Total Responsibility

Engineering.
Software.
Controls.
Motors.
Solutions.
Service.

At Okuma, our business and design process has been built on the philosophy of "Total Responsibility". From the engineering of our machines to the development of the control and software, from manufacturing solutions to sales and service, you can trust Okuma as your manufacturing partner.

OKUMA

WWW.OKUMA.COM

OKUMA

Premium machine tools and controls – 112 years in the making

Reliable products and world-class support create satisfied customers around the globe

The history of Okuma started when Eiichi Okuma hung out his signboard for "Okuma Noodle Manufacturing Machine Co." in 1898. The technical seeds sown with the noodle machine soon spread to machine tools, and finally grew to create today's Okuma, a comprehensive manufacturer of lathes, machining centers, grinders, multitasking machines, NC controllers, FA systems, and more. After 112 years, it is in our DNA to value foresight and creative technology that stays ahead of the times. This way of thinking has been passed from generation to generation as the driving force in the formation of the Okuma group. We are never satisfied, always seeking to take the next step forward. We strive to solve problems through technical innovations and continuously spread the joy of monozukuri with inventiveness and with passion.

Since 1898

Passionate inventiveness from generation to generation

Europe

Okuma's German subsidiary was established in 1988, and has developed broadly as a sales and service base in areas from customer support to the training of service experts. Its Technical Centers house a show room, parts warehouse, and training room and hosts educational events and seminars. It also compiles rapidly with mandatory safety standards for products exported to European Union countries—Machinery Directives, EMC Directives (to prevent malfunction caused by electromagnetic waves), and Low Voltage Directives—and declares CE Marking.

Okuma Europe GmbH (Germany)

Okuma Technology Centre South

Okuma Technical Centre East

OKUMA Europe RUS

Asia-Pacific

Rapid economic development continues in east Asia, and through the establishment of production and sales bases in China and Taiwan (joint ventures) and India, Okuma provides exceptional machines at affordable costs. Additionally, a Technical Center in Singapore conducts activities such as technical consulting for machining and production. In the Asia-Pacific region we have sales bases in 7 countries, and work with dozens of dealerships to provide customer and product support activities.

Okuma Machine Tool (Shanghai) Corporation

Taiwan Okuma Co. Ltd
Okuma Taiwan Technical Center

Okuma Technos (Thailand)

Okuma Australia Pty.Ltd

Okuma New Zealand

Okuma India Pvt. Ltd

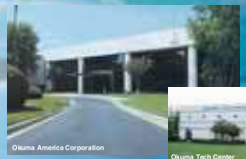
Japan World Headquarters

Oguchi Plant

Kani Plant

Rather than simply selling machine tools, Okuma focuses on providing machining technologies in order to provide customers with the best solution possible. Even after the sale, Okuma provides education and training, answers questions regarding operation and maintenance, and provides service for repairs, transfers and system upgrades.

Americas



Okuma America Corporation

Okuma America Corporation was established in 1984, and as a member of the American Machine Tool Distributors' Association, provides CNC lathes, machining centers, grinders and double-column machining centers to a wide range of industries. Through a distribution network of more than 40 distributor locations, Okuma America services North, Central, and South America.

Okuma Tech Center Chicago at Morris Midwest

Okuma Tech Center Houston

Okuma Latino Americana

PREMIUM PRODUCTS

Real Help to provide manufacturers the best machine tool solution for today and tomorrow.

Aerospace

Oil & Energy

Automotive & Construction

Medical

INTELLIGENT TECHNOLOGY

Okuma has developed software technologies that merge the capabilities of mechanical, electrical, and information engineering to improve the functionality of the Okuma machine tools. The Collision Avoidance System provides protection for the ultimate in high-precision work. Machining Navi digitizes chatter to help operators find the optimum machining conditions. And our Thermo-Friendly Concept automatically compensates for heat build-up to overcome thermal deformation. The features available with these three functions, all combine to drastically improve machining conditions, thereby increasing the efficiency of operations immensely.

MACHINING NAVI

THERMO FRIENDLY CONCEPT

COLLISION AVOIDANCE SYSTEM

Aerospace

When lives depend on the quality and precision of the parts employed, aerospace manufacturers turn to Okuma.

December 1903. The Wright Brothers succeeded in accomplishing mankind's first powered flight in a hand-built airplane. In the 107 years since then, mankind has shifted their focus from conquering the air, to designing and improving the performance of air transportation equipment. With this, parts have also shifted from aluminum alloys to difficult-to-machine materials such as titanium and CFRP (carbon fiber-reinforced plastic). Meanwhile, increased durability has become increasingly important, as evidenced by parts constructed with an integrated structure or with complex shapes. In order to meet the stringent demands of this complex industry, machining centers must be capable of machining tough materials and complex curvatures smoothly and with extreme precision.

5-Axis Vertical Machining Center

MU-500VA

Simultaneous 5-axis machining from a fast and accurate vertical machining center

Use of the Thermo-Friendly Concept on the MU-500V vertical machining center enables unparalleled high-accuracy and stable machining in normal factory environments. The trunnion structure rotary table with 5-axis control provides the highest speeds and accuracies in its class. A new era of improved productivity is achieved with high quality, process-intensive machining - from simultaneous 5-axis machining to one chuck multi-sided machining of complex shapes – the MU-500V is ideal for parts such as those of dies or aerospace components.

Pat O'Hara, General Manager, Lighthouse for the Blind, Seattle, WA, USA

"It was the only control that could have gotten us where we are today, and no other control is attached to a piece of equipment that will be running in 20 years."

Lighthouse for the Blind is a not-for-profit agency providing employment, support and training opportunities for people who are blind, Deaf-Blind, and blind with other disabilities. The Lighthouse operates a machine shop and manufactures parts for the aerospace industry, servicing the US federal government and The Boeing Company.

Multitasking Machining Center

MILLAC 1000VH

5-axis machining centers with a swivel spindle to machine inclined surfaces

In addition to top surface machining on the vertical axis and side surface machining on the horizontal axis, the swivel spindle with 0.001 indexing allows machining of any slope. One-chuck, multi-sided machining provides improved accuracy, reduced tool change time, and significant increases in productivity. The table remains horizontal while the spindle tilts, resulting in no movement in the center of gravity when working on large workpieces. Interference with the head is reduced and no mechanism is needed to tilt the table.

Intelligent Multitasking Machine

MULTUS B750

Accuracy and precision even on large,heavy parts

The largest in Okuma's line of horizontal lathes, the Multus B750 compensates to micron accuracies even in environments without air-conditioning, allowing the cutting of precision parts. Boring bar and steady rest options provide flexibility, ensuring a variety of parts can be cut on this large machine.

Oil & Energy

Rigidity, strength and high precision to support the world's energy industries and the growing need for global energy sources

Okuma is pro-actively involved in the development of clean energy sources such as wind power and solar power stations, with the aim of conserving the natural environment across the globe. As part of our efforts to meet customer demand for the required and unprecedented manufacturing specifications, Okuma offers a comprehensive range of large-scale machining centers. These machining centers are capable of industrial and integrated machining for semi-conductor devices and parts, and for machining of large-diameter, cylindrical workpieces such as bearings and gears used in wind power generation facilities.

CNC Lathe

LOC650

Okuma's large capacity lathe brings heavy muscle to the oil industry

So precisely designed for the needs of the oil industry, the LOC650 is even named after the specifications driving its development: Lathe Oil Country. Available in both 2- and 4-axis configurations, the LOC650 makes it possible to perform the tightest threading functions on the largest pipes with precision and speed. Extra-large 14.75" and 22.05" spindles accommodate super big bores all created by Okuma engineers specifically for this machine. Okuma's Oil Field "Threading Suite" is custom designed to combine variable speed threading and harmonic spindle control that delivers an exact match between infeed patterns and cutting increments.

Double-Column Turning Center

VTR-350A

Reliable double-column construction for high rigidity, stable accuracy and process-intensive machining of big bore and tall workpieces

Okuma expertise in developing double-column machining centers has been used to design the VTR-A series of large turning centers, giving them unrivaled rigidity and accuracy. These turning centers handle heavy-duty cutting with capacity to spare, provide the highest thermal stability in their class. Combine that with high quality milling and ease of use and the VTR-A series goes beyond conventional concepts of turning centers to produce huge production floor advantages.

NEW

Double-Column Machining Center

MCR-BII

The most versatile machine for heavy cutting and high accuracy – ideal for die/mold jobs and for machining large complex parts

The MCR-BII was engineered with Okuma's field-proven experience of building for exceptional power, rigidity, and smooth operation to assure close tolerances over time even over high production runs. The shudder free design means heavy-duty face milling and flawless, fine boring. A superb machine for fast and highly accurate machining of dies and molds.

Toshikazu Maeda, President, Marumae Co., Ltd. Japan

Desired accuracies are 2 mm in depth (Z axis), 5 mm on the X and Y axes, and 5 mm in flatness. Moreover, given the effects of long cutting times and temperature, milling is repeated with the machining locations changed. At this time we want machined steps to be less than 1 mm, small enough that it cannot be felt by hand. To reliably ensure this accuracy, we in fact aim for accuracy at twice that level. We looked into various machines, but only the precision specifications of the MCR-BII could perform reliably under these conditions.

Automotive & Construction

A long-time supplier to the automotive and construction industries, Okuma has developed products and solutions that deliver cost-effective, efficient machining processes to help keep manufacturers competitive

The history of the automobile and combustion engine is long and there have been many developments in manufacturing processes along the way. Okuma has helped in some of this development through the use of new technology and automation. As the industry moves toward alternative (hybrid and electric) technologies, Okuma is ready to take engine component and body-parts production to the next level.

GENOS Series

The new GENOS series of machines builds on Okuma's history and technology to provide manufacturers with cost-effective, reliable and accurate equipment.

A perfect balance between cost and quality, the GENOS machines deliver quality, rigidity and productivity that exceed expectations. Built with specific customer input, Okuma has taken 112 years of history and experience and put it into the development of these machines to ensure they meet the stringent demands of the most exacting industries.

1-Saddle CNC Lathe

GENOS L300-WM

NEW

Vertical Machining Center

GENOS M460-VE

NEW

Horizontal Machining Center

MB-8000H

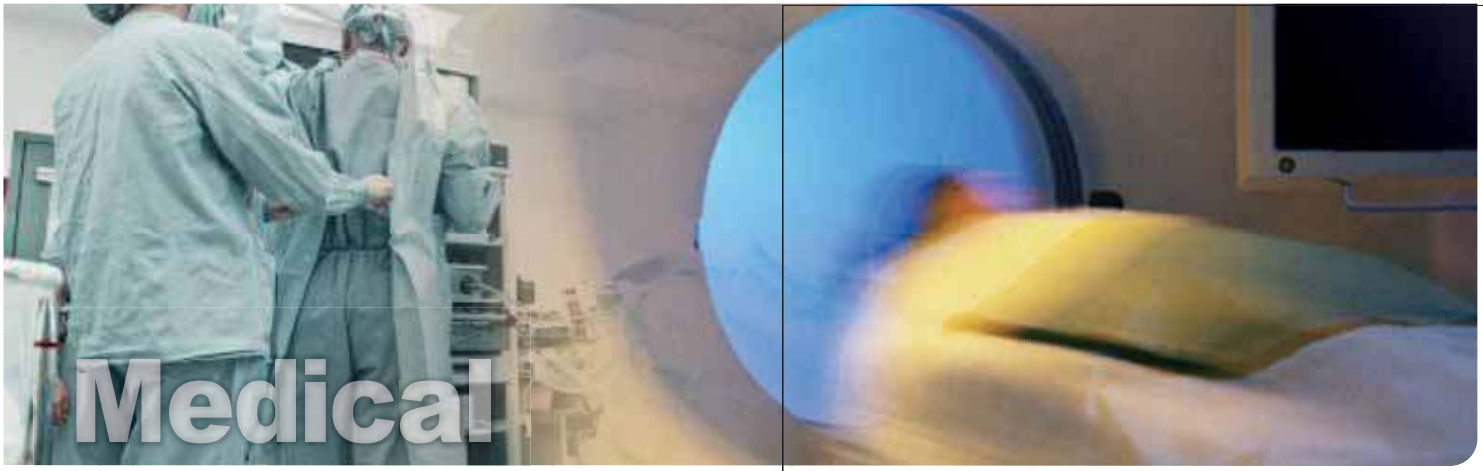
A new horizontal machining center series, the MB-H machines deliver high speed, high rigidity and unparalleled accuracy

The new MB-8000H builds on the rich history of Okuma's experience in horizontal machining centers. It was designed specifically for improved productivity for large parts production for construction equipment and aircraft. When combined with automation equipment such as flexible pallet systems and Okuma's new tool matrix, this work horse of a machine delivers on its promise of efficiency and effectiveness.

NEW

Marten Hinsenveld, HP Valves B.V., Oldenzaal, Netherlands

"Long machine lives and fast order handling is the most important thing to us. Machines by OKUMA prove to be reliable and untiring team players in automation and interlinking. The OSP-P200 smoothly integrates itself in each automation project as open Windows™ CNC."



Medical

Manufacturing of medical devices, instruments and implants can require tight tolerances, precise finishes and rigorous quality metrics and Okuma machines fit the bill.

Medical devices and equipment are being developed on a daily basis to enhance and protect the lives of people throughout the world. The development of high-precision machining centers is closely related to technical progress within the medical field. Okuma has a complete range of machining centers that are ideal for medical manufacturing, whether for the production of parts for artificial bones and joints, small and complex shapes, or custom-made parts.

5-Axis Vertical Multitasking Machine

MILLAC 33TU

Small parts, small footprint, outstanding results

The Millac 33TU is a 5-axis vertical multi-tasking machine that employs a 2-axis rotary table, making it ideal for radial and angular applications. Designed to handle a wide variety of workpieces it offers high speed and high torque. The small footprint and front- and rear-access design enable side-by-side placement allowing for maximization of floorspace.

5-Axis Vertical Machining Center

MU-400VA

Process-intensive machining made simple

A new era of improved productivity is achieved with high-quality process intensive machining - from simultaneous 5-axis machining to one-chuck multi-sided machining of complex shapes. Ideal for medical, aerospace and mold/die work, this machine provides unparalleled accuracy and speed.

Turning Center with Twin Spindles

LT2000 EX

In All Directions

Left / right spindles, upper / lower turrets — that's superb teamwork for 1-machine complete machining. Ultimate processive-intensive machining with a 3rd turret!
The upper/lower turrets can be combined with either Spindle. Thus you can get the ideal balance of primary and secondary operations to assure maximum productivity.
- Equal-capacity upper/lower turrets
- Equal-capacity left/right spindles
- 3rd turret (optional)

Josep Sillero, Mecanitzats Sillero, S.L., Tordera, Spain

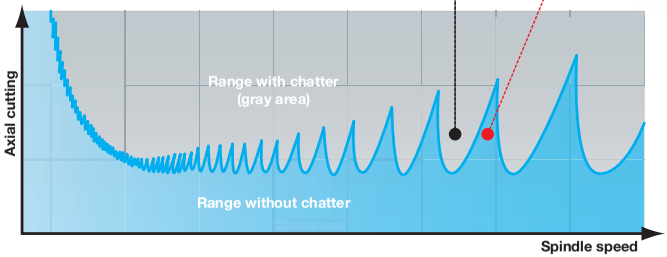
"With OKUMA we feel like co-producers. Our needs, suggestions and stimuli flow into the optimization and development of new products. OKUMA adapts our practical experiences and in this way realizes a technological evolution process which brings us forward. I call this development intelligence."

Push cutting conditions higher to increase profit

Machining Navi instantly determines the optimal cutting conditions for highly efficient machining.

Machining Navi

A continual challenge for manufacturers is finding optimal cutting conditions – determining the right balance that provides fast cutting and chatter reduction. Okuma's new Machining Navi stops chatter by searching for the optimum cutting conditions, automatically adjusting the tool rotation speed (Machining Navi M-i), and advising the operator on the optimum spindle speed for cutting (Machining Navi M-g).

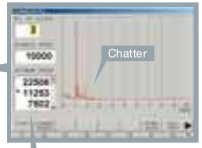


Machining Navi M-*g* (Guidance)

Visual tools allow the operator to select the optimum cutting conditions

Machining Navi M-g analyzes the harmonic imbalance (waveforms) of the chatter and graphically displays this information on the control screen. The operator then uses the information to adjust spindle speed and reduce chatter. In some cases, other parameters can be adjusted to improve cutting conditions (feed rate, cutting depth, etc.).

Microphone attached to operation panel captures sound



Select and confirm any of a number of possible spindle speeds with a single touch

Machining Navi M-*i* (Intelligence)

A simple setting leaves optimal spindle speed selection to the machine

Sensors incorporated in the machine measure chatter vibration and automatically adjust the spindle speed to the optimal setting.

Customer Examples

Example 1 — 47.5% increase in rotation speed eliminated chatter! High-speed aluminum machining

Work material: A7075
Tool: ø20 (ø0.79) 4-flute end mill

	Machining Navi		Higher feed rate!
Spindle speed min-1	11,000	16,225	16,225
Feed rate mm/min (ipm)	2,200 (87)	3,200 (87)	3,200 (126)
Axial cut mm (in.)	10 (0.39)	10 (0.39)	10 (0.39)
Radial cut mm (in.)	1 (0.39)	10 (0.39)	10 (0.39)
Removal rate cm3/min (in.3/min)	22 (1.3 42)	32 (0.19 .42)	32 (0.19 .52)

Example 2 — Machining efficiency increased a full 500%! End Mill Die/Mold Machining

Work material: STAVAX Die/Mold
Tool: ø16 (ø0.63) 4-flute carbide end mill

	Machining Navi		
Spindle speed min-1	400	5,000	5,900
Feed rate mm/min (ipm)	20 (0.8)	3,000 (118)	3,000 (118)
Axial cut mm (in.)	30 (1.18)	10 (0.39)	10 (0.39)
Removal rate cm3/min (in.3/min)	6 (0.3 7)	30 (1.83)	30 (1.83)

Still fighting chatter with faster spindle speeds and feed rates

Example 3 — A difference of just 7rpm eliminates chatter! Milling

Work material: S45C
Tool: ø63 (ø2.48) milling cutter

	Machining Navi	
Spindle speed min-1	400	407
Axial cut mm (in.)	2 (0.08)	2 (0.08)
Radial cut mm (in.)	55 (2.17)	55 (2.17)

Example 4 — Machining efficiency increased a 150%! Side Cutter Machining

Work material: FC300
Tool: ø230 (ø9.06) side cutter

	Machining Navi		
Spindle speed min-1	140	270	270
Removal rate cm3/min (in.3/min)	2 (0.12)	2 (0.12)	2.9 (0.18)

Tool taper flexing due to vibration in machining — Improved feed rate

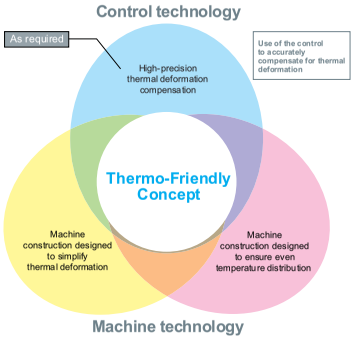
Frank Obert, OFT Feindrehtechnik GmbH, Hornberg, Germany

In my view, the OSP-P200 is presently the best CNC control system for our daily production routine. The consistent conversion of numerous valuable support, optimization and safety functions and features, like the 3D simulation, the Machining Navi or the collision avoidance system, give our company a concrete competitive edge day by day.

Okuma's Thermal Control Technology

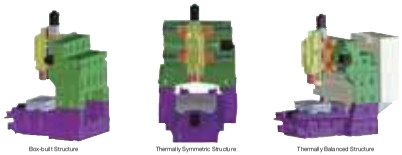
for changing temperatures... with unchanging high precision

Machine tools and components expand and contract due to many types of heat factors: fluctuations in ambient temperature, heat generated by the machine, machining or frictional heat. The changes caused by this heat adversely affect the precision with which manufacturers cut. Until now, forced cooling, insulation and large-scale air conditioning was required to control the temperature, at great cost to both customers and manufacturers alike. Okuma created the "Thermo-Friendly Concept", an advanced thermal deformation compensation system, following 20 years of environmental testing involving detailed analysis of thermal deformation. The Thermo-Friendly Concept is possible through the integration of machine tool and control and involves accurately predicting thermal growth and appropriately compensating for it.



Cold starts are possible
Ambient temperature regulation is not required

Cold start machining is now possible with Okuma machines equipped with the Thermo-Friendly Concept. High precision machining can now be conducted without the need for temperature controlled rooms or special temperature regulation.



Okuma has developed a simple block stacking construction for the column called a Box-built Structure. This is a thermally symmetric structure in which both sides have similar masses. With this simple, balanced block assembly, the machine will grow and shrink—as predicted—even if the ambient air changes. Moreover, if the column includes both exposed and covered sections there will be differences in the way the ambient air is transmitted, preventing uniform temperature changes. To counter this, a thermally balanced structure is used to achieve the same temperature conditions at the front and back, with a column cover on the front and the NC cabinet located in back.

Shoichi Suzuki,
President,
KGK, Inc.,
Japan

The materials of workpieces we machine with the MULTUS have a range of hardnesses, from duralumin aluminum to S45C. But whatever we use, sufficient accuracy can be assured by compensating for tool wear only, without the need for warm air operation even in winter. The thermal stability with the Thermo-Friendly Concept seems almost too good to be true.

Thermo Friendly Concept

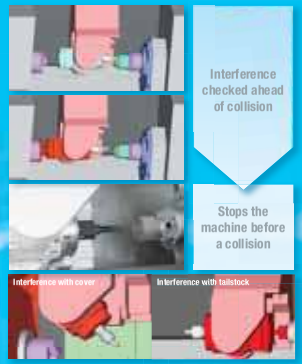
The world's first collision prevention – for automatic or manual operating modes Protect your machine investment, protect your operators, improve your production

Collision-free Machining

Program Check — Fast possible collision checks just prior to actual machining

Manual Operation — Real-time just-ahead checks of manual movements
Manual movement stopped when collision just ahead detected

Automatic Operation — NC movements checked in real time
Movement stopped before the programmed block containing a collision risk



Collision Avoida nce System

Simple input of setup information

Machine (settings done)

3D model of machine is registered Automatically selected settings for startup

Select chuck (fixture)

3D models of standard chucks already stored Select from a stored 3D model

3D models (STL format) created with CAD can also be read.

Select tools

3D models of standard tools already stored Select from a stored 3D model

3D models (STL format) created with CAD and input tool profiles can also be read.

Enter blank shapes

Interactively enter of basic configurations

3D models (STL format) created with CAD can also be read.

Relax

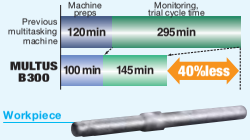
concentrating on machining

Shorter machine prep times

Shorter trial cuts

Collision avoided

Significant reduction in machining preparation time



The Multus series machines were the first Okuma models to be equipped with the Collision Avoidance System (CAS) and received the 2004 Top Ten New Products Award (Nikkan Kogyo Simbun). CAS is now a widely available option on Okuma machines and is sure to become the world standard for collision-free machining.

Intelligent Multitasking Machine

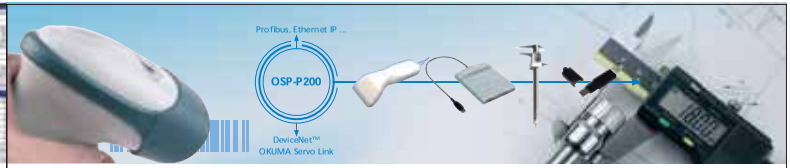
MULTUS Series

Kentaro Suzuki,
President,
Musashino Seiki, Co., Ltd.,
Japan

The Collision Avoidance System also allows us to speed up first piece machining, which previously we had done slowly with close concentration on the movement of the cutting tool tip. A collision in the machine was our greatest fear, because after a collision it is possible that accuracy will not be restored even following machine repair. We do a lot of trial production, so "Collision-Free" gives us a strong sense of security.

The Okuma Control

A history of innovation and leadership, a future for manufacturing control

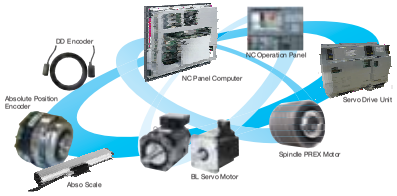


Total Responsibility

Founded in 1898, Okuma has become a world-class leader as a manufacturer of high-quality machine tools. And from the initial stage of NC technology, Okuma has distinguished itself by independently developing leading-edge control systems. Okuma builds its machines from the ground up, and knows everything there is to know about machine tools. Through "mechatronics", the merging of mechanical and electrical engineering, Okuma machines deliver the utmost in control, accuracy, flexibility, performance, stability and repeatability.

Okuma Built Controls, Motors, Drives and Encoders

The technical combination of these Okuma-built parts, creates the foundation of accuracy that all computer numerical control (CNC) machines require. The harmonious communication between these units not only causes Okuma machine tools to have some of the highest metal removal rates, but also gives positioning repeatability in the single digit micrometer range. Day in and day out, even in the most unpredictable environments, Okuma's complete drive system package delivers perpetual strength and accuracy.



S. Erkan Polat,
Otomobil Fabrikasi A.S.,
Osamangazi BUSRSA,
Turkey

Okuma is unique worldwide; the OSP control system, drive and position encoder systems and in-house developed software are perfectly matched to high-grade machine building. Machine tools can be compared to high-quality cars. One feels comfortable with it immediately even on challenging routes one arrives at ones destination quickly safely and entirely relaxed.

OSP Okuma Sampling Path control

1963
NC Controller (OSP III) with an Absolute Position Encoder

NC Controllers are developed in-house as part of efforts as a comprehensive manufacturer of both machine and control.

NC machining centers that first became popular in America arrive in Japan. Okuma develops NC machining centers together with electronic manufacturers. They remain divided on what detection method to use. Conventional systems require the machining center to move back to a reference point when the power is turned on. In contrast, Okuma products employ an absolute position feedback encoder to memorize the last position used for maximum convenience.

1972
OSP2000 CNC Device

NC Controllers are developed in-house, leading the charge into the computer age.

Replacing complex wiring and circuits with tiny IC memory modules and advanced software greatly improves the performance of NC devices and machining centers. The Okuma development team presses forward with manufacturing computerized NC Devices - something that was considered impossible. CNC devices that have been developed in-house provide the drive for Okuma's faster, more advanced machining centers, lathes and milling machines.

1981
Interactive NC IGF

Say goodbye to NC tape, say hello to interactive functionality

With the advent of CRT terminals (screens) and floppy disks, programming work and development without the need for paper tape or punching devices is now available. A new function (IGF) has been developed that enables NC programs to be created automatically by operators pressing certain keys while following instructions on the screen. This revolutionary software for "interactively" entering data has kicked off a new era of NC operations

2000
OSP-P100

The world's first commercial open NC control

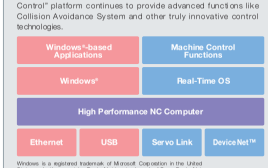
2004
OSP-P200

Improvements for easier operation

Okuma adds user-friendly features, including a large color monitor and touch panel operation. USB and Ethernet connections allow for the connectivity of digital calipers, barcode readers and more.

An OSP / Windows® Collaboration

The NC software developed by our "Single Source for Machine & Control" platform continues to provide advanced functions like Collision Avoidance System and other truly innovative control technologies.



Kiyoshi Nakahara,
Chairman,
Nakahara Seisakusho, Inc.
Japan

Familiarity with the entire operation makes it possible to see specific points for improvement in setup, machine movement, and programming. This is the same now as it was then. And because Okuma was a true single source builder of machine and control, they met tough machine tool requirements and produced a user-friendly controller.

1963 — successful Apollo 11 mission and mankind's first steps on the moon
1969
1972
1975 — Microsoft established
1981
1988 — Start of commercial mainstream internet usage in America
1995 — Windows 95 goes on sale
2000
2004