Agent based engineering in a cost estimation model for composites (ECOMP)

Results in Brief

Decision support for composites design and manufacture

The market for composite materials, those made of two or more other materials, is steadily growing. EU-funded researchers developed a web-based modelling platform to assist companies in making the best design and manufacturing decisions.

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Composites enable designers to build on the individual strengths of each component leading to a final product with superior technical specifications often including low weight and high strength.

Applications of composites are found not only in conventional sectors such as automotive, aerospace and civil engineering but also in emerging and commodity sectors as well.

However, given the seemingly endless combinations of materials with various processing requirements leading to a tremendously varied product range, engineers and manufacturers could benefit from some advanced technological design and optimisation support.

European researchers initiated the ‘Agent based engineering in a cost estimation model for composites’ (ECOMP) project to develop a web-based platform facilitating decision making for optimal process, equipment and materials selection with maximum cost reduction.

Scientists used object-oriented programming, a relatively recent programming technique used by languages such as Java. In Java, individual entities (objects) are defined with specific rules for controlling their associated data and interactions with other objects. Thus, objects included materials, properties and processes.

They combined this with an agent-based model (ABM), a relatively new computational modelling structure that evaluates the effects of multiple components (agents) on the system as a whole. An ABM was used to model effects of various objects on cost, to evaluate costs of alternative routes and to inform the user of issues unrelated to economics that might weigh on his or her decision.

ECOMP have therefore delivered the first web-based software tool for modelling cost and selecting materials, processes and equipment in the early phases of composite design.Commercialisation of ECOMP has the potential to tremendously increase the competitive position of small and medium-sized enterprises (SMEs) involved in composites manufacturing. It should also increase the quality and variety of available products while reducing their costs, an added benefit to end users.

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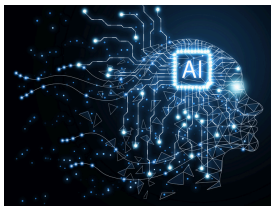

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Project Information

ECOMP

Grant agreement ID: 508149

Project closed

Start date
1 November 2004

End date
31 October 2006

Funded under
Horizontal research activities involving SMEs: Specific activities covering wider field of research under the Focusing and Integrating Community Research programme 2002-2006.

Total cost
€ 1 186 730,00

EU contribution
€ 614 865,00

Coordinated by
CENTRE DE RECERCA I INVESTIGACIO DE CATALUNYA S.A.
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