

Domat/Ems, December 7, 2016

PRESS INFORMATION

Press release K 2016

EMS-GRIVORY expands its Computer Assisted Technical Service

EMS-GRIVORY is emphatically supporting the trend towards virtual development, testing and analysis of parts. This allows much shorter cycle times to be achieved while at the same time increasing component quality and thus, enabling customers to benefit from significant competitive advantages. Recently the Swiss polyamide specialist has expanded the service portfolio of its Computer Assisted Technical Service by two promising features.

EMS-GRIVORY is very active in the development of calculation methods to determine the life expectancy of components made of fiber-reinforced polymer materials. Together with well-known partners such as VW, BMW, Bosch, Sulzer, Magna and Loeben University in Austria, a corresponding research project was launched. The project work involved simulating the life expectancy of a transmission cross member using the newly developed calculation methods – a highly complex issue as this time span is affected by a variety of different factors. Apart from temperature, moisture and mechanical loading these also include the orientation of the fibers. Depending on whether the fibers are transversally or longitudinally oriented, strength values can deviate by up to 50% which has a decisive influence on the life expectancy of a component.

Parallel to the calculations, conventional component tests were also carried out to determine the fatigue behavior – i.e. the working life – under specific loading scenarios. A comparison of the calculation results with the component tests shows that the results of current computer-calculated forecasts are already very reliable. The savings potential from shortened component development time is not a few days, but many months!

Non-destructive component analysis

If problems are caused in a component made of polymer materials due to pinholes, cavities, weld lines or a less than optimal fiber orientation, these require careful and complete analysis. This takes time and greatly lengthens the development phase. Previously, insights into a component were only possible using time-consuming microscope technology and involving individual section planes. The EMS-GRIVORY application development department now uses computer tomog-

raphy for this kind of examination. This technology has been used medicine for many years and has recently been introduced for industrial applications. Using computer tomography, a complete, three-dimensional image of the component can be created in a non-destructive way. This greatly shortens customer service response time and improves the quality of information provided.

Benefits for component development

Computer tomography is especially suited for precise measuring of component dimensions and for the analysis of fiber orientation and inclusions. All necessary information for this kind of examination can be gained from one single scan. It is even possible to compare the results of a scan directly with the original 3D model images created during component development. This provides information about the accuracy of the simulation models and where they can be improved.

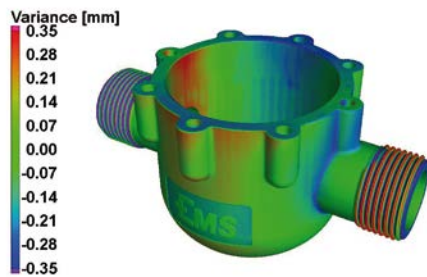
Using the new calculation methods for forecasting life-expectancy and the new computer tomography technology, EMS-GRIVORY has two powerful tools which provide significantly more know-how about component behaviour, considerably improve customer service efficiency and greatly accelerate component development.

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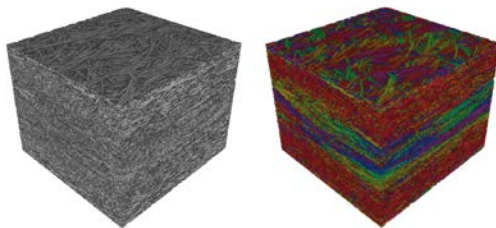
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Components made of polymer materials are increasingly designed completely on a computer. It is intended that in future, forecasting of component life expectancy will also be a completely virtual process.



Comparison of a CT scan with the original 3D CAD model showing local geometrical deviation.



Glass fibers within a component can be made visible in a high-definition scan (left) and their quantity and orientation analysed using special software programs (right).



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