



## FACTS AT A GLANCE

**Company:** ECEPDI

**Website:** [www.ecepd.com](http://www.ecepd.com)

**Description:** The China Power Engineering Consulting Group Corp. (CPECC) East China Electric Power Design Institute (ECEPDI) is ranked as one of the 100 most powerful engineering companies in China.

**Employees:** More than 1,000

**Industry:** Electric Power

**Country:** China

## PRODUCTS USED

- SmartPlant 3D
- SmartPlant P&ID
- SmartPlant Instrumentation
- SmartPlant Electrical
- SmartPlant Foundation
- SmartPlant Reference Data

## KEY BENEFITS

With SmartPlant 3D, ECEPDI has gained:

- A substantial increase in design quality and efficiency.
- Approximately 20 percent reduction in construction and installation engineering costs.
- Total project investment savings of 3 percent to 5 percent.

# THE POWER OF COLLABORATION FOR MODERN POWER PLANT PROJECTS

## IDENTIFYING GOALS

ECEPDI recently designed the Cadillac Green Energy Development Co., Ltd. biomass power plant engineering 30MW unit in Jinzhai county in the Anhui province and the Cadillac 30MW unit in Songtao county in the Guizhou province. ECEPDI chose SmartPlant® Foundation and SmartPlant 3D for the design and implementation process of the digital power plants.

## OVERCOMING CHALLENGES

Before the projects began, the design team had its doubts about using the new design software. The team worried that the SmartPlant Enterprise software architecture and development direction would not be able to support the digital plant design goals for the future. But those fears soon proved to be entirely unfounded. Intergraph design software helped ECEPDI do more and meet stricter requirements.

## REALIZING RESULTS

With unified integration and a powerful design environment, ECEPDI achieves automatic 2D and 3D calibration of its engineering data. Data inconsistencies are highlighted, greatly enhancing fully digital plant design.

The team can work in real-time, taking advantage of quality control for design work. All disciplines can focus on design and content, improving the quality of design to deliver optimized design.

With collaborative design, professionals across many workflows can benefit from the modeling process to design and achieve a single representation of reality. As design collaboration is repeated, it improves design efficiency and quality, and lays the foundation for the transfer of digital data back to the owner for operations and maintenance.

In power plant design, there are upstream and downstream processes. SmartPlant Foundation receives design data released by the upstream design software. After system checking and confirmation, data is exported from SmartPlant Foundation to the downstream design software. This effectively avoids data entry errors, reducing labor hours and improving design efficiency.

Part of the value of SmartPlant Foundation is found during plant operations. The original data is stored as model attributes or in the form of data tables in SmartPlant Foundation to support operations and maintenance activities.

ECEPDI has customized the SmartPlant Foundation document management process to store not only various types of finished design drawings and unified management reports, but also to document the extended scope for early raw data and intermediate files in the design process.

SmartPlant Foundation acts as a unified management platform. Plant design content and progress can be monitored with real-time response through the software's rights management for the open query functionality. Customers can always visit the SmartPlant Foundation master design schedule and browse the 3D model without having to wait until the finished product delivery.

This gives users an intuitive engineering and construction process to analyze any differences between the design and as-built. At the same time, through the 3D model, owners can carry out related functions of the building and construction process to further assess any issues that may arise and resolve them quickly.

The new 3D digital layout design is no longer confined to the main plant role, but has expanded its scope for comprehensive coverage to include turbine, boiler, coal, ash, chemical, hydraulic, civil, electrical, and instrumentation workflows. The 3D arrangement covers the entire plant, including built structures and other areas. In this way, layout design considerations will be more comprehensive, systematic, and global. Designers can maximize the use of space, optimizing clearance and enhancing layout design.

SmartPlant 3D helped ECEPDI to expand the scope of 3D layout design to improve design accuracy. The installation unit can arrange for small pipe installation based on the latest design.

The team can now advance more quickly to the design phase. SmartPlant 3D helps ECEPDI to improve the effectiveness of its planning so small piping can be placed more efficiently.

Not only does it enhance 3D layout design, but it also helps the team more accurately complete cable laying. The cable tray can be filled more adequately to reduce the amount of bridge material and wasted space.

With the expansion of the 3D layout design scope, the 3D model can truly reflect the power plant. In the past, collisions could only be detected during the construction phase, but now they can be located and resolved earlier, during the design stage. SmartPlant 3D offers superior collision detection, combined with automatically generated collision reports and collision control in the design phase. This reduces the amount of rework during the construction phase, speeding up the construction schedule and reducing material waste.

With the data management platform, process system design results are passed to the process piping layout design. SmartPlant 3D offers layout design without the need for manual entry. Users can avoid data inconsistencies arising from the design of intermediate links. This improves the accuracy of input data to effectively guarantee design quality.

After long-term use of Intergraph technology, ECEPDI enjoys 3D coordination of the engineering workflow. With layout design in a 3D environment, users can take advantage of the fully intuitive software to visualize the surrounding layout and improve the accuracy of the model. This includes the object's spatial location and size. The civil engineering group can base its work on this data and direct the subsequent selection of design. Data transfer without manual intervention ensures data accuracy and reduces the possibility of design errors.

## ABOUT INTERGRAPH

Intergraph is the leading global provider of engineering and geospatial software that enables customers to visualize complex data. Businesses and governments in more than 60 countries rely on Intergraph's industry-specific software to organize vast amounts of data to make processes and infrastructure better, safer and smarter. The company's software and services empower customers to build and operate more efficient plants and ships, create intelligent maps, and protect critical infrastructure and millions of people around the world.

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Intergraph SG&I provides geospatially powered solutions, including ERDAS technologies, to the public safety and security, defense and intelligence, government, transportation, photogrammetry, and utilities and communications industries. Intergraph Government Solutions (IGS) is a wholly owned subsidiary of Intergraph Corporation responsible for the SG&I U.S. federal business.

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