

#### Multi-industry

# Akevono Kohgyo

Japanese machining specialist uses NX software to diversify and expand the business

#### Product

NX

# **Business challenges**

Shorter setup time for the latest machine tools

Operation and maintenance of a wide variety of CNC machines

Complex manufacturing processes for varying production volumes

## **Keys to success**

Implement NX CAD/CAM software to drive the company's design and manufacturing operations

Digitalize the entire workflow, from design, 3D data preparation and NC programming to machining data output and quality inspection

Drive a wide variety of CNC machines using one comprehensive CAM system

Quickly generate machinespecific NC programs using the post builder capability in NX CAM

Outstanding system support

Siemens PLM Software enables Akevono Kohgyo to easily utilize customer data to effectively drive a wide range of CNC machine tools

Leveraging the latest machine tools

Akevono Kohgyo Co., Ltd. specializes in machining metal and nonmetallic materials, primarily in manufacturing automobile components. Recently, the company expanded into other fields including aircraft, industrial robots, and medical instruments. The company handles the complete machining of materials from scratch. Akevono Kohgyo's distinct competitive advantage is its ability to handle a wide range of production volumes, from a oneoff prototype to mass production runs of 100,000 units per month.

The degree of precision required by customers is becoming increasingly high. In addition, many components are required to be lightweight and durable, and the use of hard-to-work materials such as stainless steel, titanium, and Inconel super alloys is increasing, making the processing more challenging every year.



# Results

Rapidly put the latest machine tools into operation

Expanded orders

Reduced time to analyze and modify customer data by up to 70 percent

Faster machine setup on the shop floor by using a precise digital representation of the 3D model, fixtures and entire machine setup

Shortened operation time for the entire manufacturing process by up to 80 percent In order to support the various requirements of a wide range of industries, the company has introduced a broad variety of machine tools, which leads to an extremely large number of variations when combined with the different types of computerized numerical control (CNC) controllers. Akevono Kohgyo uses NX<sup>TM</sup> software from Siemens PLM Software to support operations that require various types of machines and setup arrangements such as small-quantity production and the processing of hard-to-work materials.

NX was introduced to address a huge problem. When Akevono Kohgyo introduced a leading-technology machine tool with 5-axis support, its representatives asked the previous NC programming solution vendor to develop postprocessor software, completing a critical link



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Masayoshi Uno Technology Manager, Manufacturing Department Akevono Kohgyo between the computer-aided manufacturing (CAM) solution and the machine tool. However, the postprocessor did not perform adequately, even after three months. In response, Akevono Kohgyo introduced NX and decided to develop its own postprocessors using the Post Builder included in NX CAM software. Siemens PLM Software provided support during the installation period, and Akevono Kohgyo was able to successfully control the new machine in about two weeks.

"When the machine started to run, we felt that we were saved," says Masayoshi Uno, technology manager in the manufacturing department at Akevono Khogyo. "Since then, our orders have also expanded."

#### Improving use of customer data

NX computer-aided design and manufacturing (CAD/CAM) software is widely used in the company's operations, in tasks including the import of customer data for the creation of NC programs and the output of the machining data. Currently, about one-third of the company's work is still supplied as 2D drawings, and NX CAD is used to create 3D models from the blueprints.



From a manufacturing perspective, there are frequently issues with the data provided by customers. These can include gaps and other inaccuracies in models or missing tolerance information. Using poor-quality data leads to problems in NC programming that can take a long time to resolve. "Many problems that occur during manufacturing are directly related to imperfect part models that can require many hours to revise and fix," Uno explains.









Before the introduction of NX, Akevono Kohgyo handled such problems by applying a certain amount of tolerance in the CAM software and generating the cutter paths separately. This approach is difficult and error-prone. "The process depended on individuals with certain know-how," says Uno. "The company realized that this manual and painstaking process was affecting our overall productivity."

#### Resolving problems in the early stages

Using NX for all operations that require CAD/CAM, Akevono Kohgyo has established a better manufacturing process. Engineers import the supplied 3D data and use NX tools to check model quality and repair geometry as necessary for use in NC programming. Next, NC toolpaths and programs are created for each process and operation using the advanced capabilities in NX CAM.

Before introducing NX, Akevono Kohgyo had difficulties identifying and fixing problems in the supplied models, and toolpaths created under such conditions often caused time-consuming complications. Now the company can easily import and optimize customer data for NC programming and machining using the leading-edge synchronous technology model editing capabilities of NX. "Geometry checking using NX is visual and easy to understand," Uno says. "You can decide where and how to modify the data. NX provides extremely advanced model analysis and modeling capabilities."

Previously, model revisions required three or four hours, but with NX that time has been reduced to about one hour. In addition, the company can avoid problems in postprocessing the NC data for specific machine tool and controller combinations. This has led to an improvement in machining efficiency that ranges from 30 to 80 percent.

Akevono Kohgyo also uses NX to design and manufacture its own jigs and fixtures for holding workpieces. Previously, jigs



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were created using a different software package, which made it difficult to check their fit and function in advance. Using NX, the company can design the jigs and fixtures in the context of the entire machine setup in the same system used for NC programming. The digital representation of the entire setup enables engineers to visually verify jig designs and validate NC programs to avoid problems on the shop floor. Uno describes the advantages of utilizing NX throughout the company's operations: "We can minimize the problems and bring the model into the actual manufacturing process. Many problems on the shop floor can be eliminated using the machining simulation in NX CAM software. We create a digital copy of the complete machine setup and use NC programs to accurately simulate machining processes in NX, so we can increase machine utilization." "Geometry checking using NX is visual and easy to understand. NX provides extremely advanced model analysis and modeling capabilities."

Masayoshi Uno Technology Manager, Manufacturing Department Akevono Kohgyo

#### Supporting a wide variety of machinery

As a company that supports the requirements of a diverse set of customers in multiple industries, Akevono Kohgyo must be able to create data with CAM software that can actually run a wide variety of machinery. NX CAM's comprehensive programming capabilities allow the company to efficiently machine high-precision parts on different CNC machine tools, including the latest 5-axis milling machines and multi-function centers.

"With NX CAM's broad, specialized programming capabilities, we can drive all the CNC machines on our shop floor," says Uno. "The advanced CAM capabilities allow us to consistently deliver high-quality products used in different industries, such as automotive and machinery."

To maximize the performance of their large machinery park, the company needs to generate machine-specific data to effectively drive the CNC equipment. For this purpose, the manufacturing team relies on the postprocessor in NX CAM that outputs custom programs for the different machine tools. When the NC programs need to be adjusted for a certain job on a given machine tool, the company uses the NX CAM Post Builder functions.

"Users do not typically edit postprocessors, and they have to request development of posts for each machine," Uno explains. "NX provides an environment in which the user can easily modify or develop the postprocessor. I believe that the Post Builder in NX CAM is a major advantage for users at companies like ours that have a wide variety of machinery."

This flexibility to successfully program jobs of any complexity on many machines by using one CAM system enables the company to continuously expand their business. By placing NX CAD/CAM software at the center of its design and manufacturing practices, Akevono Kohgyo was able to automate and standardize the entire process. In addition, NX enables other teams to re-use knowledge and improve their organizational response capability, which formerly depended on individual expertise.

#### Improving quality

The diversification of customer needs, along with increased levels of precision and machining difficulty, require simultaneous improvements in quality control. For this initiative, Akevono Kohgyo is introducing a 3D coordinate measuring machine (CMM) for part inspection. Models designed with NX will be used to create automated inspection programs for the machine. Going forward, the goal is to further integrate the measuring equipment and NX CMM Inspection Programming software to achieve an even higher level of quality control.

#### Delivering confidence in support

For manufacturers, it doesn't matter how good the machinery and software are if you cannot actually produce products. "Production stops if the machinery and software support is weak," says Uno. "In that sense, we are grateful for the support capabilities of Siemens PLM Software." Akevono Kohgyo has rated Siemens support very highly from the time that the company introduced NX and began running the latest machine tools to the present, and it trusts that this level of support will continue in the future.

# Solutions/Services

NX www.siemens.com/nx

# **Customer's primary business**

Akevono Kohgyo, founded 1970 and based in Anjo, Japan, manufactures parts for automotive, machinery and semiconductor processing industries. www.akevono.co.jp

# Customer location Anjo

Japan



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## Masayoshi Uno Technology Manager, Manufacturing Department Akevono Kohgyo

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