

Welcome to the



Conference & Workshop

Full-scale demonstration tests in technology development of repositories for disposal of radioactive waste

2-4 June 2015, Oskarshamn, Sweden

Venue: Forum, Södra Långgatan 15, Oskarshamn

www.lucoex.eu/conference

Day 1

- 09.00-10.00 **Registration and coffee**
10.00 **Welcome and opening of conference**
(Magnus Westerlind, SKB Erik Thurner, SKB)
10.05-10.15 **News from EC** (Christophe Davies)

10.15 – 12.00 Session 1

National programmes of Geological disposal

Chair: Monica Hammarström, SKB

Geological disposal programmes in crystalline hard rock

- 10.20 SKB (Magnus Westerlind)
10.45 Posiva (Petteri Vuorio)

Geological disposal programmes in clay formation

- 11.10 Andra (Jean-Michel Bosgiraud)
11.35 Nagra (Tim Vietor)

12.00–12.45 Lunch

(at the conference premises, hosted by the project)

12.45 – 17.00 Session 2

Full-scale tests – planning and installation

Chair: Jean-Michel Bosgiraud, Andra

Presentations from LUCOEX and other projects

- 12.50 **FE/LUCOEX: Backfilling a horizontal tunnel with granulated bentonite - machine development, pre- & mock-up tests and application at the Mont Terri URL**
Sven Köhler, Nagra
13.10 **Instrumenting, monitoring and heating the Full-Scale Emplacement (FE) Experiment at the Mont Terri URL**
Herwig Müller, Nagra
13.30 **HLW cell full scale demonstration test in Bure URL: method of realization and behaviour characterization**
Frédéric Bumbieler, Andra
13.55 **Technical feasibility of the Cigéo Project seals**
Régis Foin, Andra
14.15 **The preparation of the large-scale PRACLAY Heater test**
Philippe Van Marcke, ONDRAF

14.40 – 15.10 Coffee break

- 15.10 **Multi Purpose Test, LUCOEX WP4, a full scale demonstration of KBS-3H technology**
Magnus Kronberg, SKB

- 15.30 **Multi Purpose Test, LUCOEX WP4, Instrumentation – Experiences from planning, installation and monitoring**
Xavier Pintado, B+Tech
15.55 **Full-scale tests – planning and installation, KBS-3V**
Keijo Haapala, Posiva
16.20 **Review of monitoring technology for repositories: outcome of instrumentation performance obtained from dismantled long duration experiments and recently installed ones**
J.L. Garcia-Siñeriz, AITEMIN

17.00-19.00 Poster session (list incomplete)

A light snack will be served during the session.

LUCOEX and its application on Europe - A. Wiberg, UU
LUCOEX WP2 - Full-Scale Emplacement (FE) Experiment at Mont Terri URL - H. Muller et al, Nagra
LUCOEX WP3 – Disposal in Callovo-Oxfordian Clay - J. Morel et al
LUCOEX WP4 – Horizontal disposal in crystalline rock - M. Kronberg et al
LUCOEX WP5 – KBS 3V Emplacement tests in Onkalo - K. Haapala, Posiva
Experimental study of the mechanical behavior of a steel casing in a 500 m deep clay formation - F. Bumbieler et al
FE experiment/LUCOEX: Production of bentonite based backfill materials - B. Garitte et al
Quality control, traceability and verification of the process for construction of deposition tunnels – H. Ittner et al
A general overview of the DOPAS project - J. Hansen
DOPAS design basis workflow - M. White, Galson
Large scale sealing experiment in the Meuse/Haute-Marne Underground Research Laboratory - R. de La Vaissière et al
FE/LUCOEX: Density measurement of granulated bentonite mixture in a 2D pre-test using a dielectric moisture profile probe - Toshihiro Sakaki et al
FE/LUCOEX: Density measurement of granulated bentonite mixture in a full scale mockup test using dielectric tools - Toshihiro Sakaki et al
FE/ LUCOEX: Development of a prototype machine for backfilling horizontal emplacement tunnels with granulated bentonite - H. Jenni et al.
FE Experiment: The instrumentation and monitoring concept of a 1:1-scale heater experiment - T. Vogt et al.
Requirements and Approaches for Optimization of the Bentonite Barrier around SF HLW Disposal Canisters – S. Köhler et al
Stability of compacted bentonite blocks and block pedestals under changing climatic conditions in tunnels and long-term loads – B. Garitte et al
Synoptic structural geological analysis of the MB & FE tunnel excavation in the Mont Terri URL – J.K. Becker et al
Results from hydro-mechanical and geochemical analyses of the retrieved buffer material from the Prototype Repository at Äspö HRL – LE Johannesson et al
Prototype retrieval – Graham et al
Ukrainian strategy for disposal in deep geological repository - B. Zlobenko
Management of spent nuclear fuel in Lithuania – Grigaliūnienė et al
Long-term performance of engineered barrier systems: Modelling the interactions of corrosion products with compacted bentonite in a HLW repository in granite – Naves et al

19.00

Dinner

at the Conference premises (hosted by the project)

Day 2

08.30 - 08.35 **Intro day 2.** Erik Thurner

08.35 – 09.40 **Session 2 (Cont.)**

Full-scale tests - planning and installation

Chair: Jean-Michel Bosgiraud, Andra

Presentations:

- 08.40 **Requirements-based Design In Support of Full-scale Tests of Plugs and Seals in the DOPAS Project**
Matt White, Galson
- 09.00 **Full-scale test of a Dome plug tunnel seal at Äspö HRL - Design, installation and results**
Pär Grahm, SKB/DOPAS
- 09.20 **Dismantling of the Febex experiment**
Florian Kober, FEBEX

09.45 - 10.00 **Coffee break**

10.00 – 11.45 **Session 3**

Excavation of tunnels/drifts

Lessons learned from different excavation techniques in crystalline hard rock and clay formations

Chair: Jukka-Pekka Salo, Posiva

Presentations:

- 10.05 **Lessons learnt from constructing the FE tunnel incl. monitoring results**
Herwig Müller, Nagra
- 10.25 **KBS-3H, LUCOEX WP4 - Experiences from directional core drilling at the Äspö HRL**
Göran Nilsson, GNC AB
- 10.45 **Lessons learnt from excavating the clayish Callovo-Oxfordian host formation at the Bure URL and excavation technologies considered for the future Cigéo DGR**
François Chauvet, Andra
- 11.10 **Wire sawing of deposition tunnels**
Stig Pettersson, SKB

11.45–12.30 **Lunch** (at the conference premises, hosted by the project)

12.30 – 14.40 **Session 4**

Production of bentonite blocks and granulates

Lessons learned from different production techniques for bentonite blocks and granulates

Chair: Herwig Müller, Nagra

Presentations:

- 12.35 **FE/LUCOEX: Design criteria for bentonite block manufacturing and emplacement in an underground facility**
Tim Vietor, Nagra
- 12.55 **Production of buffer and backfill for the Multi-Purpose Test (MPT)**
Peter Eriksson, SKB

13.15 **Manufacturing of Buffer Blocks, Backfill Blocks and Pellets for Posiva's KBS-3V concept**
Jutta Peura, VTT

13.35 **From ESDRED to NSC, SET and FSS: Fabrication and use of compacted Wyoming sodic bentonite in Andra's sealing experiments**
Sébastien Paysan, MPC

14.00 **Experimental works with bentonite pellets at the CEG**
Jan Smutek, Czech Technical University

14.20 **FE/LUCOEX: QA/QC during granulated bentonite material production and emplacement**
Hanspeter Weber, Nagra

14.40 - 15.00 **Coffee break**

15.00 – 17.00 **Session 5**

Panel discussion

Presentations from four organisations on their programmes and plans related to large/full scale tests, followed by discussions and advice from an expert panel.

Chair: Monica Hammarström, SKB

Co-Chair: Christer Svemar, SKB

Introduction: Ann Caroline Wiberg

Evaluation of how the LUCOEX results can be utilized by the less-advanced programs

Expert panel: Jean-Michel Bosgiraud, Alan Hooper, Johanna Hansen, Stig Pettersson and Tim Vietor

Panel members representing:

- Surao (Czech Republic) Vítězslav Duda
- PURAM (Hungary) Kálmán Benedek
- INR (Romania) Marius Iordache
- RWM (UK) Robert McLaverty
Kevin O'Donoghue

17.00 – 17.15 **Summary and Conclusions**

Chair: Erik Thurner. Summary by the scientific rapporteurs: Lumir Nachmilner and Wilhelm Bollingerfehr

End of conference

Day 3, June 4th (Optional)

Visit ÄSPÖ HRL

08.00-12.00

A visit to the Äspö Hard Rock Laboratory (**Transportation will leave from Forum at 07.30**)

12.00-13.00 **Lunch** (hosted by SKB)

Transport to Oskarshamn/Kalmar in the afternoon will be provided. Kalmar Central station 14.30. Kalmar Öland Airport 14.45.