

News Release

FOR IMMEDIATE RELEASE

Hitachi Develops System to Increase Productivity and Safety at Construction Sites Using IoT Technologies

Tokyo, Japan, March 27, 2018 --- Hitachi, Ltd. (TSE:6501, "Hitachi") announced today that it has developed a system to increase productivity and safety on the front lines of construction using IoT (Internet of Things) technologies. Specifically, it will increase productivity at construction sites by using dedicated devices to monitor, in real time, information on the position and movement of workers and construction machinery, and the status of operations. The system will also increase safety by using triaxial acceleration sensors and air pressure sensors in the devices to quickly determine when workers have fallen down or entered dangerous environments. In preparation for the future commercialization of this system, Hitachi is planning to conduct on-site tests at construction sites.

In recent years, with the continuing trend toward digitalization, IoT and digital technologies have come to be used in a variety of fields. Meanwhile, as Japan faces a decrease in its working population, the movements to increase productivity and realize work style reform including the reduction of work hours and the introduction of a five-day workweek at construction sites have become more active in construction industry. Hitachi group has developed and provided services and solutions which contribute to increasing safety and productivity by visualizing the status of workers and equipment at a construction site.

Now, Hitachi has developed a system that uses dedicated devices to monitor the status of workers and construction machinery to increase productivity and safety at construction sites. This system uses dedicated devices and "clean beacons⁽¹⁾" developed by Hitachi along with GPS⁽²⁾ to seamlessly monitor, in real time, positional information on workers and construction machinery both indoors and outdoors. In this way, it is able to detect worker excesses and shortfalls and ensure optimum worker allocation, thereby contributing to increasing productivity. The system also increases safety by using triaxial acceleration sensors and air pressure sensors built into the devices to quickly detect when workers are in danger; for example, if they have fallen down, or if they have entered a restricted area or an environment with a high risk of heatstroke.

Hitachi is planning to conduct on-site verification tests of this system at construction sites and is aiming to begin commercial applications during the first half of FY2018. The goal of using this system is to improve productivity and safety not only within the Hitachi Group but across the entire supply chain, through collaborative creation with Hitachi's suppliers and various partners.

- (1) Clean beacon: A "beacon" (fixed position device that transmits radio waves or other signals) developed by Hitachi that operates both indoors and outdoors. This beacon harvests energy from the environment, and so requires no primary battery or other external power source. It can begin operations in a short time even under low light conditions (around 200 lux), for example with indoor lighting or under the shade of a tree, and can simultaneously store the power required to operate the beacon device, so that operations can continue for a certain period of time even at night or in the event of a power outage. Development and demonstration of a part of technologies used in clean beacons was supported by the New Energy and Industrial Technology Development Organization (NEDO).
- (2) GPS: Satellite-based Global Positioning System

Unique features of the newly developed system

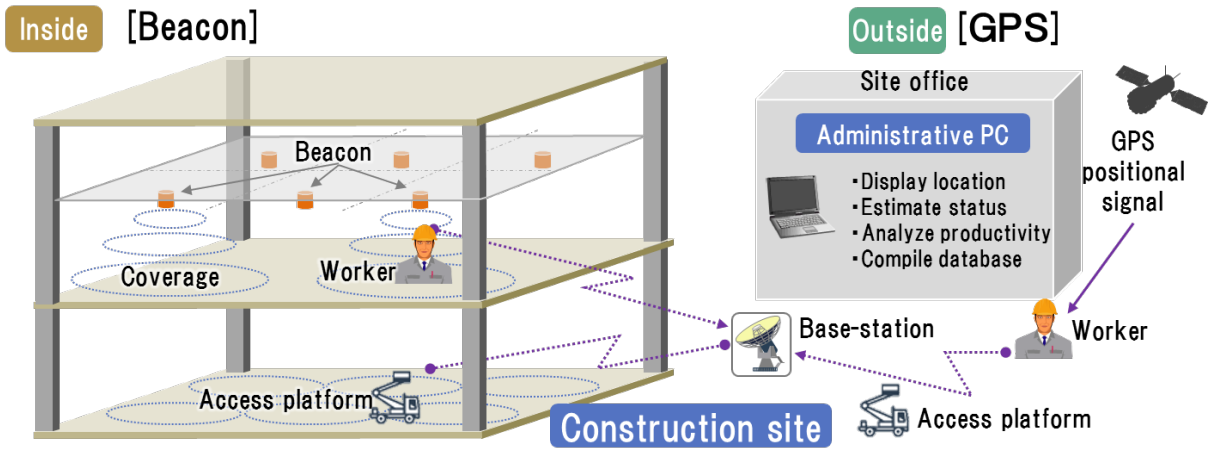
1. Uses dedicated devices, beacons, and GPS to monitor positional information both indoors and outdoors seamlessly and in real time, and at low costs

The system uses a dedicated device, with no need for a smart phone or other smart device, so it can be introduced at a low cost. Positional information on workers and construction machinery is monitored at indoor construction sites using beacons and at outdoor construction sites using GPS, and so is not influenced by mobile phone reception, thus enabling seamless, real-time monitoring of positional information both indoors and outdoors. The system uses 920MHz band communications to provide communication functions that are highly resistant to radio wave interference. Because the devices do not need to be operated by the users, the system also contributes to securing worksite safety.

2. Monitors movement and operating conditions for construction machinery and workers using triaxial acceleration sensors and air pressure sensors built into the devices

The system contributes to increasing safety by using triaxial acceleration sensors and air pressure sensors built into the devices to quickly detect when workers are in danger – for example, if they have fallen down, or if they have entered restricted areas or environments with a high risk of heatstroke – and also to detect when construction machinery starts and stops. In addition, the system sends a warning when dangerous conditions are detected, thus enabling a rapid response.

Outline of the newly developed system



About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges. The company's consolidated revenues for fiscal 2016 (ended March 31, 2017) totaled 9,162.2 billion yen (\$81.8 billion). The Hitachi Group is a global leader in the Social Innovation Business, and it has approximately 304,000 employees worldwide. Through collaborative creation, Hitachi is providing solutions to customers in a broad range of sectors, including Power / Energy, Industry / Distribution / Water, Urban Development, and Finance / Government & Public / Healthcare. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
