AEG Electric Tools Uses FloEFD™ to Create Cool Power Tools Faster

MECHANICAL ANALYSIS
Engineering Fluid Dynamics

Design Challenge

Recognized as a member of the "Top 100 Most Innovative Companies in Germany's SME Sector," AEG Electric Tools GmbH is a market leading manufacturer and marketer of heavy-duty portable electric power tools. AEG's product portfolio includes more than 100 different types of tools for the professional market including hammers, percussion and diamond drills, angle and straight grinders, jig and circular saws. The design team at AEG is responsible for solving motor cooling as well as air flow issues. "As power tools are getting more compact, we investigate motor cooling issues to better understand the effectiveness of the cooling method used" explained Markus Wörner, Design Engineer.

Power tools designed at the South German facilities are engineered for two different brands: AEG Power Tools and Milwaukee Electric Tools. The tools are based on a common platform which makes it possible to modify the machine components for the different needs of the users. The modular design enables AEG to realize two different exterior designs. "Different exterior design and internal components result in completely different airflow in the machine. Testing each configuration would take a lot of time. But with simulation we can identify the effects caused by all the different design options and ensure proper performance for all machines based on the platform" said Peter Henske, CAD Manager.

Solution and Benefits

To test design concepts created with PTC's Pro/ENGINEER Wildfire, the design team uses FloEFD for thermal and airflow effects. "On a recent project we used FloEFD early in the design process and we were able to get the engine running 20% cooler and also we obtained this improvement much faster than before" said Wörner.

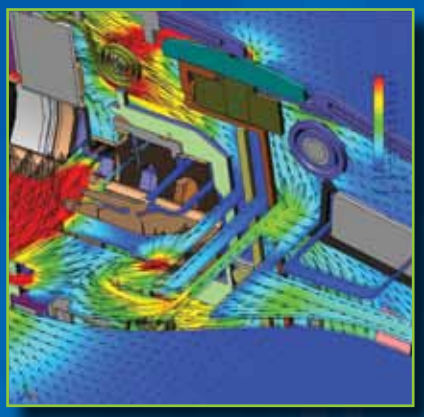
"We chose FloEFD because it is easy to use. For example, with FloEFD we do not need to define the fluid area – the software does this automatically." Most traditional fluid flow simulation programs require users to create "phantom" parts to represent the (empty) fluid regions – an extremely time consuming process since users need to identify each region manually and then create geometry to fill it. FloEFD saves time and effort by automatically differentiating between solid and fluid regions for internal and external flows to create the fluid domain.

Testing prototypes with FloEFD also enables the AEG design team to fine-tune new design concepts by using information that they have amassed over the years as the basic building block for their new design work. "By using FloEFD we are able to fine-tune our designs to reach an optimized design much faster. On a recent project, we reached our goal for improved airflow with the very first prototype" added Henske.

Customer Testimonial

" We chose FloEFD because it is easy to use. Using FloEFD, we are able to fine-tune our designs to reach an optimized design much faster. "

Markus Wörner, Design Engineer, AEG Electric Tools GmbH



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