

## Integrated, Intelligent modular power electronic converter

**From** 2015-05-01 **to** 2018-05-01, ongoing project

### Project details

<p><b>Total cost:</b></p> <p>EUR 7 180 892,51</p> <p><b>EU contribution:</b></p> <p>EUR 6 734 626,26</p> <p><b>Coordinated in:</b></p> <p>Germany</p>	<p><b>Topic(s):</b></p> <p><a href="#">MG-1.1-2014 - Competitiveness of European Aviation through cost efficiency and innovation</a></p> <p><b>Call for proposal:</b></p> <p>H2020-MG-2014_TwoStages</p> <p><b>Funding scheme:</b></p> <p>RIA - Research and Innovation action</p>
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### Objective

Increasingly demanding requirements in the transportation industry for higher efficiency and reduced carbon footprint are leading to an ever increasing interest in electrically operated drives which offer significant benefits over their pneumatic or hydraulic counterparts. More electric aircraft technologies with fully electrical actuation and environmental conditioning systems are moving from topics of academic interest to commercial applications. Despite the progress in power electronics and electrical drives, significant advances in power density and reliability are still required before electrical technologies are fully accepted in the aircraft industry. The thermal management of losses generated in the power converters, with the associated requirements for heavy cooling systems, is proving to be the stumbling block for further improvements in power density. Ground-breaking advances in wide band-gap semiconductor materials are promising to deliver significant benefits to power conversion systems with unprecedented levels of power density thanks to considerably reduced losses and high temperature operation, making them ideal building blocks for aerospace power electronics. Leveraging on some of EU best expertise in device manufacture and packaging, components integration, thermal management, converters design, reliability analysis, control and condition monitoring, as well as aircraft power systems, the proposal will demonstrate significant advances of the state of the art in power converters for harsh environments. Innovative 3D device packaging based on planar interconnect technologies with double-sided integrated cooling, will be demonstrated for wide band-gap wire-bond free power semiconductor devices. These technological breakthroughs, coupled with novel methodologies for active thermal management, lifetime testing, health management and prognosis will contribute to unprecedented levels of power density, efficiency and reliability in aerospace application

### Coordinator

SIEMENS AKTIENGESELLSCHAFT  
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Germany

**EU contribution:** EUR 2 662 357,5

## Participants

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AIRBUS DEFENCE AND SPACE GMBH  
Germany

Germany

**EU contribution:** EUR 156 253,13

EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH  
Switzerland

Switzerland

**EU contribution:** Not available

THE UNIVERSITY OF SHEFFIELD  
United Kingdom

United Kingdom

**EU contribution:** EUR 572 771,25

DYNEX SEMICONDUCTOR LIMITED  
United Kingdom

United Kingdom

**EU contribution:** EUR 954 157,5

LABINAL POWER SYSTEMS  
France

France

**EU contribution:** EUR 1 026 250

INSTITUT NATIONAL DES SCIENCES APPLIQUEES DE LYON  
France

France

**EU contribution:** EUR 1 159 038,75

K & S GMBH PROJEKTMANAGEMENT  
Germany

Germany

**EU contribution:** EUR 128 750

AIRBUS OPERATIONS SAS  
France

France

**EU contribution:** EUR 75 048,13

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