

# EVAC GmbH Relies on MSC Nastran and MSC Fatigue for Durability Studies

*First evaluations have shown significant time savings during the design process*

SANTA ANA, CA--(Business Wire – July 16) – [MSC Software Corporation](#), the leader in multidiscipline simulation solutions that accelerate product innovation, today announced that EVAC GmbH is using [MSC Nastran](#) and [MSC Fatigue](#) simulation solutions to accurately and reliably predict performance and durability of sanitary tanks and their mounting frames on passenger trains.

Modern sanitary systems on passenger trains have come a long way since archaic designs. Today's systems operate with a vacuum suction process, similar in appearance and function to toilets used on airplanes, offering the best possibility of maximum hygiene and functional reliability.

EVAC GmbH, headquartered in Wedel, Germany is one of the leading providers of modern hygiene systems. The company has used FEA programs for many years for tank design and optimization of high-grade steel. Only recently has extensive and precise durability testing become a focus. EVAC chose to use [MSC Software](#) solutions this year because of a proven track record of reliability and performance across industry applications for decades. [MSC Nastran](#) is used for structural analysis and [MSC Fatigue](#) to evaluate the durability and lifetime.

The loads applied to tanks and mounting frames on trains are substantial. Under normal operating conditions, load impacts with accelerations of up to 5g can occur, for instance, during train configurations or when running over railway turnouts. The high alternating pressure loads of the tanks produced by the vacuum principle presents a significant challenge, requiring engineers to pay special attention to the fatigue and structural durability of the tanks and the various welded and/or bonded joints.

[MSC Fatigue](#) identifies critical areas quickly and accurately to predict the lifetime of products by analyzing time/frequency dependent loads using arbitrary combinations. In addition to [MSC Nastran](#), MSC Fatigue also supports MSC's nonlinear FEA solution, [Marc](#), and multibody dynamics solution, [Adams](#), as well as other third-party solutions such as Abaqus and Ansys. The functionality of the program contains, among other features, HCF (High-Cycle Fatigue), LCF (Low Cycle Fatigue) and crack growth.

"The FE-capabilities within our CAD system are not able to calculate structural durability," said Arne Matzke, Manager Engineering and Design at EVAC GmbH. "And, the former needed manual Excel calculations can now be replaced by automated calculations with MSC Fatigue. First evaluations have shown that we will save approximately one man day per calculation."

### **About EVAC GmbH**

Since 1959, EVAC GmbH has developed and manufactured vacuum systems for sanitary areas. Today, more than 70,000 EVAC-systems are installed world-wide. The company's specialty is the delivery of systems optimally adapted to the requirements of their customers – from complete cabins and door mechanisms to freshwater and sewage systems including waste water treatment and the necessary control systems. Since 2004, GmbH has been involved with the French ZODIAC SA yet has maintained its trading areas and acts to a large extent autonomously. EVAC GmbH is headquartered in Wedel/Germany with subsidiaries in Shanghai/China and in Carson/USA and employs 220 people. For more information about EVAC GmbH, please visit: [www.evac-train.com](http://www.evac-train.com)

### **About MSC Software**

MSC Software is one of the ten original software companies and the worldwide leader in multidiscipline simulation. As a trusted partner, MSC Software helps companies improve quality, save time and reduce costs associated with design and test of manufactured products. Academic institutions, researchers, and students employ MSC technology to expand individual knowledge as well as expand the horizon of simulation. MSC Software employs 1,000 professionals in 20 countries. For additional information about MSC Software's products and services, please visit: [www.mscsoftware.com](http://www.mscsoftware.com)

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