Project consortium		
1	Technical University of Denmark	DK
2	Commissariat à l'énergie atomique et aux énergies alternatives	FR
3	University of Salerno	IT
4	Institut de Recerca en Energia de Catalunya	ES
5	Institute of Power Engineering	PL
6	ECN part of TNO	NL
7	Foundation for Research and Technology	GR
8	The Centre for Research & Technology	GR
9	Technical Research Centre of Finland	FI
10	École polytechnique fédérale de Lausanne	CH
11	Politecnico di Torino	IT
12	Solid Power	IT
13	Elcogen	EE
14	Sunfire	GE
15	Ceres Power	GB
16	Hexis	CH

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European Project: Next Generation Solid Oxide Fuel Cell and Electrolysis Technology

NewSOC

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Clean Hydrogen Partnership

Co-funded by the European Union

Solid oxide technologies (SOC: Solid oxide fuel cells SOFC & Solid oxide electrolysis SOE, reversible fuel cell- electrolysis revSOC):

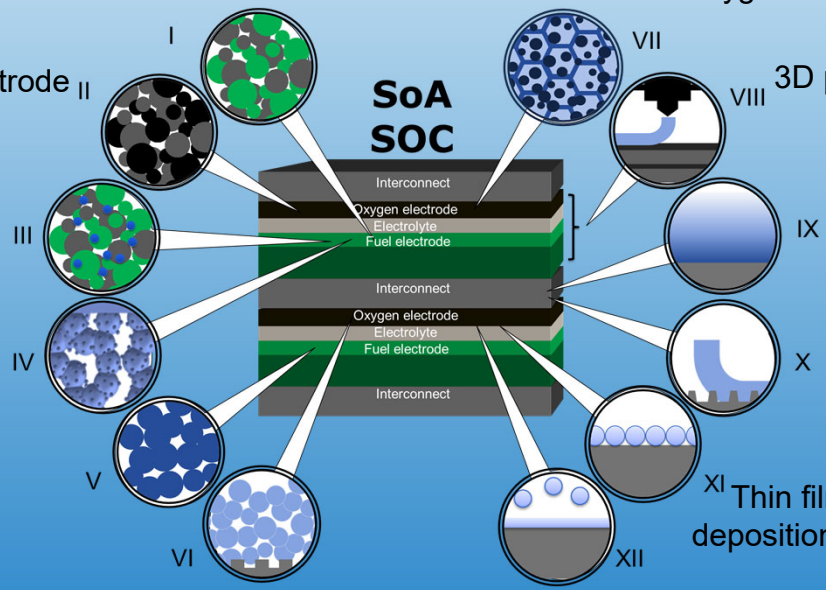
- ✓ Are key enabling technologies for energy systems based on renewable sources.
- ✓ Allow for a strong interlinking of sectors electricity, heat, and gas/fuels.
- ✓ Can emerge as key players in many concepts, such as fuel/gas to power & heat at small to large scale, energy storage through power to hydrogen/fuel, utilization & upgrading of biogas, balancing of intermittent electricity from renewable sources through load following and reversible operation, and central & decentral solutions for electricity and heat production.

The NewSOC project proposes twelve innovative concepts through:

(i) Structural optimization and innovative architectures based on SoA materials,

(ii) Alternative materials, which allow for overcoming inherent challenges of SoA, and

(iii) Innovative manufacturing to reduce critical raw materials and reduction of environmental footprint at improved performance & lifetime.



I — Ni based fuel electrode

II — LSCF based oxygen electrode

III — Bi-metallic or tri-metallic Ni based fuel electrode

IV — Infiltrated, doped titanate backbone fuel electrode

V — Doped lanthanum chromite based fuel electrode

VI — Patterned electrode/electrolyte interface for Co-free oxygen electrode

VII — Honeycomb supported oxygen electrode

VIII — 3D printing of SOC

IX — Protective coating through inkjet printing

X — Ceramic coatings with innovative interface concepts

XI — Thin film atomic layer deposition barrier layers

XII — Thin film room temperature sputtering barrier layer