

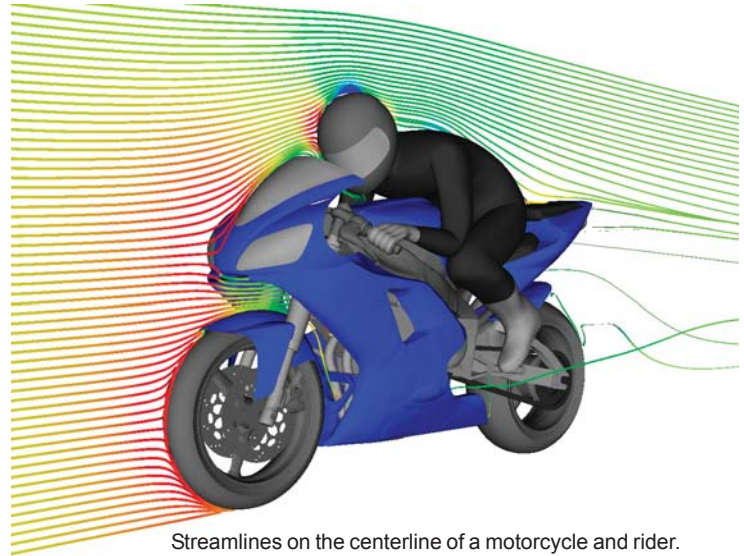
Advantage CFD Uses Gridgen to Streamline CFD

Advantage CFD is a leading UK computational fluid dynamics consultancy, with a long history in the motorsport and automotive industries. We have extensive experience of racecar design and wind tunnel commissioning in both the US and Europe. In recent years, we have expanded our business to encompass more general CFD applications with clients in industries as varied as pharmaceuticals, food processing and power generation.

Due to Advantage CFD's involvement in motorsport, it is necessary for us to constantly seek ways to streamline our procedures in order to meet the tight timescales demanded by our customers. Inherent in the CFD process is the ability to reliably generate high quality meshes that are fed into the Fluent solver used at Advantage CFD.

In order to evaluate the commercially available meshing packages, Advantage CFD used a series of test cases. The results showed that Pointwise's Gridgen program produced tetrahedral meshes up to ten times faster than some of the other programs considered, as well as being the most robust. Pointwise's rapid response to development requests was another reason why Advantage CFD chose Gridgen over the other packages evaluated.

The latest release of Gridgen, which has incorporated the Glyph scripting language, has enabled Advantage CFD to further improve our internal procedures. Our development team has produced in-house programs and scripts which automate the generation of a tetrahedral volume mesh given a triangular surface mesh. This capability has proven pivotal in reducing the turnaround times required to analyze design modifications and ensures consistent meshes throughout a given project. Recent studies that have utilized this automated meshing include an investigation of the flow around a Yamaha R1 road bike and also air flow through a gas mask.



Streamlines on the centerline of a motorcycle and rider.

Gridgen's structured meshing capability has been primarily used at Advantage CFD for generating high quality butterfly meshes for internal flows using the domain extrusion tools. This approach has yielded higher quality meshes in less time than using our previous techniques. The domain extrusion has also been used for generating near wall prismatic meshes as part of a hybrid mesh, which enables us to produce accurate results without the overhead of a completely structured mesh.

The major benefit of improving and/or automating the meshing process, is the additional time it allows Advantage CFD engineers to devote to flow visualization and the analysis of CFD data. Hence increasing the number of models we are able to assess within each project. This would not have been possible or as successful without Gridgen.

For more information, please visit www.advantage-cfd.co.uk or contact Jo Scott at Tel. +44 1280 846 806 or jo@advantage-cfd.co.uk.

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