

# HIOKI E.E. CORPORATION

Improving the development of electrical measuring and testing instruments with SolidWorks



*HIOKI designers used SolidWorks design and simulation tools to develop the HIOKI Power Analyzer 3390, the world's best power meter.*

The HIOKI name is synonymous with electrical measuring and testing instruments. For over 75 years, HIOKI E.E. Corporation has led the electrical measurement industry, manufacturing a range of instruments and test equipment for a variety of applications. Today, the company operates on a global scale, with headquarters and primary product development in Nagano, Japan. It offers a complete line of automatic test equipment, memory recorders, electrical measurement instruments, and field measurement devices.

For many years, HIOKI designers and engineers used ME10® 2D design tools for product development. In the mid-1990s, however, the manufacturer turned to 3D technology to support its QCDS (Quality, Cost, Delivery, and Service) improvement initiative, according to Hiroshi Mizuide, manager of development assistance in HIOKI's Engineering Department.

"We started to use Pro/ENGINEER® software in 1995; however, we found it to be expensive and difficult to use," Mizuide explains. "We had a vision of providing each designer with a 3D CAD license, so they could communicate design information more effectively, whether it was within product development, with mold manufacturers, or with production personnel. In short, we needed a 3D design tool that was more affordable and easier to use."

After evaluating available 3D design packages, HIOKI decided to standardize on SolidWorks® software in 1998. Today, the company relies on its 32 licenses of SolidWorks Premium design and analysis software to further its QCDS program. In addition to being easier to use and a better value, SolidWorks Premium provides HIOKI with an integrated set of design visualization, simulation, and communication tools. The SolidWorks solution also enables the company to reuse legacy 2D and 3D data when necessary.

"Our vision of providing every designer and engineer with access to 3D CAD rested on the belief that it would help them more accurately and effectively communicate design intent, and ultimately improve design quality, reduce lead-times, and more quickly deliver excellent products to our customers," Mizuide stresses. "SolidWorks has enabled us to achieve these goals."

## Challenge:

Advance the development of electrical test and measurement devices by realizing quality, cost, delivery, and service improvements, while increasing manufacturing efficiency.

## Solution:

Implement SolidWorks Premium and SolidWorks Plastics software for design and analysis.

## Results:

- Shortened design cycles by 30 percent
- Accelerated time-to-market by 30 percent
- Cut development costs by 30 percent
- Reduced prototyping cycles by 30 percent

## CircuitWorks and configurations accelerate design

Since implementing SolidWorks Premium, HIOKI has trimmed nearly four months from its development cycles—a reduction of 30 percent. This improvement has allowed the company to bring products to market 30 percent faster, while simultaneously reducing development costs by 30 percent. Mizuide attributes these productivity improvements to the greater degrees of collaboration and communication supported by SolidWorks. For example, HIOKI uses CircuitWorks™ capabilities to integrate the electronic and mechanical aspects of its instrument designs.

“One of the ways that we save time is by combining CircuitWorks with design configuration tools,” Mizuide notes. “We have to make two PCB (printed circuit board) models and accompanying drawings: one board that is fully populated with all of the electrical components and another board that is not. SolidWorks is very effective in this situation and eliminates a number of steps from the process.”

## Simulating design and mold performance

While some of HIOKI's development cost reductions relate to time savings, a large portion involve the 30 percent fewer prototyping cycles that the manufacturer has achieved using SolidWorks solutions. Mizuide says that by using the design analysis tools in SolidWorks Premium and the plastic injection simulation capabilities in SolidWorks Plastics software, HIOKI designers and engineers can validate design and mold performance, resulting in more streamlined interaction with mold manufacturers and requiring fewer prototypes.

“With SolidWorks Plastics, our designers can confirm whether a particular design will produce the perfect mold for our parts,” Mizuide points out. “This capability has improved the quality of designs, has drastically reduced rework in the final stages of die making, and has greatly improved quality, cost, and delivery for overall manufacturing.”

“We can communicate with mold fabricators more effectively,” Mizuide adds. “With SolidWorks Plastics, we can use the design data created with SolidWorks to investigate the manufacturability of plastic parts. By identifying any potential problems before making the molds, we can modify parts in the early stages, improving the quality of the design and the molds, and drastically reducing rework after the molds have been fabricated.”

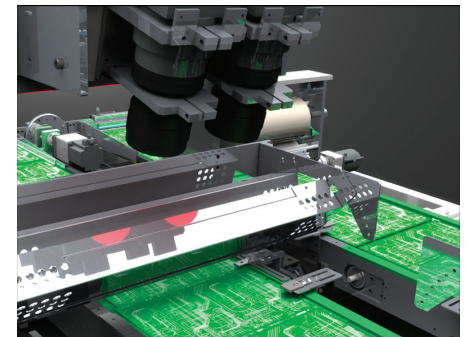
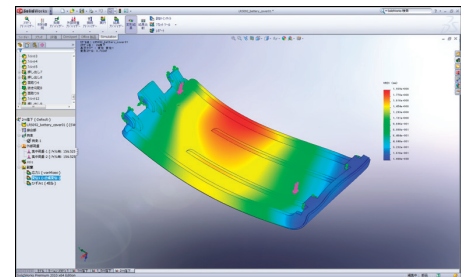
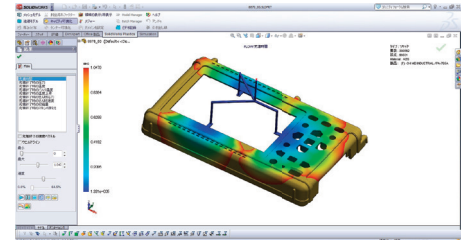
## Developing the world's best power meter

HIOKI has not only realized substantial productivity gains with SolidWorks software, but has also improved product quality, expanded product capabilities, and introduced industry innovations. The recently released HIOKI Power Analyzer 3390 is the top product of its kind and allows power measurements with a higher degree of accuracy. Takayuki Usui, manager of engineering in HIOKI's Engineering Department, who designed the Power Analyzer 3390, credits SolidWorks software with helping him create a breakthrough product for measuring electrical current related to inverters and motors.

“SolidWorks solutions helped us create the design for the best power meter in the world,” Usui says. “There are nearly a thousand parts and assemblies in the unit. With SolidWorks, we were able to deliver a product that is number one in the market in record time.”

*“USING THE SIMULATION CAPABILITIES OF SOLIDWORKS PREMIUM, WE CAN DO MORE PROTOTYPING IN SOFTWARE AND PRODUCE FEWER PHYSICAL PROTOTYPES.”*

Hiroshi Mizuide  
Manager of Development Assistance,  
Engineering Department



In addition to using the design and simulation capabilities of SolidWorks Premium, HIOKI relies on CircuitWorks for integrating electronic and mechanical design, and SolidWorks Plastics for simulating plastic injection mold processes.

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