

CFD Modeling for Developing Woven Meshes

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ABSTRACT - CFD Modeling for Developing Woven Meshes

To reduce the time to develop a wire mesh for a customer specific application GKD collaborated with the Fraunhofer Institute and has designed simulation software “WeaveGeo” to model characteristics and functionality of woven mesh. Computer fluid dynamics (CFD) is used to calculate filtration parameters.

The filtration behavior of woven meshes is simulated and the findings are used to create new mesh constructions or to further optimize existing ones for customer specific applications. Predictions from the software such as porosity, pressure drop, bubble point, retention rate and filter efficiency are extremely close to reality. Relevant variables like wire thickness, pitch, deformation behavior and ovality of the wires are individually defined according to the particular application and mesh type. Comparison of results from simulations and classic laboratory experiments show a close correlation with a deviation of less than 4 percent.

The advantages for the customer are the precise configuration and optimization of the wire mesh to the specific application, a better understanding of process through graphic 3D evaluations, and substantial reduction in development times and costs.

Biography:

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BIOGRAPHY

Markus Knefel graduated from the University of Aachen and is a mechanical engineer at GKD – Gebr. Kufferath AG in Duren, Germany. His primary responsibilities include performing CFD of filter media for developing and validating woven wire meshes to specific customer requirements. Markus is a certified quality manager and has implemented ISO 9001 in different GKD business locations worldwide. He will finish his MBA mid 2010.