Structured Yarn Coating

Yarn Functionalization for Smart Textiles

Invention

This invention describes a spraying process for the structured coating of a yarn with functional materials in a continuous process. The yarn passes through two coaxially arranged cylindrical stencils, the outer one of which has a slit-shaped opening and the inner one a helical one. By rotating the outer cylinder at a speed adapted to the yarn speed, a ring-shaped structure that is limited in an axial direction can be applied to the yarn surface. This is highly advantageous for the production of what are known as smart textiles, as electronic components can be produced directly at the level of a yarn. The substances applied in several layers can have different electronic or electrochemical properties and can be used in a variety of ways.

Commercial Opportunities

The process is suitable for the structured coating of yarns using sprayable coating agents or PVD to produce functional yarns or filaments for electronic or active textiles such as electroluminescence, energy storage or sensor technology in textiles. An application within medical technology is also possible as active substances can also be applied. It can be used as a stencil in yarn sputtering systems as an offset coating of two zones of different material can take place both on top of each other and next to each other.

Current Status

A patent has been filed for the invention. A prototype is to be built and tested as part of a project. On behalf of Hochschule Niederrhein University of Applied Sciences, PROvendis offers interested companies licenses for the invention and patent application. Further developments and adaptation to a problem in cooperation with interested companies is also conceivable.

An invention of Hochschule Niederrhein University of Applied Sciences.

Competitive Advantages

- Continuous coating
- Application of structures on yarns or filaments
- Several materials can be processed at the same time
- Use as a stencil
- Reduction in process costs

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