

Critical Materials and Life Cycle Management

The Example of Rare Earths – Curse or Blessing?

Workshop 6th-8th February 2023

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06.02.2023

HELMHOLTZ SPITZENFORSCHUNG FÜR
GROSSE HERAUSFORDERUNGEN

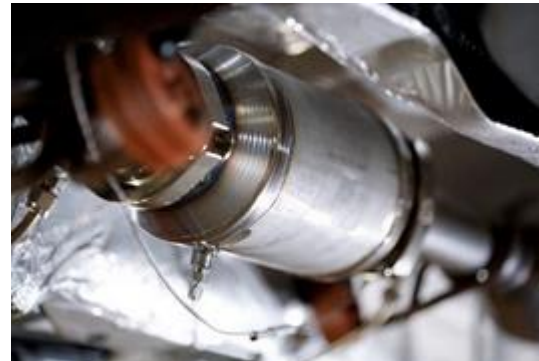


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Rare Earth Elements

Variety of Applications



source: <https://de.freepik.com/>

Rare Earth Elements (and other critical materials)



Variety of Problems

Liam Young/Unknown Fields



source: INKOTA, 2018, Kobalt kritisch³,
Foto: Meinrad Schade/laif

source: ORF, 2015, Auf der dunklen Seite des Fortschritts:
<https://orf.at/v2/stories/2272650/2272651/>

source: BGR, 2021, Seltene Erden –
Informationen zur Nachhaltigkeit



source: Spektrum, 2020, Politik bedroht unberührte
Amazonasgebiete,
<https://www.spektrum.de/news/politik-bedroht-unberuehrte-amazonasgebiete/1754314>

PETRA IV

Switch to Permanent Magnets



DESYs Approach to Sustainability

Comprehensive idea



Handlungsfelder - Fields of action



Organisationsführung

Organisational management



Forschung

Research



Personal

Human Resources



Gebäude & Infrastrukturen

Buildings and Infrastructures



Unterstützende Prozesse

Supporting Processes



Workshop content

Explore possible solutions



Using permanent magnets: Examples of the use of permanent magnets and its Pros and Cons

Mining and processing of rare earths: A socio-ecological approach – energy savings versus destructive mining and processing

Life cycle management: Consider entire life cycle of technical components using critical materials: construction – operation – deconstruction

→ 3 possible routes for solutions:

Certification for mining and processing of REE: How to force more sustainable thinking in the production of REE

Recycling of permanent magnets: New processes for the re-use and recycling of permanent magnets

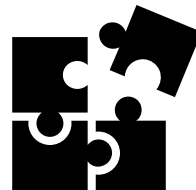
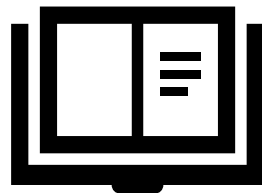
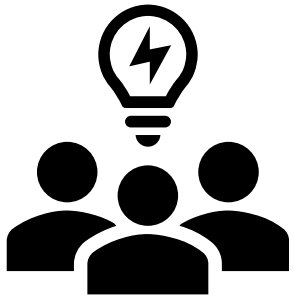
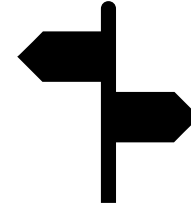
Alternatives for magnet designs without REE: New magnetic materials as well as improved electromagnets

Workshop idea

Awareness – Understanding – Solutions



- Workshop
- Consider a variety of perspectives
- Start conversation with new groups
- the wisdom is in the group

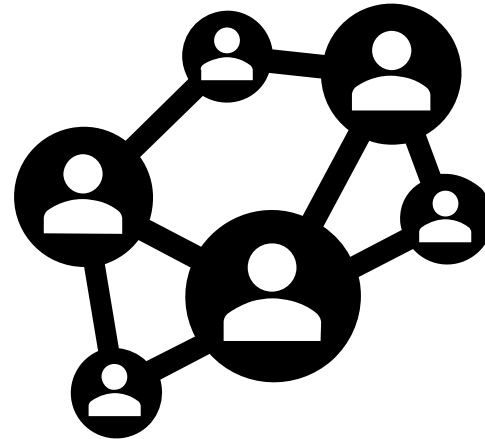


Participants

Bring together different views



- Experts on LCA and CoC
- Experts on Recycling
- Experts on alternative designs
- Users of REE
- Magnet Producers
- Politics
- NGO



Agenda

Agile if needed



Monday 6.2.



- Get each participants group the info from the others
- Introduce paths for solutions
- Prepare the discussion basis

Tuesday 7.2.



- Morning session on Chain of Custody/Certification/Auditing on the broader sense with LCA as a basis
- Afternoon session on REE Recycling

→ Discussions and Exchange

Wednesday 8.2.



- Alternative magnet designs
- Conclusion

Logistics



- Registration counter and info
- Covid
- Exhibition in Foyer
- DESY Tour incl. Magnets Wednesday
12.00 – 13.30
- Breaks and Food
 - Dinner Monday at Foyer
 - Dinner Tuesday at Canteen
 - Wednesday lunch pack



Let's start...