WG1 - Industrialisation and optimisation

IGD-TP EF6
Working Group 1
Introduction by
Johan Andersson, SKB and
Johanna Hansen, Posiva
Aim of WG1

- To find out whether there are joint industrialisation and optimisation aspects for reaching the Vision 2025 (for spent fuel or other high level waste).
- The discussion will take place within WMO’s and organisations supporting the WMO’s to reach the target.
- Aspects are relevant also for countries still developing disposal concept, since the countries/WMO’s near the licencing phase are pacemakers and have experience in scientific, political and societal questions related to the final disposal.
## WG1 Programme and schedule

**Tuesday 25\(^{th}\) Oct, Working Groups parts 1 and 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
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<tbody>
<tr>
<td>14:00</td>
<td>Session introduction – WG aims</td>
<td>J Andersson, SKB and J. Hansen, Posiva</td>
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<tr>
<td>14:20</td>
<td>Industrialisation and optimisation of the KBS-3 repositories</td>
<td>J. Andersson, SKB and T. Jalonen, Posiva</td>
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<td>14:40</td>
<td>Development of optimisation methodology and methodology illustration</td>
<td>D. Galson, Galson Sciences</td>
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<td>15:00</td>
<td>International cooperation and consensus in geological disposal</td>
<td>A. Dreimanis, Radiation safety centre of the State Environmental Service</td>
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<td>15:20</td>
<td>Reducing the cost of waste containers for decommissioning and geological disposal</td>
<td>J. Hardy, Nuclear AMRC</td>
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<td>15:40</td>
<td>Coffee Break</td>
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<td>16:00</td>
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### Part 2

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<th>Time</th>
<th>Session</th>
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<tr>
<td>16:20 – 16:40</td>
<td>Looking for rational environmentally friendly approach for development of concept for safe nuclear waste repository in preparing for future projects</td>
<td>I. Ivanov, TUS</td>
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<td>16:40 – 17:00</td>
<td>Discussion</td>
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<td>17:00</td>
<td>Close of day 1</td>
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### Wednesday 26\textsuperscript{th} Oct, Working Groups part 3

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<th>Time</th>
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<tr>
<td>09:00 – 10:30</td>
<td>Discussion and summary session, aiming to: i) summarise what was presented, ii) agree and document some recommendations for how IGD-TP should (if at all) continue with this technical area</td>
<td>J Andersson, SKB, J. Hansen, Posiva adn all WG1 attendees</td>
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IGD-TP vision

- The Implementing Geological Disposal of Radioactive Waste Technology Platform (IGD-TP) was launched on 12 November 2009 (IGD-TP, 2011). The vision ("Vision 2025") of the IGD-TP is that "by 2025, the first geological disposal facilities for spent fuel, high-level waste (HLW) and other long-lived radioactive waste will be operating safely in Europe (IGD-TP, 2009). The IGD-TP’s activities are driven by this vision that, and its commitment to:
Role of IGD-TP activities

- Build confidence in the safety of geological disposal solutions among European citizens and decision-makers.
- Encourage the establishment of waste management programmes that integrate geological disposal as the accepted option for the safe long-term management of long-lived and/or HLW.
- Facilitate access to expertise and technology and maintain competences in the field of geological disposal for the benefit of Member States."
Industrialisation and optimisation

- Joint work in previous programmes:
  - Prototype repository (KBS concept)
  - Esdred (methods and emplacement)
  - Lucoex (machines in full scale)
  - DOPAS (full scale demonstrations on plugs and seals)

- It has been demonstrated that concept is safe and can be constructed, with some uncertainties (processes like homogenisation, erosion, corrosion etc)

- Now some WMO:s (Posiva, SKB and Andra) will soon enter actual implementation
Needs for industrialisation and optimisation

- Logistics (underground work, material flows)
- Methods for production (fast, reliable, QA/QC)
- Licencing
- Occupational safety and design
- Alternatives and options for future
- On site tests – learning for others
- Safety case co-operation for operational facilities in future
Areas of common interest?

- Research results and technology know-how that can be useful for implementation and optimisation:
  - Host rock issues e.g.:
    - Applicability of site descriptive models
    - Means of adapting repository to site conditions (selection of suitable rock volumes)
    - Detailed methods and interpretation
  - Canister issues e.g.:
    - Material science
    - design and verification,
    - NDT methods
  - Buffer, backfill and closure aspects e.g.:
    - homogenisation, chemical and mechanical erosion, interactions – how these items does influence to the design – and how these will be verified in full scale
- What else?
Technology readiness levels (TRL)

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment
- TRL 6 – technology demonstrated in relevant environment
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment
Kiitos
Thank you

26.10.2016 Hansen Johanna