

Technology Offer

Title:

Fibre Composite Spraying process for high quality fibre reinforced PUR components (Ref: 10 DE 1486 3GX1)

(Open)

Abstract:

A larger German company developed a new production process for fibre-reinforced polyurethane parts with excellent mechanical properties and surface optics. The Fibre Composite Spraying (FCS) process enables very flexible response to the demanding specifications for mechanical properties and surface optics, and at the same time keeps investment and manufacturing costs low. The company offers machinery and technical assistance to manufactures interested in implementing this new process.

Description:

Fiber Composite Spraying (FCS) is an excellent new method for producing rugged, large-format parts with optically impeccable surfaces by directly spraying fibre-reinforced polyurethane (PUR) material into a mould.

In the FCS process, reinforcing fibres (e.g. glass or carbon) from an endless roving are cut to length in a chopper unit and then transferred into the polyurethane spray cone. Here they are thoroughly wetted with PUR. In contrast to the familiar Long Fibre Injection (LFI) process, the filaments make contact with the PUR mix only after it has left the mixing head. This makes for even greater flexibility and cost effectiveness in producing composite parts.



One highlight of the process is the new spray head which guarantees optimal access to the surface being sprayed. With the new head, the filaments reach the spray cone as a coaxial stream. This guarantees that the filaments are optimally wetted. Fibre length and fibre content can be adjusted to give the product specific properties.

Wide design freedom through multicomponent technology

After spraying a barrier coat, the fibre-reinforced PUR is sprayed in layers to build up the specified wall thickness and mechanical properties. By changing the spray pattern and fibre concentration during spraying, it is possible to produce zones in the part that have different strength and different properties. This flexibility reduces material consumption and helps to make the FCS process extremely cost effective.

A multi-component mixing head enables huge design freedom in building up the consecutive layers. Different layers – compact, foamed or reinforced – can be combined to comply with product specifications. 4-component technology guarantees processors a very high level of production flexibility.

The machinery, adaptation to specific needs and technical assistance for the implementation is offered to manufactures interested in using this new process in their company.

Innovations and advantages of the offer

Spraying composites has a number of advantages compared with other processing methods:

No problem with emissions.

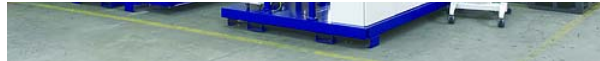
Excellent mixing performance and uniform fibre distribution, giving the part excellent mechanical properties.

Inserts can be integrated in the part with ease.

In many cases, FCS requires only a one-part



mould, so that initial investment is lower.



The relatively low tooling costs make FCS an economically viable production method for small and medium-sized batches.

Current and Potential Domain of Application

Typical applications are bodywork parts for utility vehicles such as buses or tractors and wind deflectors or sleeper cabins for trucks.

There are also many potential applications in the construction and furniture industries.

Other Profile Details

Organisation: Bayern Innovativ Bayerische Gesellschaft für Innovation und Wissenstra

Network Partner: Bavaria2Europe

Country: Germany

Entry Date: Wed, March 17, 2010

Validation Date:

Deadline: Sat, February 05, 2011

List of Keywords

Technology

- ✦ Moulding, injection moulding, extrusion, sintering
- ✦ Composite materials
- ✦ Plastics, Polymers
- ✦ Chemical Technology and Engineering

Market

- ✦ Furnishing and Furniture
- ✦ Transportation

Current Stage of Development

Already on the market

Exploitation of RTD Results

Others

Intellectual Property Rights

Comments

Organisation/Company

Type: Industry

Size: >500

Collaboration Type

- ✦ Joint further development
- ✦ Adaptation to specific needs
- ✦ Change in the partner sought's currently used technologies (installations, process, facilities)
- ✦ Engineering
- ✦ Technical consultancy

Comments

Type of partner sought:

Industry

- Specific area of activity of the partner:

Utility vehicles industry (e.g. buses, tractors, trucks), construction and furniture industries

- Task to be performed by the partner sought:

Definition of requirements and specification of parameters of the product/production where the new process shall be used. Purchasing the machinery and implementation into the own production. Receiving staff training.

Targeted Countries

ALL

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