

A one-of-a-kind testing field “Fukushima Robot Test Field”: An important base for Japan’s robotics technology development

Fukushima Prefecture



Background to the Project

Contributing to Fukushima’s recovery by building up robot technology

In order to revive local industries along the coast of Fukushima Prefecture that were lost in the Great East Japan Earthquake of 2011, as a national policy Japan is endeavouring to create a cluster of industries such as robotics, energy, and agriculture/forestry/fisheries, as well as expand human resources training and Fukushima’s non-resident population in an initiative called the “Fukushima Innovation Coast Framework.” Based on this framework, in 2020 Fukushima Prefecture established the “Fukushima Robot Test Field” on the coast in Minamisoma City and Namie Town as a large development and testing base for field robots designed for land, sea, and air use.

Project Aims

By creating a one-of-a-kind testing field, the project aims to contribute to Fukushima’s recovery through robot technology innovation.

Project Outline

Making practical testing possible using all types of field robots for land, sea, and air

Fukushima Robot Test Field is located on an approx. 500,000 m² site in Minamisoma City, and comprises the four areas described below. In addition, the facility has a 400 m airstrip located in Namie Town that enables long-distance test flights.

This test field is also an important Japanese base for drone verification testing and training, and is the only test flight base for “flying cars” in Japan.

1. Development Base Area

The largest robot technology R&D base in Japan

Used as an R&D/verification testing base, the main building (research building) houses the laboratories of 20 organisations, including companies, universities, and research institutions. The building is also home to the Fukushima Technology Center Minamisoma Technical Support Centre, which provides usage support for environmental testing equipment, machining devices, and analytical instruments, as well as consultation services regarding robot technology.



[Development Base Area] Research Building

2. Unmanned Aircraft Area

From drones to flying cars, this facility conducts testing of a diverse range of unmanned aircraft

On an area of land twice the size of a soccer field is an airfield surrounded by a 15 m high net with a 500 m long airstrip. This facility is used by companies conducting R&D on drones

and flying cars.



[Unmanned Aircraft Area] Transport testing of blood for transfusion

3. Infrastructure Inspection and Disaster Response Robot Area

A practical test field recreating an entire urban area

With a mockup tunnel, a mockup bridge, and mockup plant buildings, this facility recreates an entire urban area. It is used by companies conducting R&D on infrastructure inspections by robots and automatic driving in urban areas.

In addition, the mockup tunnel and plant have been selected as competition venues for the World Robot Summit, which is to be held in 2021.



[Infrastructure Inspection and Disaster Response Robot Area] Verification of 3D tunnel inspection system

4. Underwater and Maritime Robot Area

A “Submerged Urban Field” test field that

is unique in the world

This area comprises a “Submerged Urban Field” and “Indoor Water Tank” that recreate flood disaster scenarios and is used for verification testing of underwater robots and lifesaving training.

The Indoor Water Tank testing building training is being carried out for operating underwater cameras on the underwater robots being used for decommissioning reactors at the Fukushima-Daiichi Nuclear Power Plant.

Features and Innovation

A practical test field unmatched in the world for its ability to handle all types of field robots

In order for drones and other robots to play an active role on the frontlines in times of natural disasters and help with building infrastructure, development bases are essential; however, virtually nowhere in the world are there any large-scale facilities where it is possible to conduct tests realistically for such varied situations.

Not only can the “Fukushima Robot Test Field” handle robots for land, sea, and air, it is a one-of-a-kind facility where testing can be carried out in extremely unique and practical fields.

Results of the Project

1. Researchers around the world focus their attention on one-of-a-kind test fields

As of October 2020, approx. 30,000 researchers have visited the test field and more than 240 verification tests have been carried out.

Furthermore, local companies have begun supplying parts and developing prototypes, with robot research bases being newly established along the coast of Fukushima Prefecture by 56 companies and organisations.

2. Main Activities and Results

- (1) Guidance provided for improving drone safety through public disclosure of API (Application Programming Interface)

- (2) More than 100 flights/km²/hr successfully carried out by multiple drone manufacturers
- (3) Independent collision avoidance testing successfully carried out on unmanned aircraft against manned helicopters at a relative speed of 100 km/hr (world first)

Future Developments

1. Promote robot technology as a leading robot facility in Japan and contribute to the recovery of Fukushima

The facility will endeavour to nurture robot-related industries in Fukushima Prefecture and promote related industries with the aim of generating innovative “Made-in-Fukushima” robot technology and products.

2. Develop robot technology as a means of overcoming the issue of Japan’s declining population

In addition, the facility will promote innovation in robot technology in collaboration with government bodies and related institutions with the aim of realising flying cars, as well as a safe and affluent society.

3. Demonstrate initiative as a major base for robot R&D in Japan

The facility aims to be an organisation that is capable of demonstrating an international presence in terms of formulating guidelines for the application of robot technology to social issues, as well as rules and regulations for training and diffusing the necessary human resources.

Reference URLs

<https://www.fipo.or.jp/vision>

(“Fukushima Innovation Coast Framework” (in Japanese))

<https://www.fipo.or.jp/robot/>

(Fukushima Robot Test Field (in Japanese))

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Key Terms

◆API (Application Programming Interface)

Originally meaning something connecting “applications, software” and “programs,” here this term refers to platforms that enable authentication functions to be shared and mutual data analysis to be carried out across different software and services.