ThermoBot
Project ID: 284607
Funded under: FP7-NMP

Autonomous robotic system for thermo-graphic detection of cracks

From 2012-01-01 to 2014-12-31, closed project

Project details

<table>
<thead>
<tr>
<th>Total cost:</th>
<th>Topic(s):</th>
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<tbody>
<tr>
<td>EUR 3 504 053,80</td>
<td>FoF.NMP.2011-3 - Robots for automation of post-production and other auxiliary processes</td>
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<tr>
<th>EU contribution:</th>
<th>Call for proposal:</th>
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<tr>
<td>EUR 2 550 000</td>
<td>FP7-2011-NMP-ICT-FoF See other projects for this call</td>
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<tr>
<th>Coordinated in:</th>
<th>Funding scheme:</th>
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<tr>
<td>Italy</td>
<td>CP-FP - Small or medium-scale focused research project</td>
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Objective

Non-destructive testing of components is an important auxiliary process step, not only in post-production but also in regular maintenance. The detection of cracks is currently done by using magnetic particle inspection, which is a decades-old, inefficient and ecologically undesirable process. There is an urgent need in industry to replace this technology with more up-to-date methods that provide fully automatic testing. This project thus aims at the development of an autonomous robotic system for the inspection of metallic and composite parts using thermography. By combining automatic path planning for robots using a process model of thermographic image acquisition and knowledge-based image analysis methods, an inspection robot will be developed that can adapt to new parts within 15 minutes and achieves cycle times in the range of 20-30 seconds.

Applications include inspection of metallic and composite parts in the automotive and aircraft industry as well as inspection during regular maintenance, mainly in the aircraft industry, where magnetic particle inspection is often a requirement. Market estimates show a potential of more than 1000 such inspection systems within 5-7 years after the end of the project. Despite a higher initial investment (compared to magnetic particle inspection) the robotic inspection system will save more than 400kEUR after 5 years of operation, thus contributing to a substantial increase in efficiency in these tasks. Furthermore, ecologically undesirable suspensions of magnetic particles that include corrosion-inhibitors can be avoided.

The consortium consists of technology providers in robotics, industrial inspection and thermographic cameras and end-users that cover metallic and composite parts in the automotive and aircraft industry. SMEs play a leading role in the project and contribute 60% of the total effort.

Related information

- Result In Brief: Robots to automate detection of cracks
- Report Summaries: Final Report Summary - THERMOBOT (Autonomous robotic system for thermo-graphic detection of cracks)
- News: CORDIS Express: Robots come of age!
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Subjects
Industrial Manufacture

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