SIEMENS
Ingenuity for life

Automotive and transportation

# Shark Factory

## Manufacturer of motorcycle parts improves quality and efficiency with Siemens Digital Industries Software solutions

**Products**

Solid Edge, CAM Express

**Business challenges**

Increase production efficiency

Reduce costs

Protect intellectual property

**Keys to success**

Solid Edge and CAM Express to improve efficiency and precision in product manufacturing

5-axis machining technology

Support from Siemens Digital Industries Software partner CADEX Technology

Easy-to-use interface

**Results**

Improved machining accuracy

Increased machining efficiency and flexibility on the production line

Reduced machining time by as much as 50 percent

Improved quality

Increased employee productivity through automation

### 3D CAD and 5-axis CAM solutions from Siemens Digital Industries Software enable Shark Factory to secure a competitive advantage

**Benchmark in the production of motorcycle parts**

Shark Factory was founded in 2006 and is located in Taiwan's Xinbei Industrial Zone. The 10 employees of the company design and produce high-quality components for the automotive and transportation industry, such as shock absorbers, wheel frames and rocker arms. The company's logo features an open-mouth shark to convey the company's tag line: "Unlock the Power."

Zhang Zonglin, founder of Shark Factory, works continuously to improve the company's products and is always looking for more streamlined and efficient computer-aided design and manufacturing (CAD/CAM) solutions. Four years ago, Zhang introduced 5-axis machining software and hardware, which led to positive feedback from the market and steadily increasing orders. In 2015, with the implementation of Solid Edge® software and CAM Express software from product lifecycle management (PLM) specialist Siemens Digital Industries Software, the company was able to increase business and drive part quality to higher levels.

**Protecting intellectual property**

At Shark Factory all forms of computer numerical control (CNC) machine tools are available for parts processing, including 3-axis and 3+2-axis and 5-axis lathes,

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motor-driven turrets, rotary-milling machines, and more recently, 5-axis machining.

The key advantage of 5-axis machining is that all processes for precision parts can be carried out simultaneously from different angles. Zhang invested in 5-axis machining mainly for reasons of security, in particular to reduce the possibility of competitors copying Shark Factory designs. "As soon as we launch a new product to the market, competitors try to reduce our profits with copies," says Zhang. "It happens all the time. They copy everything that others develop without their own innovation."

Shark Factory has evolved into a preferred brand with loyal customers, and for this reason Zhang decided to improve the equipment and acquired 5-axis machines, jigs/fixtures, and robots, as well as Siemens CAD/CAM software. Zhang says, "Competitors need to find ways to develop different products. If they continue to copy our products, they have to sell them at higher prices. This is because the 5-axis machining equipment is very expensive, which in the end increases the production costs. In this way, I hope we can prevent copying."

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**High-precision 5-axis machining commands higher market prices**

Shark Factory selected Siemens' 3D CAD and CAM products due to their familiar operational approach. At present, design drawings and models are created in other software products and then transferred to Solid Edge for conversion. Then the data can be used directly in CAM Express for CNC machining.

With the Siemens solutions, Shark Factory can model components once and then modify the dimensions repeatedly. For example, Zhang used both turning and milling operations to produce three products of the same type with different dimensions. He says, "We only have to create the model once using Solid Edge; we then transfer it to CAM Express to adjust and modify the dimensions. It is very easy to use. No other CAM software product we`ve ever used is so user-friendly."

He also compared 5-axis machining and 3-axis machining in terms of machining accuracy and efficiency. Shark Factory produces products that vary in both precision and price, and are well-known to consumers. The higher-priced products require the full utilization of 5-axis machining.

Zhang explains, "With 5-axis machining equipment, we are able to design more complex and exquisite parts." He provides shock absorbers as an example: "Shock absorbers that are manufactured with 3-axis machining are neither aesthetically nor visually ideal. On the other hand, 5-axis machines offer the possibility to design with more freedom and creativity."

**Broad software capability supports high processing efficiency**

After using CAM Express for more than a year, Zhang is convinced of its ease of use in comparison to other software products. CAM Express enables the quick adjustment of various parameters as necessary, such as engraving shock absorbers, to help Shark Factory realize significant time savings.

In addition, Shark Factory has realized other notable benefits using the software. When experimenting with different ideas, designers can see the results directly, since it is possible to visualize the design in 3D. "With the graphic interface of CAM Express, joining, merging or cutting can be easily achieved between programs so that designers, when trying different ideas, can easily see the results without spending time on writing programs one after another. It minimizes the rollover of work pieces with no time wasted."

Zhang is impressed with the broad range of capabilities of CAM Express: "I clicked all the buttons on all interfaces of CAM Express. When you click a button, four to five sub-buttons appear. The range of functions is huge." Zhang quickly learned how to handle workpieces efficiently. Moreover, such capabilities are very valuable in developing Shark Factory's

innovative products. The company can determine which machining process is most suitable for the production in a very short time.

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The company has also reduced machine setup time. As designers have become more familiar with the machines and their capabilities, they have configured the machine with 40 cutting tools that can produce virtually any of the company's designs. This single setup helps save time by eliminating the need to interrupt machining to change cutting tools.

Zhang stresses the importance of cross-discipline knowledge of CAD and CAM to Shark Factory employees, encouraging designers to not only know how to use

CAD to model parts, but also to understand production processes. Likewise, machine programmers and operators are encouraged to have a detailed understanding of CAD models.

**Competitive advantages through automation and flexibility**

To fully realize the benefits of 5-axis machining, machines should be set up only once, so that subsequent cutting sequences can run without interruption

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**Solution/Services**

Solid Edge
solidedge.siemens.com

CAM Express
siemens.com/plm/camexpress

**Customer's primary business**

Shark Factory is engaged in development and manufacturing of supplier parts for motorcycles, including various shock absorbers, forged wheel rims, rock arms, etc.
www.shark-factory.com.tw

**Customer location**

Xinbei City
Taiwan

**Solution Provider Partner**

CADEX Technology
www.cadex.com.tw

to reduce processing time. "In the past, manual setup was often necessary," Zhang says. "For a workpiece with 10 fixtures, this required assembly and disassembly 20 times. It was very time-consuming and labor-intensive." Shark Factory also devised special jigs and fixtures to improve machining efficiency. As a result, the workpiece exchange time for 5-axis machines has been reduced to about 30 seconds, leading to considerable efficiency gains in mass production.

Another benefit of 5-axis machining is that it can process different products on a single machine. "We once used the same 5-axis machine to process more than 10 different types of wheel rims in one day," Zhang explains. The seamless integration of design and automated production enables highly flexible production planning for Shark Factory, resulting in reduced inventory and greater financial flexibility.

Shark Factory's investment in 5-axis machining and advanced CAD/CAM solutions has contributed to business growth and competitive advantage. "I notice that other vendors have improved and the whole industry has changed for the better," Zhang says. "Our actual operating results show that our performance is growing year by year. I'm glad that many suppliers are willing to improve competitiveness by investing more in product innovation and in advanced manufacturing technologies."

**Siemens Digital Industries Software**

Americas +1 314 264 8499
Europe +44 (0) 1276 413200
Asia-Pacific +852 2230 3333

**siemens.com/software**


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