

Varioplast commercializes process

By David Vink

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**Varioplast Konrad
Däbritz GmbH**
Hall A1, Booth 1007

Following four years of work together with the Pforzheim University of Applied Sciences, Ötisheim, Germany-based molder Varioplast Konrad Däbritz GmbH has developed a new Turbotherm variothermal dynamic rapid heating and cooling process to eliminate visible knit lines on molded parts.

Varioplast says the patented process is a relatively low-cost solution compared with other variothermal solutions due to low energy consumption and the way in which the tailored impulse heating can be applied selectively only to areas on moldings where visible knit lines occur. Compressed air consumption is also low.

As with other variothermal systems, there are other benefits aside from elimination of visible knit lines, namely high replication of mold cavity surfaces on molded parts.

Long flow paths are achieved by avoiding premature melt freezing, on account of injection against relatively hot mold surfaces.

This is a challenge with conventional temperature control on parts involving an unfavorable flow-path-to-wall-thickness ratio.

Turbotherm features include acceleration of the turbulent air-flow used for temperature control accelerating according to venturi principles and use of a heat recirculation sleeve.

Varioplast development engineer Daniel Koch has been dedicating much of his time to the Turbotherm project, aside from day-to-day responsibilities and tasks.

Holding a Mercedes star emblem alongside the Turbotherm system mold cavity, he said “although the main aim has been elimination of visible knit lines, a side effect was that surface quality has been improved, for example, with less surface pressure marks and sink marks.”

Koch said heating is applied until holding pressure is reached and that the heating air is easily diverted away from the cavity to facilitate cooling. The Turbotherm heating rate depends on the type of thermoplastic being molded, but Koch talked of a typical rate of 5° to 10° per second as common.

Detecting knit line visibility is notoriously difficult on mirror-finish surfaces, where they may be hidden by or falsely associated with surface scratching. But he turned the samples around to show the matte sides, where knit lines were clearly visible to the naked eye on standard examples and completely invisible on the Turbotherm ones.

Koch said Varioplast uses Turbotherm itself, also with a six-axis part handling robot, and found that heating can take

place parallel with part removal. With commercial launch of Turbotherm in January 2018, “when we intend to make it available also to our competitors,” Koch said.

Varioplast is using Fakuma as a venue to establish contact with potential Turbotherm sales partners, as the company lacks resources to actively promote the system within the molding community.

Koch stressed that Turbotherm fits within standard Euro-map interfaces, does not require injection molding tool modification and can be retrofitted to existing multicavity tools.



A Varioplast Turbotherm system applied to a Mercedes star emblem mold cavity.

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