

Demonstration of the Use of Remotely Operated Drones to Perform Extraordinary Dam Inspections ~Aiming to promote DX to achieve smart security for hydroelectric power assets~

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TEPCO Renewable Power, Inc.

On a daily basis, TEPCO Renewable Power Inc. (hereinafter referred to as, “TEPCO RP”) examines how to advance domestic hydroelectric power operations by incorporating Digital Transformation (DX). At the Kazuno River Dam (Otsuki City, Yamagata Prefecture), we successfully demonstrated how a remotely operated drone in autonomous flight mode could be used to perform an extraordinary inspection after an earthquake*.

Performing extraordinary inspections after an earthquake bears the risk of resulting in a worker accident because personnel must be sent out into the field without knowing if routes to the dam, etc., are safe. Furthermore, since it takes a certain amount of time just to travel from the closest office to the dam, which is in a mountainous region, there are cases where it’s extremely difficult to quickly ascertain information about the integrity of the dam, etc.

For this demonstration, Starlink receiver equipment, an LTE base station, and a drone port were installed at the dam where mobile carrier signals do not reach, thereby building an environment with a radius of approximately 2km from the dam within which drones can be remotely operated.

As a result, information about dam integrity can be ascertained quicker than conventional inspection methods and without the need to send personnel into the field. The largest benefit from not having to send personnel into the field is being able to avoid the risk of a worker accident.

Going forward, TEPCO RP will coordinate with related agencies, etc. based on various conditions, such as safety when sending personnel into the field and the construction of communications environments, as we aim to employ this technology as early as FY2025 for extraordinary inspections of our dams, etc. Furthermore, by combining the footage taken by drones with 3-D modeling technology, we aim to use drones in various scenarios thereby eliminating the need to have personnel perform visual inspections.

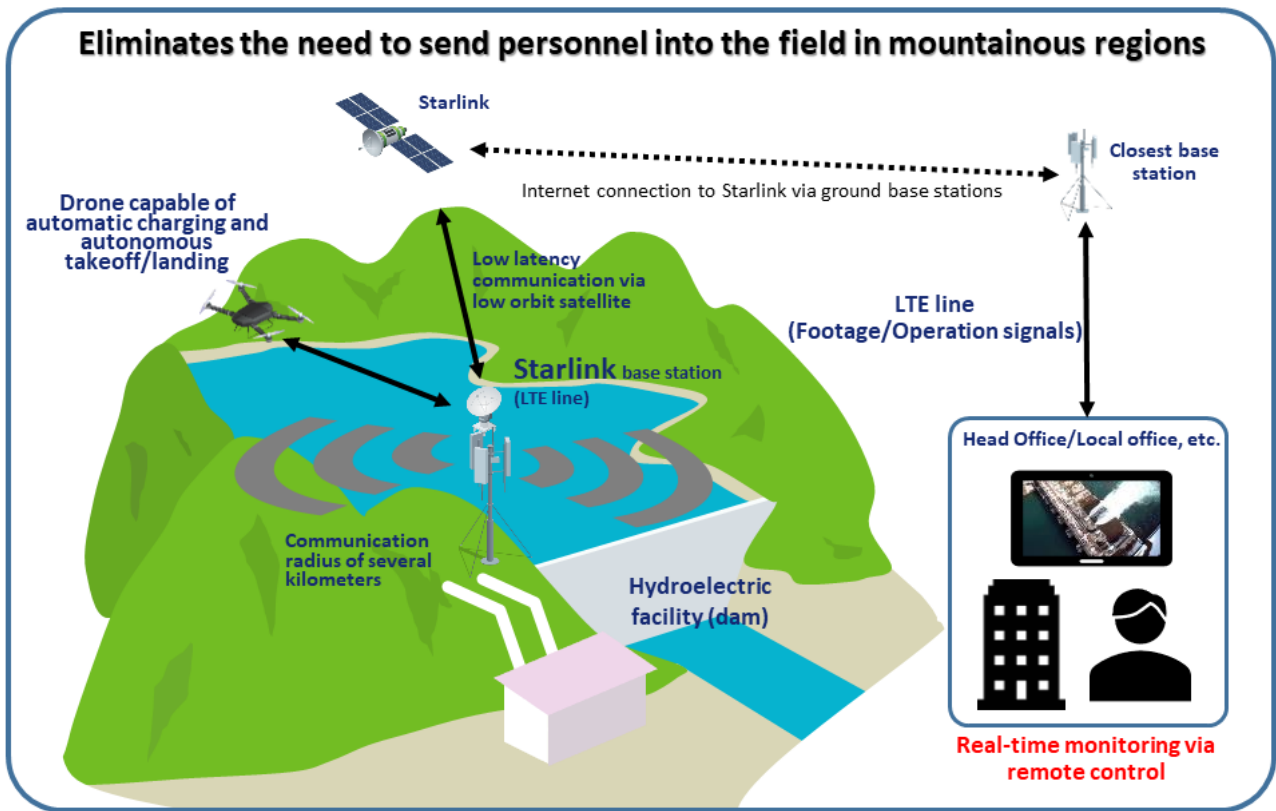
<Attachment 1> Concept Diagram of the Systems Employed for the Demonstration

<Attachment 2> TEPCO RP’s DX Map for Creating Smart Security

*Extraordinary inspections of dams, etc. performed in the wake of an earthquake:

Integrity checks of dams that exceed 15m in height or ones which subject to inspection in accordance with TEPCO RP’s manuals if dam seismometers measure a seismic intensity of 4 or higher, or if dam foundation seismometers measure an acceleration of over 25 gals.

Concept Diagram of the Systems Employed for the Demonstration



* Communications environments are built by KDDI CORPORATION

[Reference] Example of routes to a dam subject to extraordinary inspection



TEPCO RP's DX Map for Creating Smart Security

