Tokyo Electric Power Services Co., Ltd.

Customer Success Story

AutoCAD® Map 3D
Autodesk MapGuide®
AutoCAD® Raster Design

"We chose Autodesk MapGuide because of its compatibility with other Autodesk products, such as AutoCAD® and AutoCAD Map 3D, which have already been widely used in our company. And we had great confidence in MapGuide's mapping capabilities. "

— Nobuyuki Takahara
System Engineer
Tokyo Electric Power Services Co., Ltd.

Integration Powers Tokyo

CAD and GIS integration supports stable electric power supply

Project Summary

As a consulting company specializing in civil engineering, architecture, electricity, and communications, Tokyo Electric Power Services Co. developed a system that supports facility planning operations for the Tokyo Electric Power Company using AutoCAD Map 3D, Autodesk MapGuide and AutoCAD Raster Design. By using the data obtained from this system, the company is providing powerful support for electric power operations, such as creating and providing electric power grid schematics and transmission line route maps.

Creating a Visual Electric Power System

The supply of electric power is a great force that moves our society. Maintaining stable generation, transmission, substation and distribution facilities and preparing them for future needs are the most fundamental infrastructures projects affecting the power industry.

Tokyo Electric Power Services Co. developed the Tokyo Electric Power Company's facility planning operations support system in December of 2005. The system displays the electric power grid's supply and demand trends as well as facility conditions and forecast models on a map. Utility managers expect the system to become a powerful tool to back up the facility planning needed to achieve a stable electric power supply. The utility's project manager Mr. Yoichiro Masuko explains:

"This system enables us to efficiently evaluate facility planning operations by displaying regional electric power systems and facilities, operating conditions and facility conditions as well as past performance on a single map. With this system, staff have access to data necessary for facility planning as well as instructions on how to structure and implement future electric power system configurations. Users see an instant representation of the entire network and know where and how to begin an implementation. Although the evaluation results are no more than rough plans, I believe this system is something that can provide extensive support for the planning operations."

All electric power facilities in the entire Tokyo Electric Power Company supply area are displayed on the map, including the transmission line towers, which can be viewed when users zoom in. Symbols represent stations and substations on the map. Clicking on the symbols displays photographs and detailed data of that facility. And, transmission lines are color-coded to distinguish voltage classes between 20 kV and 500kV.

Autodesk®

Staff report that base system development took only six months.

The system is divided into three functional areas:
(1) support for planning operations

(2) supplementary data for planning operations

(3) a data library

(1) takes numerical data required for facility planning operations and processes it into a visual data on an electric power network map; (2) displays detailed data, such as photographs and facility data, from substations and transmission line towers; and (3) makes it possible to reference archived documents relating to each facility.

Using the system, users can easily view the facilities' conditions and their most recent forecast models. Implementation rates are displayed in a color-coded map with a single click.

Maps are simple and easy to understand and the amount of information can be adjusted to match the map scale. The user-friendly system enables users to select display layers and turn on or off other interfaces. Moreover, it offers innovative data-sharing settings, such as case-by-case access authority setting capabilities, registration of frequently-used maps for each user and more.

Capitalizing on user-friendly ideas

While management considered developing this facility planning operations support system for two to three years, staff report that the base system development took only six months.

Nobuyuki Takahara, System Engineer with Tokyo Electric Power Services Co., explains, "We chose Autodesk MapGuide because of its compatibility with other Autodesk products, such as AutoCAD and AutoCAD Map 3D, which have already been widely used in our company. And, we had great confidence in MapGuide's mapping capabilities. The team accepted the idea to create a facility planning system by using data employed in electric power facility management systems. In cooperation with the Tokyo Electric Power Company, we devoted ourselves to developing it.

"We created this system by exchanging ideas (with Tokyo Electric Power Company) on concepts of making it user friendly. We paid special attention to interface-related innovations to improve operability," says project manager of this project, Mr. Nobuyuki Takahara.

Flexible authoring functions that can quickly implement a variety of ideas are one of the defining features of Autodesk MapGuide. The system covered one-third of the Tokyo Electric Power Company's managed area when it was introduced, and it plans to cover the entire area over the next three years.

Creating Maps For the Field

Tokyo Electric Power Services also started a service that prints a required number of transmission line route maps that are created by processing map data from the facility planning operations system.

Transmission line route maps are maps that show the routes of electrical transmission lines. These maps are created so that Facility Planning Division and Electrical Transmission Division from each of the power company's offices can bring them to their work sites. However, each office simply could not afford to spend a lot of time on creating and revising the drawings. And there were concerns about sharing items that contained client information and related facilities to external printers. Consequently, a division of Tokyo Electric Power Company decided to take charge of the process.

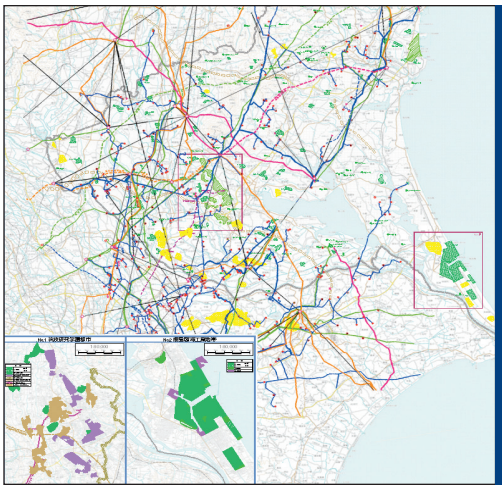
The group manages everything from the creation and printing of drawings to responding to on-demand small lot orders that external printers were not able to handle.

The process involves importing the necessary map images into AutoCAD Raster Design and performing position alignments. Once that is done, electric power facility information is compiled using AutoCAD Map 3D and is laid out on the user's desired sheet size. GIS editing is flexible with AutoCAD Map 3D, which combines CAD and GIS. The last phase is outputting the results on paper and delivering this along with DWF data. Project leader, Mr. Akihiro Yada explains further:

"We offer a service to create electrical power system information using AutoCAD Map 3D and compile these layers according to the requests of the offices we serve. We confirm the actual state of the facility, when tracing from the original for the purpose of quality improvement, and that is where we experience the most difficulty."

Orders for this service have been received from more than half of the electric company's facilities (as of December 2005). Both companies expect to continue building on Autodesk's product lineup in the future.

To learn more about how AutoCAD Map 3D is helping organizations around the world complete projects faster and more efficiently, visit www.autodesk.com/map3d.



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