Small debris removal by laser illumination and complementary technology

Fact Sheet

<table>
<thead>
<tr>
<th>Project Information</th>
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<tr>
<td>CLEANSPACE</td>
<td>Funded under FP7-SPACE</td>
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<tr>
<td>Grant agreement ID: 263044</td>
<td>Overall budget € 2 882 883,80</td>
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<td>Project website [🔗]</td>
<td>EU contribution € 1 976 440</td>
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<td>Status</td>
<td>Coordinated by</td>
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<td>Closed project</td>
<td>COMPAGNIE INDUSTRIELLE</td>
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<tr>
<td>Start date</td>
<td>DES LASERS CILAS SA</td>
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<td>1 June 2011</td>
<td>France</td>
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<td>End date</td>
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NO. 24, JULY 2013 / AUGUST 2013

Objective
This proposal aims to answer the FP7 Security research call SPA-2010-2.3.02 and the need to protect space assets from orbit collision. The number of debris in Low Earth Orbit is exponentially increasing with, in the short term, potential inter debris collisions. For medium size debris (between 1 cm and several dozens of cm) no effective and affordable protecting solution is available. This project also intends to protect the environment from chain reaction of debris production. Overall CLEANSPACE objective is to define a global architecture (including surveillance, identification and tracking) for an innovative ground-based laser solution which can remove hazardous medium debris around selected space assets.

This approach is divided into three steps:

- To propose an efficient and affordable global system architecture by taking up survey, tracking, identification and debris treatment by laser system fully in complement with Space Situational Awareness (SSA) ESA programme,
- To tackle safety regulation aspects, political implications and future collaborations,
- To develop affordable technological bricks and to establish roadmap for the development and the future implantation of a fully functional laser protection system.

The study approach is built to be fully complementary to SSA programme. This study is fully part of FP7, SPACE Theme because it will allow Europe to be a key actor for laser debris removal system able to discuss the subject with the USA and Russia and able to guide future ESA work and regulations.

The main driver of the project will be to reduce the cost of such a system focusing on the Laser technology brick which is the key to propose an affordable system. Scalable laser architecture, ceramic laser active material, laser coherent coupling, alternative narrowband pump sources and laser matter interaction will be the technology fingers of the CLEAN-SPACE innovations.

Field of science

/natural sciences/physical sciences/optics/laser physics

Programme(s)

Topic(s)

Call for proposal

FP7-SPACE-2010-1

Funding Scheme

CP - Collaborative project (generic)
Coordinator

COMPAGNIE INDUSTRIELLE DES LASERS CILAS SA

Address
Avenue Buffon Zi La Source 8
45100 Orleans
France

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

EU contribution
€ 545 600

Website
Contact the organisation

Administrative Contact
Hervé Soubrane (Mr.)

Participants (8)

DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV

Address
Linder Hoehe
51147 Koeln

Activity type
Research Organisations

EU contribution
€ 648 459

Website
Contact the organisation

Administrative Contact
Bernd Oberacker (Mr.)

AIRBUS DEFENCE AND SPACE SAS

Address
31 Rue Des Cosmonautes Zi Du Palays
31402 Toulouse Cedex

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

EU contribution
€ 162 950

Website
Contact the organisation

Administrative Contact
Bruno Esmiller (Dr.)
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<td>UNIVERSITAT ROVIRA I VIRGILI</td>
<td>Spain</td>
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<td>Francisco M. Diaz Gonzalez (Prof.)</td>
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<td>Boulevard Du 11 Novembre 1918 Num43 69622 Villeurbanne Cedex</td>
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<td>€ 102 025</td>
<td>Ul Okolna 2 50422 Wroclaw</td>
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Administrative Contact

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**UNIVERSITE DE LIMOGES**

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