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Customer Inquiries

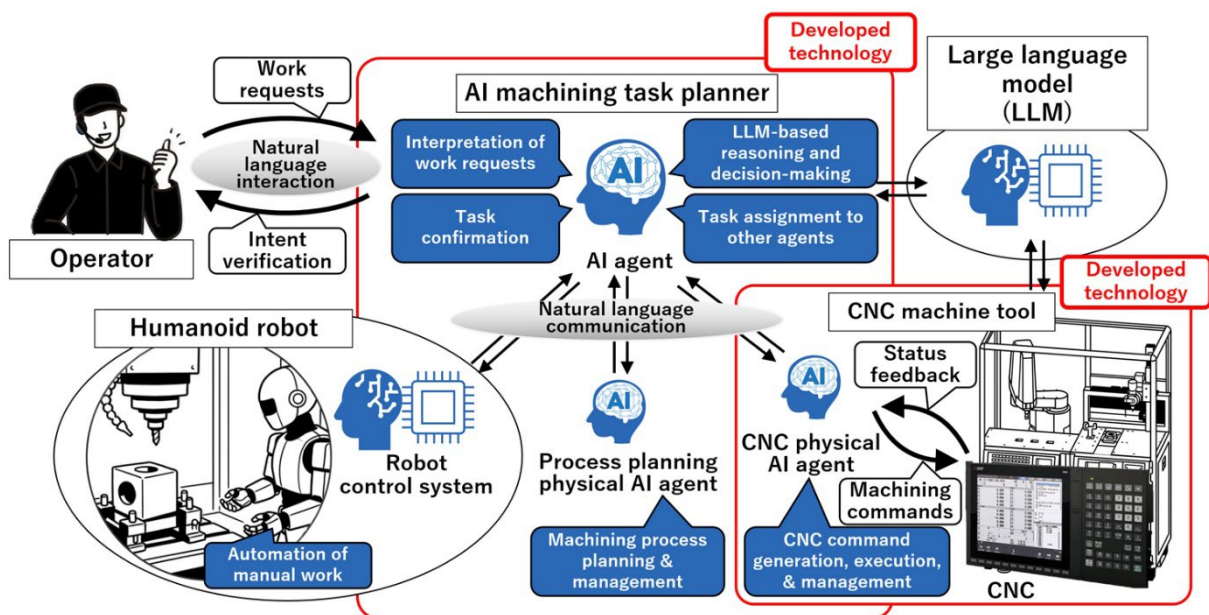
Media Inquiries

Advanced Technology R&D Center
Mitsubishi Electric Corporation
Fax: +81-6-6497-7285
www.MitsubishiElectric.com/ssl/contact/company/rd/form.html
www.MitsubishiElectric.com/en/about/rd/

Public Relations Division
Mitsubishi Electric Corporation
prd.gnews@nk.MitsubishiElectric.co.jp
www.MitsubishiElectric.com/en/pr/

Mitsubishi Electric Develops Industry's First Machining System in Which Humanoid Robots Collaborate with CNC Machine Tools

Through collaboration enabled by physical AI, humanoid robots replace manual work, contributing to a reduced need for human labor at machining sites



Machining system in which humanoid robots and CNC machine tools seamlessly collaborate through physical AI

TOKYO, October 21, 2026 – [Mitsubishi Electric Corporation](https://www.mitsubishielectric.com) (TOKYO: 6503) announced today that it has developed the industry's first¹ machining system in which humanoid robots and computer numerical control (CNC) machine tools seamlessly collaborate through physical AI.² The system enables humanoid robots to perform tasks traditionally handled by machine-tool operators—including setup, cleaning, the removal and transport of finished products, inspection, and troubleshooting—thereby helping to reduce labor requirements at machining sites.

Against the backdrop of a serious labor shortage in the manufacturing industry, demand is growing for the automation of tasks performed by operators at machining sites. However, replacing tasks that rely on human

¹ According to Mitsubishi Electric's research as of October 21, 2026 with regard to an NC system based on humanoid robot collaboration.

² AI technology that controls and optimizes physical operations in the real world.

physical capabilities—such as setting up the workpiece inside machine tools and cleaning them—using conventional industrial robots requires substantial capital investment to modify production lines and accommodate the robots. As a result, there is growing demand for humanoid robots that could perform such work without the need for expensive retrofitting, and development efforts are advancing worldwide. However, a major obstacle to their adoption has been the need to develop dedicated communication functions and control sequences for each robot in order to connect it to CNC machine tools.

Mitsubishi Electric's newly developed system comprises three main components: 1) An AI machining task planner that receives operators' instructions in natural language, automatically generates machining tasks, and assigns and coordinates work between a CNC machine tool and a humanoid robot; 2) A CNC machine tool equipped with physical AI that exchanges operational information in natural language and collaborates with the humanoid robot to perform machining; and 3) A general-purpose humanoid robot. The AI machining task planner and the physical AI integrated into the CNC machine tool are equipped with physical AI newly developed using Mitsubishi Electric's proprietary AI technology, [Maisart™](#).³

This system enables unmanned machining operations and management based solely on an operator's basic work instructions, eliminating the need for complex integration of individual robots. Mitsubishi Electric aims to accelerate the transformation toward smart factories and enable fully autonomous, unmanned factories that enhance production efficiency through innovative technologies.

A demonstration of this system will be exhibited at [the 33rd Japan International Machine Tool Fair \(JIMTOF 2026\)](#), which will be held at Tokyo Big Sight from October 26, 2026.

Features

1) Automatic generation and management of machining tasks using an AI machining task planner

- The AI machining task planner analyzes work instructions provided by operators in natural language and automatically generates a task plan by combining the necessary tasks from a list of pre-registered work tasks.
- Based on the generated task plan, the system assigns work to a CNC machine tool and a humanoid robot and manages machining operations carried out through their collaboration.

2) CNC machine tools and humanoid robots cooperate to perform machining

- Equipped with Mitsubishi Electric's proprietary physical AI, the CNC machine tool and humanoid robot can exchange operational information in natural language and cooperate flexibly, regardless of the robot model.
- The machining system can be implemented without advanced system integration, significantly shortening the time required for system deployment.
- By using humanoid robots capable of leveraging physical characteristics similar to those of humans, the system automates tasks related to machine tools that were traditionally performed by human operators, including setup, cleaning, tidying up, transport, inspection, and troubleshooting.

³ "Mitsubishi Electric's AI creates the State-of-the-ART in technology":
Mitsubishi Electric's AI technology brand aimed at making every device smarter.

Feature Development

Mitsubishi Electric will continue to enhance the system's functions and conduct demonstration experiments with the goal of commercializing a machining system in which CNC machine tools and humanoid robots work together by 2030. The company will further advance collaboration between devices at machining sites through physical AI and contribute to the realization of unmanned, unattended machining factories.

"Maisart" is a registered trademark or a trademark of Mitsubishi Electric Corporation in Japan and/or other countries.

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About Mitsubishi Electric Corporation

Guided by its corporate philosophy, Mitsubishi Electric Corporation (TOKYO: 6503) places sustainability at the core of its operations and values stakeholder trust—encompassing society, customers, shareholders and employees. In pursuing profitability, capital efficiency and growth, Mitsubishi Electric works closely alongside customers to develop value-added solutions that address today's complex challenges while enhancing the company's sustainable corporate value.

Founded in 1921, Mitsubishi Electric has over a century of experience in delivering reliable, high-quality products and solutions. With over 200 group companies and approximately 150,000 employees worldwide, the company is a recognized global leader in manufacturing, marketing and selling electrical and electronic equipment and systems across a broad range of sectors, including public utility systems, energy systems, defense and space systems, factory automation systems, automotive equipment, building systems, air conditioning systems & home products, digital innovations, and semiconductor & devices.

Mitsubishi Electric recorded consolidated revenue of 5,894.7 billion yen (U.S.\$ 36.8 billion*) in the fiscal year that ended on March 31, 2026. For more information, please visit www.MitsubishiElectric.com

*JPY 160=USD 1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2026