

Topics in the call 2024

Cross-cutting Issues

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Cross-cutting Issues Overview



Main Focus

- Continue raising the environmental sustainability of fuel cell and hydrogen (FCH) systems by developing bespoke guidelines
- To research novel materials environmentally friendly for PEM-based hydrogen technologies



What is new

- Development of 'safe and sustainable-by-design' (SSbD) guidelines for systems across the hydrogen value chain
- Development of non-fluorinated components

Cross-cutting Issues Overview

Topic	Type of Action	Ind. Budget (M€)
HORIZON-JTI-CLEANH2-2024-05-01: Guidelines for sustainable-by-design systems across the hydrogen value chain	CSA	1.5
HORIZON-JTI-CLEANH2-2023-05-02: Development of non-fluorinated components for fuel cells and electrolyzers	RIA	3

Cross-cutting Issues - Topics

HORIZON-JTI-CLEANH2-2024-05-01: Guidelines for sustainable-by-design systems across the hydrogen value chain

Development of 'safe and sustainable-by-design' (SSbD) guidelines for several fuel cell and hydrogen (FCH) systems

- 'SSbD' guidelines ≥ 5 FCH systems covering different TRLs and applications from H₂ production, storage, distribution, and use
- Encompass safety, sustainability, and eco-design aspects, such as LCSA, circularity/ material criticality assessment, etc.
- Build on lessons learned from similar activities (e.g., SH2E, eGHOST projects), involve key stakeholders, and provide datasets (LCI) into the upcoming "Hydrogen Node" of the Life-Cycle Data Network (LCDN) developed by the JRC

HORIZON-JTI-CLEANH2-2023-05-02: Development of non-fluorinated components for fuel cells and electrolyzers

Research on fluorine-free materials for PEM-based systems: PEMFC and/or PEMEL (TRL 2 \rightarrow TRL 4)

- Development of fluorine-free components: ionomers, membranes, reinforcements, etc. with similar technical performance but free of hazardous properties of per- and polyfluoroalkyl substances (PFASs)
- Demonstration in single cell/ short stacks in PEMFC and/or PEMEL (min. active area: 25cm²)
- LCA of existing fluorinated components vs. non-fluorinated components, and techno-economic analysis
- Build synergies with current projects, e.g., SUSTAINCELL, HIGHLANDER, ≥ 1 partner capable to produce membranes and/or catalyst-coated membranes, cooperate with members and contribute to Mission Innovation 2.0 - Hydrogen Mission

Questions?
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