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JIMTOF2020 Online (The 30th Japan International Machine Tool Fair) was held for 12 days from Monday, November 16, through Friday, November 27, 2020.

It was the first time for the Fair to be held online. The number of participating companies was 394 and the total number of people who accessed the site over the 12 days was 52,168. In the FANUC booth, many customers watched our video presentations that featured our new products and new functions.

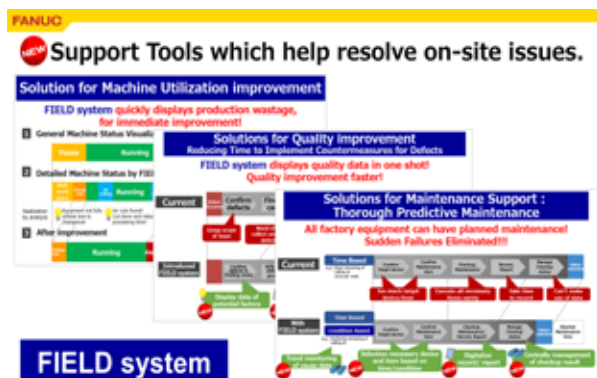


In the **FA** area, we presented FANUC's latest high-end CNC systems, the Series 30i/31i/32i-B Plus, and FANUC's standard CNC system, the Series 0i-F Plus. Many customers showed interest in CNC-QSSR that supports the use of robots with machine tools, and MT-LINKi that implements IoT technologies in factories.



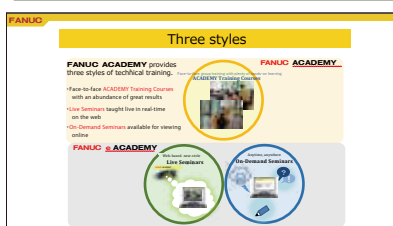
In the **ROBOT** area, customers' focus was on our video presentations of actual application examples of our white and green collaborative robots. Also, laser cutting, parts cleaning and transport of large parts were given as examples of operations to which our robots can be applied in the machining field.

In the **ROBOMACHINE** area, we presented our new products, the ROBODRILL α-DiB Plus Series, the ROBOSHOT α-SiB Series and the ROBOCUT α-CiC Series. Many customers inquired about the new products, with improved performance, operability and network connectivity, for use in their production sites.



In the **IoT** area, proposed solutions for introducing FIELD system in production sites were displayed.

The **Service** area introduced our FabriQR Contact service, which was launched in October 2020. (For details, see page 7.)



In the **Academy** area, not only FANUC ACADEMY, which has an impressive record, but also FANUC eACADEMY, which is our new web-based training service, were introduced.

Introduction of New Products, New Functions and New Services

FA New Product FANUC Series 30i/31i/32i-MODEL B Plus

The FANUC Series 30i/31i/32i-MODEL B Plus is our latest CNC products released in January 2020, that were developed as high-end models in our CNC lineup .

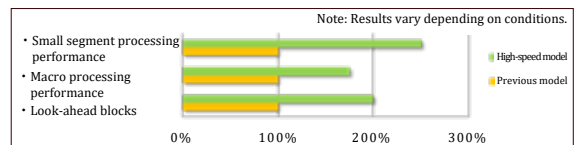
Recently, a high-speed model equipped with the latest multi-core CPU was added to the FANUC Series 30i/31i-MODEL B Plus.

Through the use of this high-speed CPU with software that maximizes CPU performance, computational power and basic CNC performance has improved significantly.

By utilizing this high-speed model in machine tools that use a small segment program for die-mold machining or multi-axis, multi-path, multi-function machine tools, in combination with FANUC's latest control technology, productivity will further improve and high-quality machining will be ensured.



FANUC Series 30i/31i/32i-MODEL B Plus



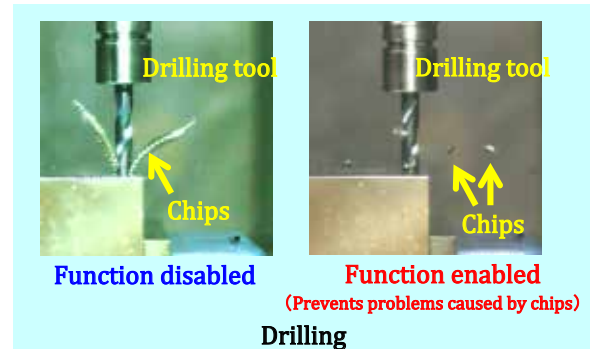
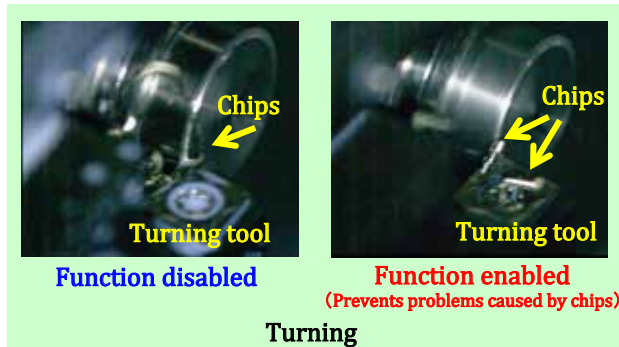
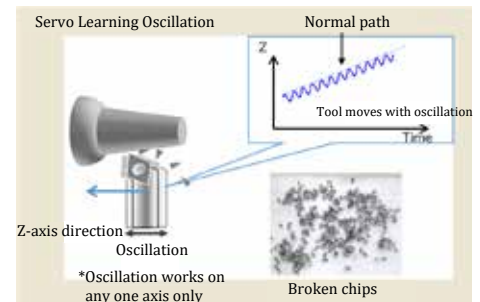
Comparison of performance between the high-speed model and previous model

FA New Function Servo Learning Oscillation for breaking chips

Servo Learning Oscillation is a function that makes a feed axis oscillate to break chips during machining. It can be used for drilling on milling machines and not just for lathes.

This function eliminates the need for chip breakers thus reducing equipment costs. It also prevents problems caused by chips and thus allows machine tools to operate continuously, leading to increased production efficiency.

(Applicable CNC: Series 30i/31i/32i-B, Series 30i/31i/32i-B Plus and Series 0i-F Plus)



FA New Function CNC-QSSR

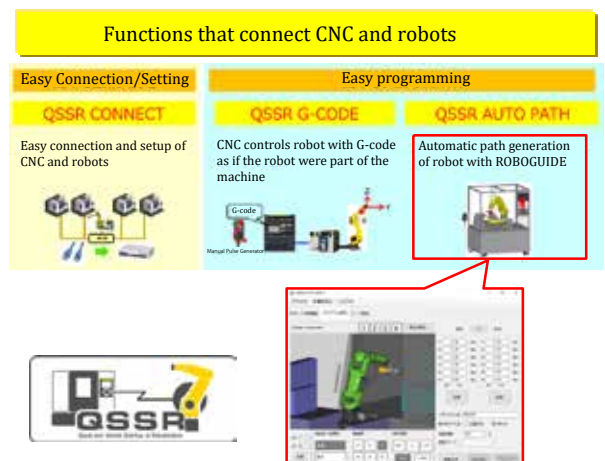
FANUC has proposed the CNC-QSSR as a function to equip machine tools with robots quickly and easily. Recently, QSSR AUTO PATH was developed for combined use with our robot system design tool called ROBOGUIDE to generate robot paths automatically.

QSSR AUTO PATH

FANUC has proposed the CNC-QSSR as a function to equip machine tools with robots quickly and easily. Recently, QSSR AUTO PATH was developed for combined use with our robot system design tool called ROBOGUIDE to generate robot paths automatically.

The generated robot motion programs can easily be invoked from machining programs using M-code.

* QSSR stands for "Quick and Simple Startup of Robotization" and expresses the concept of easy connection of CNC systems and robots.



ROBOT New Product FANUC Robot SR-20iA

FANUC has a variety of SCARA robots with payloads ranging from 3 kg, 6 kg and 12 kg. Now, as an addition, FANUC has developed and launched the SR-20iA (with a payload of 20 kg and a reach of 1,100 mm) as the latest model.

- Compared with the previous models, SR-3iA, SR-6iA and SR-12iA, the new model has a larger payload and reach and can handle heavier loads in a larger area.
- The release of this new robot has extended the small to large lineup of our SCARA robots, making it possible to meet a wider range of customer needs
- Compared to our competitors, the payload of the new robot is larger and is of a maximum class. The rigidity and vibration control enables the robot to move at a high speed with stability, even when it is carrying a 20 kg load.
- This robot can become waterproof and/or dust-proof if it is ordered with optional gaskets and bellows that protect the lifting axis at the end of the arm. An epoxy coated version is also available that is highly resistant to chemicals. It can be used without problem even in environments where cutting fluid spatters and chips fly.

This series of SCARA robots is easy to use and a wide range of models is available to meet customers' needs. These robots will contribute to improving productivity in factories.

SCARA robot series with the newly added **SR-20iA**



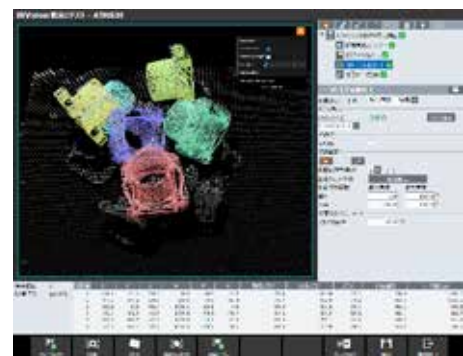
FANUC Robot SR-20iA

ROBOT New Function iRVision 3D Model Detection Function

FANUC has developed the 3D Model Detection Function, which easily captures the characteristics of a part from its 3D CAD data and uses vision to detect the part. It can be applied to a system in which a robot picks up one of many parts placed randomly in a returnable container, by using a 3D vision sensor.

- This function automatically generates the settings for detecting a part in various positions from the part's 3D CAD data.
- Previously, it was necessary to manually make the settings for a robot to detect a part in each possible position and register the settings one by one. This function automates the work of making and registering the detection settings to facilitate the startup of a bin-picking system.
- The part detection processing is performed by PANEL iH Pro, which has high processing power and connects to a robot controller via an Ethernet cable. This configuration has improved the detection capability, reduced the detection time, and has made it easier for FANUC to provide lifetime maintenance.

FANUC will continue to improve the vision functions that serve as the "eyes of robots" to contribute to automation in production sites.



Screen of the 3D Model Detection Function



Bin-picking of parts

ROBOMACHINE New Product FANUC ROBOCUT α -Ci Series



The ROBOCUT is a high-performance and highly-reliable wire electrical discharge machine that employs FANUC's latest CNC and servo technologies. With a highly rigid mechanical structure and the latest discharge device and discharge control function, the ROBOCUT can achieve high-speed and high-precision cutting of parts and molds.

High cutting performance

The mechanical structure, the discharge unit and the discharge control have been renewed for high-speed, high-precision and high-quality cutting.

- The mechanical rigidity has been strengthened to reduce any deformation of the machine, thereby enabling high-precision cutting of a perfect circle and high pitch accuracy.
- The power supply for finishing known as SF3, allows both miniaturization and a high frequency discharge pulse, for smoother surface finishing.
- The discharge control *iPulse3* optimizes the cutting conditions and speeds for corners and stepped shapes to improve cutting performance.

Minimizing downtime

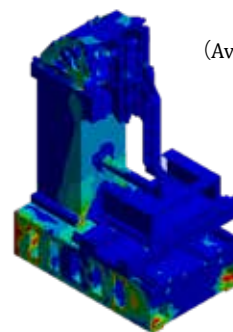
The highly reliable automatic wire feeding system, AWF3, allows unmanned operation to continue for a long period of time.

- With its simple structure, the automatic wire feeding system has excellent maintainability. The success rate for threading wires is exceptional, and high reliability is ensured for a long time.
- The air retry function intentionally vibrates the tip of a wire being threaded, offering a high success rate even at a wire break point or when using a small diameter hole.
- The twin servo wire feeding system prevents the wire from vibrating and accurately controls the wire tension.

Easy of use

FANUC's latest CNC, which provides excellent operability, is fitted to the ROBOCUT, making it much easier to use.

- With the high-performance display unit PANEL *iH* Pro, the drawing time is reduced by 75%.
- Adjustments of cutting speed along with changes in corner and approach geometries are easily performed through intuitive operations.
- The Undo and Redo functions have been added to facilitate screen operations and program editing.



Example of FEM analysis result

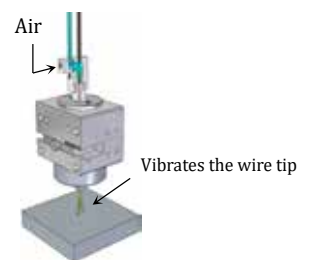
Circularity 0.9 μ m
(Average of measurements of actual workpieces)



50 mm hole diameter in 20 mm thick die steel material
Example of cutting a true circle



Automatic wire feeding system AWF3



Air retry



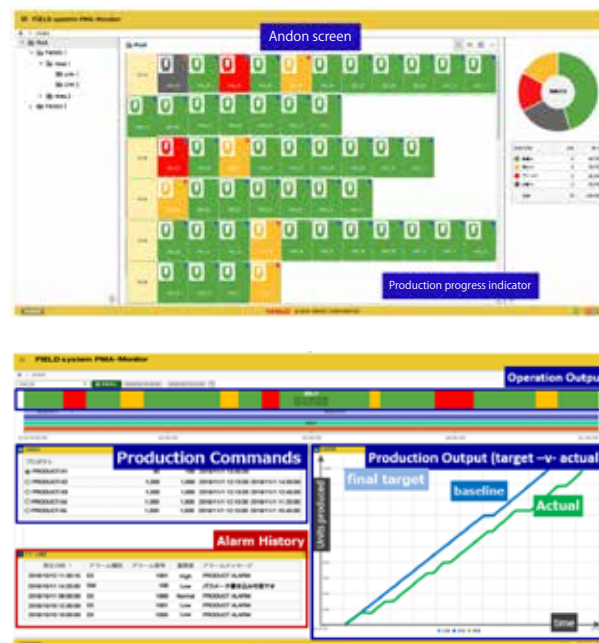
PANEL *iH* Pro



EDM cutting condition adjustment function 5

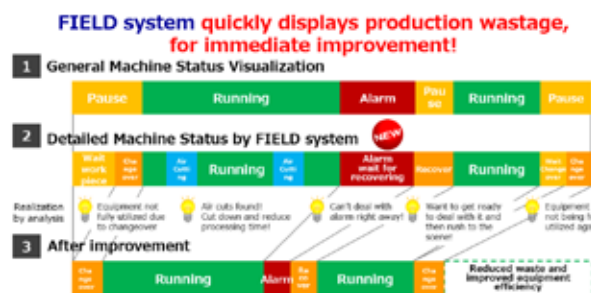
IoT New Function FIELD system PMA-Monitor

PMA-Monitor is an application intended to monitor the operation of machine tools and other devices in a factory. By displaying the operation status of devices in a list, anomalies can be found immediately. PMA-Monitor analyzes data collected from devices, such as the quantity produced, and shows information, including the progress of production in relation to the schedule and occurrences of delays.

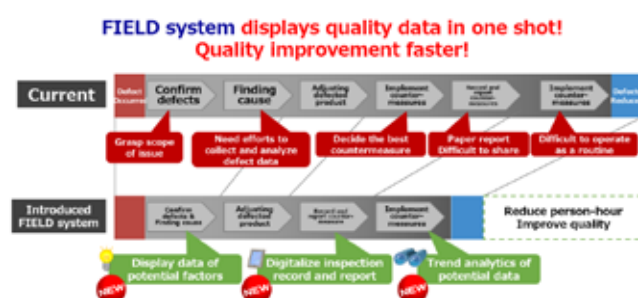


IoT New Functions FIELD system Solutions

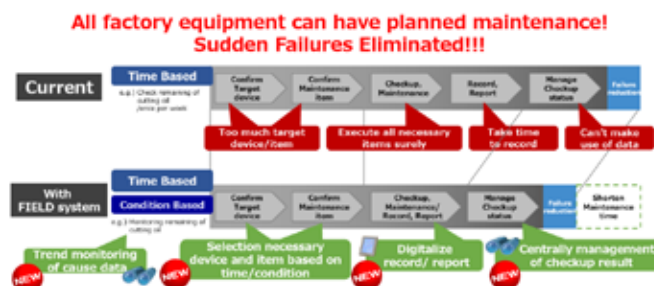
Solution for Improving Operation: Although conventional IoT systems made it possible to see that a machine tool or other device was not in operation, the explanation of the cause was not provided. The new Solution for Improving Operation visualizes the reason of the stop by analyzing data collected from the device in more detail. This supports the development of countermeasures and improves the operating rate of machines and devices in customers' factories.



Solution for Improving Quality: Previously, it took much time to conduct on-site investigation to identify the cause of defects that were found in the measuring process after machining. The Solution for Improving Quality is a countermeasure which collects data about the quality during machining, and organizes the data in correlation to measurement results, thus contributing to reduce the time to find the cause.



Solution for Facilitating Maintenance: Previously, when there was a sudden failure, identifying the cause took time, due to such issues as not being able to reproduce the problem. The Solution for Facilitating Maintenance helps identify the cause of a sudden failure by storing the operating data of the device at the time of failure. The Solution retrieves accurate data concerning the operation of a device to facilitate time-based maintenance, as well as gathering and monitoring data of sensors and other equipment to facilitate status-based maintenance. With these capabilities, this Solution helps prevent sudden failures.



SERVICE New Service FANUC FabriQR Contact

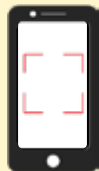
Service First

FabriQR Contact is an inquiry service which makes use of a smartphone. ➔

By simply scanning the FabriQR label attached to the machine with a smartphone camera, inquiries are handled more speedily.

Features

Feature [1]



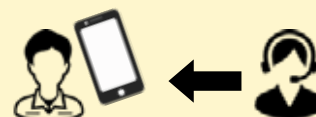
Easy to use mobile friendly application.

Feature [2]



Inquiries will be sent to an appropriate contact automatically by referencing the QR code, eliminating the need to search for serial numbers or service phone numbers.

Feature [3]



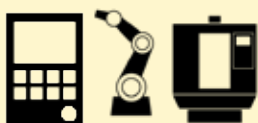
Prompt call back from an appropriate skilled service engineer.

Applicable products

In order to use FabriQR Contact, registration of the product by FANUC's service person is required in advance. ➔

For inquiries about a FANUC product without a FabriQR label, contact our Call Center as usual.

FA, ROBOT and ROBOMACHINE



Machine with a maintenance contract.

ROBOT



During periodic inspection

ROBOMACHINE

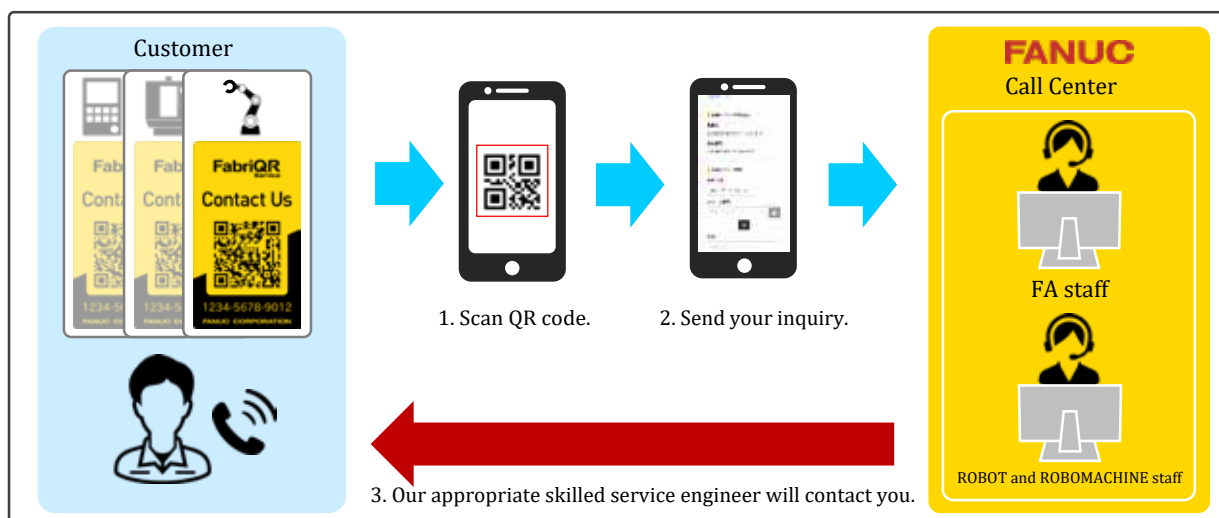


On-site adjustment of a new installment and inspection

How to use

1. Scan the FabriQR label on the machine with a smartphone camera and access the displayed URL.
2. Follow the guidance displayed on the smartphone screen, and enter your inquiry and necessary information.
3. After examining the content of your inquiry, an appropriate skilled service engineer will contact you by phone.

For more information.



*"QR Code" is a registered trademark of DENSO WAVE INCORPORATED.

Make your inquiries smart with FabriQR

Introduction of FANUC Factories

Low-cost and compact system that uses collaborative robots to assemble 6-axis servo amplifiers for robots

In the servo amplifier manufacturing process in the Electronics Factory of the Mibu Factory, 6-axis servo amplifiers for robots are assembled with a collaborative assembly system, which implements a new concept of combining human workers and collaborative robots.

The conventional assembly system, composed of many robots and peripherals, made continuous fully automatic unmanned operation possible. At the same time, building such systems consumed much time due to its complexity, and significant investments and large space was required for their installation.

The system using collaborative robots has a simple composition without the need for peripherals for automation. As such, the start-up time is shortened and investments are merely half of conventional fully automatic assembly systems, while retaining the same production capacity level.

In addition, the small collaborative robots, CR-15iA, are installed close together for the purpose of conserving space on the factory floor, and human workers are positioned between the robots in order to minimize the number of fixtures and peripherals used for feeding parts. With such a set up and eliminating safety fences, the footprint is only a third of that of fully automatic assembly systems.

One feature in terms of operation, is that a worker performs tasks that are difficult for robots, such as mounting irregularly shaped parts on printed circuit boards, while robots perform simple repetitive tasks, such as tightening screws and inspecting the mounted parts. This eliminates the causes of short stops and production becomes stable.

For the supply of parts, an automated warehouse is used to deliver heavy parts, and automated guided vehicles transport all other parts as scheduled. In this manner, operation is made efficient from assembly to parts delivery.

In addition, the large collaborative robots, CR-35iA, work on each side of the system to feed heavy parts and unload finished products, relieving human workers from exhausting physical tasks.

The collaborative assembly system for 6-axis servo amplifiers for robots was developed based on the concept that the system should be inexpensive, compact and space-saving. Robots and human workers perform tasks they are good at, and check each other's tasks then and there. This reduces physical and mental burdens of the human workers and ensures that the tasks are performed with stable quality and cycle time.



Full view of the system (one worker and five robots)



Positioning parts (by the worker) and tightening screws (by the robot)



Delivering parts with an automated guided vehicle



Unloading heavy finished products

- The METI (Ministry of Economy, Trade and Industry) Minister's Award of the 9th Robot Award
- The Main Prize of the 2020 (63rd) Nikkan Kogyo Shimbun Best Ten New Products Awards
- The Nikkei Business Daily Awards of the 2020 Nikkei Superior Products and Services Awards

The FANUC Robot CRX-10iA received triple awards: the METI Minister's Award at the 9th Robot Award, the Main Prize of the 2020 (63rd) Nikkan Kogyo Shimbun Best

Ten New Products Awards, and the Nikkei Business Daily Awards of the 2020 Nikkei Superior Products and Services Awards.



About the award-winning product, the FANUC Robot CRX-10iA

The FANUC Robot CRX-10iA is a new collaborative robot that is safe, easy to use, and highly reliable, that automates manual production sites without requiring safety fences.

This robot is safe to use as it has a roundish body and a safety function that stops the robot immediately when it comes in contact with a human worker. It is lightweight and easy to install manually. The robot can be taught in an intuitive manner by moving its arm directly with human hands and using a tablet device, similar to operating a smartphone. FANUC's technology of reliability, which has been developed over many years has made this robot maintenance-free and highly durable to harsh environments, providing a feeling of reassurance for installation in production sites.

In addition to coping with the lack of labor and the corona virus pandemic, it is effective to replace human workers who work close together with a CRX for some tasks. This allows social distancing, thus avoiding the three C's (closed spaces, crowded places and close-contact settings). As a robot that is easy to use even for first time robot users, the CRX can be introduced smoothly in production sites to achieve automation in a flexible and simple way.



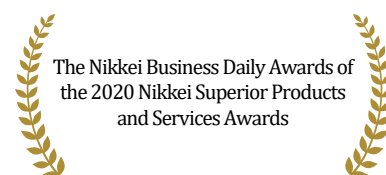
From right: Toshimitsu Fujiki (Director-General, Manufacturing Industries Bureau), Yasumasa Nagasaka (Senior Vice Minister of METI), Yoshiharu Inaba (Chairman, FANUC), Kenji Yamaguchi (President and CEO, FANUC)

The Robot Award organized by METI aims to promote robotic technology innovations and expand the use of robots. The METI Minister's Award is the Grand Prize awarded to an applicant chosen from among entrants in all categories. The award ceremony was held on Thursday, March 18, 2020, at METI. Chairman Inaba and President Yamaguchi received the certificate and trophy from Mr. Nagasaka, Senior Vice Minister of METI.



The Best 10 New Products Awards organized by Nikkan Kogyo Shimbun are awarded to products selected for their contribution to manufacturing and Japan's international competitiveness from new products developed or commercialized that year.

No award ceremony was held due to the COVID-19 pandemic; however the awards were announced in the January 4 (Monday), 2021 edition of the newspaper, Nikkan Kogyo Shimbun.



The Nikkei Superior Products and Services Awards are awarded annually to outstanding new products or services selected by Nikkei Inc. The award ceremony was held at the Okura Hotel on Monday, February 1, 2021. President Yamaguchi was presented with the certificate and trophy.

The Excellence Award of the 47th Nikkei Sangyo Shimbun Advertising Award!

FANUC's 2020 New Year newspaper advertisement received the Excellence Award in the 47th Nikkei Sangyo Shimbun Advertising Award of the Nikkei Advertising Awards organized by Nikkei Inc. The judges of the Nikkei Sangyo Shimbun Advertising Award commented that "Mount Fuji, close to FANUC headquarters, was placed at the center of the advertisement. Not only were the visuals gorgeous, the content also communicated the company's contributions and ties to the local community."

Just as Mount Fuji is Japan's highest mountain, the advertisement conveys the company's aspirations to become the top machine tool manufacturer not only in Japan but in the world."

FANUC will continue to bring innovation and a sense of confidence to factories around the world and provide customers with value they cannot do without.



The Excellence Award of the 47th
Nikkei Sangyo Shimbun Advertising
Award



Four Seasons of FANUC

Bright yellow flowers are messengers of the coming of spring to the FANUC forest, after enduring a long winter.



Japanese witch-hazel

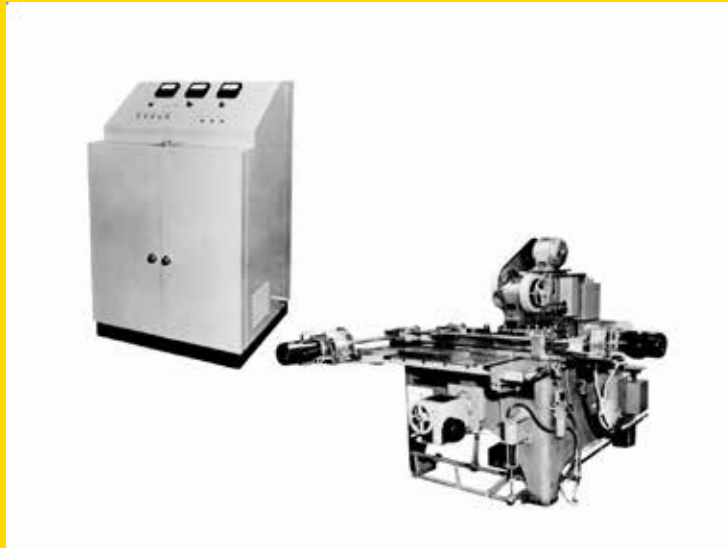


Buttercups

The FANUC pond is visited by a variety of wild birds, bathing in a relaxed manner in the spring sun.



Grey heron and mallard ducks



FANUC's History Series 1

"NC Turret Punch Press"

This was the first numerical control (NC) system FANUC successfully developed in 1956, and the first NC in Japan developed in the private sector.



FANUC NEWS 2021- I

FANUC CORPORATION

Oshino-mura, Minamitsuru-gun, Yamanashi 401-0597 Japan

<https://www.fanuc.co.jp/>

Phone: (+81) 555-84-5555

Fax: (+81) 555-84-5512

Person in charge of publishing:

Shunsuke Matsubara, Senior Managing Officer, General Manager, Research & Development Promotion / Support Division

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