

Using a tablet-based inspection system to raise the level of operation management work in waste treatment facilities



Waste treatment facilities support our comfortable lives and play their part in achieving a sustainable society. TESCO, which has taken on the operation management of many waste treatment facilities for local authorities across Japan, is promoting DX* to raise quality and efficiency in inspection work. At Hitachi Power Solutions, we customize our Maintenance Support Solution "SiteRemix", which supports the optimization of our customers' facilities on the basis of our own maintenance expertise. The result is a solution tailored to each working environment. As a co-creation partner, we support our clients in their further growth.

* DX: Digital Transformation

Challenges

- 1 In inspection work based on visual inspection and writing manually, there is no way to prevent errors in record keeping, and equipment faults being overlooked, so there is a growing need for digitalization.
- 2 It's hard to catch ongoing changes in data from a paper-based inspection checklist, which makes it more difficult to make inspection lead to preventive maintenance.
- 3 Facilities can't be modified for the purpose of inspection, and that was a barrier preventing operation management contractors from raising the efficiency and quality of their work.

Solutions

- Introduce a customized tablet-based inspection system to reduce recording errors and help to discover equipment faults sooner.
- Inspection results compiled as data can be graphed instantly for visualization, so changes in the status of equipment can be checked accurately.
- Temperature and pressure gauges can be read using the tablet camera and automatically compiled as data, to achieve advanced and high-quality maintenance and inspection that don't depend on the facility environment.

Project Background

Pressing forward with digitalization of inspection work while looking ahead to the future

The Environmental Business Division of TESCO, which has its headquarters in Chiyoda-ku, Tokyo, handles the operation management of waste and water treatment facilities throughout Japan. We began our interview by asking why digitalization was necessary for the waste treatment facilities where they introduced SiteRemix. Mr. Ouchi, assistant manager of the Technology Development Section, Technology Management Department, Environmental Business Division, told us how the company goes about day-to-day operation management in order to ensure the stable operation of facilities.

"Operation data for important facilities such as incinerators was managed and accumulated in the Distributed Control System (DCS), but data on motors and on other individual equipment not covered by DCS was compiled on paper inspection checklists by operators who patrolled around the facilities on foot. The number of meters to be read included 80 thermometers, and the checklist items packed nine A4 pages. Twice a day, two operators shared the interior of a facility equivalent to a seven-floor building, writing their records manually. Those daily inspection checklists were stored correctly, but no matter how properly they were stored, the feeling was that it would be difficult to put the information to further use, such as preventive maintenance, if it was all on paper. When a fault occurred

in the facilities, we had to flip back through the pages of the inspection checklist, so we couldn't get to the cause quickly."

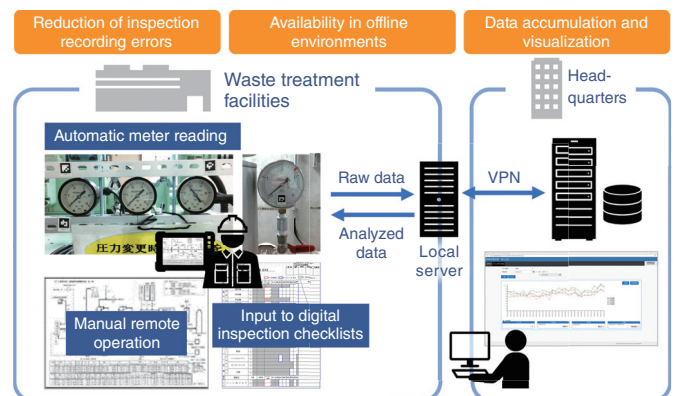
Apparently other problems, like labor shortages and difficulty with passing down inspection expertise, were becoming obvious. Mr. Iijima, secretary of the Engineering Division D&A Technology Center, who formerly belonged to the Environmental Business Division, said digitalization was the measure chosen to improve a number of problems. "We have decided that our target as a company should be to solve issues by digitalizing data, and then make it lead to the effective next stage of preventive maintenance. But modifying facilities for the purpose of inspection isn't permitted. The SiteRemix tablet-based inspection system doesn't involve modifying the facilities, so for businesses like us, which are mainly engaged in operation management, I think SiteRemix is a tool that achieves advanced and high-quality maintenance and inspection while expanding business possibilities."

Hitachi Power Solutions, which has a strong record of maintenance work on power stations and many other kinds of plants, has advanced this project as a partner, providing abundant knowledge and fresh ideas.



Secretary of the Engineering Division
D&A Technology Center,
TESCO CO., LTD.

Mr. Atsushi Iijima



Project Outcomes

Use accumulated data to foster a corporate culture that takes facilities management to higher levels

At TESCO, they dug into the potential issues on the way to digitalization of inspection work. Mr. Ouchi said "We initiated consultations in three phases. 1. Using data digitalization and visualization to improve the issues of errors in inspection record keeping and equipment faults being overlooked. 2. Using accumulated data to lead to advanced facilities management. 3. Expanding the scope of management until predictive diagnostics becomes possible. We are now at the stage of implementing phase 1 while looking ahead to phase 2."

One of the features of SiteRemix is that instruments can be photographed with the camera of the tablet, and values can be digitalized as data from the image and reflected in the inspection checklist. There were some very satisfying points that encouraged adoption of the system. Mr. Iijima said "Waste treatment facilities are covered in thick concrete, so there are many places out of the reach of Wi-Fi signals. Hitachi Power Solutions customized the system for our needs by placing all necessary functions into the tablet, to allow offline inspection. Of course, automatic meter reading of instruments with the camera is also doable offline. I was impressed by the way they got familiar with our situation and offered a customized proposal."

At the Otsuki Tsuru waste treatment facility, which introduced SiteRemix as a pilot plant, operators formed teams of four or five people to work on operation management with tablet inspection in

shifts covering 24 hours every day. When the system was introduced, Mr. Iijima told the operators "At first this might take longer than filling out an inspection checklist on paper, but you're all digitalization pioneers. Let's work together to build a new corporate culture for TESCO." There are notebooks on-site that people can use freely to write down anything they notice. TESCO and Hitachi Power Solutions share the notebooks' content on a regular basis, and they continue to make improvements, including customization for usability.



Assistant Manager of the Technology Development Section, Technology Management Department, Environmental Business Division, TESCO CO., LTD.

Mr. Haruhiko Ouchi

Future Plans

Roll the system out to multiple facilities and make it a powerful competitive edge in the operation management business

Operation management with SiteRemix is getting on track, and the company is considering rolling it out to other waste treatment facilities in the future. Mr. Ouchi said "We are accumulating and comparing data across multiple facilities to make it useful for improvements. When we announced our digitalization efforts in the division managers' meeting, the Total Building Management Division and other divisions of the company expressed their interest in benefits such as avoiding entry errors in inspection records. In future we will be looking to company-wide lateral extension, to advance full-scale usage."

Mr. Iijima looks ahead to the future. "For us, having built a background in data accumulation is very significant. We have many young staff with digital skills, and we want to make this an opportunity for them to utilize their skills to the fullest. We think that this system will become more effective by taking action early and running through PDCA* cycles to lead to improvement, rather trying to jump ahead aiming for a perfect score. Beyond making improvements, we're looking ahead to using Big Data on operation management, for preventive maintenance using predictive

diagnostics. I'm certain that operation management using the tablet-based inspection system delivers many advantages for us and for our clients, while also giving us a powerful competitive edge for gaining new clients."

Hitachi Power Solutions applies its technology-backed proposal capabilities to provide what operators want, so they can move forward powerfully with the next step in the maintenance business.



* PDCA: Plan, Do, Check, Action

User's Profile

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Established: November 1970

Capital: 196 million yen

Business: Operation and maintenance management of waste and water treatment facilities, total building management, etc.

As a total building maintenance company, it manages governmental facilities, office buildings, hospitals, educational facilities, hotels, sports facilities, research facilities, and more, providing everything from maintenance management to cleaning, security, and reception, as well as condominium management.

As a pioneer in operation management outsourcing, it is expanding its business scope beyond the maintenance management of lifeline-related facilities such as waste and water treatment facilities, to handle the works for the new construction and radical remodeling of facilities, and engineering services (hardware and software design, etc.) in the urban development field.

