Front-End Solutions to Your Business Needs
Uranium Mining, Chemistry, Enrichment
Securing your fuel cycle supplies for the long term

Orano is a recognized international operator and reliable long-term partner in the field of nuclear materials, mastering cutting-edge technologies. We offer customers high value-added products and services throughout the entire fuel cycle, through innovation and operational excellence, in a competitive and profitable way. We are proud to contribute to the production of low carbon and competitive electricity.

We provide customers with efficient products, services and technologies in uranium mining, chemistry and enrichment, as well as used fuel and nuclear waste management, nuclear material transportations, engineering, support to operations and decommissioning. The company aims to become an important player in nuclear medicine developing cancer treatments using targeted alpha therapy with lead-212 ($^{212}$Pb), thanks to the work of its Orano Med subsidiary.

Orano contributes to the fight against global warming, to the preservation of natural resources, and to human health, all of which are major challenges of our century. We are making them central to our purpose: to develop know-how in the transformation and control of nuclear materials, for the climate, for a healthy and resource-efficient world, today and tomorrow.

**Our values**
- Safety and security
- Customer satisfaction

**Our strengths**
- Continuous improvement
- Respect and people development
- Cohesion and team spirit
- Ethics, transparency and dialogue

**Our Front-End solution drivers**
- Discover, develop and operate a geographically diversified and profitable portfolio of uranium deposits in a responsible manner in order to ensure the security of your supply.
- Supply high-added-value services in chemistry and enrichment, with the best practices and best innovative processes in terms of safety and competitiveness.

**Our global network**
Anticipating your needs and meeting your expectations are our top priorities. Our sales teams located in the European, North American and Asian markets maintain close relationships with each customer. Orano provides innovative, tailor-made and competitive offers, and supports your needs all around the world.
**MINING**

One of the world’s leading uranium producers

Diversified reserves and resources provide our customers with twenty years worth of production visibility.

“We offer reliable and competitive long-term supply for our customers. In addition to sustaining our existing sites, we maintain a significant effort in exploration and innovation to optimize our projects and truly secure the longer term. We are an operator: our projects will come to life. They will contribute to deliver reliable, diversified supply of uranium in the long run. In turn this requires back-up from our customers, and we thank them for their continued trust and support” Nicolas Maes, Senior Executive Vice President, Orano Mining.

- Among the top 3 uranium producers in the world with an annual production of about 7,300 MTU in 2020. One of the world’s most diversified uranium players, with 4 mining sites in operation in 3 countries, and competitive production costs and cutting-edge extraction techniques implemented:
  - **Canada:** As a minority owner-partner, access to production from Cigar Lake and McArthur River*, the two highest-grade and largest uranium mines in the world. Operator of McClean Lake, the only mill to treat undiluted very high-grade Athabasca ore.
  - **Kazakhstan:** KATCO, the world’s largest ISR mine operator implementing innovative wellfield optimization technologies.
  - **Niger:** SOMAIR, an open pit mine using both dynamic and heap-leaching techniques.
  - A diversified portfolio of projects (in Niger, Canada, Kazakhstan, Mongolia and Namibia) in different stages of development. Continuous investment in exploration in the most prospective countries, focused on Canada and Uzbekistan.
  - Innovation projects across all stages of mining cycle, from exploration to remediation. Developing efficient and environmentally friendly technologies and techniques on uranium recovery processes at our Innovation Center for Extractive Metallurgy (CIME).
  - A responsible mining operator recognized for our robust and integrated Corporate Social Responsibility (CSR) approach, implementing international best practices as a member of the International Council of Mining and Metals, in the field of ethics, transparency, safety, environment, biodiversity, social and community investment built on the long-term partnership approach with stakeholders. The responsible mine closure is an integral part of our CSR commitment.

*McArthur River is in care and maintenance for an indefinite period since 2018*

Read more: Orano’s mining activities  
CIME website  
CSR annual report
CHEMISTRY
Modern and right-sized industrial complex

The only operating industrial conversion site in the world being fully modernized with new facilities and innovative processes, while achieving a reduced environmental footprint.

“We are committed to delivering high-value-added services for our customers over the long-term, with a unique European location and an integrated industrial platform, based on best practices and processes.” Jacques Peythieu, Senior Executive Vice President, Chemistry-Enrichment (Orano CE).

- The UF4 production plant — commissioned in 2016 at the Malvési site — completed its refurbishment plan in 2020, with the modernization of its hydrofluorination workshop. It will ensure the supply of UF4 to the Philippe Coste conversion plant at full capacity.

- The new Philippe Coste conversion plant located at the Tricastin site to convert UF4 to UF6 was commissioned at the end of 2018. The latest workshop completed — second fluorine production facility — began operation in 2020. The facility’s 15,000 ton capacity is now installed and operating at monthly production rates of 1,000 tU. The plant ramp-up will continue in 2021 and production will gradually increase until 2023 to reach the yearly nominal production of 15,000 tU.

- Processing all forms of concentrates from all uranium mines in the world, Malvési and Philippe Coste conversion plants offer an international safe storage haven for uranium concentrates and natural UF6 assets owned by our customers worldwide.

- For more than 60 years, Malvési-Tricastin has been an integrated and efficient chemistry-enrichment platform that mitigates transportation risk and reduces lead times. Its operations also encompass defluorination, denitration and cylinders maintenance.

- Latest nuclear safety requirements achieved: increased seismic resistance and confinement workshops.

- Innovative and proven technology used, such as the Isoflash technology and effluent management workshop. Environmental footprint reduced even further: Ammonia -75%, nitric acid -50% through recycling, industrial water -90%, thanks to our new facility and workshops.

- A responsible company: ISO 9001, ISO 14001 and OHSAS 18001 certifications, well integrated locally and with close relationship with stakeholders, and publication of an annual Corporate Social Responsibility report.

Watch the videos: Inauguration of the Philippe Coste plant

Conversion at Malvési-Tricastin
ENRICHMENT
A state-of-the-art facility using the most competitive technology

Georges Besse II, with its South and North units, reached its full production capacity of 7.5 million SWU at the end of 2016. Significant, right-sized plants have been built, backed by our strong backlog.

The largest enrichment facility in Europe, using the most efficient and proven enrichment technology (TC12 and TC12+ centrifuges).

Preliminary marketing of HALEU up to 6%; regulatory approvals under progress for a first production by the end of 2024.

The North unit is suitable for the enrichment of reprocessed and depleted uranium.

Dedicated support services: start of RECII workshop in 2015 dedicated to high-tech, high-quality cylinder filling.

Latest nuclear safety requirements (e.g. increased seismic resistance, confinement workshops) and environmental footprint reduced even further: energy consumption -98%, water consumption -100%. Thanks to its new conversion and enrichment facilities, the whole Tricastin platform has reduced by more than 80% its teq CO2 emissions between 2004 and 2020.

For more than 60 years, Malvési-Tricastin is an integrated and efficient chemistry-enrichment platform: mitigation of transportation risk and lead time reduction. Highly skilled and trained operators, operational experience and excellence.

A responsible operator: ISO 9001, ISO 14001 and OHSAS 18001 certifications, well-integrated locally and close relationship with stakeholders, and publication of an annual Corporate Social Responsibility report.

"We are focused on being a leading supplier to the world, committed to nuclear energy and continually developing innovative, dedicated and competitive products and services for the benefit of our customers." Jacques Peythieu, Senior Executive Vice President, Chemistry-Enrichment (Orano CE).

Learn more: Conversion & enrichment website
As a recognized international operator in the field of nuclear materials, Orano delivers solutions to address present and future global energy and health challenges.

Its expertise and mastery of cutting-edge technologies enable Orano to offer its customers high value-added products and services throughout the entire fuel cycle.

Every day, the Orano group’s 16,500 employees draw on their skills, unwavering dedication to safety and constant quest for innovation, with the commitment to develop know-how in the transformation and control of nuclear materials, for the climate and for a healthy and resource-efficient world, now and tomorrow.

Orano, giving nuclear energy its full value.

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www.orano.group