Flexible Tooling for the manufacture of free-form architectural cladding and façades

Fact Sheet

Project information

FLEXITOOL

Grant agreement ID: 261925
Status
Closed project

Start date 1 October 2010
End date 30 September 2012

Funded under:
FP7-SME
Overall budget:
€ 1 498 074,40
EU contribution
€ 1 146 707,75

Coordinated by:
CARDIFF UNIVERSITY
United Kingdom

Objective

The proposal focuses on development of a digitally controlled variable geometry tooling and implantation market for manufacture of 3D architectural panels in high performance composites for the construction industry. The main advantageous features of FlexiTool prototype are rapid, universal, sustainable and cost-effective with high reconfigurability compared with present thermoforming using dedicated solid mould or fixed hard dies. It is the aim of FlexiTool to empower digitally flexible tooling technology with a clear focus on immediate industrial exploitation in construction and building, and to drive the development of reconfigurable tooling for the benefit of SME participants leading to new processes. There are no such product of mouldless thermoforming tooling available on globe market. FlexiTool will play a key role in realising the full potential of reconfigurable tooling by combining innovative multi-point forming technology with robotic control technology. The industrial and scientific breakthrough objectives of the project are: (1) Fundamental exploitation of FlexiTool machine using multi-point forming methodology for manufacturing curved cladding and facade composite panels. This will lead to realise rapid mouldless thermoforming of thermoplastic cladding and facade panels. (2) Solution of the key technological problems of FlexiTool machine. This will lead to develop FlexiTool manufacturing cell compositing multiple active actuators to replace the traditional fixed moulds. (3) Build of the integrated the integrated computer software interface and robotic control devices. This will lead to the digital optimisation of deformation and the automatic
controlling of a FlexiTool machine. (4) Development, demonstration and implantation of FlexiTool manufacturing cell. This will lead to reduce tooling costs by 70%, cut set-up time by 60% and eliminate the need for tooling storage significantly and the quick tooling adaptation to architecture design or changes.

**Field of Science**

/ engineering and technology/materials engineering/composites

/social sciences/economics and business/business and management/commerce

/natural sciences/computer and information sciences/software

/natural sciences/mathematics/pure mathematics/geometry

**Programme(s)**

FP7-SME - Specific Programme "Capacities": Research for the benefit of SMEs

**Topic(s)**

SME-1 - Research for SMEs

**Call for proposal**

FP7-SME-2010-1

[See other projects for this call](#)

**Funding Scheme**

BSG-SME - Research for SMEs

**Coordinator**

CARDIFF UNIVERSITY

Address
Newport Road 30-36
Cf24 Ode Cardiff

United Kingdom

EU Contribution
€ 64 760

Activity type
Higher or Secondary Education Establishments

Website
[Contact the organisation](#) 

Administrative Contact
Nick Bodycombe (Mr.)

**Participants** (6)
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Country</th>
<th>Address</th>
<th>Activity type</th>
<th>EU Contribution</th>
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<tbody>
<tr>
<td>Teknologian tutkimuskeskus VTT Oy</td>
<td>Finland</td>
<td>Tekniikantie 4 A 02044 Vtt Espoo</td>
<td>Research Organisations</td>
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<tr>
<td>JILIN UNIVERSITY</td>
<td>China</td>
<td>Qianjin Street 2699 130012 Changchun</td>
<td>Higher or Secondary Education Establishments</td>
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Administrative Contact:
- Timo Mååttå (Dr.)
- Mingzhe Li (Prof.)
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<tr>
<th>Organisation</th>
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<td>A.D.A. Architectural Design Agency OOD</td>
<td>€ 352 006,25</td>
<td>Bulgaria</td>
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<td>Iota Developments Ltd</td>
<td>€ 350 891,25</td>
<td>United Kingdom</td>
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<tr>
<td>ROBOTNIK AUTOMATION SLL</td>
<td>€ 350 010,25</td>
<td>Spain</td>
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**Address**
- A.D.A. Architectural Design Agency OOD: Totleben Blvd 63, 1606 Sofia, Bulgaria
- Iota Developments Ltd: Waunfawr Business Center, Newtown Industrial Estate, Np1 7pz Newport, United Kingdom
- ROBOTNIK AUTOMATION SLL: Carrer De Barcelona, 3-A. P.I. Fuente Del Jarro, 46988 Paterna, Spain

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

**Website**

**Contact the organisation**
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  - Ian Stead (Mr.)
  - Rafael López Tarazón (Mr.)