

SUSTAINCELL – DURABLE AND SUSTAINABLE COMPONENT SUPPLY CHAIN FOR HIGH PERFORMANCE FUEL CELLS AND ELECTROLYSERS

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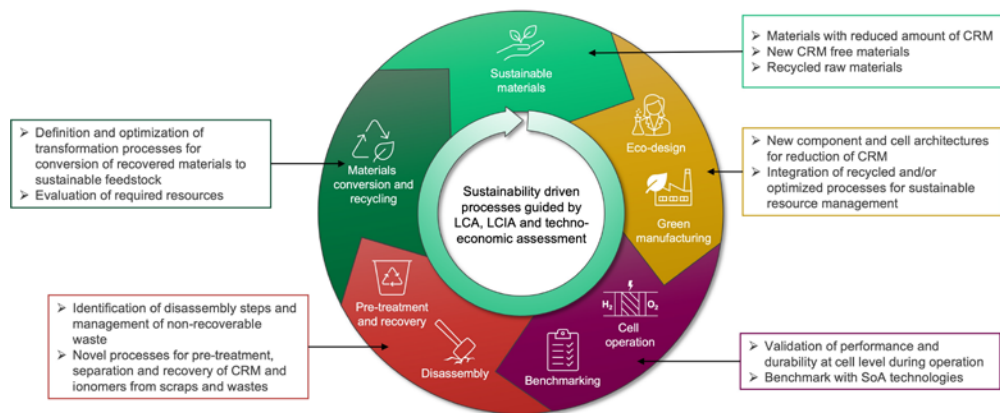
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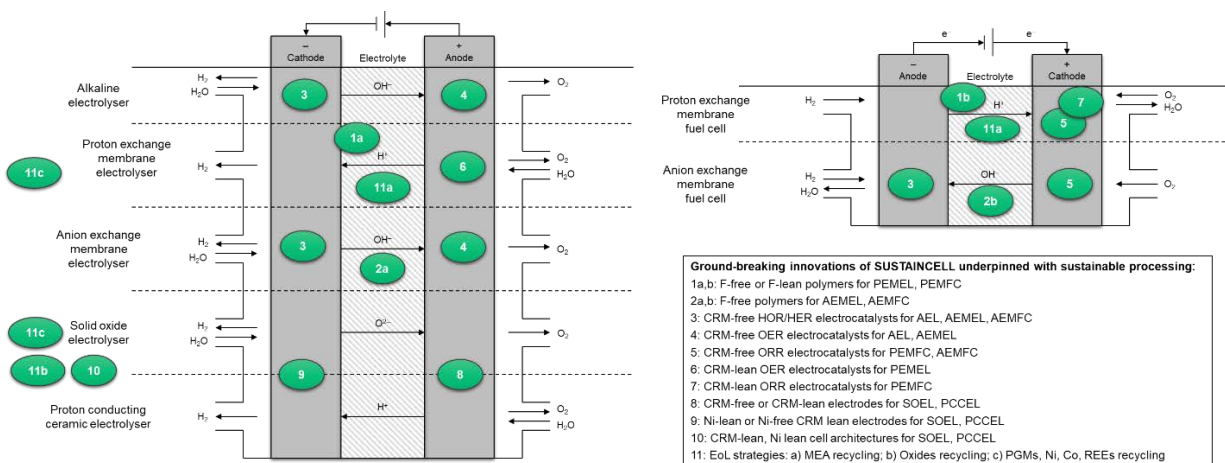
ABSTRACT

The SUSTAINCELL project aims at supporting the European industry in the development of the next generation electrolyser and fuel cell technologies (both low and high temperature) by developing a sustainable European supply chain of materials, components, and cells, significantly less reliant on critical raw materials (CRM), with lower environmental footprint and costs, and higher performance and durability than existing technologies. This will rely on scientific breakthrough innovations with the development of eco-design guidelines and environmentally friendly manufacturing routes applied for the production of new CRM-lean and/or CRM-free materials and architectures designed for maximising functionalities and durability, while decreasing CRM content per unit cell. The new flexible and scalable processing routes will exhibit higher productivity, as well as reduced utilities consumption and greenhouse gas emissions. The development of enhanced recovery and treatment processes for optimising both recovery and reuse of PGMs/CRMs and ionomers extracted from end-of-life stacks and production processes will furthermore reduce the reliance on import of materials.

The novel solutions will be validated at cell level for all technologies using harmonized testing procedures. This ambitious work will be supported by the development and implementation of life cycle thinking tools addressing environmental and economic dimensions to drive the research and development work using quantifiable sustainability criteria. The project is led by SINTEF and gathers CEA, CNRS, VTT, Forschungszentrum Juelich, TECNALIA, DTU, DLR, EPFL and HESSO world leading experts in the value chain of alkaline, proton exchange membrane, anion exchange membrane, solid oxide ion conducting and proton ceramic conducting electrolyzers and fuel cells. The open innovation research will be actively communicated to European academia and industry to exploit the results of SUSTAINCELL for the benefits of the society.



Circular approach of SUSTAINCELL project.



Targeted innovations in the SUSTAINCELL project.

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