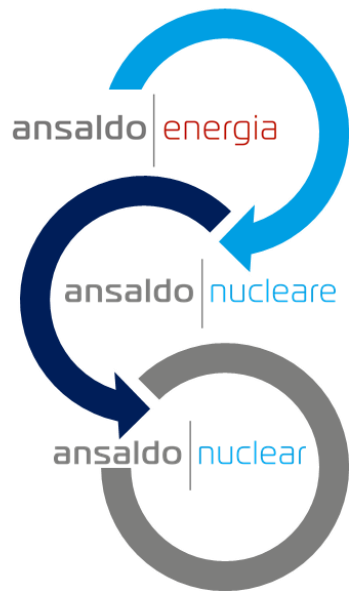


ANSALDO NUCLEARE

**Impianto Nucleare di Cernavoda
collaborazione
Italia – Romania**

Daniela Gentile
CEO

Our Company



Ansaldo Nucleare S.p.A. and its subsidiary **Ansaldo Nuclear Ltd (UK)** operate together as a “one-stop Shop” specializing in nuclear power.

Ansaldo Nucleare is fully dedicated to the Nuclear Industry and to the Sustainability of the Nuclear Option



398

Employees

Finance, HR and purchasing functions are not included



64 € million

2023 Revenue



132 € million

2023 Backlog



10

R&D&I Projects



42

In-house skills



9000 sqm

Workshops (UK)

+ access to AEN workshops

Where we are



Ansaldo Nucleare, Genova (IT)

Engineering and Supply of systems, components and services

Ansaldo Nuclear Ltd- Wolverhampton (UK)

Engineering and Manufacturing of components;
Assembly and test for electromechanical equipment for the nuclear industry
Operational space: 8,200sqm

Ansaldo Nuclear- Risley (UK)

Centre of Engineering Excellence
Engineering and Design
Project Management

Branch in Aix en Provence (France)

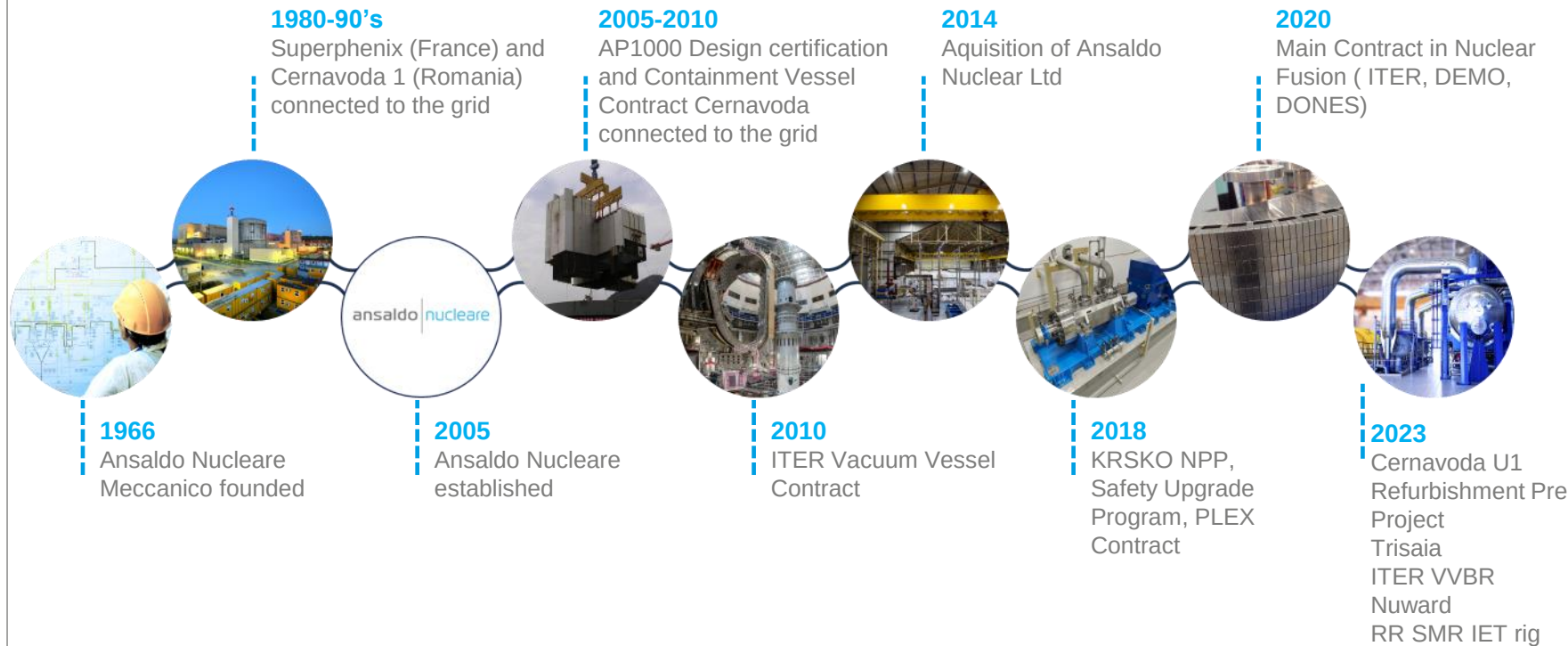
Rep in Bucharest (Romania)

Branch in Cernavoda (Romania)

Italy, UK, France and Romania are Ansaldo Nucleare domestic markets.
Established presence in Slovenia, Slovakia, Argentina.
Recent projects in China, Lithuania, Belgium, Bulgaria, Ukraine, Armenia, Czech Republic



Our History



Our Projects

Fusion

ITER (France)
Tokamak Assembly – TAC2

ITER (France)
Steady state electrical network – TB13

ITER (France)
Engineering Remote Handling

ITER (France)
Engineering Tokamak Cooling System

DTT (Italy)
Engineering (plant, systems, components)

New Builds

Cernavoda
(Romania)
Units 1 & 2 Completion

Sanmen Unit 1 AP1000 (China)
Steel Containment Vessel - Passive Residual Heat Removal

Plant Life Operation assistance

Embalse (Argentina)
PLEX & Diesel Station Refurbishment

Cernavoda Unit 1
(Romania)
PLEX Pre-project
Component Cooling Upgrade
Post Fukushima Condition Assessment

Krsko NPP (Slovenia)
Safety Upgrade Program
Bunkered Building 2 Project

Waste Gas Compressor Replacement

Water Treatment System Upgrade

Decommissioning, WM, Dismantling

SRP Gloveboxes (UK)
2 manufacturing lines of gloveboxes for encapsulation of Pu

Caorso (Italy)
Drum Retrieval Machine
Primary Circuit Decommissioning and Dismantling

Latina (Italy)
LECO (sludges extraction and conditioning)
Turn-key project of a transportable super-compaction and cementation system
Detailed Design and Realization of an Activated Fluid Treatment Plant

FEED

EMBALSE
(Argentina)
BOP Condition Assessment & Residual Life Evaluation
ITER (France)
Hot Cell Complex Building engineering project

JRC Ispra
Framework Service Contract for Engineering Support to D&WM Programme

Products

Wet Oxidation

Decontamination and vitrification process

CONTAS

Why refocus on Nuclear



**Energy trilemma:
security need,
convenience and
sustainability**

Governments are **accelerating on their Net Zero emission programs**. The new nuclear is part of the solution

EU Taxonomy, EU Industrial Act, US Infrastructure plan, ...



**Opportunities from
new technologies:
enhanced security
and improved
economic prospects**

Ongoing research on new nuclear power leads to small plants and flexible applications
New nuclear power has potential for increased **cost-effectiveness and safety**

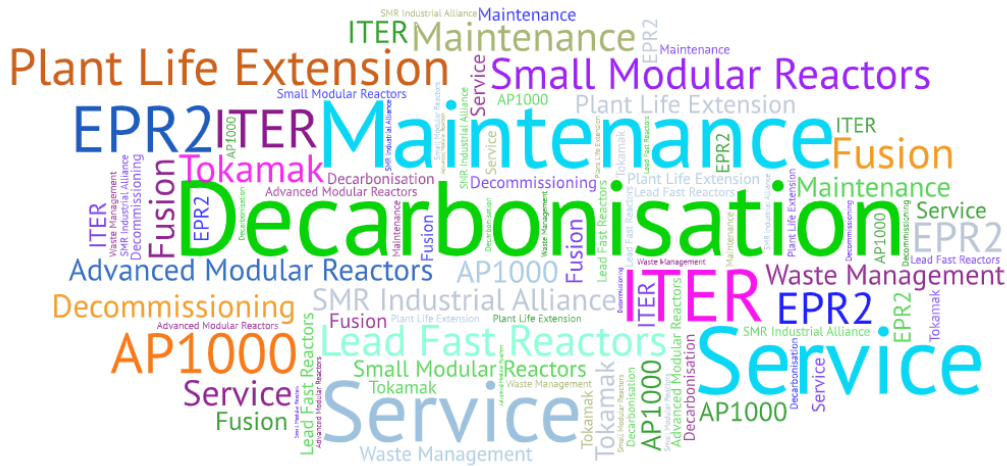


**Europe's dependence
on foreign markets:
need to diversify the
supply chain**

New nuclear could **reduce and diversify dependence on foreign markets** in terms of fuels and raw materials

Fonte: Nomisma

Market's opportunities



THE INDEPENDENT NUCLEAR NEWS AGENCY

Poland / PEJ Submits Location Decision Application For First Nuclear Power Plant



Pulse by Maeil Business News Korea

Industry minister to boost nuclear plant bid in Czech Republic



Support agreement for Cernavoda 3 and 4 signed



THE INDEPENDENT NUCLEAR NEWS AGENCY

Slovenia / Gov't Considers Two New Units At Krško, Finalises Plans For Unit 1 Life Extension



Bulgaria to begin work on two reactors at Kozloduy nuclear site



Market's opportunities



Support agreement for Cernavoda 3 and 4 signed



Our History in Romania: Cernavoda

Ansaldo Nucleare in Romania for over 40 years

Ansaldo Nucleare is the Design Authority of the **Balance Of Plant** of the firsts two Units:

- Unit 1 Completion Contract – Commercial operation Dec. 1996
- Unit 2 Completion Contract – Commercial operation Sept. 2007

Cernavoda Unit 1 and Unit 2: ~20% of Romania's energy needs

215 million tons of CO2 emissions **avoided**.



Activities in progress in Romania, PLEX Cernavoda Unit 1

Client:



Power Output: 700 MW

Lifetime Station Statistics Since First Connection to the Grid (*)

	Unit 1 since first connection to the grid until the present August 11, 1996- December 2023	Unit 2 since first connection to the grid until the present August 7, 2007- December 2023
Total Generated Power (Gross) [Mwh]	152,202,749	91,084,542
Total Power (Net) [Mwh]	140,002,146	86,847,602

- **Cernavoda 1** Refurbishment is a CANDU-6 PLEX (Plant Life Extension) project designed to extend the plant's life by another **thirty years**
- **Ansaldo Nucleare** has already been awarded three contracts for the pre-engineering activities

Commercial Operation in 2023 - Unit 1 (*)

Month	Generated Power (Gross) [MWh]	Net Power [MWh]	Gross Capacity Factor [%]
January	512,784	472,454	98.21
February	460,962	424,566	97.76
March	513,814	474,461	98.42
April	498,019	458,936	98.44
May	509,821	469,781	97.37
June	485,681	446,476	95.81
July	493,493	451,869	93.97
August	458,720	419,614	87.34
September	480,315	440,528	94.56
October	503,310	462,640	95.74
November	463,035	424,704	91.76
December	505,363	464,913	96.71
TOTAL	5,885,317	5,410,942	95.49

Cernavoda Plant Life Extension Unit 1



**90 design
modifications
out of 210**



Ansaldo Nucleare's Event: industrial prospects for the Italian supply chain in Romania

In April 2024, Ansaldo Nucleare brought together its Italian suppliers to present in detail the project related to the life extension of Unit 1 of the Cernavoda nuclear power plant, where the company will have a primary role as designer of the Balance of Plant.

With **over 70 companies** present, Ansaldo Nucleare provided the necessary tools to evaluate the opportunities of this project, structuring a synergistic system of industrial and economic growth in a fundamental sector for the energy transition that could be expanded in the European supply chain.



Activities in progress in Romania, Cernavoda Unit 3&4



- **Cernavoda 3&4** Completion is a **key project** for Romanian Government as per October 2021 “Integrated National Plan for Energy and Climate Change” for the **Completion of two new nuclear CANDU Units** on Cernavoda site
- Concrete structures for the two Units are already existing at site.
- Several **enhancements to CANDU-6 Unit 2 design** are requested to meet national requirements for new nuclear build projects (e.g., CDF, LRF, seismic)
- **CANDU** and **Ansaldo Nucleare** delivered Cernavoda Units 1&2 in 1996 and 2007 and own relevant IP rights (i.e., engineering documentation produced during the two Projects)
- **EnergONuclear**, a 100% company of **Nuclearelectica**, issued a formal **Request for Proposal** towards a joint venture that includes Ansaldo Nucleare

Cernavoda U3 e U4



In: Media Press release

The adoption of the positive opinion of the European Commission on the project of Units 3 and 4 at CNE Cernavoda

Press release

Bucharest, July 2, 2024

Nuclearelectrica announces the adoption of the positive opinion of the European Commission on the project of Units 3 and 4 at CNE Cernavodă, on the basis of Article 41 of the Euratom Treaty. The project is managed by the project company Energonuclear, wholly owned by Societatea Națională Nuclearelectrica SA (SNN).

The viewpoint submitted on July 1, 2024 reflects the assessment by the European Commission – Directorate General for Energy, of the technical and nuclear safety aspects of the project. Under the Euratom Treaty, nuclear project developers are required to notify the European Commission of planned investments and to demonstrate compliance with the highest nuclear safety standards. Energonuclear notified the Commission about the Units 3 and 4 project in May 2023.

The opinion received is the result of an elaborate analysis of the information provided by the Romanian side, site visits to the CNE Cernavodă site and technical discussions over a period of 13 months. The Commission's assessment is that the project to complete the construction of Units 3 and 4 at CNE Cernavodă is in line with the objectives of the Euratom Treaty.

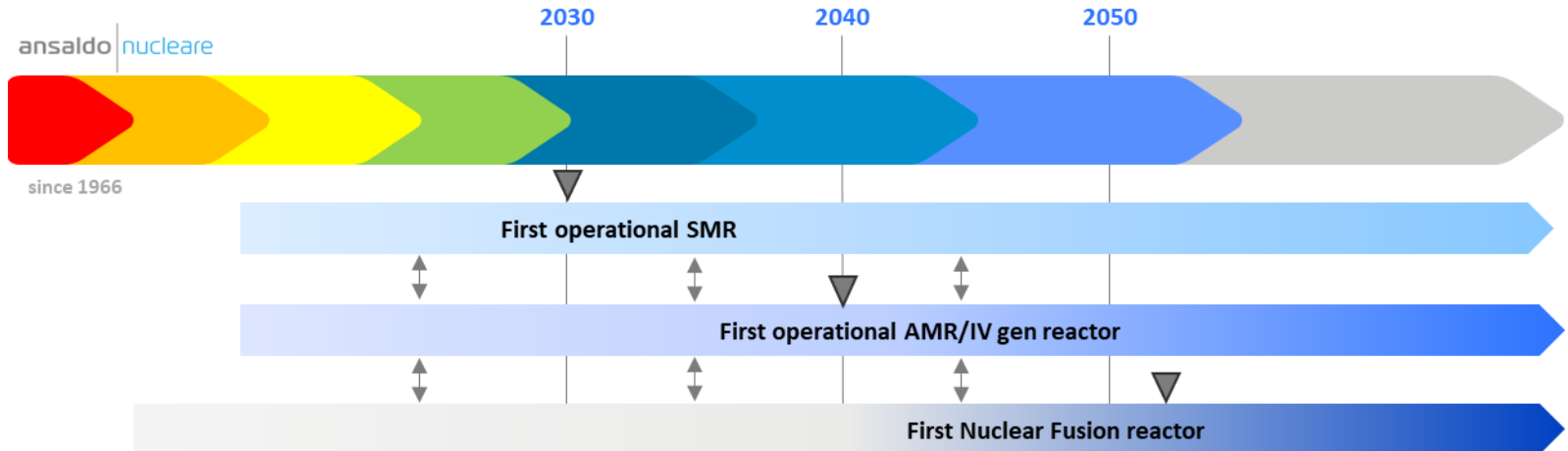
**Authorization
for the
completion of
Unit 3&4
by European
Commission
(art. 41)**

**Successful
Partnership
For
Further
Projects**

Vision – Building the future on the strenght of the present

Ansaldo Nucleare has been operating in nuclear since 1966 and provides solutions through an **Integrated Delivery Model** for Nuclear Power Plant Products by matching, combining, complementing systems and components already consolidated in the market for all nuclear activities

Combined with our **FEED (Front End Engineering Design) Services**, Ansaldo Nucleare activities range from the production of critical high-tech components to the design and construction of new builds, from decommissioning to research on radwaste management, Fusion, Generation IV plants and SMR



Energy-intensive industries

SMRs for district heating, H2 for high temperature industrial processes

Heat for industrial purposes



AMRs can devote some of their heat to industrial applications requiring medium-high temperatures (e.g. **chemical industry and refining**), renouncing a share of electricity production

300-500°C → **AMR** **12%**

12% of an AMR provides the thermal consumption of an industrial refining pole (~500 GWh/a). Using green H2 alternatively requires ~780MW of dedicated PV 3

Hydrogen production



The hard-to-abate sectors (high temperature applications such as **ceramics, glass, metals and cement**) can be decarbonised with H2. SMRs can provide low temperature heat to produce **H2** using SOEC electrolyzers

150-200°C → **SMR** **18%**

18% of an SMR produces H2 to decarbonise a ceramic industrial pole (up to ~700 GWh/a).

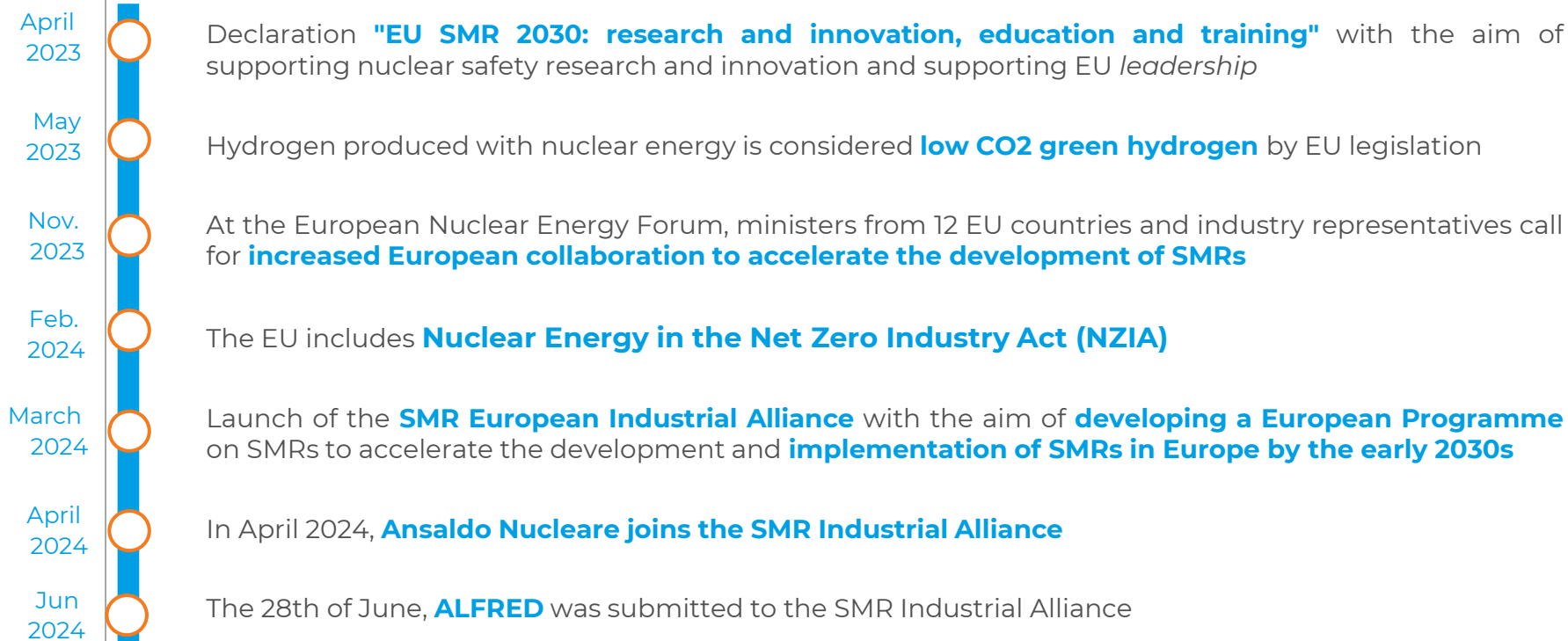
In the light of gas-based energy policy choices and the marginal pricing mechanism for the electricity price, **Italy has always been characterized by a higher electricity price than competitors**

The increase in costs **affects the competitiveness of Italian energy-intensive industries**, more than in other countries (peak of € 317.6/MWh in the second half of 2022, while in France in the same period prices stopped at € 112.2/MWh)

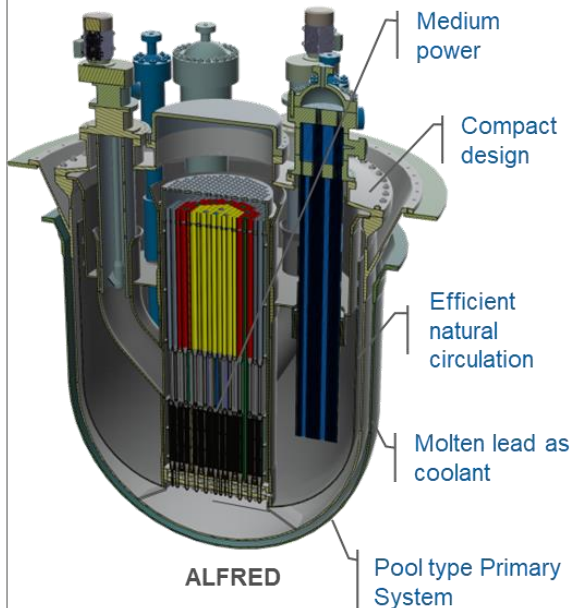
The benefits of SMRs and AMRs for energy-intensive industries



In March 2024, the EU launched the European Industrial Alliance with the objective of developing a European SMR Programme



Next Steps: Italy and Romania for fourth generation Nuclear



FALCON
a long-term collaborative
endeavour to promote the LFR
technology at European level

ALFRED
an international project to speed
up the LFR deployment through
a technology park in Romania

ATHENA
the first Facility under
construction in Mioveni/Pitești
site

ansaldo | nucleare

ENEA

**RATEN
ICN PITEȘTI**



Collaboration opened in November 2023 also to

SCK CEN

Conclusions

- The **Candu-6** technology are approved at European level
- **Cenavoda** Unit 3 and 4 will be an **opportunity** to retrace and patrimonialize the **experience** cultivated in the last **40 years**
- For the **next generation** of nuclear, **ALFRED** may represent for Italy, Romania and Belgium the chance to develop and own a European Nuclear Technology to the benefit of **European Energy Transition** needs

