Success Story

Optimized Cogeneration System Operation for a Secure and Comfortable Life

- Community Energy Management System for F-Grid Miyagi -

F-Grid Miyagi

Location: **Miyagi Prefecture, Japan**
Completion: **2015**
Industry: **Power (Community Energy Management System)**

Executive Summary

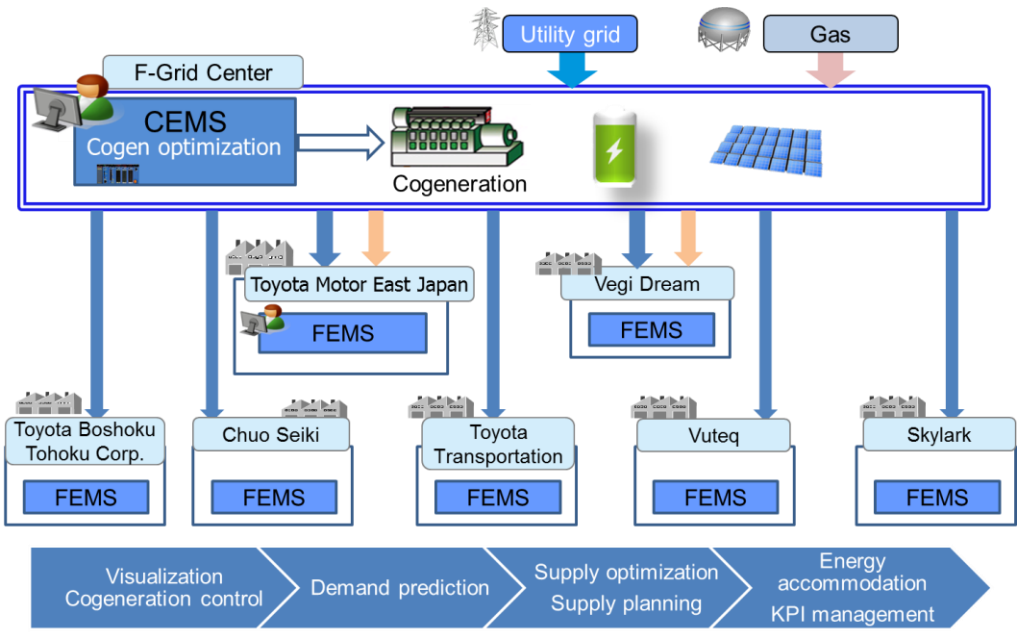
After the experience of the Great East Japan Earthquake, F-Grid Miyagi now uses a gas engine cogeneration system in its automotive factory to protect against the next energy crisis and conducts manufacturing in partnership with the region. The company has also been studying the “F-Grid” (factory-driven power grid) initiative, which is a collaboration among industry, academia and government that aims to build a more secure, comfortable life for the community.

Photo courtesy of Toyota Motor Corporation

The community energy management system (CEMS) at F-Grid Miyagi efficiently supplies electricity and heat to consumers in the industrial park while optimally balancing the power purchased from the electric power supplier and the electricity and heat (steam and hot water) generated by the company’s cogeneration system (CGS) and solar power generation system. This Industrial Park Smart Community program was developed and is now operated by F-Grid Miyagi, supported by subsidies from the national government after a two-year demonstration experiment. Yokogawa took part in this program and configured the CEMS.

Benefits

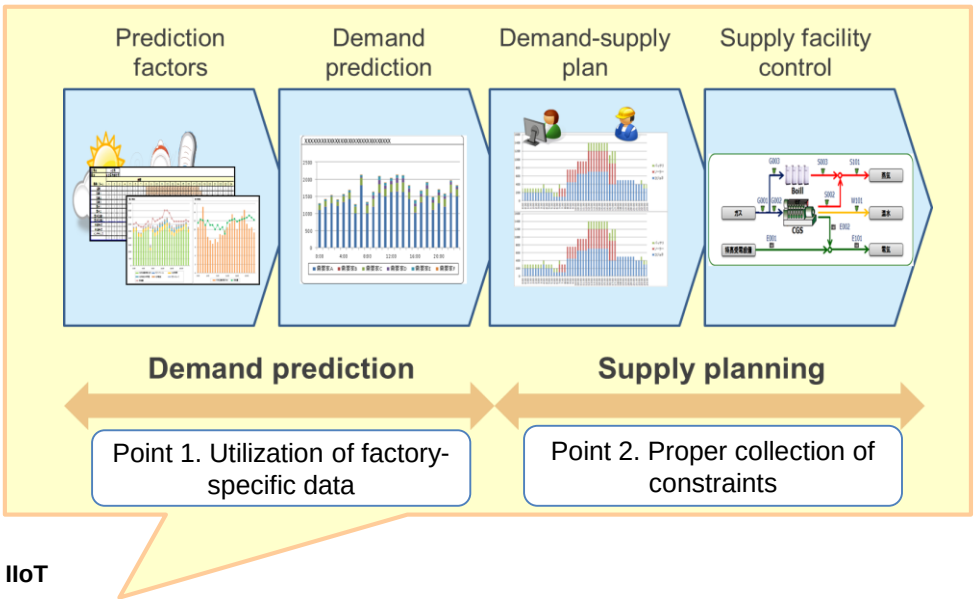
- The CEMS of F-Grid Miyagi optimally balances the electricity and heat generated by its own CGS and solar power generation system with the power purchased from the electric power supplier, and efficiently supplies electricity and heat to consumers in the industrial park.
- The CEMS captures the varying power and steam demand, and unit price data of power and gas rates, and calculates the optimum ratios of the power to be generated by the CGS and the power to be purchased.
- During the two-year demonstration experiment from April 2013 to March 2015, costs were reduced by 20% compared with the past.



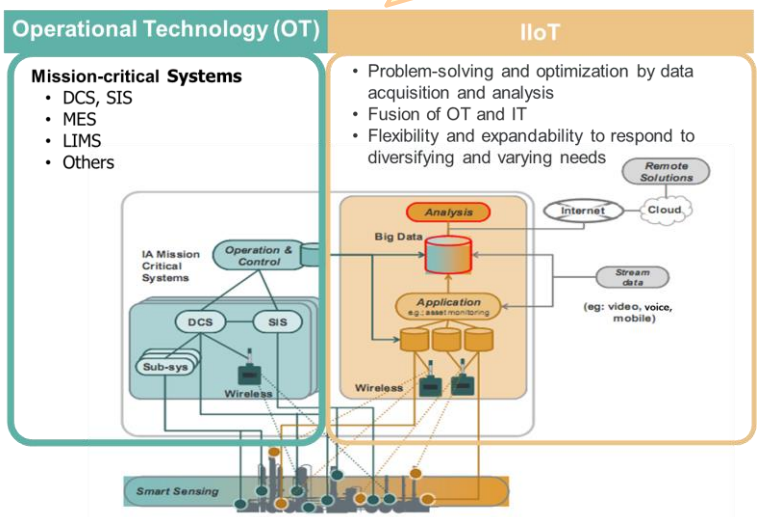
Community Energy Management System and Factory Energy Management Systems (FEMSs)

Features

The CEMS of F-Grid Miyagi features a function to predict the energy demand of each factory based on the captured data that is specific to the individual factories and is closely correlated with energy demand. By calculating the optimum energy supply from the predicted values, the CEMS draws up supply plans including CGS operation plans. In future, each factory will use the predicted values, compare them with the actual results, and analyze the discrepancies for more efficient use of energy.



Yokogawa's vision for IIoT



Future plan

Adjustment of energy supply and demand in individual regions and industrial plants is crucial for the energy policy of Japan. Yokogawa is committed to helping establish distributed energy infrastructure in partnership with local regions by leveraging the experience gained in developing the CEMS for F-Grid Miyagi.

For more Information and Contact

Community Energy Management System

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