

NUCLEAR FACTSHEET

Safety assessment for the design of nuclear waste storage structures

Field of activity
NUCLEAR ENERGY
Radioactive waste storage

Context

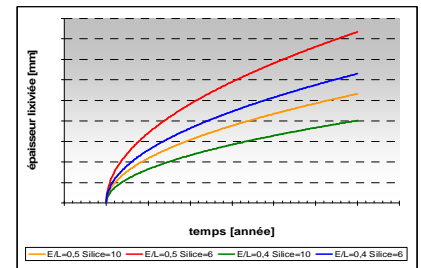
This study concerned a radioactive waste storage site consisting of reinforced concrete storage structures. These will be buried by earth banks of several metres depth after approximately 50 years of use.

The design of each new generation of tanks is optimized thanks to an analysis of the behaviour and design of the previous generation. The difficulties of such a review mainly consist in (1) gathering and integrating all the design, construction and operation data, (2) considering the 350 years of expected lifespan during which confinement criteria must be met, and (3) taking into account financial aspects.

In this context, OXAND was chosen to produce a complete performance analysis of the existing tanks, based on proven skills in structure calculation and in materials ageing, and on its reputable experience in nuclear infrastructure management.

Methodology

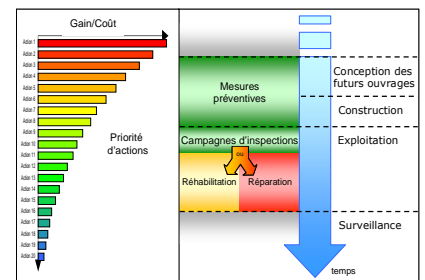
- Comprehensive analysis of the critical design hypothesis and inventory of potential discrepancies
- Simulation of concrete deterioration kinetics over 300 years (using SIMEO™ software)
- Structural calculations to check safety margins (finite element analysis)
- Evaluation of the criticality and prioritisation of the discrepancies to be treated



Simulation of the advance of the leaching front – SIMEO™

Value added

- **Recommendations for design hypothesis update** (both envelope and realistic)
- **Recommendations for construction** to ensure sustainability and facilitate risk management
- **Development of a short and long term action plan** for both existing and future tanks, based on a cost-benefit analysis
- **Framing of client's requirements** in the form of tender specifications and support for the preparation of the Design Review



Action plan

OXAND

Internet : www.oxand.com
E-mail : contact@oxand.com