

# GridgenApp

A Unique Gridgen® Application



## Behr Saves Time with Pointwise Consulting Services



Pointwise used Gridgen to rapidly generate hexahedral grids for Behr.

Engineers at Behr Climate Systems, Inc. are using Pointwise Consulting Services as well as Pointwise's software – Gridgen – for the mesh generation aspect of their CFD studies. Behr uses its CFD tools to quickly analyze the flow and heat transfer in new climate control system designs. They get detailed flow field information from the analyses, which helps guide design modifications. Plus, they can analyze several design alternatives in this way before building costly prototypes. The overall result is better climate control system designs produced more quickly.

Behr Climate Systems, Inc. is a leader in developing and manufacturing heating, ventilation, and air conditioning (HVAC) systems for automotive applications, trucks, and commercial vehicles. They are a subsidiary of Behr GmbH & Co., a worldwide organization that provides vehicular HVAC and engine thermal management systems.

Most of Behr's HVAC systems are customized for customer's specific needs, which require working closely with the customer to ensure the completed system meets their requirements and integrates well with other vehicle systems. This is only possible if Behr is able to quickly produce design modifications in response

to customer feedback. Part of the design modification process is to analyze the flow and thermal properties of the modified system to ensure they still meet customer requirements. If the analysis takes too long, the result cannot be implemented in the design process. Additionally, if it is not accurate, it provides incorrect information about the design changes and can result in reduced system performance. Behr's engineers must balance the need for speed and the requirement for accuracy in their HVAC system analyses. They use the STAR-CD CFD code with hexahedral grids generated by Pointwise to achieve the proper balance between speed and accuracy.

Hexahedral grids, particularly multiple block, structured grids, are known for producing highly accurate flow solutions. However, they have traditionally taken much longer to build than grids consisting of tetrahedral elements. Behr is able to have the best of both worlds, speed and accuracy, by using Pointwise's consulting engineers to generate hexahedral grids for them.

Pointwise works closely with Behr to determine the requirements for a particular grid. Typically, the geometry is transferred via network connections from Behr to Pointwise in a matter of minutes. Pointwise then uses Gridgen, long known for quickly producing high quality hexahedral grids, to make the meshes. Transferring the completed mesh back to Behr is again done by means of network interfaces to ensure rapid turn-around times.

*"The engineers at Pointwise contributed significantly to our CFD activities through their expertise in mesh generation and quick response times," said Dr. Thomas Mersch, Systems and Test Manager at Behr Climate Systems, Inc.*

Working cooperatively, Pointwise is able to produce hexahedral grids for complex geometries in a short time, thus enabling Behr Climate Systems, Inc. to respond to their customer's needs and produce the best HVAC system for that particular vehicle.

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