

Press release



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Premiere at Simac: ATOM Lab to present fully-automated shoe manufacturing

Bonding soles via digital printing

Covestro provides technology and material solution with polyurethane

ATOM Lab, the research and innovation business unit of shoe machinery manufacturer ATOM, will present a fully-automated process for shoe production for the first time at the Simac Tanning Tech trade fair in Milan from February 20–22, 2018. At its booth in Hall 14, visitors can select 3D-printed soles and uppers, and have customized shoes made for them.

The most technically challenging step in this process is bonding the outsole to the shoe upper. Covestro developed an efficient solution for this within a very short time. It is based on polyurethane raw materials for adhesives, which are applied to the outsole or upper by means of digital printing.

Digital printing of adhesives

For the application, ATOM Lab used a variation of the melt layer method (Fused Filament Fabrication, FFF, or Fused Deposition Modeling, FDM). This method uses strands of melt-processable adhesives – so-called filaments – which are melted. The molten adhesive is applied according to a digital print layout. The sole and upper are then joined under pressure. This creates a solid, permanent adhesive bond.

This application using adhesive filaments is quick and efficient. Furthermore, it is very precise and reproducible, and it is also well suited for absorbent substrates. Due to the use of solid filaments, for example, the subsequent drying process may be dispensed. The adhesive features a high initial strength. Since application takes place from the melt, the adhesive is already activated. If the open time is sufficiently long, the fabricator can dispense with prior heat activation. Thus, two process steps can be saved in total.



Broad experience in additive manufacturing

Covestro benefited from its experience in additive manufacturing with the technology and material solution developed on short notice. The company is involved in conventional printing methods and is currently developing a wide range of materials. Among these are filaments and raw materials for the FFF method, which so far has been used primarily in rapid prototyping.

Polyurethane adhesives have proven to be successful in shoe manufacturing. They are easy to process and result in flexible yet strong and durable adhesive joints with high impact resistance. Covestro offers a comprehensive range of raw materials for one- and two-component adhesives that are often developed in close collaboration with formulators.

About Covestro:

With 2016 sales of EUR 11.9 billion, Covestro is among the world's largest polymer companies. Business activities are focused on the manufacture of high-tech polymer materials and the development of innovative solutions for products used in many areas of daily life. The main segments served are the automotive, construction, wood processing and furniture, and electrical and electronics industries. Other sectors include sports and leisure, cosmetics, health and the chemical industry itself. Covestro has 30 production sites worldwide and employs approximately 15,600 people (calculated as full-time equivalents) at the end of 2016.

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