HARDENED SHELTERS

CEGELEC Défense Infrastructure & Réseaux has long experience of projects involving the creation of **complex hardened infrastructures** aimed at housing communication systems for strategic command centres, as the company has participated in most of the major programmes undertaken by the French Ministry of Defence over the last 50 years, dating back to the nuclear missile site on the Plateau d'Albion.

STATE SOVEREIGN MISSION

Whether underground or half-buried, the shelters and relay stations housing the active and passive equipment of the command network play an important role: they provide the applications with a transmission medium that is permanently available, reinforced against High-Altitude EMP and protected against potential aggressions such as listening-in, intrusion, and explosions in the air or on the ground.

If the shelter is intended to receive personnel (command center), it must provide CBRN protection and survival requirements.

The extreme criticality of such an environment demands particularly strict requirements, based on appropriate solutions :

- Physical reinforcement (retaining wall, concrete casing, etc.) to resist against high-level attacks; anti-blast valves,
- High-altitude EMP reinforcement: integration of utilities in a main Faraday cage, linked to a reinforced power generator,
- Active lightning protection,
- Reinforcement of CBRN protection filters and positive pressure,
- Self-sufficiency : ability to survive thanks to long and short-term operational autonomy,
- Protection against intrusions : fence and/or barbed wire with intrusion detection and cut-off system,
- Fire detection and automatic extinction system,
- Central technical management and utilities management, normal and emergency lighting,
- Environment, adapting to the sites: layouts adapted to the configuration of sites, sizing of foundations and buildings based on soil studies and climate conditions.
  climatiques.

Cegelec Défense Infrastructures & Réseaux

FARADAY CAGES

As a central component for underground shelters or operational centers housed in an above-ground building, Faraday cages are vital to prevent systems being compromised, High-altitude EMP, COMSEC and TEMPEST protection.

As a system designer and manufacturer, CEGELEC Défense Infrastructures & Réseaux was commissioned by the CNES to design and produce a TEMPEST anechoic chamber; this was an unprecedented undertaking considering the cage's exceptional dimensions (L 30m x W 20m x H 18m) and the level of damping required.

CEGELEC Défense Infrastructures & Réseaux has provided the French Armed Forces with dozens of Faraday cages, and also provided the services to maintain the integrated equipment in operating condition :

- Power cabinets, uninterrupted power supply and rectifier bays,
- Cabinets for air-conditioning and air treatment,
- Fire protection and central technical management,
- Reinforced power generators,
- EMP Equipment: NIDAS, collecting plates, access air-locks, wave-blocking tubes, cut-off door, emergency door, etc.

MULTI-DISCIPLINARY EXPERTISE
PROVIDING A COMPREHENSIVE OFFER

Because Cegelec aims to provide its customers with the very best solutions and services, the company has brought together and developed a broad spectrum of skills: civil engineering, mechanical engineering, power production and distribution, air conditioning, security, monitoring and control systems, computing, networks, etc.
These are essential assets for complex projects involving underground or semi-buried facilities. They enable Cegelec to propose a comprehensive offer :

- Prime contracting service,
- Design, calculations for structures (3D modelling),
- Production,
- Qualification, integration,
- Deployment,
- Maintaining in operational condition (MOC),
- Rehabilitation.

Cegelec **Défense** Infrastructures & Réseaux

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