

## **State-of-Art Demonstrations of Geological Deposition for High Level Waste Large Underground Concept Experiments – The LUCOEX Project**

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The overall objective of the four year LUCOEX project is to demonstrate the technical feasibility *in situ* for safe and reliable construction, manufacturing, disposal and sealing of repositories for long-lived high-level nuclear waste. The demonstration activities in the project take place in four different underground research laboratories (URL) in Europe, which have been constructed for the specific purpose of developing repository technology under repository-like conditions. The demonstrations include four different geological deposition concepts, which have been developed individually to the present state-of-the-art in national programmes. We are now combining knowledge and practical experiences to develop the demonstration installations and these concepts further in cooperation.

The four addressed repository concepts are:

- Horizontal disposal of waste packages in Opalinus Clay formation
- Horizontal disposal of waste packages in Callovo-Oxfordian clay formation
- Horizontal disposal of waste packages in crystalline hard rock
- Vertical disposal of waste packages in crystalline hard rock

In order to establish confidence in the technical feasibility of constructing and operating the four repository concepts the following key technical issues are addressed in LUCOEX:

- Gallery construction
- Manufacturing and emplacement of buffer around waste canisters
- Emplacement of waste packages
- Backfilling and sealing of galleries

The quality and use of obtained technical achievements are enhanced by engaging many more persons in the addressed issues than the ones taking part in the actual project. This is achieved by distributing out results and findings through workshops, conferences, our webpage, scholarships for participating in the project and most importantly through a direct dialogue with interested parties. Because of this we have ensured that all four participating URLs are open for domestic and foreign engineers, decision makers and the general public interested in getting information at the actual sites of the demonstrations.

At the current state of progress of the project (LUCOEX will be completed 2015), gallery construction and instrumentation of drifts is mostly finished. We are now focusing on the manufacturing of buffer material and development of the necessary support equipment to be able to handle the emplacement, backfilling and sealing of the galleries during 2013. Further information regarding our key technical issues will be presented at the EURADWASTE 2013 conference and on our webpage [www.lucoex.eu](http://www.lucoex.eu).