Le CIME

Trusted partner

Expertise & innovation to support responsible industrial players and decision-makers

CENTER FOR INNOVATION IN EXTRACTIVE METALLURGY

orano

Commitments

Long-term commitments

In line with the CSR commitments enshrined in the Orano group's purpose, **CIME draws on its skills and expertise in the control of nuclear** (e.g. U, Th, Ra) **and chemical** (e.g. V, Li, Co, Ni, Mn, Cu) materials for the recovery and reuse of strategic metals; **for health**, through the extraction of radioisotopes for medical applications; and **for the environment**, through the decontamination of soils, water, and industrial effluents.

All of CIME's projects are **resolutely forward-looking with strong focus on circular economy initiatives** with the reuse-recycling of materials and the development of solutions to mitigate the environmental impact of a number of industrial activities. It notably plays a major role in the optimization of Orano's ore processing plants located around the world (Niger, Canada, Kazakhstan, Mongolia).

FOCUS ON
circular economy

BATTERY RECYCLING

The project proposes to develop a **complete recycling process for the Li-ion batteries** of electric vehicles, including a comprehensive recovery of strategic materials.

This project will eventually lead to the creation of an electrical manufacturing field for positive electrodes and battery cells using recycled materials. This will contribute to the energy transition, while helping protect national domestic independence in terms of critical metals, in a circular economy framework.
The Li-ion battery recycling market in Europe is expected to reach 1 billion euros by 2030.

ScaVanger

The ScaVanger project consists in **recovering strategic materials** (Scandium, Vanadium, Niobium) from residues of the titanium industry.

This collaborative project, led by Orano and including 5 other European partners, is part of the European research program «EIT Raw Materials». The developed process aims at providing a sustainable supply of Scandium, Vanadium and Niobium, thus contributing to the EU action plan for the circular economy.

Solutions geared to

the needs of our customers

We are committed to establishing a relationship of trust with our customers. For each project, our teams take the time to carefully analyze the customer's expectations. This is key to achieving a successful outcome when you develop innovative, customized solutions. From the initial studies, through process monitoring, to the start-up of industrial units, we are able to cover the entire R&D production chain and we deploy our staff worldwide to support the customer's implementation.»

Pascal NARDOUX
Director of CIME

For the past 40 years, CIME, located on the industrial site of Bessines-sur-Gartempe, has been developing scientific and technical solutions to meet the needs of national and international customers in the fields of energy, the environment, industrial recycling, health, ore processing and engineering.

With its experts, engineers and technicians, CIME assists companies and authorities in the conduct of studies and analyses right through to the design and implementation of industrial-scale pilots. As of 2021, CIME is equipped with a new 8,300 m² industrial facility, with installations designed to offer the highest levels of performance in terms of occupational and nuclear safety, security and environmental footprint.

A NEW INDUSTRIAL FACILITY
capable of spanning the full scope of R&D for projects

CIME benefits from a high-performance, state-of-the-art laboratory to carry out its studies and to meet the requirements of customers and partners alike.

STUDIES AND ANALYSES
following the process from start to finish

TESTS
at laboratory scale

PILOTS
tailor made

START-UP
industrial phase

Facilities at the **cutting edge of technology**

Some twenty laboratories for testing and analysis and a 1000 m² **pilot hall**

QUALIFIED AND COMMITTED TEAMS

Because each new project is different, the multi-disciplinary profiles and talents within the CIME team (expertise in chemistry, radiology, mineralurgy, mechanics, physics, etc.) constitute a major asset.

The close cooperation between the different disciplines and the diversity of the projects create a collective intelligence that leads to innovative solutions and promotes the development of new skills among our employees.

APPLICATIONS
of our expertise

Addressing **key environmental and societal issues,**
CIME carries out projects for its responsible customers in various different fields:

ENVIRONMENT

- Treatment of water using natural products (example: filtration over zeolites)
- Depollution and decontamination of soil, water, and industrial effluents
- Environmental analysis
- Study for the stabilization of waste by cement encapsulation
- Treatment and recovery of chemical products produced by industry through innovative solutions and technologies (example: membrane system, bio-recovery)

HEALTH

- Extraction and recovery of radioelements for medical treatments (example: Pb^{212} for Orano Med)

INDUSTRIAL RECYCLING

- Study for the manufacture of new multi-recyclable MOX fuel for pressurized water nuclear reactors
- Pilots for the extraction, purification and recovery of strategic metals from batteries and photovoltaic panels

PROCESSING OF ORES

- Bioleaching of low grade ores
- Metal recovery and purification by solvent extraction
- Optimization of precipitation by Fluid Bed technology
- Design of new pilot projects for processing plants (Mongolia, Uzbekistan, Kazakhstan)

ENERGY

- Project for the treatment of specific fuels (solubilization, recycling)
- Recovery of uranium from strategic metal effluents

Long-time partner

of innovative projects

AUTHORIZATION
to hold materials

34 T of Uranium
800 g of U^{235}

2 T of Thorium
+ 400 sources artificial non-sealed radioisotope sources

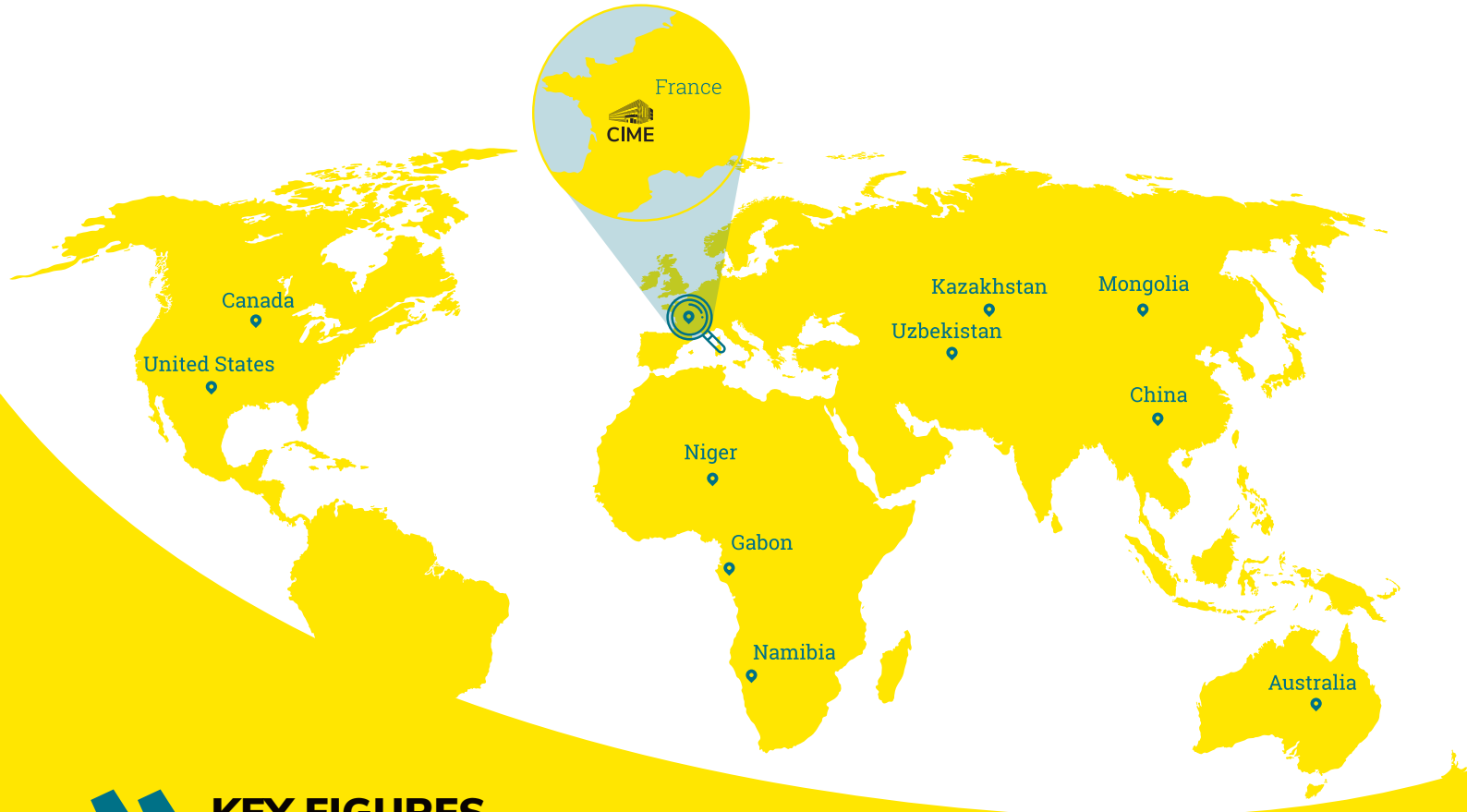
Analysis laboratory
ACCREDITED BY COFRAC*

NF ISO/CEI 17025 standard,
Since 1996
Accreditation n°1-5873
Scope available on **cofrac.fr**

CERTIFICATIONS

ISO : 9001 and 14001
ISO 45001

CIME supports its responsible customers worldwide, industrial companies and decision-makers.
*French certification and acreditation authorities



KEY FIGURES for the CIME

40
years
of experience

OVER 100
publications
patents

OVER 200,000
parameters
analyzed each year

OVER
10 MILLION euros
in annual revenues

OVER 10
pilotes
per year

CIME

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 17,000 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.

https://www.orano.group/cime

Center for Innovation in Extractive Metallurgy
2 route de Lavaugrasse
F-87250 BESSINES-SUR-GARTEMPE

Orano, giving nuclear energy its full value.

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