

JRC support to the Clean Hydrogen JU's activities



P. Moretto
European Commission

JRC sites



The scope of the JRC - JU Collaboration

**Knowledge
Management**

Sustainability

**Regulations
Standards**

Safety

*Programme
targets
(MAWP-SRIA)*

*Annual
Programme
assessment*

*Methods
Guidelines*

Strategy

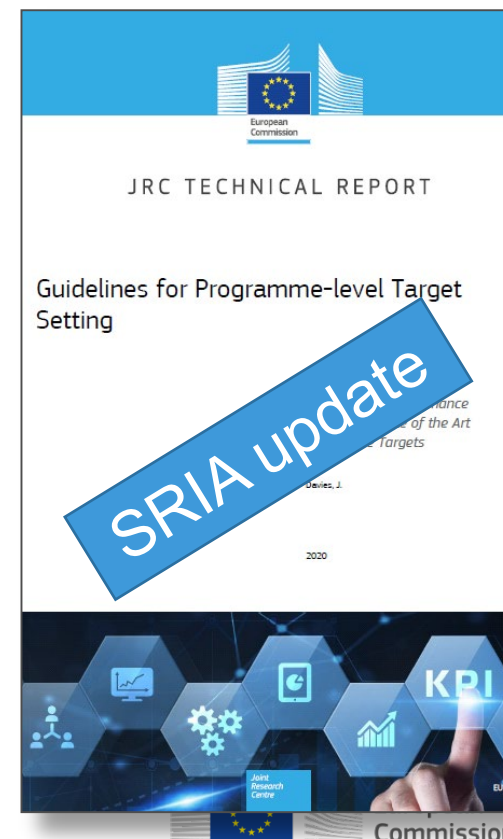
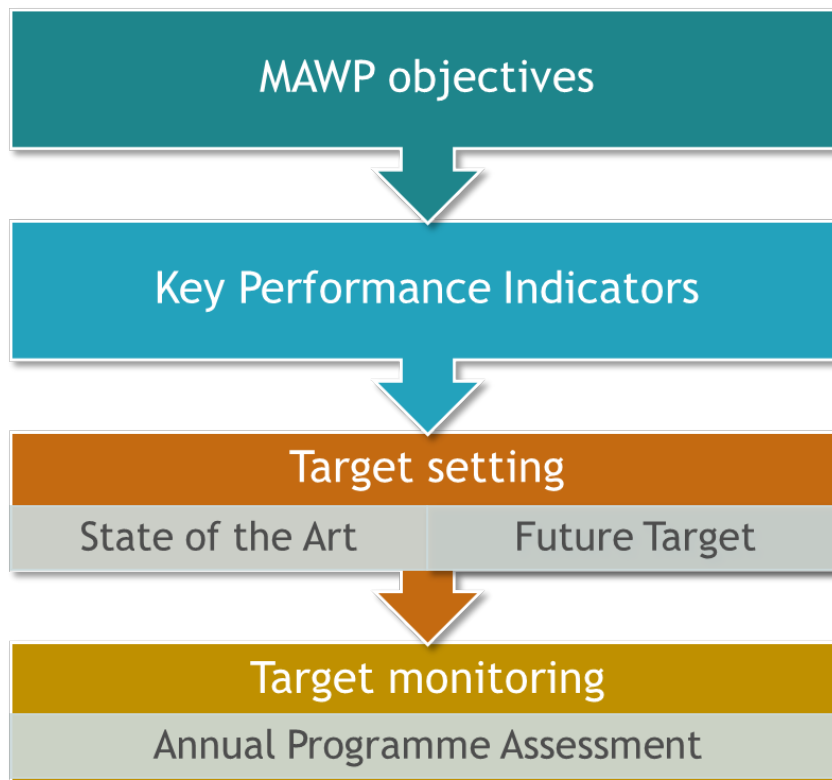
*Tests
harmonisation*

HIAD Database

TIM Tool for Innovation Monitoring

Datasets

Knowledge Management



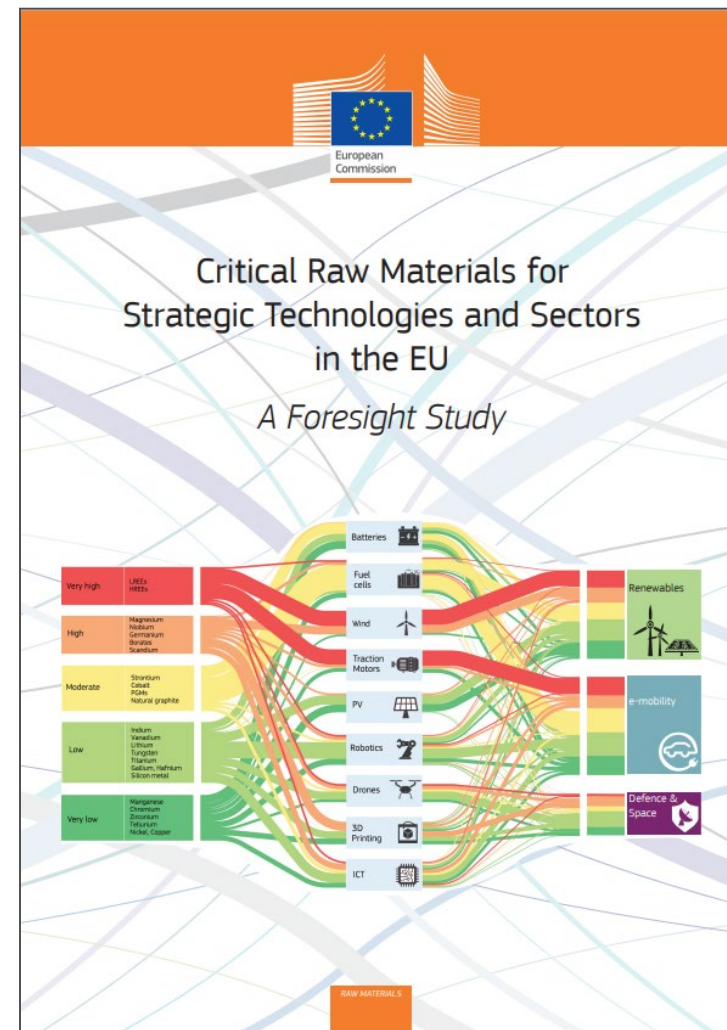
Sustainability



[JRC Publications Repository - Hydrogen emissions from a hydrogen economy and their potential global warming impact \(europa.eu\)](https://publications.jrc.ec.europa.eu/publication/?id=JRC116108)

The first overview report on findings, with conclusion consented among a broad group of stakeholders

Input to the study on CRM for electrolysers and fuel cells



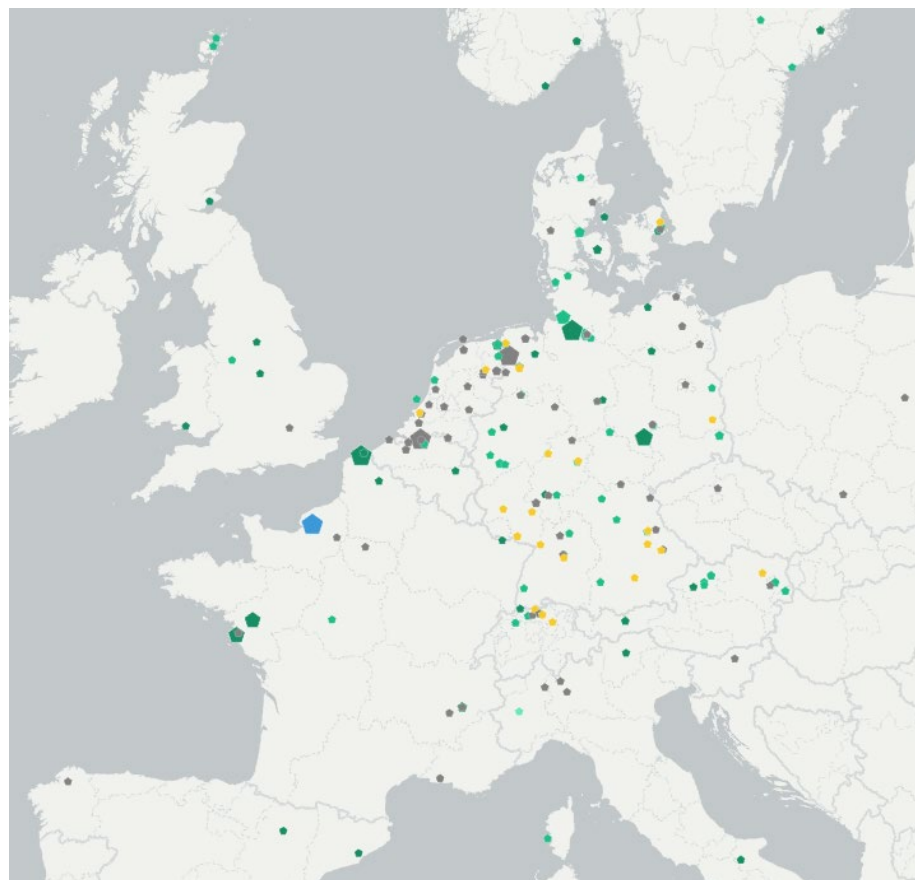
Energy and Industry Geography Lab

Hydrogen infrastructure

Hydrogen production facilities

Current hydrogen production facilities

- Alkaline electrolysis
- Proton exchange membrane electrolysis
- Solid oxide electrolysis cells
- Fossil based hydrogen + CCS
- Power to Gas
- Other or unknown
- < 1 MW
- > 1 - 10 MW
- > 10 - 100 MW
- > 100 MW



← Data from HE

Max annual water consumption, 2023 (m³/y)

- Electrolytic renewable-based electricity
- Electrolytic nuclear-based electricity
- Fossil-based with CCUS
- Fossil-based without CCUS
- Methane pyrolysis
- Unknown process

Max annual added water consumption [m³(H₂O)/y]

- 0
- 2,666,670
- 5,333,330
- 8,000,000

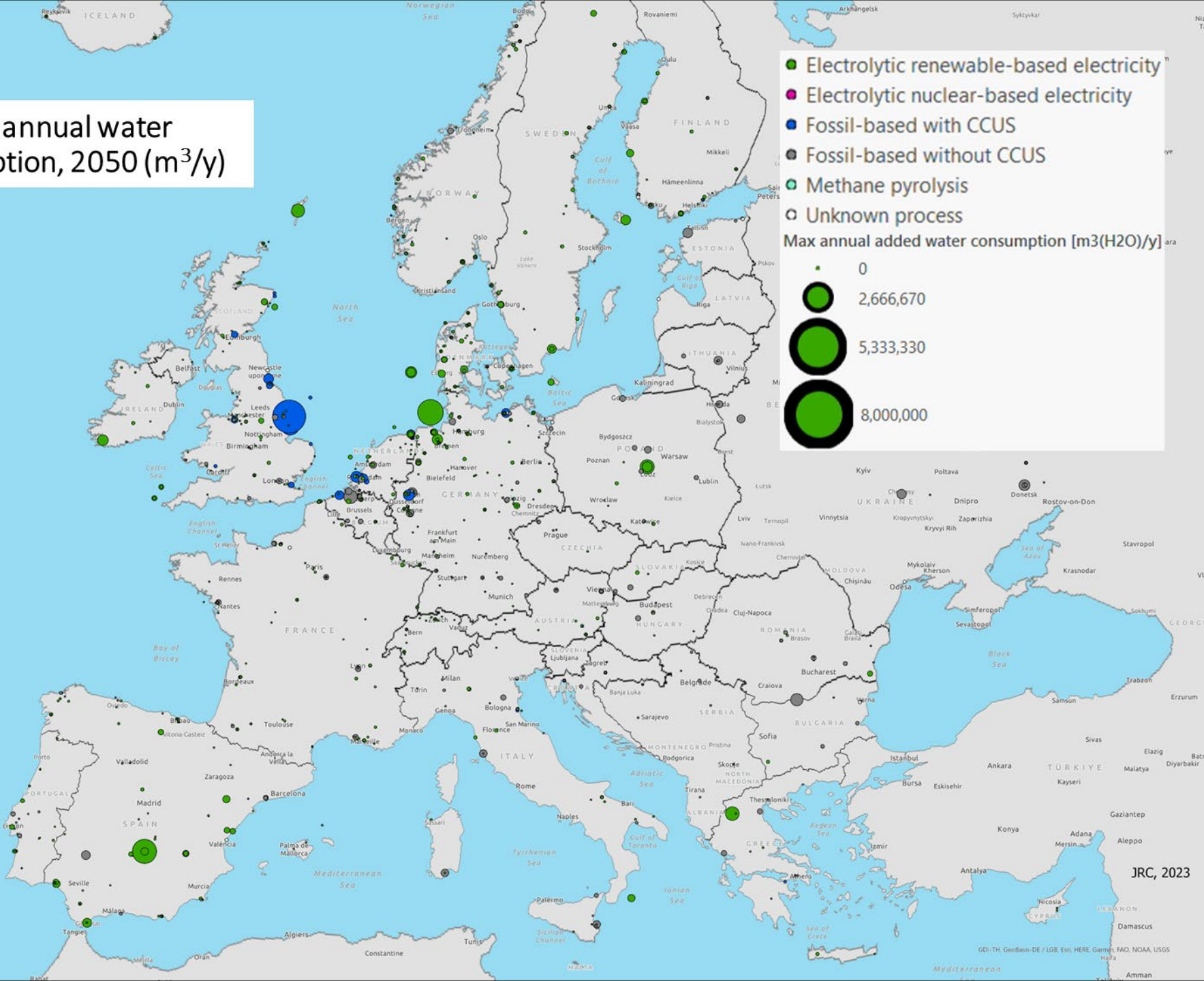


Max annual water consumption, 2050 (m³/y)

- Electrolytic renewable-based electricity
- Electrolytic nuclear-based electricity
- Fossil-based with CCUS
- Fossil-based without CCUS
- Methane pyrolysis
- Unknown process

Max annual added water consumption [m³(H₂O)/y]

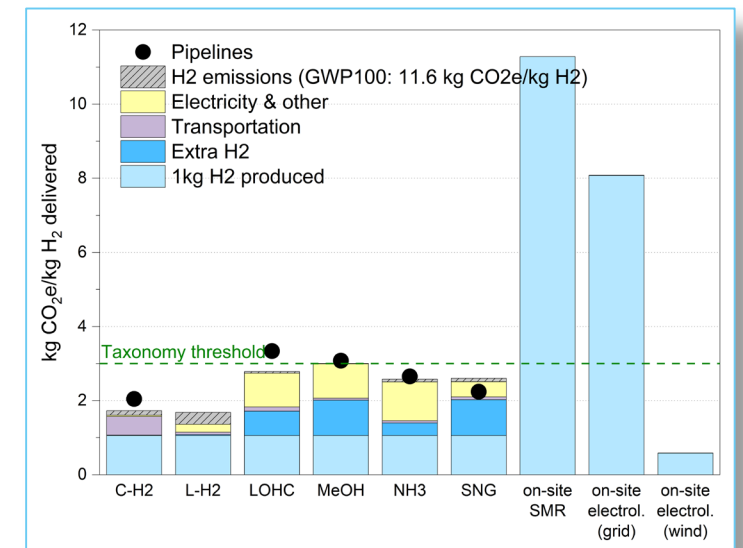
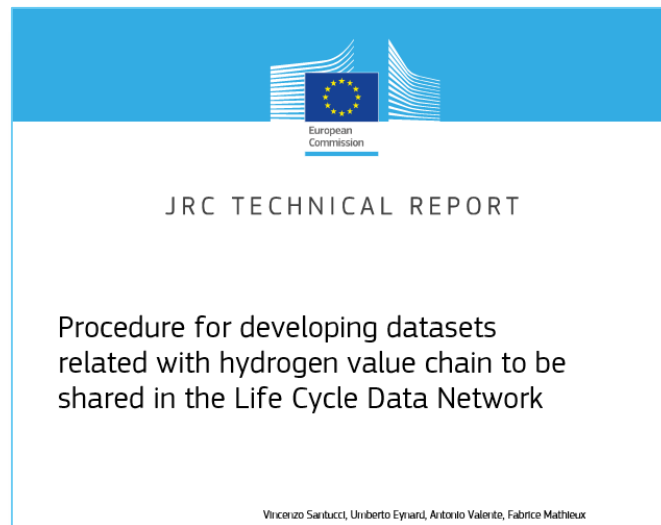
- 0
- 2,666,670
- 5,333,330
- 8,000,000



JRC, 2023

Sustainability & Circularity

- Review project LCA deliverables and develop a checklist to help projects
- Investigate environmental and social impact H₂ delivery
- Develop FCH inventories for the Life Cycle Data Network
- Summarise outcomes workshop on H₂ emissions

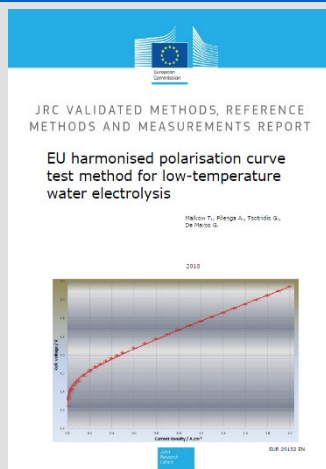


Harmonisation of water electrolysis tests

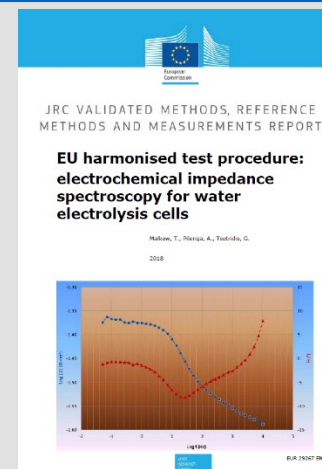
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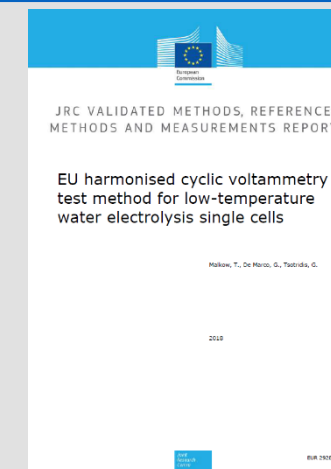
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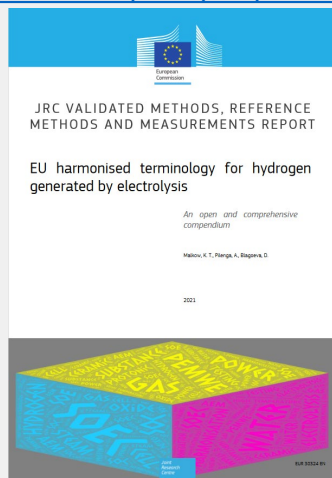
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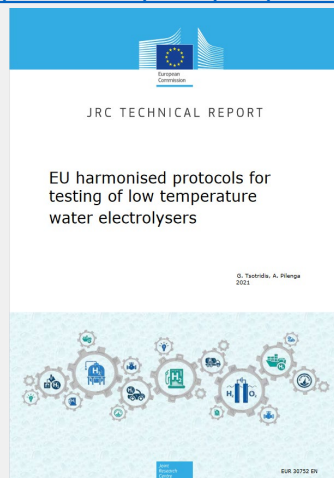
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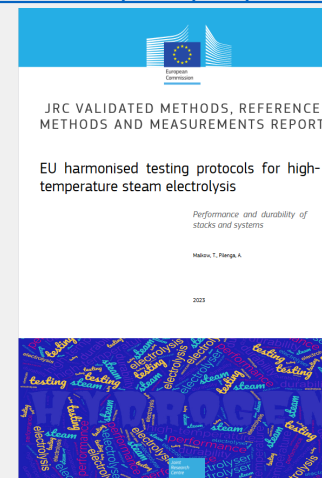
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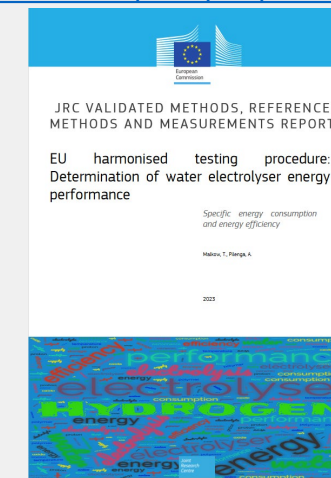


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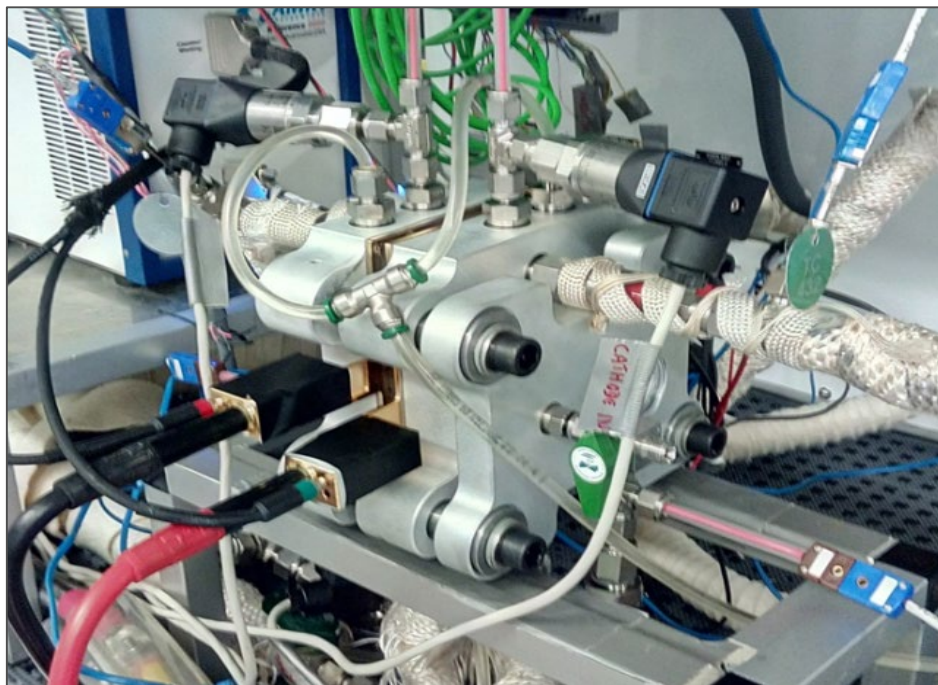


<https://data.europa.eu/doi/10.2760/34979>

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Testing hardware



 Mendeley Data

The JRC ZERO ∇ CELL design documentation

Published: 26 October 2021 | Version 1 | DOI: 10.17632/c7bffdv7yb.1

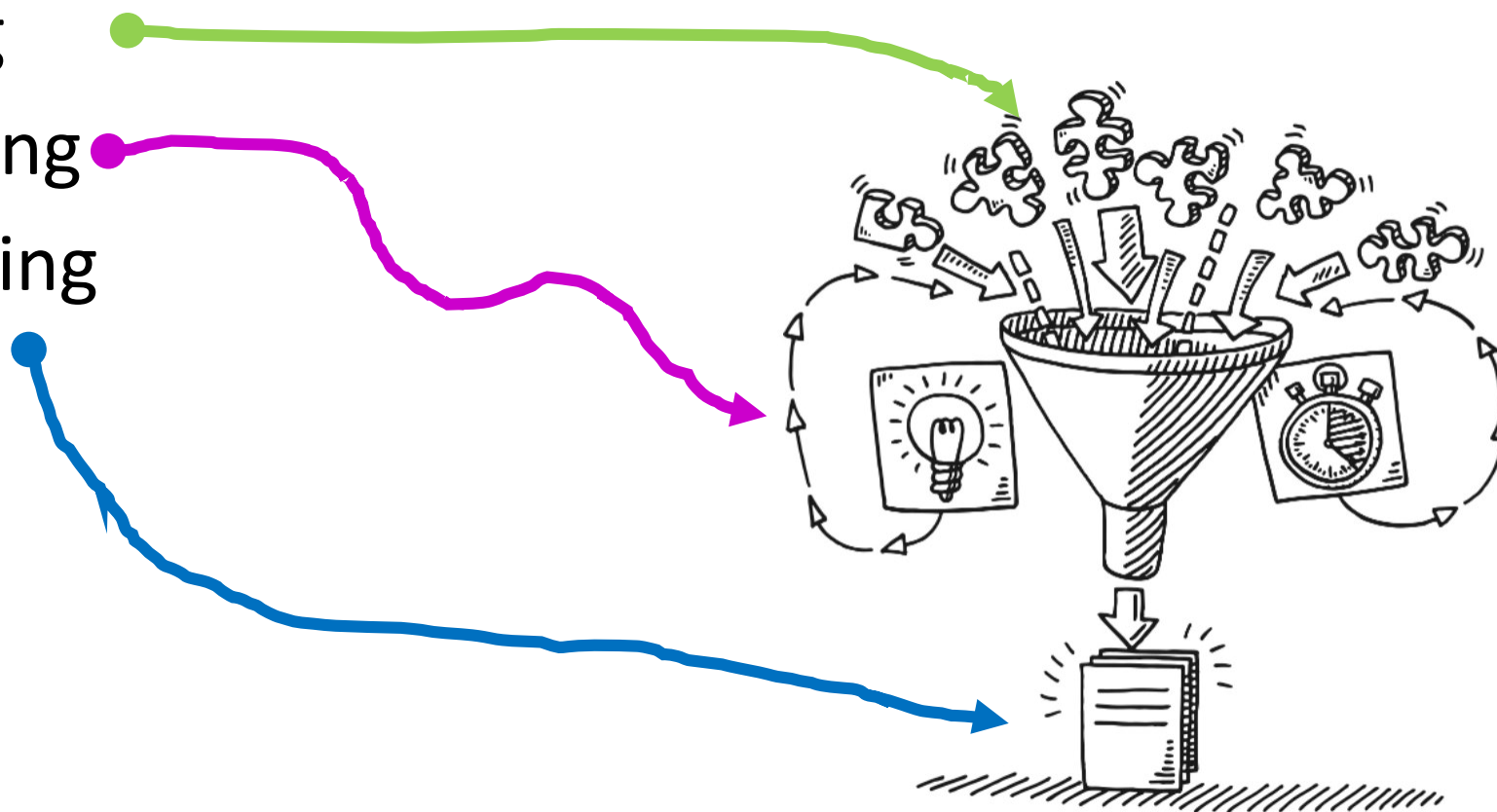
Contributor: Tomasz Bednarek

[The JRC ZERO \$\nabla\$ CELL design documentation - Mendeley Data](#)

Hydrogen safety - why an incidents database ?

The three human faculties of memorising:

- storing
- encoding
- retrieving



HIAD database - upgrade September 2023



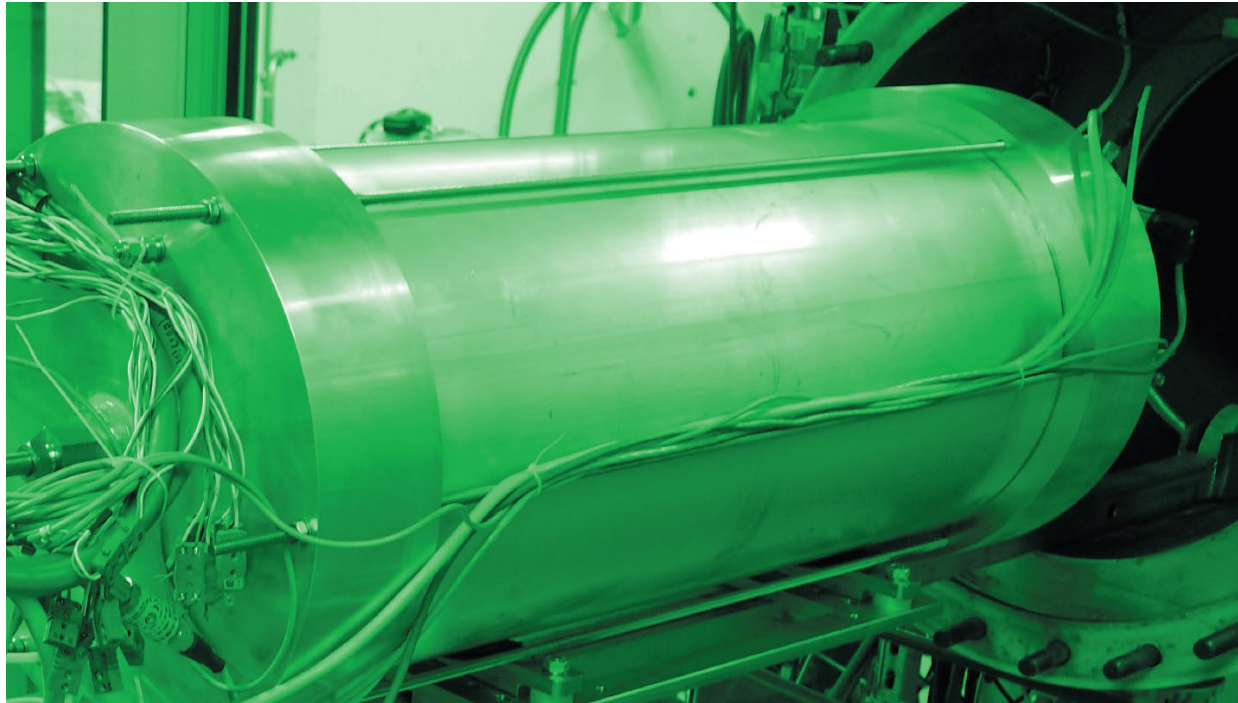
HIAD 2.1 is available as EXCEL dataset, downloadable from:

<https://minerva.jrc.ec.europa.eu/en/shorturl/capri/hiadpt>

For questions, special requests and input of new events:

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developers and membrane researchers:

https://joint-research-centre.ec.europa.eu/tools-and-laboratories/open-access-jrc-research-infrastructures_en

Thank you!



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Slide 10: GetDrawing picture <http://getdrawings.com/database-drawing>

Slide 11: Fotolia_72599012.