SIEMENS

Industrial machinery and equipment

Parfaite Tool

Precision tool and high-speed spindle specialist uses Solid Edge to reduce simulation verification time by 83 percent

Products

Solid Edge, CAM Express

Business challenges

Respond faster to design modifications

Eliminate data inconsistencies due to changes on assembly and part drawings

Improve interference checking on models

Keys to success

Integrate CAD and CAM drawings to improve accuracy

Use software to improve design simulation and model dismantling

Leverage services and support of Siemens PLM Software's integration partner

Results

Cut simulation verification time by an average of 83 percent

Significantly reduced design errors

Notably improved machining precision and manufacturing productivity

Siemens PLM Software solution enables Parfaite to reduce design errors

Taking an innovative approach

Founded in 1982, Parfaite Tool Co., Ltd (Parfaite) is a leader in the area of automated production equipment, and specializes in the research, development, manufacture and sale of motorized, high-speed spindles, high-precision tool holders and customized tools. The company also produces clamping jigs, inspection jigs and similar products that are used for manufacturing and machining engine parts.

Parfaite, which means "perfection" in French, has integrated design, production and machining within its factory, and excels in product precision and delivery. With over 30 years of experience in the aerospace, automotive and locomotive industries, the company has built a significant user base in Taiwan, Japan and Southeast Asia. It has branches and acting regional offices on six continents.

Parfaite has long sought a competitive advantage by focusing on research and development (R&D). For example, the company's Electric Speeder, which was granted an innovative research award by the Taiwanese Ministry of Economic Affairs, can be used to improve the spindle speed efficiency of a machine. Also in 1995, the company's motorized high-speed spindle, which was the first of its kind in Taiwan, went into mass production, providing Parfaite with significant market differentiation.

Parfaite's core competency and competitive advantage is in automation design. With the implementation of Solid Edge® software from product lifecycle management (PLM) specialist Siemens PLM Software, Parfaite is able to use design tools to fulfill specific design requirements,

Results *(continued)*

Improved collaboration with partners and universities

Accelerated overall business growth

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R&D Manager
Parfaite

which is essential to improving overall design and machining efficiency.

"The enhancements provided by switching to 3D computer-aided design (CAD) using Solid Edge have not only greatly improved our business by accelerating product delivery and increasing profitability, but they have also helped us accumulate rich technical experience," says Kuo Kuochen, R&D manager, Parfaite. "Although we had a late start in the customization business, switching to 3D with Solid Edge has accelerated our company's overall growth and made positive impacts on our business."

Breaking the design-to-machining bottleneck

With Solid Edge, Parfaite's top priority is to improve the efficiency of handling customer design changes.

"When we relied on 2D drafting software and there was a need to change the 3D model received from our customer, we would often fail to make that change in a timely manner," says Kuochen. "That made us less competitive, making it urgent for us to upgrade to 3D design."

Using 2D drafting, the design took much longer, drawings were subject to blind spots and communication with external

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customers or internal (machining) personnel was prone to misunderstandings. Furthermore, if an assembly drawing was changed but no updates were made to the related part drawings because of a lack of associativity among 2D files, the result was inconsistent drawings.

In addition, Parfaite wanted to address the inability to use 2D drawing files to provide interference checking among models, calculate the accurate number of assemblies and conduct product reliability analysis.

Parfaite found that another advantage of using Solid Edge was the breadth of design capabilities in a single system. Through intuitive creation and precisely controlled edits, model integrity is greatly enhanced by the combination of synchronous modeling, Live Rules and 3D driving dimensions. Furthermore, Solid Edge Simulation provides advanced analysis capabilities to fully address product design and safety requirements before manufacturing commences.

"On the one hand, the enhancements provided by Solid Edge continue to strengthen our design and change management efficiency, and increase our market competitiveness so we can win more orders," says Kuochen. "On the other hand, the use of Solid Edge enables us to closely integrate with downstream machining systems, reducing the time and cost of design rework due to errors.

"Sometimes it's hard to deal with the design and modification of some components with 2D technology, such as the chuck and tool holder. But after implementing Solid Edge, these problems were properly solved. What's especially remarkable is that customers can clearly understand the design model and 3D physical prototype, narrowing the communication gap and thereby streamlining follow-up work."

By using Solid Edge for part design, Parfaite now rapidly and accurately generates multiple specifications and dimensions of tool holder parts, and directly uses forms in an engineering drawing to illustrate it. That way, an assembly sectional view can be directly drawn in a proportion of 4:1, while the interference checking function can either provide a report of interference results or independently display the areas with interferences.

Multiple types of 3D displays enable designers to accurately view designs from an almost infinite number of angles. In addition, the highly reliable finite element analysis (FEA) capabilities of Solid Edge help users to understand the product structure's safety level and displacement deformation, reducing part design errors.

Solid Edge retains standard drawing templates within imported 2D drawings, as well as permits quick and easy changes to the size of engineering drawings. The software's automatic associating of part attributes enables real-time database updates, thus significantly reducing the time and cost of resetting.

Cutting simulation verification time

Since Solid Edge provides 3D designs in PDF format, Parfaite can offer its customers easy access to a complete view of the dynamic model by rotating, moving or zooming in and out.

Parfaite has not only made great changes to its design process, but it has also adopted computer-aided manufacturing (CAM) technology form Siemens PLM Software, called CAM Express, to increase manufacturing productivity.

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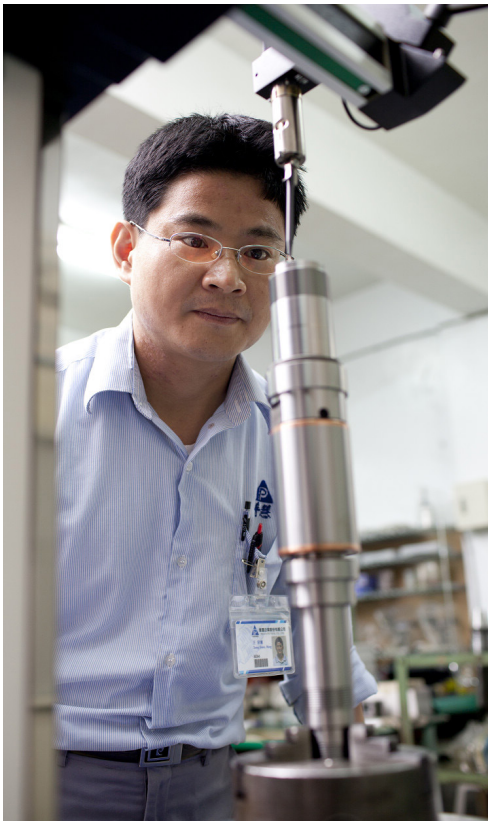

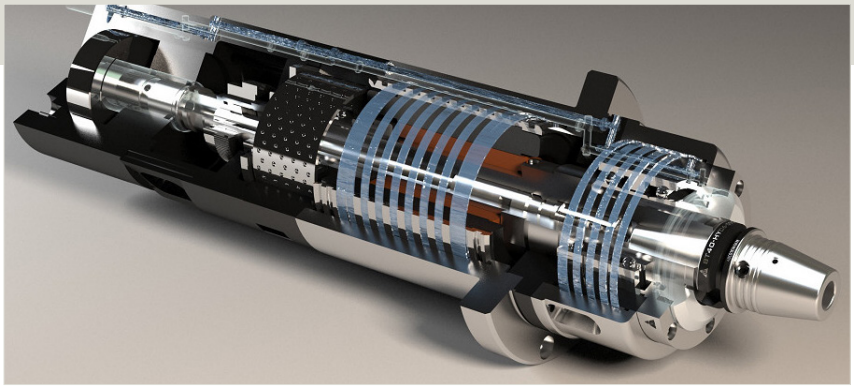

Solutions/Services

Solid Edge
www.siemens.com/solidedge

CAM Express
www.siemens.com/plm/camexpress

Customer's primary business

Parfaite designs, manufactures and sells motorized, high-speed spindles, high-precision tool holders and customized tools. Founded in 1982, Parfaite serves the automotive, aerospace and machining industries.
www.parfaite.com.tw

Customer location

Jen Te, Tainan
Taiwan

Partner

CADEX Technology Co., Ltd.
www.CADEX.com.tw

"Because of the high extensibility of 3D files, we can use them directly in CAE (computer-aided engineering) analysis processing and CNC (computer numerical control) machining and reduce the time it takes to dissect both development parts and custom parts, significantly cutting the error rate," says Kuochen. "That way we make quick samples, provide more options for our customers and gain an advantage in winning orders."

The benefits of 3D design are directly manifested in improved cooperation with academic institutions. By providing 3D designs instead of 2D drawings to the universities with which it collaborates, Parfaite not only prevents errors and improves precision, but also reduces the time it takes to verify simulations from 3 to 4 weeks to 3 days – a time savings, on average, of 83 percent.

Seeking more challenging tasks

In its earlier days, Parfaite mainly provided tooling, clamping jigs and inspection jigs that are necessary for manufacturing and machining automotive and locomotive engine parts. However, after deploying Solid Edge for design, the machining process is now more precise and can be used to capture dimensions automatically. This eliminates wasted time without compromising machining precision.

Meanwhile, Parfaite has gradually developed a parts and assemblies design database and has established the necessary confidence to undertake high-order design business.

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