

# FULL-SCALE TESTS, PLANNING AND INSTALLATION, KBS-3V

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LUCOEX CONFERENCE &  
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OSKARSHAMN, SWEDEN



# Contents

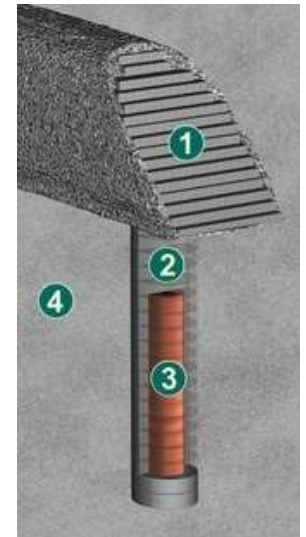
- Accuracy requirements for buffer.
- Sensitivity of bentonite to the moisture.
- Development of buffer installation machine.
- Installation demonstrations.
- Testing of buffer installation problem handling tools.



Large Underground Concept Experiments  
This Project has received funding from EuroAtom/FP7  
under grant agreement n°269905.

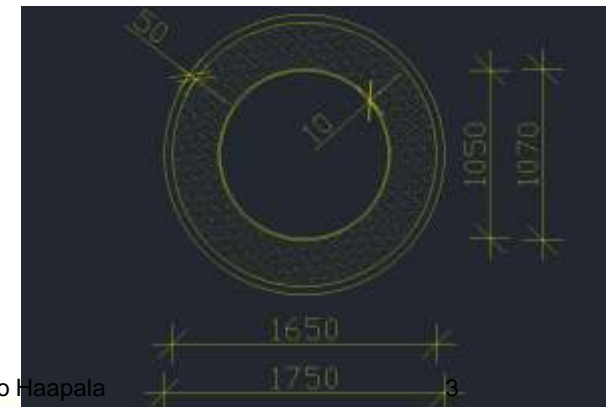
# Accuracy requirements for buffer

- **Straightness of bottom in disposal hole:**  
**Inklination no more than 1mm / 1750 mm**  
**(diameter).**
- **Tolerances of buffer block:**
  - **Diameter: +/- 2 mm.**
  - **Height: +/- 1 mm.**
  - **Deviation of parallelism between bottom and top surface: less than 1 mm.**



- 1: Backfill blocks
- 2: Buffer blocks
- 3: Copper canister
- 4: Host rock

Cross-section of disposal hole



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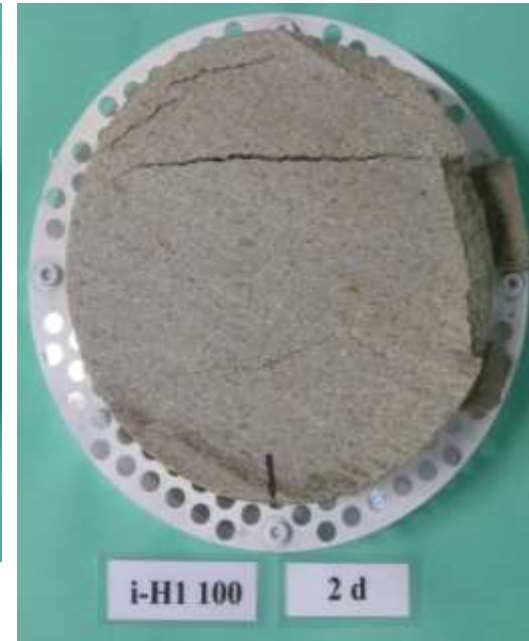
# Sensitivity of bentonite to the air humidity



The initial state



**Damages after 2 hours.**



After 2 days RH 100 %



# Development of buffer installation machine

- The work started 2008 with vacuum lifter tests.
- Development 2011 – 2015 under LUCOEX-project, Work Package 5
- New ideas for installation, transportation and moisture protection.



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# Animation film: Bentonite buffer installation sequence

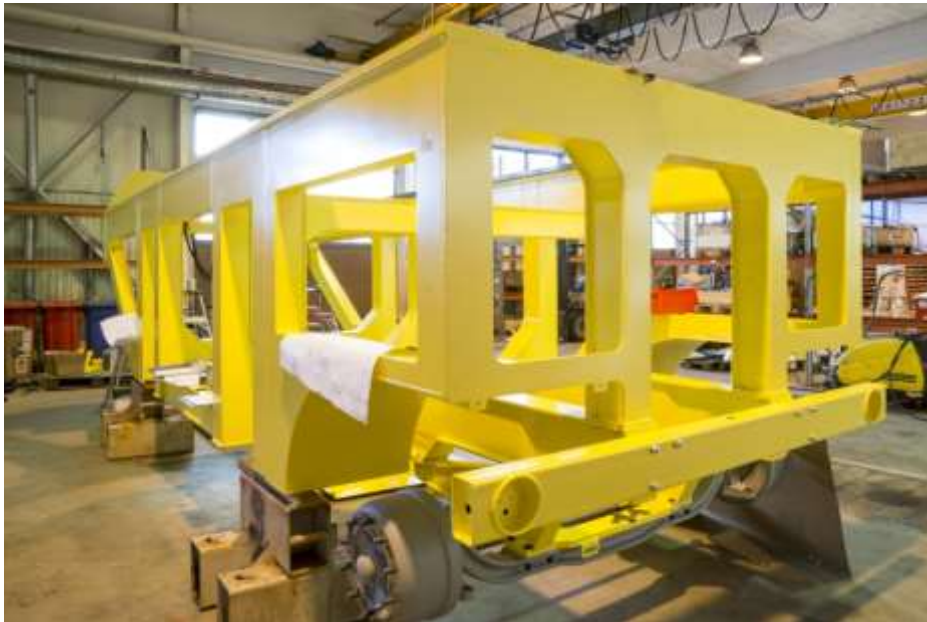
## 3:10 min



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# Manufacturing of buffer installation machine BIM

- The frame of BIM under construction.



  
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 **POSIVA**

# Testing of BIM in test hall

- BIM over disposal hole.
- Lowering the block to the hole



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# Film: Testing of BIM in test hall

## 4:50 min



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# Installation demonstrations in ONKALO



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# Installation demonstrations in ONKALO



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# Installation demonstrations in ONKALO



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# Film: Demonstrations performed in ONKALO URCF

8:40 min



# Testing of installation problem handling tools

- Demonstrations performed in ground level as well in ONKALO URCF.
- Testmethods: Water jet cutting and lifting of block pieces.



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# Kiitos Thank you

