Plug materials influence on final part quality in Thermoforming process

Fact Sheet

Project Information

PLUGIN

Grant agreement ID: 31602

Funded under
FP6-SME

Start date
1 October 2006

End date
30 November 2008

Overall budget
€ 979 614

EU contribution
€ 745 188

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Objective
The thermoforming process is something of a black art; when a new product is being developed, the process parameters and plug properties are determined through a mixture of trial and error and experience. These methods are highly inefficient, stifle innovation and reduce the overall competitiveness of thermoforming companies. The aim of the project will be to use a more scientific approach which will enable products to be manufactured with a faster time to market, optimal properties and with reduced material and energy costs. The work will gather the current knowledge base, use experimentation to understand the physical phenomena that govern the effects of the plug and observe the actual plug behaviour and verify these results through extensive thermoforming trials. Unique test rigs will be built at the RTD institutes to quantify the effects of friction and heat transfer. Data generated from these rigs will be used to develop numerical models for friction and heat transfer, which will be implemented into the simulation software supplied from the SME software vendor. This software will be validated by initially carrying out experiments using instrumented lab scale thermoforming equipment at each RTD institute and by carrying out trials on industrial scale equipment at each of the SME thermoformers. A web based expert system will be constructed by using the validated simulation software along with the practical knowledge and data accumulated over the duration of the project. The web based expert system will be the major deliverable of the project. This will consist of a suite of databases and a plug advisor. It is intended to be a valuable tool for all of the SMEs within the consortium. The processors will use the system to enhance their production facility, the material suppliers will have access to knowledge that will enable them improve the composition of their plug and sheet products whilst the software developer will enhance the capabilities of their software.

Field of science

/natural sciences/computer and information sciences/artificial intelligence/expert systems
/natural sciences/computer and information sciences/databases
/natural sciences/computer and information sciences/software/application software/simulation software

Programme(s)

Topic(s)

Call for proposal

FP6-2004-SME-COOP
Funding Scheme

Cooperative - SMEs-Co-operative research contracts

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