EIG CONCERT JAPAN

Connecting and Coordinating European Research and Technology Development with Japan

EIG CONCERT- JAPAN 4th JOINT CALL

DESCRIPTION OF THE THEMATIC AREA

"EFFICIENT ENERGY STORAGE AND DISTRIBUTION"

Context

Energy storage and distribution technologies have critical importance for transition to and operation of a more efficient, sustainable and low carbon energy system. In the past, the transport and distribution of energy - regardless of its source - was managed in a relatively direct manner going in a single direction from producers or suppliers to the consumer. The integration of conventional sources of energy and renewable sources of energy (wind, solar etc.) is calling for the development of energy storage technologies on a large scale as well as for the expansion of energy grids and particularly electricity grids. Existing grids will need to be adapted and engineered to cope with the increased use of renewable energy and decentralization of the power supply. Only some of the technologies needed in this respect are currently available and basic research and technology development in energy storage and grid infrastructures need to be intensified. At the systemic level, the management and optimization of an energy system with increased degrees of freedom can be a further driver for future research.

Purpose

The overall aim of this call is to support research in developing more efficient, reliable, secure, flexible and sustainable technologies in energy storage systems and distribution of electricity.

Scope

Intensive research is needed for the development of improved energy storage and distribution technologies.

In the scope of this call, energy storage research may address all areas of energy storage technologies including:

- Chemical and electrochemical technologies (including alternatives to critical metals used in efficient energy storage);
- Electrical technologies;
- Mechanical and thermal storage technologies.

The research could address stationary applications as well as mobile applications. Research may range from the development of improved storage systems for smart grids to hydrogen and solid oxide fuel cells for vehicles.

Research on energy distribution within this call is expected to address innovative energy transmission and distribution concepts. The key aspects in this context cover a broad spectrum: they range from the development of new components (such as direct current power transmission technology and superconductivity technology) to modelling for planning purposes and secure, efficient operation of electricity grids as well as to the demonstration and assessment of new technologies and systems analysis issues. In this context, research may address:

- Numerical simulation of smart grids;
- Microgrids and renewable energy integration;
- IT solutions such as Scada systems;
- Grid integration of renewable energy sources as well as other distributed and intermittent energy sources;
- Electromobility and challenges for power systems.

This call for Efficient Energy Storage and Distribution is not exclusive to the above mentioned research issues and the call is open to any other research issue addressing the problems in efficient distribution and storage of energy. Proposals that are orientated towards emerging technologies or ideas based on unique and innovative concepts are encouraged.

N.B. Applicants should thoroughly check the relevant national/regional regulations oft he Joint Call text to confirm the precise eligible research scope for their country/region.

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List of Keywords:

1. Energy distribution concepts
2. Energy storage systems
3. Batteries technology
4. Supercapacitors technology
5. Sustainable energy
6. Low carbon energy
7. Chemical and electrochemical technologies
8. Electrical technology
9. Mechanical technology
10. Thermal technology
11. Fuel Cells
12. Hydrogen
13. Solid oxide fuel cells
14. Stationary applications
15. Mobile applications
16. Alternative critical materials
17. Renewable energy integration
18. Distributed or intermittent energy sources integration
19. Energy transportation
20. Electricity grids
21. Power transmission technologies
22. Superconductivity technology
23. Innovative system analysis

24. Numerical simulation
25. Grid infrastructures
26. Smart grids
27. Micro-grids
28. Power supply
29. SCADA
30. Electro-mobility