

Andra

Underground research laboratory

Keeping people and assets safe with Panorama

Integrator
Actemium Saint-Dizier

Andra's primary mission is to implement management solutions for the radioactive waste produced in France in order to guarantee the protection of the population and the environment. To this end, a research laboratory, located in Bure (55), was created to carry out the testing required for the long-term storage project Cigéo. This site comprises three distinct facilities. Firstly the underground laboratory, at a depth of 500 meters, with over 2,000 meters of galleries. Secondly, an Ecotheque, where samples of the ecosystem are to be stored, to enable the establishment of an «environmental baseline» which will be preserved into the future. And finally a technology space dedicated to public information.

Panorama installed throughout the site

Since 2007, Panorama has been implemented to **safeguard the personnel and facilities** at the Bure site. A **global hypervision** system has been set up to collect information from a multitude of local applications on three levels:

- The Surface level:

In the *Ecotheque*, a «Surface BMS/FM» manages the cold systems for archiving materials including rock and clay samples, as well as the BEMS, the HVAC, monitoring and observation of the drying room and the cold room, and the management of alarms for the entrance airlock and the clean room. Located at the heart

of the site, the operations center supervises all the facilities: labs, technology space, and administrative buildings. In particular, it implements instrumentation and **control functions** integrating **access control, CCTV and geo-location**.

- Mobiles:

To provide a continuous link between the surface and the deep storage levels, two access shafts consisting of a freight elevator and two passenger elevators are operated and supervised continuously.

- The Underground level:

with more than 2km of tunnels,

the **SCADA system devoted to these galleries** controls numerous equipments and devices to ensure that underground staff can work comfortably and in complete safety. The «Underground BMS/FM» is located in the emergency bay, which includes a station for the underground evacuation officer and a firefighter station. It controls the management of the ventilation system, the electrics, the water pumps, the linear heat and gas detection systems as well as the personnel positioning and evacuation systems and other options.





Panorama, a decision support system

Acting as an operational link between the surface and the underground levels, the Command Post is equipped with around ten HMIs, making it a veritable **control tower** for the whole facility. Within this hypervision system, a **Decision Support Unit (DSU)** provides scripted instructions in the event of fire. It helps operators to get the right information at the right time in order to make the right decisions and take the right action. To do this, it uses several standard SCADA functions including visuals for the display of real-time information and log data, the management and retrieval of status and alarm tables, and the issuing of commands.



The Command Post

in figures

- **Footprint of site : 17 hectares**
- **Over 2,000 meters of underground facilities**
- **490 meters in depth**
- **2 access shafts, 4 and 5 meters in diameter**

Day-to-day operational safety and security

Panorama is a robust and proven SCADA platform that is supporting Andra in its innovative projects. One of the objectives is to avoid human errors that could degrade the level of performance required for safety. Indeed, the scientific research site hosts up to 380 postings every day. The staff must be able to count on a reliable and secure tool. The **scalability of the system** has been thoroughly proven, progressing over a 15-year period from a scope limited to controlling the elevator systems at the outset, to today offering hypervision functionality for the entire site.

The Cigéo project

Every day, Andra's research and testing laboratory collects **more than 2.7 million data** (rock temperature, permeability, pressure, etc.) to feed into the design work for the future deep storage facility. If the Cigéo project is approved, the research laboratory is expected to remain in operation at least until 2030, in order to continue to **be a place for advanced scientific and technological experimentation and innovation**. The Ecotheque, meanwhile, will continue to compare sample types from past and future years to ensure the protection of the population and the environment.



Galleries