

Consumer products and retail

Wkidea

Integrated design-through-manufacturing system delivers a custom wooden cell phone case in just three hours; also opens door to new markets

Product

Solid Edge

Business challenges

Bring cell phone case production in-house to better control quality

Keys to success

Integrated 3D design-through-manufacturing process utilizing Solid Edge and CAM Express

Support from Siemens PLM Software partner CADEX Technology

Software's ease-of-use

Macros that capture best practices

Results

Entire production process – design through manufacturing – takes only three hours

Easy design changes help accommodate different types of wood

Product line expanded from one product to five

Large market share (25 to 35 percent) that's poised to increase

Using Solid Edge and CAM Express, craftsman single-handedly runs the entire process from 3D design through to CNC machining

Cell phone cases with a difference

In a market dominated by plastic, wooden cell phone cases have a unique charm, with fascinating textures, warm touches and natural wood fragrance. Wkidea specializes in wooden cell phone cases, and has sold more than 2,000 from its online store in only three years. The cases are made from a variety of woods that are native to Taiwan or imported, including Taiwan Mengzong Bamboo, Taiwan Cypress, Calocedrus Formosana (Taiwan Incense Cedar), Green Sandalwood (Baile San Tan) and Africa Ebony. Although the company's products fall into the middle-to-high end of the price range, they have attracted an enthusiastic group of consumers.

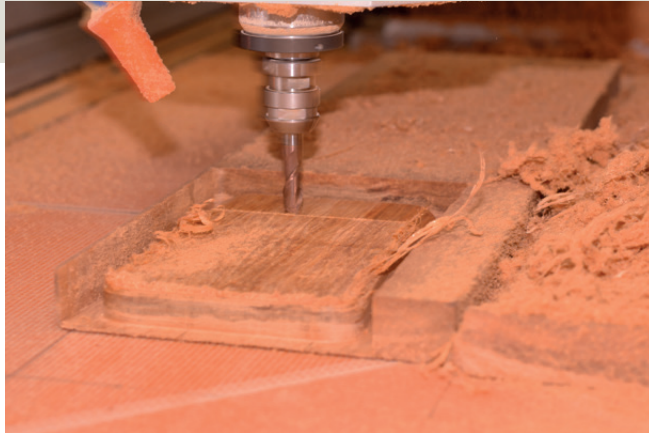
Shih-Min Kang, the founder of Wkidea, initially designed the cases himself and outsourced production. Outsourcing often led to unfinished products and unsatisfactory yield rates, however. Sometimes the technicians just couldn't put a design into production even though they fully understood it. To eliminate this problem and better control quality, Shih-Min Kang decided to invest in his own product lifecycle management (PLM) software and machine tools to be able to handle production in-house.



First step, Siemens PLM Software partner CADEX

Shih-Min Kang consulted Siemens PLM Software partner CADEX Technology Co., Ltd., and on its recommendation decided to implement an integrated computer-aided design (CAD)/computer-aided manufacturing (CAM) solution consisting of Solid Edge® software for design and CAM Express software for CAM. Shih-Min Kang also purchased a computer numerical control (CNC) machine.

With CADEX's assistance, Shih-Min Kang quickly learned how to operate the software and write macros to capture best practices, such as which machine tool is best for each type of wood. Within about two weeks, he was able to generate NC codes using CAM Express, which he runs along with Solid Edge on his notebook computer.



Shih-Min Kang speaks highly of the intuitive interface of Solid Edge, which allows him to implement a design concept based on subtraction, and easily manipulate surfaces. “When creating a surface on a model, I cut out all of the unwanted parts,” Shih-Min Kang explains. “Sometimes I make components first before assembling. All of the drafting tasks can easily be done in Solid Edge, which has been a great spur to improving my productivity.”

Easy design changes accommodate different types of wood

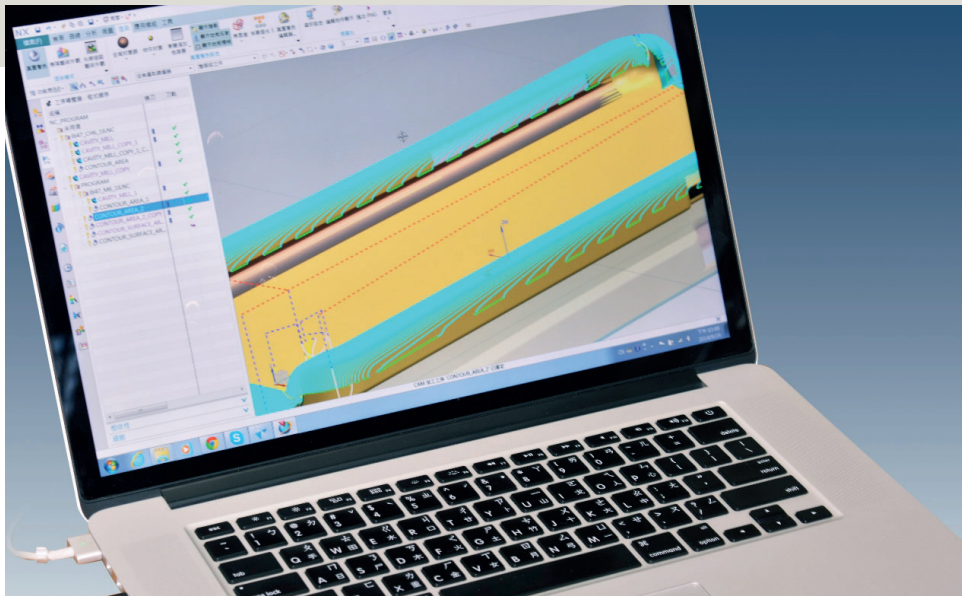
Shih-Min Kang has extensively studied the characteristics of wood and how they affect the machining process. He explains that wood’s sensitivity to humidity has a great impact on the grooves that form a case’s grip, and that even a tiny machining error can make a case unable to hold the phone seamlessly, thus losing its protective function.

“Whenever a different kind of wood is used, even if it’s the same cell phone case, some parameters on the design have to be reconfigured, which then lead to remodeling,” says Shih-Min Kang. “What’s more, the stress associated with growth rings has to be considered because it’s a determinant of the machining success as well. I have to say, the reason I can handle the whole process all by myself is because Solid Edge makes it quite easy for me to make changes to an existing design.”

The codes are then transferred to the CNC machine, which carves the cases one-by-one out of pieces of wood. “Cell phone cases are a good use for leftover bits and pieces of wood,” Shin-Min Kang notes. “What’s more, even a piece of seemingly defective wood holds a great appeal to consumers because of its unique texture and fragrance.”

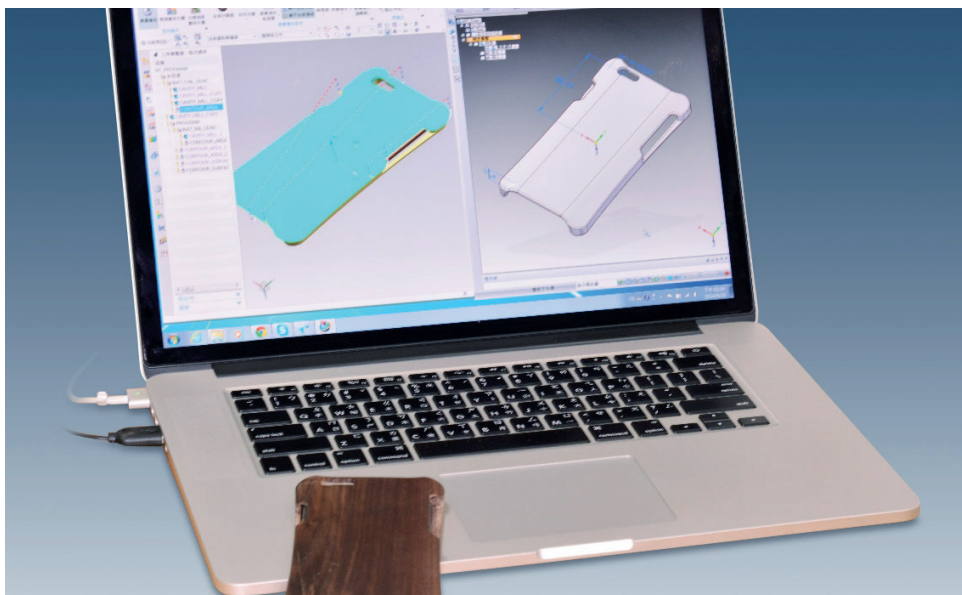
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Order-to-product in just three hours

Shih-Min Kang’s entire process – from receiving the order, to choosing the wood, to making the design adjustments, to machining the finished product – takes around three hours. He believes that the improved productivity and lower production costs he experiences using Solid Edge and CAM Express gives him a competitive edge.

Shih-Min Kang estimates that Wkidea’s sales represent between 25 to 35 percent of Taiwan’s wooden cell phone case market. Many of his sales are to repeat

customers. “Some customers place an order whenever I launch a product with different materials; some have probably bought over a dozen cell phone cases from me,” he says.

Expanding the product line

Since becoming familiar with Solid Edge and CAM Express and acquiring extensive insight into the characteristics of wood, Shih-Min Kang has expanded his product line to include multi-functional phone stands, wooden business card holders, pencil cases and loose-leaf notebooks.

Solutions/Services

Solid Edge
www.siemens.com/solidedge
CAM Express
www.siemens.com/plm/camexpress

Customer's primary business

Wkidea offers a variety of wooden products including cell phone cases, multi-functional phone stands, wooden business card holders, pencil cases, and loose-leaf notebooks.
www.wkidea.com

Customer location

Sanzhong District, Xinbei City
Taiwan

Partner

CADEX Technology Co., Ltd.

"In the machining process, it's very important to be able to quickly and accurately position the magnet, which means sticking to the size and depth specifications. The key lies in the perfect integration between Solid Edge and CAM Express, and also to the ability to do quick test runs and then easily modify the design."

Shih-Min Kang
Founder
Wkidea

Some of those items have two faces that attach to each other by means of a magnetic snap-fit. The inclusion of a magnet requires higher precision in surface machining. Shih-Min Kang credits the seamless integration between Solid Edge and CAM Express with his ability to achieve that level of precision. "In the machining process, it's very important to be able to quickly and accurately position the magnet, which means sticking to the size and depth specifications," he explains. "The key lies in the perfect integration between Solid Edge and CAM Express, and also in the ability to do quick test runs and then easily modify the design."

Currently, Wkidea provides custom-made wooden cell phone cases for the more expensive cell phone models from four major brands: Apple, HTC, Samsung and Sony. Shih-Min Kang plans to begin offering cases for less expensive phones, which will open the door to a larger group of consumers. The software macros he has created will allow him to hand some of the work off to others as the business expands. Overall, Shih-Min Kang says that his use of the Solid Edge and CAM Express solution is helping him fulfill his dream of "creating precision 'wooden trends' and enhancing industrial competitive advantages."

Wkidea's entire production process – design through manufacturing – takes only three hours.

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