*new*cleo & Next-N

AMR Technology for Decarbonizing the Chemical Industry

November 28th 2025

NEXTCHEM
MAIRE Sustainable Technology Solutions

newcleo
Futurable Energy

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Companies Profile

MAIRE AT A GLANCE

We integrate technology solutions, engineering expertise and project execution capabilities for the sustainable valorization of natural resources

Listed on the Milan Stock Exchange
Ticker: MAIRE

2024 KEY GROUP FIGURES

€ 5.9bn Revenues	€ 386.4m EBITDA	€ 212.4m Net income
€ 375.1m Adj. net cash[1]	€ 13.8bn Backlog	~ 9,800+ Employees
~ 50 Countries	9 Engineering hubs	1,500+ Plants delivered

MAIRE

NEXTCHEM

SUSTAINABLE TECHNOLOGY SOLUTIONS

Unique portfolio of low-carbon and circular technologies.

TECNIMONT

INTEGRATED E&C SOLUTIONS

Superior execution track record in the downstream segment

MET DEVELOPMENT

PROJECT DEVELOPMENT

Pursuing opportunities to support both businesses by developing projects

Next-N, which will be jointly owned by Nextchem (60%) and newcleo (40%), has been created to facilitate the cooperation of SMR/AMR technology providers with Maire Group, offering comprehensive support throughout all phases of project development (from licensing to excellent project execution).

NEWCLEO AT A GLANCE

A new, innovative player in nuclear energy

REACTOR DESIGN:
Small Modular (SMR) + Lead-cooled Fast Reactors (LFR) = AMR
*new*cleo is working to design, build, and operate Gen-IV Advanced Modular Reactors (AMRs) cooled by liquid lead

FUEL MANUFACTURING:
Mixed Uranium Plutonium Oxide (MOX)
MOX and Fast Reactors allow the multi-recycling of nuclear waste into new fuel with no new mining for generations

INTRINSICALLY SAFE power production

COMPETITIVE energy cost

CIRCULAR nuclear waste recycling

€570 million of private funds
~€70 million revenues in 2024

French first **licensing stage completed** for the reactor in **Chinon** and the fuel production facility in **Nogent**

Selected by **France 2030** and the **European Industrial Alliance on SMRs**

900+ EMPLOYEES GLOBALLY	30+ YEARS of leadership in Lead Technology	25 PATENTS

Highly specialised EPCM capabilities

FUCINA ITALIA (A newcleo company) · S.R.S. (A newcleo company) · RUTSCHI (A newcleo company)

02

The E-factory for low carbon chemistry

Energy Transition is a challenge and an opportunity

- An **inescapable challenge** on which humanity's existence on planet Earth depends.
- The **most complex project** humans have ever faced.

Implementing the Energy Transition often requires **dealing with inefficiencies** compared to fossil-fuel based processes, so the **costs** to be addressed are **massive**.

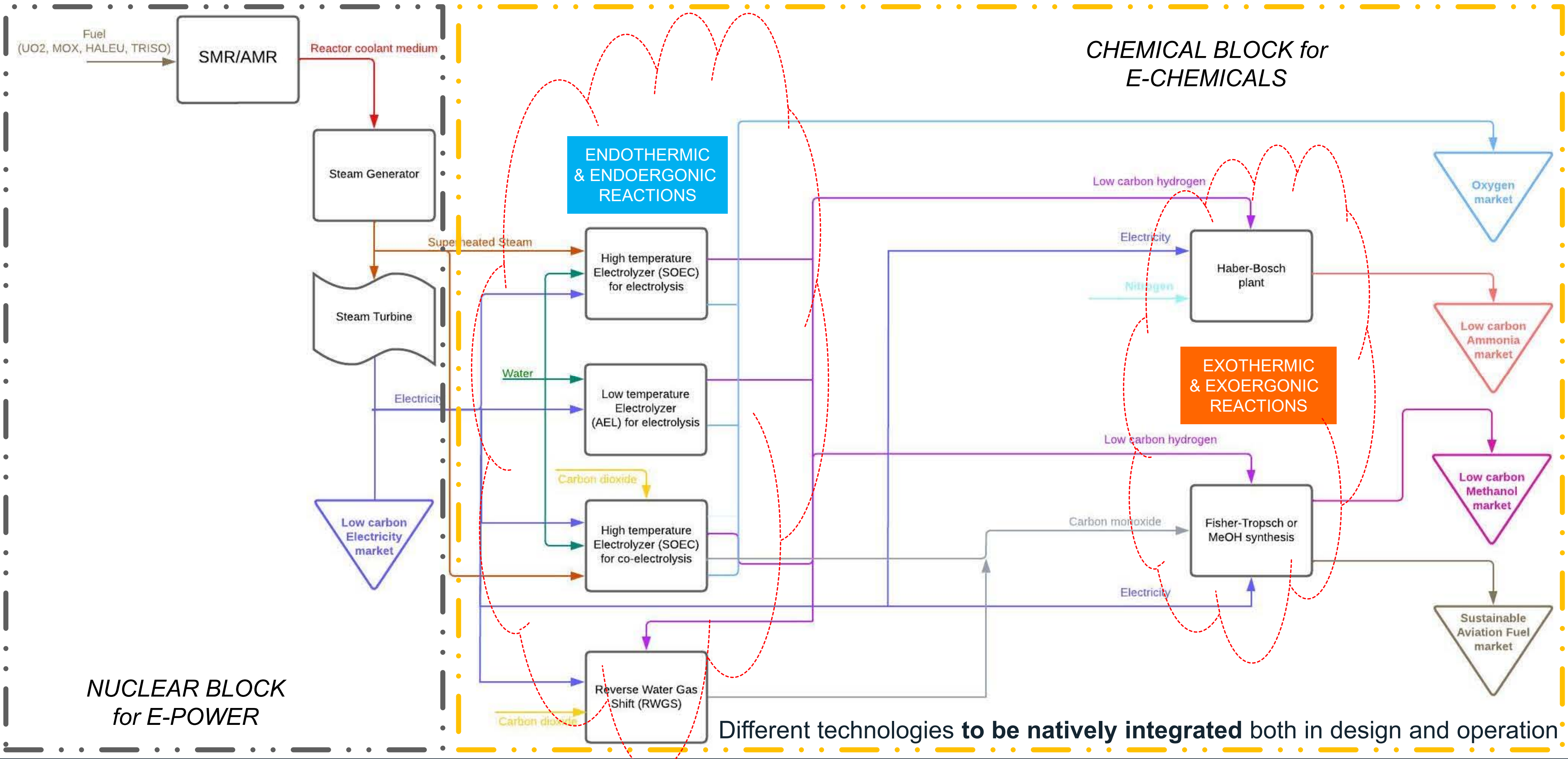
Public support is crucial for the Energy Transition, although unfortunately it is currently faltering because people feel the economic burden but do not see the benefits for humanity.

Energy Transition claims for the solution of the Energy Trilemma

To industrialize the Energy Transition, the energy sector shall decarbonize the Energy sector by producing **affordable, reliable, sustainable** energy vectors that can also be used to produce **low-carbon chemical molecules**, according to Maire format of the "**E-factory for low carbon chemistry**".

In such perspective, **nuclear energy is undergoing a renaissance** as countries and industries realize that renewable sources alone won't be able to meet the demand for 24/7 low carbon power.

The E-Factory for low carbon chemistry enabled by SMR/AMR



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newcleo LFR technology as enabler of the E-factory format

A long-term vision centred on safety, costs and sustainability

Reactor technology:
AMR: SMR + Gen-IV LFR

LEAD-COOLED

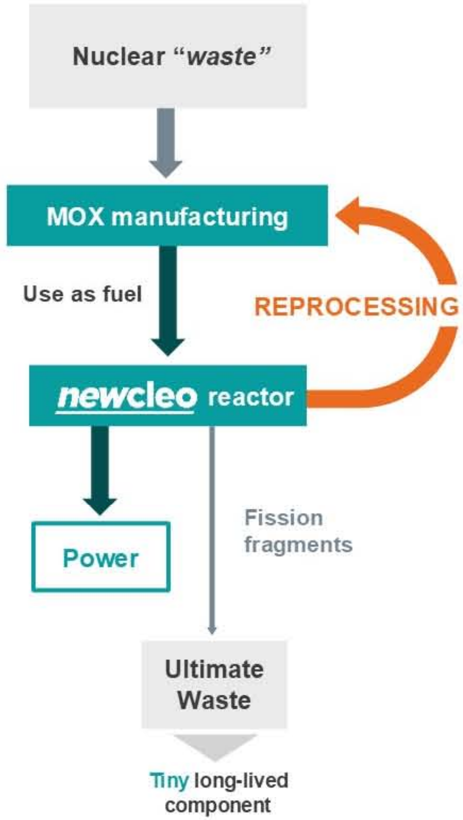
High temperature | Compact and simple | Intrinsic safety

FAST NEUTRON SPECTRUM

Low production of nuclear waste | Able to recycle reprocessed spent fuel

SMALL MODULAR REACTOR

Faster construction | Site flexibility and industrial heat production | Further economies from series and modularisation

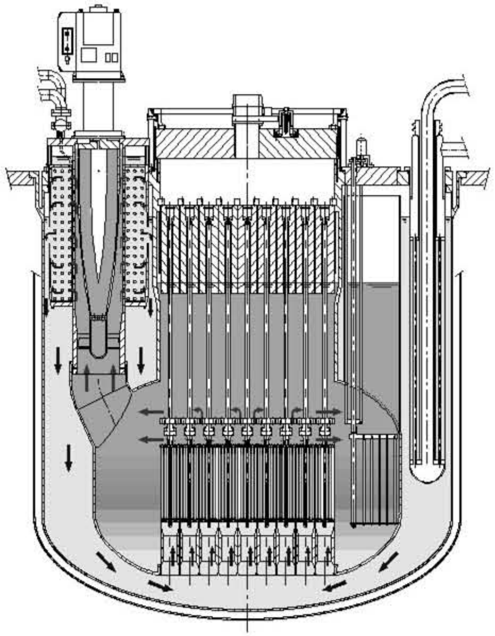


Fuel: MOX

- MOX is made of reprocessed spent fuel. A clean solution to the issue of costly and **long-lasting nuclear waste disposal**
- The **long-term strategy** will eliminate the need to mine new uranium, enable **energy independence**, and reduce the volume headed to geological repository
- Spent fuel will be **reprocessed** multiple times. The unavoidable waste is less than **1t of fission fragments** (radioactive for 250y) from one year's generation by a 1GWe of *new*cleo LFRs vs. **200t** of nuclear waste from conventional reactors (radioactive for 250,000y)

LFR-AS-200: Amphora Shaped, 200MWe

R&D and PRECURSOR	MOX PRODUCTION	LFR-AS-30	LFR-AS-200



- *new*cleo's commercial nuclear reactor to be deployed in multi-unit mode, with the intention to deploy a fleet
- The First-Of-A-Kind (FOAK) unit is expected at the end of 2033

MAIRE

Since January 2024 working with **MAIRE** on a conceptual study, on an exclusive basis, for the chemical sector, for the production of electrolytic hydrogen, carbon-neutral ammonia, methanol, e-fuels and derivatives

SAIPEM

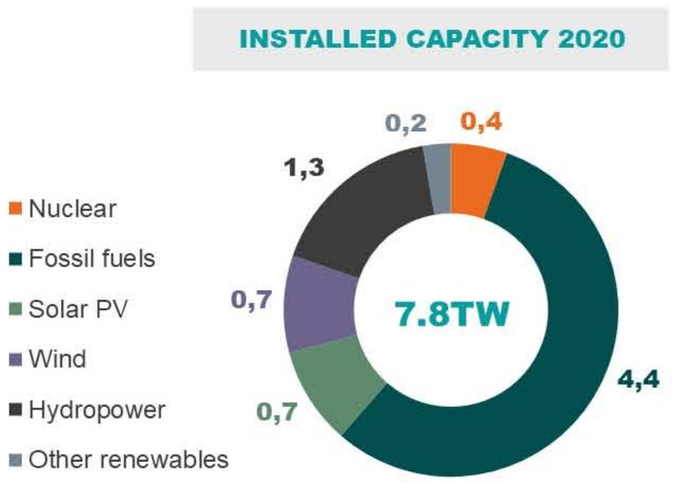
Since September 2024 working with **Saipem** on applying *new*cleo's reactors to oil and gas offshore installations and floating nuclear units, connected to the electricity grid on land

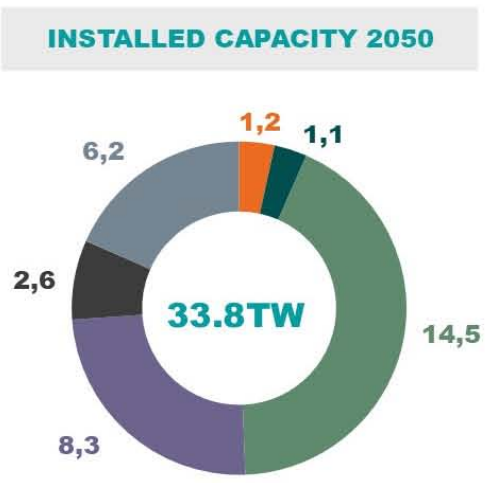
Power	**480 MWth**
Core coolant	**Pure lead**
Core coolant temperature	**inlet 420°C, outlet 530°C**
Layout	**Pool-type**
Circulation	**Forced: 6 pumps**
Spectrum	**Fast**
Fuel form	**Extended-stem fuel assembly**
Fuel	**MOX**
Secondary side fluid	**Water**
Steam generators	**6 spiral-tube SG**
Design life	**60 years**
Lifetime capacity factor	**93%**

Nuclear energy's critical role in energy future

Decarbonisation and energy security dilemma

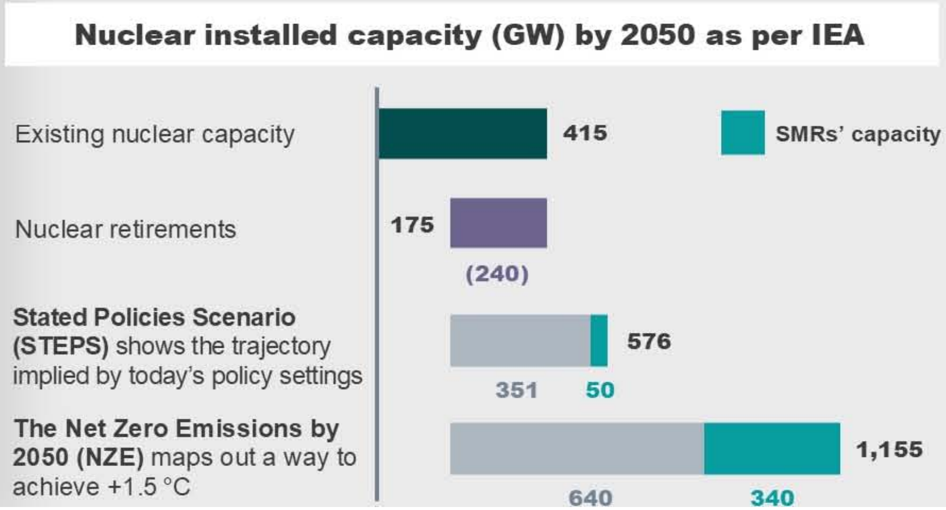
- Growing energy demand
- Decarbonisation objectives
- Increasing installed intermittent renewable sources
- Higher electrification of end-uses
- Higher volatility of fossil markets
- Geopolitical security of supply
- Critical materials scarcity





Fission can be the answer:

- Reliable and dispatchable, complementing intermittent renewable sources
- Dense, with small footprint on the environment and large availability of fuel supply
- Enables energy security and independence
- No direct CO_2 or pollutants emission



Non-electrical applications

Challenges & Perspectives

newcleo's innovative reactors offer much more than just electricity generation. Thanks to their advanced design, they allow cogeneration, i.e. the simultaneous production of electricity and heat, thus paving the way for multiple industrial and energy applications, in line with EU strategic challenges in terms of energy sovereignty, decarbonization and technological innovation.

Applications and perspectives

Decarbonization of industry

- Replacing fossil sources with clean energy to power industrial processes. EU industry, is still largely dependent on gas and coal for its heat and energy needs.
- LFRs can provide clean energy supply to the entire surrounding industrial zone.

Low-carbon hydrogen production

- Hydrogen is key for the decarbonization of transport and the production of ammonia and E-Fuel (Methanol, SAF), but its current production is mainly based on fossil gas.

Data centers

- Securing the supply of EU digital infrastructures with stable, low-carbon energy. The exponential growth of data centers is driving a high demand for electricity, often covered by fossil or intermittent sources.

Irradiation services for nuclear R&D & Medical sector

- Support for research on new fuels and advanced materials to ensure the safety and competitiveness of EU nuclear infrastructures.
- Production of isotopes for radiotherapy and medical imaging.

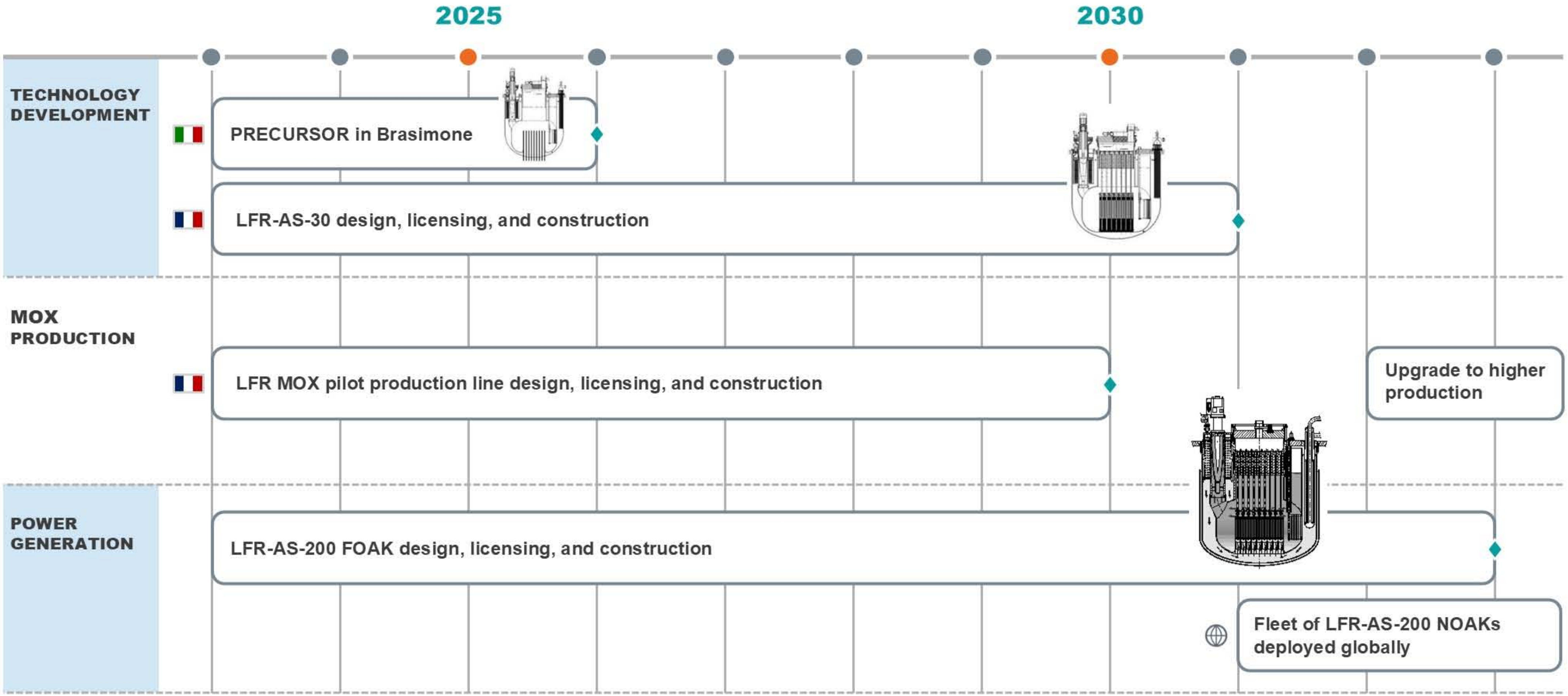
District Heating

- Nuclear energy can supply stable, low-carbon heat to district heating networks by using waste heat or dedicated heat exchangers from reactors, reducing fossil fuel use and supporting decarbonisation of urban heating systems.

Italian Nuclear Supply Chain for Small Modular Reactors

Fonte: ITALIAN NUCLEAR SUPPLY CHAIN FOR SMALL MODULAR REACTORS

A well-defined roadmap to achieve tangible development goals



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From MOX to e-Ammonia, e-Methanol and SAF

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Levelized Cost of Production of chemical molecules

Levelized Cost Of Production (**LCOP**) as key parameter for comparing different technological routes

$$\mathrm{LCoP} = \frac{\sum_{t=0}^{T} \frac{I_t + M_t + F_t}{(1+r)^t}}{\sum_{t=0}^{T} \frac{Q_t}{(1+r)^t}}$$

- For a certain molecule it is a **measure that aggregates all the costs associated** with producing that molecule over its entire lifecycle.
- This includes **initial capital expenditures** (I_t), **periodic fixed and variable operating costs** (M_t & F_t), and any other relevant expenses.
- The resulting figure represents the **average cost per unit of the molecule produced** (Q_t), allowing for a consistent basis to compare the economic viability of different production methods.

LCOP for e-Ammonia, e-Methanol and SAF based on 4 x LFR-AS-200 configurations with LCOE 66euro/MWh

•The cost of e-Ammonia is nearly three times that of gray-Ammonia, yet its LCOP falls within the economic range acceptable to off-takers.

•Similarly, e-Methanol costs approximately three times more than gray-Methanol, but its LCOP is also within acceptable limits for off-takers.

•Sustainable Aviation Fuel (SAF) costs 5-6 times more than kerosene. However, the economically acceptable range for SAF is unclear as its adoption is driven primarily by regulatory mandates (e.g., ReFuelEU Aviation).

•Selling 50% of the generated energy to the grid at an average price of 70euro/MWh can lower the LCOP of the final molecule by 4-5% compared to using all the energy for chemical production. Selling 75% of the energy to the grid could achieve a reduction of 12-15%. However, this improvement depends on the assumed electricity price (70euro/MWh), which applies only to specific markets. Additionally, integrating chemical production with energy sales remains profit-enhancing, though margins may be lower than pure electricity sales.

•Adopting SOEC electrolyzers by 2030, which utilize heat from the nuclear block, could reduce the LCOP of final molecules by 16-17% compared to using ALK electrolyzers.

•In the longer term, SOEC in co-electrolysis mode is expected to further lower the LCOP by 7-8% compared to pure electrolysis mode for producing low-carbon hydrogen.

05

Conclusions

Applicability of the E-factory format combined with AMR technology

The Energy Transition is a **critical challenge essential for humanity's survival on Earth.**

Transitioning the chemical sector to low-carbon processes involves significant inefficiencies compared to fossil-based methods, resulting in substantial costs.

The inefficiencies of low-carbon technologies stem from the multiple chemical-physical transformations required. These necessitate **CAPEX/OPEX intensive investments**, innovative energy recovery designs within chemical processes, and advanced digitization to enhance operational predictability.

The **inefficiencies of low-carbon technologies**, due to the number of chemical-physical transformations involved, entail large capex investments and require an **innovative design** to recover as much **energy flows** as possible within the chemical block, and an in-depth level of **digitization** to improve predictability during plants operation.

Affordable, reliable, and sustainable electricity and steam from nuclear sources are key enablers for producing low-carbon chemical molecules that meet off-taker requirements.