

“JFE Hyper RemoteTM” for Optimum Plant Operation Support System[†]

1. Introduction

Conventionally, operation and management of waste incineration facilities has been performed by cities, towns, and villages, which are local governing bodies. However, accompanying the deterioration of local government finances in recent years, there have been increasing moves to entrust the operation of waste incineration facilities to the private sector, for example, to the plant maker, in expectation of lower operating costs and supply of high quality public service. One typical arrangement is the DBO (Design, Build, Operate) system under a blanket consignment contract with a long term on the order of 20 years. Recently, arrangements of this type have accounted for more than 30% of new projects. Moreover, due to changes in the circumstances surrounding electric power since the Great East Japan Earthquake of 2011, there is also a heightened need to improve profitability by increasing sales of electric power in order to hold down power costs.

Since 2003, JFE Engineering has performed remote

maintenance of the distributed control system (DCS) of waste incineration facilities such as software repairs from its Yokohama Head Office via the internet. However, it had become difficult to provide a satisfactory response to the above-mentioned environmental changes by the conventional remote maintenance function. To solve this problem, the company reached the judgment that a new system for plant operation support, power sale control, etc. was necessary and developed a new system called “JFE Hyper RemoteTM” based on the former remote maintenance function. This report introduces “JFE Hyper RemoteTM,” which enables optimum operational support for plant facilities and supply of the optimum quantity of electric power for sale.

2. System Configuration

2.1 Remote Service Center

JFE Engineering established a new Remote Service Center, which supports optimum operation of urban



Photo 1 Situation of operation support for facilities at the Remote Service Center

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“JFE Hyper Remote” is registered trademark of JFE Holdings, Inc. in Japan.

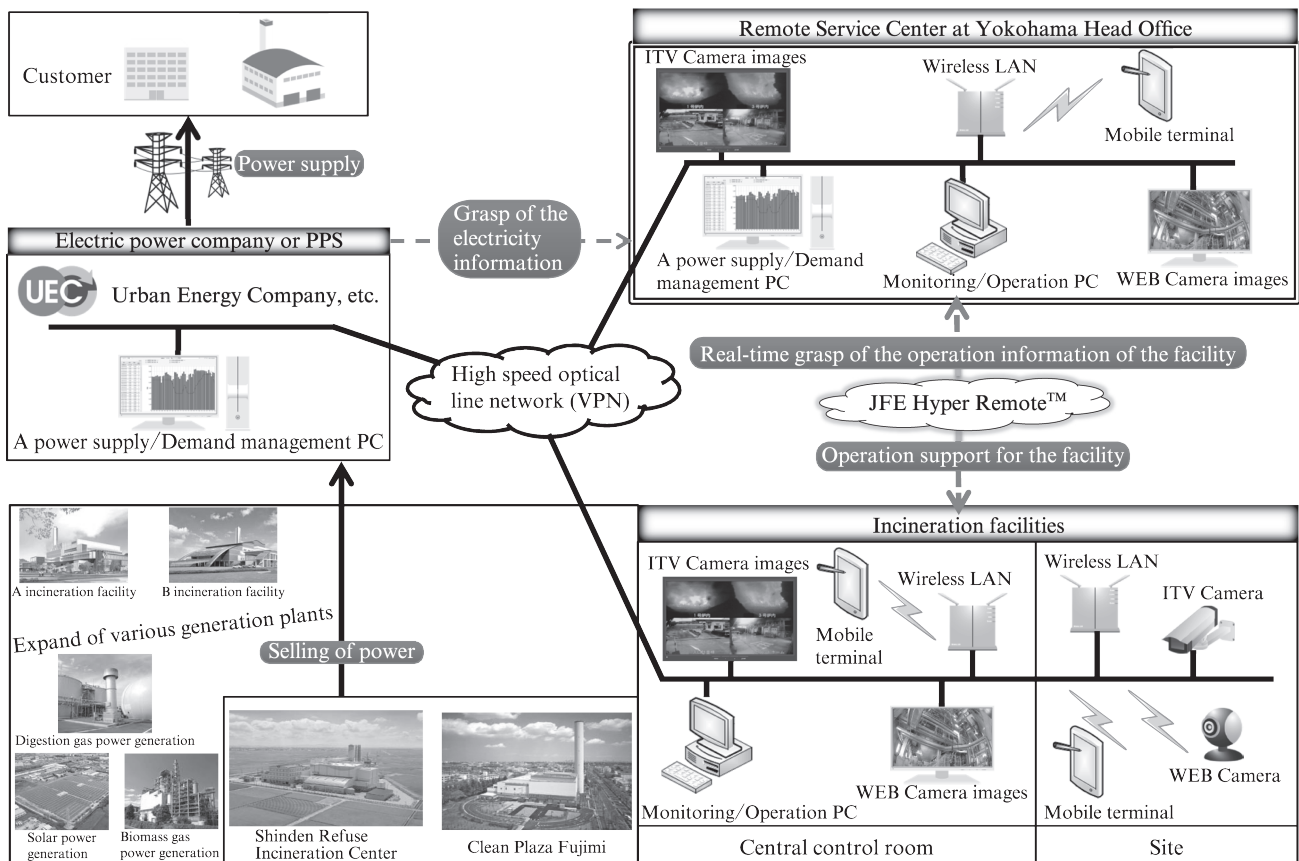


Fig. 1 Schematic diagram of “JFE Hyper Remote™”

environmental plants throughout Japan, at its Yokohama Head Office in Tsurumi-ku (ward), Yokohama-shi (city) and began operation of the Center on September 1, 2014. The new system “JFE Hyper Remote™” was introduced into the Center, making it possible to provide the optimum operation support by continuous, 24-hour-a-day monitoring of waste incineration facilities and other environmental plants. **Photo 1** shows the situation in the Remote Service Center and engineers performing operation support.

2.2 System Configuration and Functions

Figure 1 shows a schematic diagram of the system configuration of “JFE Hyper Remote™.” Waste incineration facilities, electric power companies, and PPS (Power Producer and Supplier) are connected with the Remote Service Center by a high speed virtual private network (VPN) by way of optical lines.

Because the Remote Service Center uses the same type of monitoring and operation terminal (DCS terminal) as the waste incineration facilities at the site, stress-free support while monitoring of various types of data is possible. Center personnel can also always check televised images of the site from fixed industrial television (ITV) cameras on large-scale liquid crystal monitors. Smooth operation support can be realized, as real-time

communication is possible in an environment like being in the same room, while operators who are separated by distance can see each other by mobile terminals. During maintenance of various equipment and when trouble occurs, the Center can confirm the situation (images) in real time via a wireless LAN, and can provide appropriate support by using mobile wireless web cameras to cover areas outside the range of the ITV cameras.

At the Remote Service Center, it is also possible to grasp information on power supply and demand from power companies and PPS at all times. Based on this information, the Center provides the optimum operation support for the plant to each incineration facility, considering the balance with the quantity of power required by customers. This makes it possible for each incineration facility to supply the optimum amount of power sales to the power companies and PPS. Although this system is currently in operation at 2 waste incineration facilities: Shinden Refuse Incineration Center, Niigata City, Niigata Pref. and Clean Plaza Fujimi, Chofu City, Tokyo, application to various other types of power generating plants is also possible.

3. Features of System

The features of “JFE Hyper Remote™” are as fol-

lows.

(1) Stable Operation

Continuous 24-hour-a-day monitoring and grasp of the operational condition of multiple facilities enables early discovery and improvement of problems by engineers at JFE Engineering's Yokohama Head Office, and as a result, stable operation is possible.

(2) Fast Response to Trouble by Engineers

Taking advantage of real-time response by high speed circuits and the regular communication function, it is possible for operators in the Remote Service Center and design engineers in the Yokohama Head Office, JFE Engineering to respond quickly and flexibly in the unlikely event that trouble occurs.

(3) Optimization of Quantity of Power for Sale

Optimization of the quantity of power for sale is possible by management and control of the quantity of power for sale by cooperation with power companies and PPS, beginning with Urban Energy Company, which is a member of the JFE Engineering Group.

4. Results of Introduction

The results of the introduction of “JFE Hyper Remote™” are presented below.

(1) Expansion of Power Sales

Because the quantity of electric power for sale at multiple facilities can be grasped comprehensively and in real time with “JFE Hyper Remote™,” deviations from the power sale plan can be minimized by performing support to approach the planned value as closely as possible. A target 3% increase in power sales is expected.

(2) Minimization of Trouble by Stable, Safe Operation

It is possible to detect the signs of equipment abnormalities in advance and prevent sudden, unexpected trouble that leads to an incinerator shutdown by a response based on 24-hour-a-day monitoring and operation. In the unlikely event that trouble occurs, a quick, flexible response to the trouble by design engineers from the Remote Service Center is possible, and recovery time can also be greatly reduced. As a result, a reduction in trouble that leads to unplanned

shutdown is expected.

(3) Higher Efficiency in Operational Improvement Support

In the past, in order to conduct tests for operational improvements, working time was necessary for email and telephone communications with the site and dispatches of personnel to the site several times a month. If this system can be used, it is possible to obtain site information directly and grasp the situation at the site in real time from the Remote Service Center. This greatly reduces working time for dispatches, and a large reduction in time spent on email and telephone communications can also be expected, realizing higher efficiency in support for operational improvements.

Further improvement of customer satisfaction is expected as a result of these effects.

5. Conclusion

The “JFE Hyper Remote™” system introduced here can contribute to stabilization of operation and reduction of operating costs by enabling optimum support of the operation of environmental plants such as waste incineration facilities, together with optimum control of the quantity of electric power for sale in cooperation with power companies and PPS. In the future, JFE Engineering plans to gradually increase the number of plants where this system is applied, targeting development to approximately 10 plants within several years. Through this system, the company will work to further improve customer satisfaction, and in the future, will also expand its safe, secure operation business for environmental plants, beginning with waste incineration facilities, which are a key part of social infrastructure.

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