

PROJECT

## DCADE

# Diamond Converter and Arc fault DEtection for high-altitude operations

**Funding:** European (Horizon 2020)

**Duration:** Jan 2021 - Oct 2023

**Status:** Ongoing

**Total project cost:** €1,257,816

**EU contribution:** €1,257,816



**Call for proposal:** H2020-CS2-CFP11-2020-01

[CORDIS RCN : 232516](#)

### Objectives:

The increasing demand for clean aviation is pushing the industry towards the all electrical aircraft, with zero emissions. The green deal of the European Commission is a clear high-level example of the commitment that all the countries all over the world should have.

Recent advances in the last few decades in power semiconductors is moving the industry to the electrical propulsion, where the generation and electrical consumers are connected together in a small weak electrical grid. The amount of power to be managed by the electrical system is expected to be increasing in the following decade from a few Megawatts to power small aircraft to several tens of MWs to power long haul aircrafts. Although the technology to manage this amount of power is well known for typical ground distribution power grids, the concepts and components cannot be directly applied to aircraft application due to the size/weight required for an aircraft application and the fact of high altitude flying which means a lower pressure and air density. The evolution of aircraft electrical power management system to higher power is critical in the next few years to reach the objective of a future clean sky program.

In this context, the overall objective of DCADE is the evaluation of potential technologies that will allow higher voltage converters while maintaining the power density and arc detection techniques that will increase the safety of high altitude, high power A/C distribution systems.

Due to the nature of this CfP, DCADE proposal will focus on 2 of the 3 technologies described in the call text, these technologies are power electronics and electric power distribution.

DCADE project will implement two demonstrators, one related to each topic. The first demonstrator will be at the facilities of Skylife in Seville (Spain) and the second will be in the facilities of IRTSE in Toulouse (France).

### 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)

**Other programmes:** JTI-CS2-2020-CFP11-THT-12 Advanced High Power Electrical Systems for High Altitude Operation

### Lead Organisation:

**Skylife Engineering SI**

**Address:**

CALLE AMERICO VESPUCCIO N5, BLOQUE 1, LOCAL A 8-12

41092 SEVILLA  
Spain

**EU Contribution:** €404,375

### Partner Organisations:

#### Diamfab

**Address:**

25 AVENUE DES MARTYRS  
38042 GRENOBLE  
France

**EU Contribution:** €279,409

#### Irt Antoine De Saint Exupery

**Address:**

B 612 - CS 34436, 3 RUE TARFAYA  
31400 TOULOUSE  
France

**EU Contribution:** €398,281

#### Centre National De La Recherche Scientifique

**Address:**

3 rue Michel-Ange  
75794 PARIS  
France

**Organisation Website:**

<http://www.cnrs.fr>

**EU Contribution:** €175,751

### Technologies:

Aircraft design and manufacturing  
Electric aircraft

**Development phase:** Demonstration/prototyping/Pilot Production

Aircraft propulsion  
Electrical power management of turboprop  
engine

**Development phase:** Demonstration/prototyping/Pilot Production

Aircraft design and manufacturing  
Power electronics

**Development phase:** Demonstration/prototyping/Pilot Production

**STRIA Roadmaps:** Transport electrification, Vehicle design and manufacturing

**Transport mode:** Air transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Environmental/Emissions aspects, Safety/Security

**Geo-spatial type:** Other