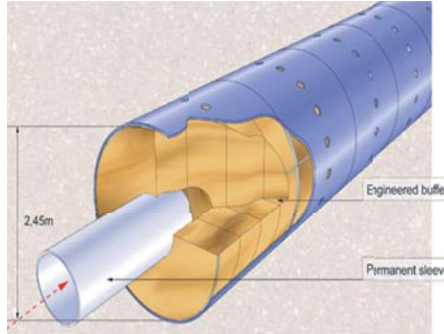


ESDRED - An Integrated Project Focused on Technology Development (1/3)

Wolf K Seidler, Jean-Michel Bosgiraud
 Andra - Agence nationale pour la gestion des déchets radioactifs

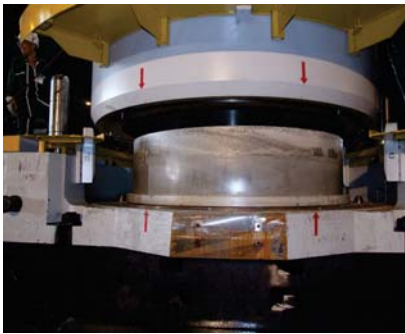
MODULE 1 - BUFFER CONSTRUCTION TECHNOLOGY



Andra's conceptual design showing perforated liner, bentonite rings and inner sleeve



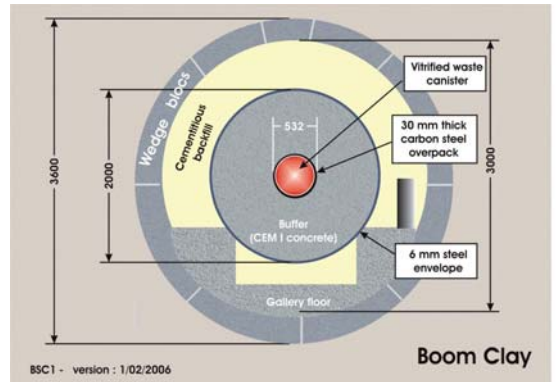
Mould fabricated and commissioned at Le Creusot Mecanique's premises



Bentonite ring just after stripping from mould at Issoire



View of set of 4 rings loaded onto air cushion test bench launch table (fabricated as part of Module 3)



Ondraf/Niras conceptual design showing Super Container, Wedge Block Liner and Cementitious Backfill



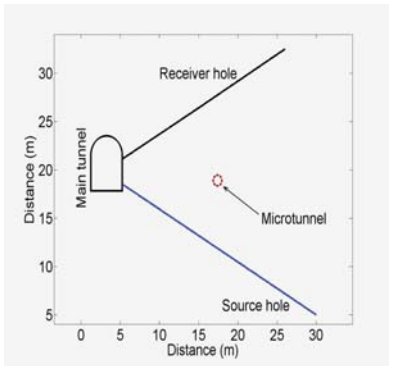
Granular materials backfill placement machine and spray nozzle during test with MX-80 Bentonite at Mol



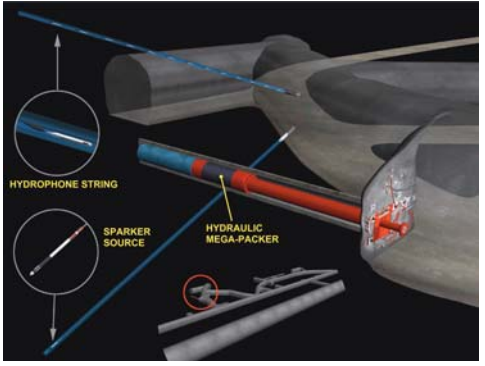
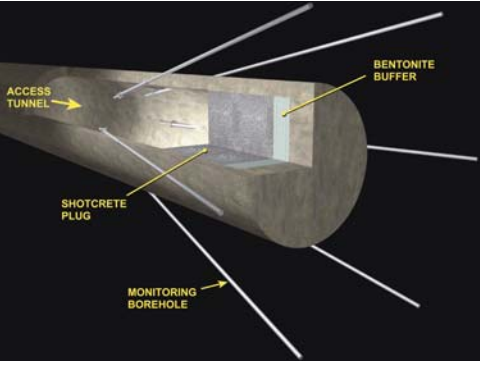
Results of the reduced scale grout backfill test



Grout backfill full-scale mockup during construction at Mol



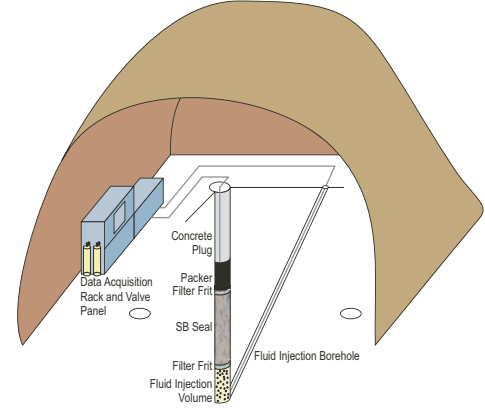
Cross-hole seismic tomography non-intrusive monitoring design experiment



Installation at Mt. Terri Underground Laboratory Switzerland



Data collection at Grimsel Underground Laboratory Switzerland



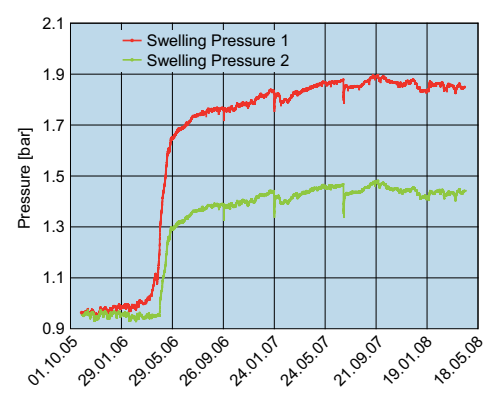
Design of the SB self sealing clay/sand barrier



SB mock-up at GRS's Geotechnical Laboratory in Braunschweig



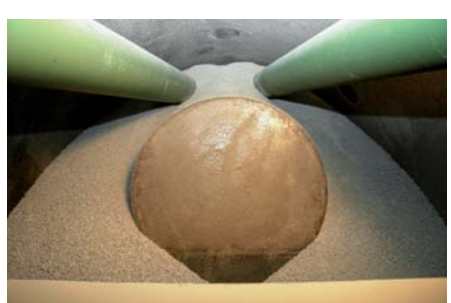
Test Niche at Mt. Terri for the SB experiment



Measured evolution of swelling pressure at top of seal in the field test at Mt. Terri



Twin auger system to emplace granular bentonite buffer material around mock-up canister



Gradual filling of buffer material around canister



Low pH shotcrete applied on test panels of Opalinus Clay



Large scale field test using low pH shotcrete for rock support at the Hagerbach underground facilities