Properties

Title:
Polyurethanes: new 3D-Modelling and Tooling Techniques.

-Technology profile

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General information

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Technology offer

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Technologic information profile

Title:
Polyurethanes: new 3D-Modelling and Tooling Techniques.

Description:
The Austrian SME is a start-up (founded in 2015) active in the plastic industry.

In the fields of aerospace, automotive and engineering, big blocks from polyurethane or epoxy resins are used for 3D-modelling or tooling. It is state of the art to produce these blocks from standardized plates, which are glued together and milled to the final contour. This method leads to a whole list of disadvantages:

- By glueing standardized plates, only a very rough approximation of the desired model is possible.
- Due to this fact, the milling itself is time consuming.
- Additionally much more non-recyclable material than necessary is wasted.
- Natural gaps appear in the glued areas, thus reducing the optical and mechanical properties of the product.
- Within these gaps air bubbles or shrink holes can appear, leading to even more problems.

Alternative technologies like injection molding or 3D-printing cannot be used for block production based on their lack in flexibility or their inability to produce bigger parts respectively.

These problems generated the motivation to develop a completely new approach to produce blocks primarily from polyurethanes but also from epoxy resins. A casting process using an adjustable mold can manufacture blocks with a contour quite close to the final structure rather than just roughly approaching it like in the plate glueing process.

Usually the density and the shore-d hardness are the most important material features for customers. In general all material data can be freely adjusted within the physical limits. The lowest density is 0.7 g/cm³ with a shore-d hardness of 66, the highest density is 1.8 g/cm³, which leads to a shore-d value of 86. Other material properties have as well been evaluated and are available on material data sheets.

The Austrian SME is looking for partners for the commercialization of the product through a commercial agreement with technical assistance. (Industrial) Partners of any size from all regions are sought who have a strong knowledge, understanding and demand of the polyurethane (plates) technique (e.g.in the area of aerospace, automotive, design, architecture, ship building, tooling, 3D-modelling, etc.). Furthermore, partners are sought who are willing to apply the novel system and give feedback for further development and optimization of the product.

Technologie keywords

- Design and Modelling / Prototypes
- Construction Technology
- Materials Technology
- Transport and Shipping Technologies

Languages

- English
- German

Exploitations

- National or Regional R&D programme

Sector groups

- Materials

More information

Plus Value:
In comparison to state of the art technologies the main advantages of the custom shaped blocks are:

a. Decreasing total costs by ~ 35 %:
The fully automated procedure -> - 30% of labor costs and - 40% of material costs

b. Decreasing time in the whole process chain:
No glueing plan & no glueing, less material to be milled, milling without supervision possible

c. Superior material properties:
Uniform structure & homogeneous material -> best optical and mechanical qualities
Compact material -> wet milling and direct tool manufacturing is possible

d. Waste reduction:
40 % less non-recyclable waste produced

IPR Status:

Secret Know-how,Patent(s) applied for but not yet granted

EOI Status:
True

Experience:

Organisation

Type of organisation:

Since:
0

Type and Size:
Industry SME 11-49

Transnational
Ja

Turnover:

Collaboration

Technical Specification or Expertise Sought:
pppIndustrial partners of any size from all regions are sought which are active in the area of aerospace, automotive, design, architecture, ship building, tooling, 3D-modelling or companies which use polyurethane and / or the described standardized polyurethane plates.

The company is looking for partners who would be interested in further commercialization of the product. It is offering the technology through a commercial agreement along with training, support and technical assistance in order to create customized and differently sized models.

In addition, (industrial) partners are sought who are willing to apply the novel system and give feedback for further development and optimization of the product.ppSME 11-50,SME 10,500 MNE,251-500,SME 51-250,500p

Partnerships

- Commercial agreement with technical assistance