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 25th Oct, Working Groups parts 1 and 2

Part 1		
14:00 – 14:20	Session introduction – WG aims	J Andersson, SKB and J. Hansen, Posiva
14:20 – 14:40	Industrialisation and optimisation of the KBS-3 repositories	J. Andersson, SKB and T. Jalonen, Posiva
14:40 – 15:00	Development of optimisation methodology and methodology illustration	D. Galson, Galson Sciences
15:00 – 15:20	International cooperation and consensus in geological disposal	A. Dreimanis, Radiation safety centre of the State Environmental Service
15:20 – 15:40	Reducing the cost of waste containers for decommissioning and geological disposal	J. Hardy, Nuclear AMRC
15:40 – 16:00	Coffee Break	

Part 2		
16:00 – 16:20	Pyro(hydro)lysis of Spent Ion Exchange Resins for the Disposal of Organic-Free Radioactive Waste	H.G. Jung, NUKEM
16:20 – 16:40	Looking for rational environmentally friendly approach for development of concept for safe nuclear waste repository in preparing for future projects	I. Ivanov, TUS
16:40 – 17:00	Discussion	
17:00	Close of day 1	

Wednesday 26th Oct, Working Groups part 3

Part 3		
09:00 – 10:30	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	J Andersson, SKB, J. Hansen, Posiva adn all WG1 attendees

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