THE CENTRE FOR TUNNEL STUDIES (CETU)

A centre of expertise at the service of the tunnelling community
A resource centre providing support in the field of underground construction

The Centre for Tunnel Studies (CETU) is a public body within the French Ministry in charge of transport and was founded more than 40 years ago as a resource centre providing expertise on all technical issues related to tunnels.

Formerly the Tunnels Division of the Regional Technical Office in Lyon, CETU was officially created on 31st December 1970. It forms part of the Ministry’s scientific and technical network and reports to the head of the Directorate General for Infrastructure, Transport and the Sea (DGITM).

CETU’s activities cover every stage of a tunnel’s lifespan, from design, construction and operation, through to safety and asset management – encompassing both equipment and civil engineering issues.

CETU’s particularity resides in the complementarity of its different fields of activity – construction techniques and methods, environmental integration, asset management and road tunnel operation and safety. Its research activities, its production of professional guidelines and standards and the operational support that it provides to owners of road, rail and waterway tunnels, make CETU a unique resource and support centre in the field of underground construction.

A pivotal role amongst stakeholders in tunnelling

An advisory body to the Directorate for Infrastructure
CETU acts as an advisory body to its Ministry for the design, management and operation of State-owned tunnels on the national road network. In charge of monitoring tunnel assets and refurbishment programmes, CETU provides a wealth of operational and technical expertise at all stages. In addition, it directly participates in the drafting or amending of tunnel regulations, whilst assisting tunnel owners in their implementation.

A permanent support centre for local authorities
The work conducted by CETU for State-owned tunnels is also of direct benefit to local authorities, which also manage numerous tunnels. CETU is regularly called upon to assist these contracting authorities, providing expert insight, advice and training. One of CETU’s key missions is to help central government and local authorities better understand and apply regulations and assess the issues underpinning a tunnel construction or refurbishment project.

A team of experts at the service of tunnelling professionals
CETU’s valued technical assistance leads to its involvement in numerous tunnel feasibility, construction and refurbishment projects. Its involvement in working groups or specific assignments enables CETU to work in partnership with prime contractors and consultants, its role complementing that of other stakeholders. This permanent collaboration is an important means of fostering technological developments and improving the overall quality of tunnels.

Research, production of professional guidelines and standards, technical consultancy and engineering – CETU’s core activities

Research and the production of professional guidelines and standards: driving the field forward
Harnessing and sharing knowledge is one of CETU’s fundamental goals and accounts for over half of its activities. Research actions provide valuable input to professional guidelines and standards, reinforce CETU’s engineering activities and give impetus to the drafting and implementation of tunnel regulations, which CETU has been involved in for many years.

CETU’s teams have a strong presence amongst the scientific community, working across a range of disciplines such as human and organizational factors in tunnel safety, the design and operation of sustainable tunnels, knowledge acquisition and management, the assessment of tunnelling techniques, tunnel cost estimations and cost-efficiency assessments.

Technical consultancy and engineering – tailored to the needs of owners and operators
CETU provides a wide range of services for owners and operators, reflecting the breadth of its expertise. It provides engineering consultancy services and training within the scope of both short-term actions and larger-scale long-term projects. It also offers valuable support within the scope of tunnel asset policies, providing assistance on maintenance and operation issues, whether technical, organizational, regulatory, planning or works related.
A nationally recognized authority on tunnel engineering with an established presence on the global stage

CETU is actively involved in several expert networks both in France and abroad. It also chairs research committees and takes part in European projects. These networks provide a key forum for exchanging knowledge on tunnelling techniques and methods, whilst offering the opportunity to draw on the experiences of other countries and increase the outreach of the French technical community.

CETU has forged partnerships both in France, with AFTES*, GTFE*, research centres and schools, and at an international level, with flagship institutions such as PIARC*, ITA* and COSUF*. These partnerships help French engineers keep abreast of the latest developments in the field and showcase their expertise.

CETU draws on its skilled specialists (heads of department, technical advisors, engineers, technicians, etc.), working in multi-disciplinary teams, tailored to fit the study or research task at hand.

This cross-functional approach when building project teams has been applied for over ten years. The required resources are chosen from within the technical departments listed opposite.

Seven complementary departments

The Construction Methods, Contracts and Works Department provides tunnel owners with assistance when choosing prime contractors, seeking to optimise techniques, control costs and improve performance conditions. Its responsibilities include issuing guidance on study-related and works-related contracts.

The Engineering Geology and Geological Design Department is a leading source of expertise on ground-tunnel interactions. It contributes to the design of tunnel support systems and linings and is actively involved in project studies and the overseeing of excavation work.

The Materials, Structures and Tunnel Durability Department operates in two main areas – the design and inspection of materials and structures (notably in terms of fire resistance), and asset management (regulations, inspections and repairs).

The Ventilation and Environment Department covers all environmental aspects related to tunnels, in addition to ventilation for air supply/exhaust air removal and smoke extraction in the event of fires. It is heavily involved in research activities and the development of new tools, as well as conducting on-site measurements and diagnoses.

The Safety Department plays a leading role in the drafting and implementation of safety regulations. Its work seeks to improve knowledge of the key tunnel safety issues and propose analysis methods and recommendations for all relevant stakeholders.

The Operations Department deals with the management of tunnels and their equipment, the coordination of operations, equipment maintenance and the assessment of operating costs. It works closely with tunnel operators, sharing and disseminating knowledge – in particular by coordinating the French-speaking working group of road tunnel operators (GTFE) and dispensing targeted training.

The Electrical and Operational Equipment Department specializes in the technical systems of tunnels. Its remit covers system design (from feasibility studies through to works monitoring) and operation (including inspections). The advent of comprehensive tunnel management systems has heightened the importance of this field.

Cross-disciplinary technical advisors

The two technical advisors on opinion reports, in charge of internal quality control issue official recommendations on projects that come under State authority – the first dealing with civil engineering aspects and the second with equipment-related issues. They also play a key role in producing CETU publications.

The technical advisor on international networks and research is tasked with expanding and coordinating international networks on tunnel safety and security, providing high-level guidelines and assessments on tunnel safety and security in France and abroad, and overseeing CETU’s research activities.

Several technical advisors responsible for cross-cutting issues (major projects, rail tunnel actions, equipment inspections).
A vehicle for the policies and ambitions of its Ministry, CETU puts its resources and expertise at the service of public authorities and tunnelling professionals

At the crossroads of all tunnel-related activities and at the heart of dialogue between stakeholders of the profession, CETU plays a major role in harnessing and disseminating tunnel data, technical knowledge and best practices. It also produces numerous publications in the form of recommendations, technical guidelines, articles and theses.

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