SIEMENS

Industrial machinery

# Werner Weitner

## CAD with integrated FEA facilitates a fast track to validated designs

**Product**

Solid Edge

**Business challenges**

Reduce product development cycle without compromising quality

Comply with strict safety regulations

Reduce development costs

**Keys to success**

Solid Edge CAD and integrated FEA functionality

Support partner that keeps company informed of technology advances

Seamless flow of information from engineering to manufacturing

**Results**

Complex designs are completed faster

Correct design decisions are made earlier in the process

Time-consuming rework has been reduced

Static testing costs are lower

### Solid Edge helps ensure product safety while reducing development time and costs

**Machine-building expertise**

With approximately 200 employees, Werner Weitner develops and manufactures special tools for motor vehicles, workshop equipment, and precision parts and tools, as well as special-purpose machines for automotive, medical engineering, and aerospace applications.

The company's products for the automotive industry include repair stands for engines, gearboxes and axles that incorporate customer-specific holding devices, and a variety of special-purpose equipment such as valve assembly tools and strut turnbuckles. Many industry leaders, including Mazda, Daimler, KTM and MAN, take advantage of Werner Weitner's expertise and quality standards in their own after-sales networks, which require an increasing amount of this type of equipment as vehicles become more complex. This is driving a rise in orders at Werner Weitner, an official development partner of the original equipment manufacturers (OEMs).

**User-friendly CAD**

In 1998, Werner Weitner established its own engineering department and equipped it with Solid Edge® software from Siemens PLM Software. Pivotal decision criteria in choosing this computer-aided design (CAD) solution included the cost of the initial investment, functionality, ease of learning and use, and seamless integration with the manufacturing department's computer-aided manufacturing (CAM) tools.

*Repair stand for motorcycle engines and gearboxes.*

"The user-friendliness of Solid Edge is very much appreciated. After any project in which we have to use another CAD system, all of my colleagues are happy when they can return to using Solid Edge again."

Wolfgang Wiesent
Development Manager
Werner Weitner

Solid Edge, designed specifically for the requirements of small and mid-sized companies such as Werner Weitner, offered the best cost-benefit ratio of the CAD systems they evaluated. The software's user guidance, in terms of how commands and options are structured, along with integrated tutorials, enabled the company's design engineers to learn the software without having to attend time-consuming training sessions. Even inexperienced users picked up Solid Edge easily and were able to learn the software on their own.

"The user-friendliness is very much appreciated," says Wolfgang Wiesent, development manager at Werner Weitner. "After any project in which we have to use another CAD system, all of my colleagues are happy when they can return to using Solid Edge again." He adds that even personnel who do not work in the design department, such as manufacturing managers, are able to use Solid Edge as a reference resource after a short introduction.

Solid Edge integrates smoothly with the company's existing software environment, enabling a comprehensive data exchange. For example, Werner Weitner can pass its 3D Solid Edge CAD models to manufacturing, without any loss of information. Even design details, such as drill type, are recognized automatically.

**Built-in FEA**

Werner Weitner also uses Solid Edge Simulation, the built-in finite element analysis (FEA) tool that lets design engineers digitally validate part and assembly designs within the Solid Edge environment. The integration with the CAD system allows design engineers to use simulation results to refine and optimize their designs.

*Actual blank of the simulated casting.*

Wiesent and his team learned about the Solid Edge Simulation functionality at a user forum hosted by PBU CAD-Systeme GmbH, a Siemens PLM Software sales and solution partner. PBU CAD-Systeme followed up with an on-site demonstration and helped Wiesent and the design engineers to use the software. PBU still assists Werner Weitner with ongoing customer support. "We are happy about the cooperation with PBU. When we have questions, we receive accurate answers very quickly," says Wiesent.

The value of an in-house FEA solution is illustrated by a redesign of a gear head for an engine repair stand. The previous version of this gear head consisted of standard parts and five different special components. The manufacturing process required a total of ten processing steps, from sawing to welding. In the new design, a single aluminum casting replaces these components, leading to a simplified and accelerated manufacturing process for the gear head. "The casting is too complex to calculate stresses manually," explains Wiesent. "To an extent, this design was only possible with simulation's support."

Even inexperienced users picked up Solid Edge easily and were able to learn the software on their own.

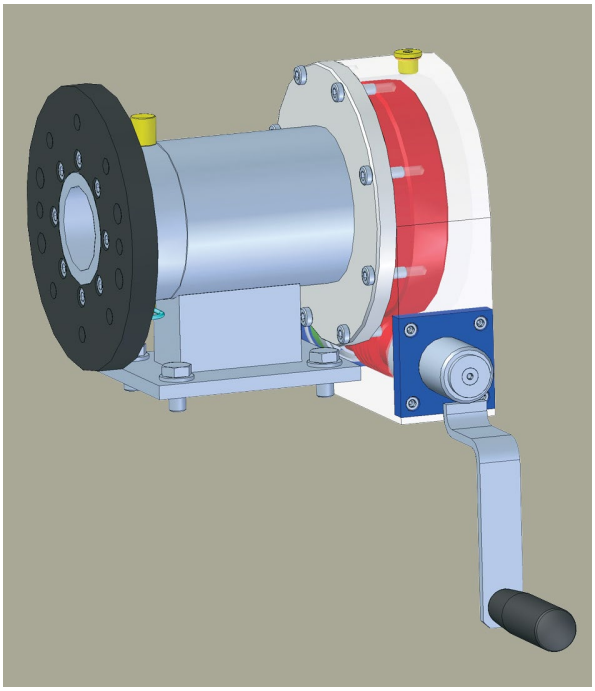
“With built-in simulation, we are able to identify potential design problems earlier in the process and can react more quickly. As a result, we save a lot of time and money.”

Wolfgang Wiesent
Development Manager
Werner Weitner

**Ongoing benefits**

Solid Edge Simulation functionality is beneficial to Werner Weitner in a variety of ways. “With built-in simulation, we are able to identify potential design problems earlier in the process and can react more quickly. As a result, we save a lot of time and money,” explains Wiesent. Costly design rework has been reduced to the minimum, lowering the time needed to complete each order.

The simulation process for an assembly – from preparing the model using Solid Edge to entering analysis parameters and running the calculation – requires about two hours. The company considers this time to be a good investment because the information gained from the simulation facilitates and streamlines the following job steps significantly. “Already after a few simulations, the investment in the software has paid for itself. We definitely benefit from it,” confirms Wiesent.



*Previous model of the gear head built out of several parts.*

### Solutions/Services

Solid Edge
Solid Edge Simulation
www.siemens.com/solidedge

### Customer's primary business

Werner Weitner develops and manufactures special tools and special-purpose machines for automotive, medical engineering and aerospace applications.
www.werner-weitner.com

### Customer location

Eichstaett
Germany

### Partner

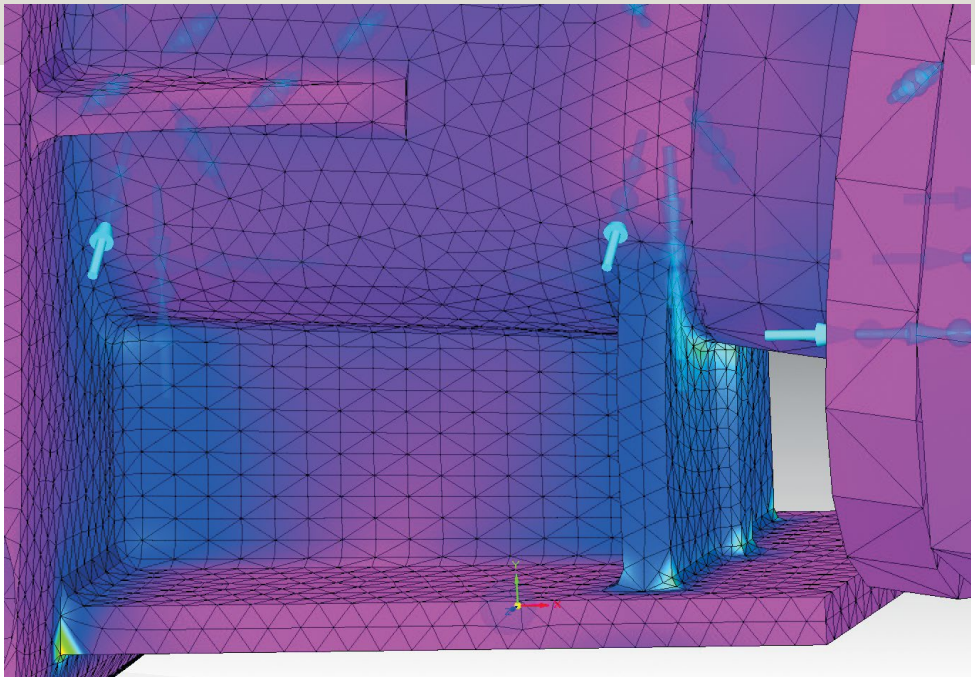
PBU CAD-Systeme GmbH
www.pbu-cad.de

**"With Solid Edge Simulation, we are able to react more quickly and, as a result, we save a lot of time and money."**

Wolfgang Wiesent
Development Manager
Werner Weitner

**"Already after a few simulations, the investment in the software has paid for itself."**

Wolfgang Wiesent
Development Manager
Werner Weitner



*Section of a simulation model after stress test.*

Simulation also helps Werner Weitner make sure its equipment meets the safety specifications of the European Machinery Directive, which requires the company to perform comprehensive static analyses for all newly developed hoists. Static analyses in Solid Edge help ensure that the design is ready to be sent to an independent auditor, and including the FEA results makes the communication process easier, faster and less expensive.

Werner Weitner is a rising star in the field of custom mechanical tools, having achieved the position as a main supplier for Daimler and MAN. "Solid Edge is delivering a tangible contribution to the company's success," says Wiesent. "The software's functionality is absolutely well suited to our tasks."

# Costly design rework has been reduced to the minimum, lowering the time needed to complete each order.

**Siemens PLM Software**

Americas +1 314 264 8287
Europe +44 (0) 1276 413200
Asia-Pacific +852 2230 3308

**www.siemens.com/plm**


Z10 25826 10/13 B