Engineering Studies and Demonstrations of Repository Designs (ESDRED)

Results in Brief

Safe transfer for waste storage

Industrial prototypes were developed for the underground transportation of radioactive waste canisters and very heavy loads, including prefabricated buffers and extra large containers.

National radioactive waste management agencies and research organisations from across Europe joined together to design a repository for radioactive waste. The 'Engineering studies and demonstrations of repository designs' (Esdred) project involved 13 partners from 8 EU Member States and Switzerland.

The project used industrial-scale prototypes to demonstrate the safe disposal of long-lived radioactive material in geological formations. Consortium members developed technology for the remote-controlled transfer of radioactive waste canisters and heavy loads to storage underground. One of the main challenges facing the team was to be able to operate in confined spaces.

Two groups of project partners designed, built and demonstrated two alternative systems for the transfer and emplacement of waste canisters in horizontal and vertical shafts. The two different types of test canister contained inert material and
weighed 2 and 5.2 tonnes respectively.

Scientists and engineers from the Esdred consortium also developed a system for placing, in horizontal shafts, very heavy waste canisters weighing between 43-45 tonnes each. Air cushion technology was used to reduce the high level of friction that occurs when pushing such a heavy load into position.

The equipment was then adapted to demonstrate how it could put in place 4 pre-assembled 17 tonne bentonite rings. Bentonite is an absorbent clay formed from volcanic ash and is placed between the radioactive waste containers and the rock formation to act as a buffer.

The Esdred project helped to establish the feasibility of the safe disposal of long-lived radioactive waste underground on an industrial scale. It also showed that Europe’s radioactive waste management organisations can successfully work together to overcome technical challenges and produce new systems and technologies.

---

**Project Information**

**ESDRED**

Grant agreement ID: 508851

<table>
<thead>
<tr>
<th>Start date</th>
<th>End date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 February 2004</td>
<td>31 January 2009</td>
</tr>
</tbody>
</table>

**Funded under**

FP6-EURATOM-NUWASTE

**Overall budget**

€ 23 885 470

**EU contribution**

€ 7 826 100

**Coordinated by**

AGENCE NATIONALE POUR LA GESTION DES DECHETS RADIOACTIFS

France

---

Discover other articles in the same domain of application
NEW PRODUCTS AND TECHNOLOGIES

Tidal energy reaches another milestone

7 June 2017

SCIENTIFIC ADVANCES

Smart, energy-saving glass solutions for large windows and glass façades

26 November 2020

RESULTS IN BRIEF

New technology set to enable small-scale biofuel production

26 June 2020

Last update: 31 May 2010
Record number: 85460


© European Union, 2020