

PROJECT

HYPNOTIC

HYbridization via Parallelization based on NOvel Topologies for Innovative Converters

Funding: European (Horizon 2020)

Duration: May 2020 - Oct 2022

Status: Ongoing

Total project cost: €1,044,944

EU contribution: €822,963



Call for proposal: H2020-CS2-CFP10-2019-01

[CORDIS RCN : 229133](#)

Objectives:

The main objective of HYPNOTIC project is the development of a set of bidirectional converters (at least 5), acting together as only one equipment. Specifically the equipment, composed by several DC/DC bidirectional converters (i.e., the “modules”) plus a supervisor, must be able to reconfigure itself as a consequence of load/source variations, referring to their characteristics and priority, and as a reaction to a fault or to other undesirable events, hence contributing to the maturity of any HVDC distribution Network.

This modular architecture will support the design of a scalable converter (30 to 150KW) which could be used to support the integration of new HVDC sources. The HYPNOTIC converter will be connected to HVDC network of the aircraft on one side and to a HVDC battery on the other side which will provide an energy storage source. The converter will implement relevant control techniques to ensure the stability of the network and the battery, and to allow a smooth energy transfer in both directions.

Hence, the scope of the project can be summarized as the design and development of a modular bi-directional converter, composed by hardware and software acting together in order to solve the Power Transfer problem of additional DC sources in any HVDC network.

Objectives of HYPNOTIC project include:

- Development of DC/DC converter cells with enhanced performances, including power density and reconfiguration capabilities.
- Development of accurate simulation models, at both “behavioural” and “functional” levels, potentially also integrated with external environments for the aims of the energy management functionalities verification.
- Implementation of reliable control laws to allow the parallelization of several HVDC sources
- Demonstration of the operation of such converter inside any HVDC network.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Skylife Engineering SI

Address:

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Spain

EU Contribution: €376,425

Partner Organisations:

Aeromechs SRL

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EU Contribution: €141,531

Universita Degli Studi Della Campania Luigi Vanvitelli

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Organisation Website:

<http://www.unina2.it>

EU Contribution: €128,500

Irt Antoine De Saint Exupery

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B 612 - CS 34436, 3 RUE TARFAYA
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France

EU Contribution: €176,506

Technologies:

Aircraft design and manufacturing
Innovative DC/DC resonant cellular
converter

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport
Environmental/Emissions aspects, Decarbonisation, Other

Transport policies: specified

Geo-spatial type: Other