Trading Business
(JFE Shoji Corporation)

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Under the Seventh Medium-term Business Plan (FY2021–FY2024), the JFE Shoji Group is pursuing a DX strategy that is investing for growth over 10 years in the three areas of "innovative productivity enhancement," "transforming existing businesses," and "creating new businesses using digital technologies."

During fiscal 2021, we established an internal DX propulsion working group that has begun to consider DX solutions Groupwide. We are also conducting DX training to deepen each employee's understanding of DX while collecting ideas for using DX in businesses and workplaces and putting those ideas to specific uses.

The JFE Shoji Group will continue to use DX to increase satisfaction among both customers and employees.

Vision for DX promotion

Continuous creation of corporate value and enhanced competitiveness by providing DX groundbreaking services

External DX	Transforming existing businesses
	Creating new businesses using digital technologies
Internal DX	Innovative productivity enhancement

Three areas of DX emphasis

JFE Shoji Group

- JFE Steel
- JFE Engineering

JFE Shoji Electronics (use of DX technologies and expertise obtained from the industry)

DX human resources of JFE Shoji and Group companies

Coordination → **DX promotion organization** ← Coordination

Digital IT platform

Non-destructive inspection using radar-equipped drones

JFE Shoji Electronics and Osaka University have jointly developed a non-destructive system for remote inspection inside various structures using drones equipped with ultrawide band (1G–1,000 GHz) radar.

Phase detection using different radar wavelengths corresponding to various structures being inspected allows for assessment of a structure's condition with contactless, non-destructive diagnosis and visualization of risks the naked eye cannot see.

The system is still at the demonstration testing stage but when implemented is seen being used over a wide range including plants, construction and infrastructure, primarily for equipment in old buildings, high locations, and other places where it is difficult for humans to conduct maintenance and inspection. It can also be expected to contribute to resolving the social issues of inspection, repair costs, and personnel shortages, and to increasing efficiency and safety.

Non-destructive inspection using ultrawide band (1G–1,000 GHz) radar-equipped drones

DRONE + RADAR =

1 Enables visualization of risks naked eye cannot see
2 Makes inspection operations more economical, efficient, and safe
3 Solves the problem of personnel shortages for inspections and repairs

Target for non-destructive inspection

Target	Range	Effects, functions, capabilities	Area
Concrete	Microwave	Visualization of internal structure of concrete, fire-resistant, castable materials, etc.	Bridges and buildings, social infrastructure, smokestacks, plant equipment, etc.
Underground, in snow	Milliwave Microwave	Trace inspections of underground objects	Underground objects, objects covered by snow Embankments, energy infrastructure, etc.
Instability	Microwave	Detection of loose or strained bolts	Steel towers, roads, signs Infrastructure inspection (external)
Coatings and defects	THz wave	Inspection of quality, defects, etc., of coatings	Ships, buildings and structures, metal-plated surfaces

Successful demonstration test of inspection of smokestack's inner coating thickness

For work previously done with the naked eye or a camera viewing a surface, this approach will make it possible to assess effectively the thickness of an inner wall without causing damage, while also allowing early detection of the degree of wear and tear inside a smokestack.

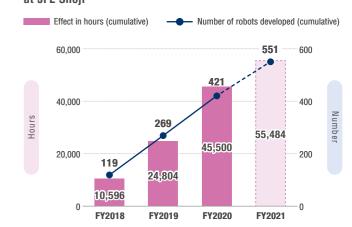Demonstration test

Promoting RPA

The development of robots for Robotics Process Automation (RPA) began in fiscal 2018, and Companywide needs were identified as of the end of fiscal 2021. The roughly 550 robots that have been developed are expected to achieve laborsaving reductions of approximately 56,000 hours annually. We are also developing replacement robots in response to environmental changes. In addition to increasing the efficiency of existing operations, we have recently been using AI-OCR* to digitalize some documentation and adding functions to robots for customer service. We are also accelerating their introduction to Group companies. Going forward, we will work to establish a "new normal" of an "operational style in cooperation with robots."

* OCR: Optical Character Recognition/Reader

JFE Shoji Group's utilization of RPA robots (fiscal 2021 year-end projections)

	JFE Shoji	JFE Shoji Group companies
Number of robots operating	Roughly 550 robots operating (end of FY2021)	Roughly 145 robots operating (end of FY2021)
	→ Maintain high level	↗ Increase
	• Hours of labor savings: Average of approximately 100 hours/year/robot • Robots/section: Average of 5.1 robots/year • Breakdown: Marketing 83%; Administration 17%	• Companies: nine • Special feature (1): Developed by referencing JFE Shoji's existing robots • Special feature (2): Standardization of head office-use robots for use at branch offices

Number of robots developed and labor savings by year at JFE Shoji

Effect in hours (cumulative) — Number of robots developed (cumulative)

	FY2018	FY2019	FY2020	FY2021
Number of robots developed	119	269	421	551
Effect in hours	10,596	24,804	45,500	55,484