Development of Aero Engine Component Manufacture using Laser Additive Manufacturing

Fact Sheet

Project information

**MERLIN**

Grant agreement ID: 266271

<table>
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<th>Project website</th>
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Status

Closed project

Start date: 1 January 2011

End date: 31 December 2014

Funded under:

FP7-TRANSPORT

Overall budget:

€ 7 062 175,83

EU contribution

€ 4 886 561

Coordinated by:

ROLLS-ROYCE PLC

United Kingdom

Objective

The concept of the MERLIN project is to reduce the environmental impact of air transport using Additive Manufacturing (AM) techniques in the manufacture of civil aero engines. MERLIN will develop AM techniques, at the level 1 stage, to allow environmental benefits including near 100% material utilisation, current buy to fly ratios result in massive amounts of waste, no toxic chemical usage and no tooling costs, to impact the manufacture of future aero engine components. All of these factors will drastically reduce emissions across the life-cycle of the parts. There will also be added in-service benefits because of the design freedom in AM. Light-weighting, and the performance improvement of parts will result in reduced fuel consumption and reduced emissions. MERLIN will seek to develop the state-of-the-art by producing higher performance additive manufactured parts in a more productive, consistent, measurable, environmentally friendly and cost effective way.

The MERLIN consortia has identified the following areas where a progression of the state-of-the art is needed to take advantage of AM:

- Productivity increase.
- Design or Topology optimisation.
- Powder recycling validation.
• In-process NDT development.
• In-process geometrical validation.
• High specification materials process development.

The MERLIN consortium comprises six world leading aero engine manufacturers, Rolls-Royce is the coordinator, six renowned RTD providers and two intelligent SME’s. Impacts will include the development of high value, disruptive AM technologies capable of step changes in performance which will safeguard EU companies in the high value aero engine manufacturing field. AM will significantly reduce waste in an industry where materials require massive amounts of energy and toxic chemicals, in-process toxic chemical usage will be massively reduced, and emissions will drop because of the reduced amount of material involved.

Field of Science

/natural sciences/mathematics/pure mathematics/topology
/natural sciences/physical sciences/optics/laser physics
/engineering and technology/mechanical engineering/manufacturing engineering/additive manufacturing
/social sciences/social and economic geography/transport
/social sciences/economics and business/economics/production economics/productivity

Programme(s)

FP7-TRANSPORT - Specific Programme "Cooperation": Transport (including Aeronautics)

Topic(s)

AAT.2010.1.1-2. - Aerostructures
AAT.2010.4.1-5. - Production

Call for proposal

FP7-AAT-2010-RTD-1

See other projects for this call

Funding Scheme

CP-FP - Small or medium-scale focused research project

Coordinator
ROLLS-ROYCE PLC
Address
Kings Place 90 York Way
N1 9fx London
United Kingdom
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
EU Contribution
€ 223 164

Website
Contact the organisation
Administrative Contact
Keith Nurney (Mr.)

Participants (15)

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MTU AERO ENGINES GMBH
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Activity type
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Website
Contact the organisation
Administrative Contact
Stephan Servaty (Mr.)
<table>
<thead>
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<td>PRATT &amp; WHITNEY RZESZOW SPOLKA AKCYJNA</td>
<td>Poland</td>
<td>€ 34 490,50</td>
<td>Ulica Hetmanska 120 35 078 Rzeszow</td>
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<td>INDUSTRIA DE TURBO PROPULSORES S.A.U.</td>
<td>Spain</td>
<td>€ 150 578</td>
<td>Parque Tecnologico De Zamudio 300 48170 Zamudio-Vizcaya</td>
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<td>MTU AERO ENGINES AG</td>
<td>Germany</td>
<td>€ 404 000</td>
<td>Dachauer Strasse 665 80995 Munchen</td>
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<td><strong>LPW Technology Ltd</strong></td>
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<td><strong>SAFRAN HELICOPTER ENGINES</strong></td>
<td>€ 263 871,50</td>
<td>Avenue Du President Szydlowski</td>
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<td><strong>GKN AEROSPACE SWEDEN AB</strong></td>
<td>€ 172 746</td>
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TWI LIMITED
United Kingdom
Address: Granta Park Great Abington Cb21 6al Cambridge
Activity type: Research Organisations
EU Contribution: € 978 099,45
Administrative Contact: Agata Surowiec (Ms.)

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<td>LORTEK S COOP</td>
<td>Spain</td>
<td>€ 323,880,60</td>
<td>Arranomendia Kalea 4 A 20240 Ordizia</td>
<td>Research Organisations</td>
<td>Josune Sarasola (Ms.)</td>
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<td>BCT STEUERUNGS UND DV-SYSTEME GMB</td>
<td>Germany</td>
<td>€ 393,828,80</td>
<td>Carlo-Schmid-Allee 3 44263 Dortmund</td>
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<td>Claus Bremer (Dr.)</td>
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<td>HOGSKOLAN VAST</td>
<td>Sweden</td>
<td>€ 544,233</td>
<td>Hogskolan Vast 461 86 Trollhattan</td>
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</tbody>
</table>
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- Cyprus

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EU Contribution
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Contact the organisation

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