

# Takisawa Machine Tool increases profit and flexibility with CATIA V5



*"With CATIA V5, the time from the prototype until mass production has been reduced to about half what it used to be." Masafumi Onishi, Deputy General Manager, Technical Department, Takisawa Machine Tool.*

## Overview

### ■ The Challenge

*To reduce development time and cost, Takisawa Machine Tool sought to reform its processes through the use of a mixed 2D/3D environment*

### ■ The Solution

*Takisawa selected CATIA V5 for 3D CAD in 2001 – by 2003 all new products were being designed using CATIA V5*

### ■ The Benefit

*Using CATIA V5, Takisawa has improved interference checking, reducing time from prototype to production by as much as 50 percent.*

## Changing markets demand improved processes

Takisawa Machine Tool prides itself on the use of cutting-edge technologies to supply quality products that meet a variety of manufacturing needs. Their product range includes CNC lathes and machining centres, as well as drill centres, traditional lathes, and other stand alone machines, such as FA cells and systems for automated lines.

Japanese machine tools are used in manufacturing around the world due to their high performance, precision and reliability. But factors like globalisation, environmental concerns, increased use of IT and enhanced use of digital control systems drive are converging to drive an increase in demand for superior production equipment.

Takisawa's primary customers, such as the automobile and appliance industries, are demanding shorter times-to-market and lower costs. In addition, to meet its customers' production needs, Takisawa needed to raise the precision of its product price estimates. The company also needed to continue to accommodate multi-product, low-volume production and frequent specification changes.

## The shift to 3D design

To transform this turning point into an opportunity, Takisawa launched a reform initiative focused on its product development/production system. In the autumn of 2000, Takisawa therefore established a development strategy that it would employ 3D design for all new products.

"Unlike the automotive industry, the machine tool industry does not have any gigantic companies to lead their industry," said Tadayoshi Hiramatsu, Executive Director, Technical Department, Takisawa Machine Tool. "What this means is that the fortune of a company is decided by whether or not it takes the lead in

sending out superior products. In order to win amidst these conditions, we must move forward with product development that has its feet firmly planted in the actual market.”

Takisawa’s goal was to implement new processes, adopted throughout departments from development and production to marketing, in order to accelerate development, raise precision, lower costs and strengthen the collaborative system company wide.

But because improvements of existing products and customisation required the use of existing 2D drawings, and because not all of its customers and suppliers could handle 3D data, the transition to 3D needed to be a gradual one. So, Takisawa set out to build a mixed 2D/3D system based on its existing Micro CADAM system.

### **New products, new processes**

As part of their initiative to develop all new products with 3D, Takisawa introduced CATIA V5 to support their new product development projects.

Hiramatsu said designers found that 3D design made it possible to convey product nuances, not expressed easily on 2D drawings, even to marketing and purchasing department personnel, making deeper understanding and study possible.

Takisawa forms a new team for each new product project. As optimum personnel are picked for each design project, everyone eventually will have the chance to develop a new product using CATIA V5. The development period of complex, compound machines can last two years or more, so all the designers within the company have not yet had an opportunity to work with CATIA V5.

Among those who have experienced the system, many are starting to recognise CATIA V5 as an indispensable tool for design.

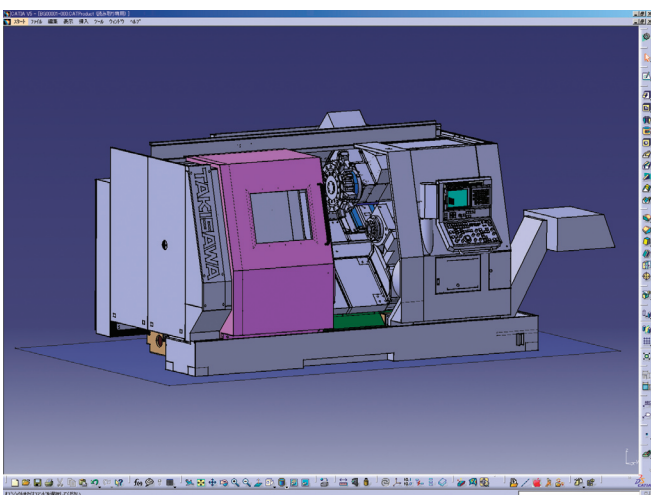
“I had done 2D design since I started at the company, so certainly when I started development with the new CATIA V5, there was confusion and worry,” said Ryoichi Muraki, Mechanical Designing Subsection Chief, Designing Section, Technical

Department. “However, as I used it day to day, I moved into the mind set for 3D conceptualisation. Once that happened, checking interferences and other tasks became easier and I became aware that I could never return to 2D design.”

### **Many efficiency gains with CATIA V5**

Before Takisawa implemented CATIA V5, the interactions between many parts could not be checked until the prototype stage, so modifications and improvements were common place before production could begin. This added as much as three months to the development process.

“Since we started using CATIA V5 in the stages prior to the prototype, we can repeatedly check and verify with more requirements and knock-off problems before hand,” said Masafumi Onishi, Deputy General Manager, Technical Department. “Thanks to this, the time from the prototype until mass production has been reduced to about half of what it used to be.”



Onishi said “CATIA V5 also has eliminated the need for developers to visit the manufacturing site to answer questions about assembly procedures or methods during the manufacturing process, because manufacturing engineers can clearly see the design intent in the 3D product renderings. This frees the designers to spend more of their time on development,” he said. “It also eliminates delays at the work site, speeding the deployment of products to the market.”

### **Changing markets demand development changes**

“In our machine tool industry, the future shift of production to China and the rest of Asia is an unavoidable flow,” Hiramatsu said. “Precisely for that reason, the only way for us to win out in the future is to create high-class machines with more value added – high value-added machines that cannot be imitated by other companies.”

To create such machines, Hiramatsu said, Takisawa must create a product culture that connects the market, development and production in a spiral of innovation through the utilisation of 3D data.

To meet these demands, Takisawa introduced CATIA V5. The CATIA V5 products are already helping Takisawa optimise the design of parts and assemblies through solid modelling and driving the efficient production of drawings. In addition, fly-throughs make it possible to study products from every angle, facilitating manufacturing process procedures.

Real-time rendering immediately presents accurate 3D images, making digital mock-up and other more precise design studies and reviews possible and promoting a common understanding among departments.

### **CATIA V5 for ‘loader’ design**

Improved operating efficiency and expanded operating hours among machine tool users have increased the need for ‘loaders’, which are linked with processing machines. Loaders bring in materials prior to processing and carry out processed goods post-production. Takisawa’s loaders lead the industry with superior operability, safety and flexible programming.

Until recently, Takisawa designed loaders with 2D data, but it is now utilising CATIA V5 knowledge and skeleton modelling with templates of 3D models. By converging the development know-how accumulated by the company with the free conceptualisation of each designer, CATIA V5 has allowed Takisawa to achieve greater efficiency and optimisation of development from concept design to detailed design.

### **Purchasing benefits on the horizon**

At Takisawa, the key to smooth execution of production plans, cost optimisation and improved profit rate is the establishment of a just-in-time system of ordering and delivery, eliminating excesses and shortages. The company therefore has decided to switch over to a real-time purchasing support system. The next stage will be shifting all exchange of drawings with suppliers and outsource companies to electronic data communication.

The ‘final form’ of this communication will be the exchange of CATIA V5 3D data. As a temporary measure toward eventual 3D data sharing, Takisawa is considering the distribution of CATIA viewers to partners, creating a system with which they can immediately check 3D data along with 2D drawings.

*“It is possible to convey nuances that cannot be expressed easily on drawings, even to personnel from the Marketing and Purchasing Departments.”*

Tadayoshi Hiramatsu, Executive Director,  
Technical Department, Takisawa Machine Tool





## Designers see a bright future with CATIA V5

Takisawa Machine Tool is taking advantage of CATIA V5 to reform not only its way of designing, but also its posture toward future product development and even its corporate culture. The company's management and designers have big expectations for the kinds of goals CATIA V5 can help Takisawa achieve in the future.



"I want to improve communication of ideas with customers thanks to 3D data, further advance our design investigations and raise the degree of completion of our drawings in order to more directly link movements from completion of the machine through its start of actual operation," Onishi said.

"Up until now, from development up to drawing issuance required a considerable amount of time, but we can generate 2D drawings from CATIA 3D data and, with colour coding and the like, the drawings become easier to understand," adds Hidehiko Miyake, Assistant Manager, Mechanical Designing Subsection. "In the future, with our thinking advancing more into 3D ways of thinking, I expect that we will even further broaden our utilisation of 3D features."

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