

## PROJECT SUMMARY

### Organization:

Iberdrola Ingeniería y Construcción

### Solution:

Utilities / Substation Design

### Location:

Spain

### Project Objectives:

- To redefine the management system and collaboration processes for the design and construction of electric substations such that design can be produced faster and more accurately
- To improve the management of information within and between the various engineering groups which Iberdrola S.A. has throughout the world
- To create a "de facto standard" for automating the design of the various systems that make up substations
- To use a single system and a single database to support the various workgroups (designers, engineers and construction crews) throughout the entire design and construction process

### Products Used:

Bentley® Substation, InRoads® Site, MicroStation®, ProjectWise®

## FAST FACTS

- Iberdrola Ingeniería y Construcción is one of the world's leading energy engineering companies, with projects in more than 25 countries, subsidiaries and local offices in 22 countries and a project portfolio valued at over €2.5 billion at the end of 2008
- Iberdrola Ingeniería y Construcción has used Bentley Systems products since 1995
- The project will improve the synergy between the various engineering groups
- Iberdrola Ingeniería y Construcción can now design substations 30% faster than before

# Bentley Systems Helps Iberdrola Ingeniería Y Construcción Design Substations Faster With New Intelligent Substation Design Software

Iberdrola Ingeniería y Construcción a subsidiary of the Iberdrola Group, is one of the world's leading energy engineering companies, with projects in over 25 countries, subsidiaries in 15 countries and a project portfolio valued at over €2.5 billion at the end of 2008. One of its key features is its ability to undertake work for all the network utility service industries (electricity and gas), with special emphasis on the electricity industry.

Designs for substations were being produced as 2D plans without being automated, without any "built-in intelligence" or any form of database to support them. As Juan Torres (Iberdrola Ingeniería y Construcción's Networks and Renewables Product Manager) explains, "Every substation involves a substantial amount of electrical, physical, and civil engineering work. There are tools for automating electrical systems design and helping with the design of cabling, wiring and cable routing policies. But physical infrastructure design and civil engineering work were still being done manually, using two-dimensional drawings. Every design used its basic elements or individual cells, without having a database available for automatically calculating the quantity of materials required to execute a particular design. There was no comprehensive software solution available, or anything that had been customized sufficiently, that was suitable for what we really needed for the multi-disciplinary design of an electric substation. It is clear that this sector had not seen the software innovation necessary to meet the needs of an organization like Iberdrola Ingeniería y Construcción."

Torres added, "We were working manually and in isolation. Integration between site civil and substation physical design was not achieved by using an information model but rather through talking to one another, with coordination relying on paper-based procedures."

At the beginning of the project whose aim was to produce an answer to these challenges,

Iberdrola Ingeniería y Construcción looked into the solutions available from the various companies on the market. The decision to work with Bentley Systems was, as Juan Torres explains, because, "The major difference is that Bentley listened to our ideas and in this case decided to regard the user as being a key influencer of the product's capabilities."

The outcome was a three-phased project:

1. To generate a complete requirements and specifications package for the integrated electrical systems and 3D physical design of electricity substations
2. The implementation of Bentley® Substation V8i
3. The deployment of Bentley ProjectWise collaboration software integrated with Bentley Substation V8i

The solution to the problem was the creation of Bentley Substation V8i, the first product on the market to combine electrical systems design with 3D physical design in a single product. Bentley Substation V8i supports 3D physical design, protection and control schematics, panel layouts, lightning protection, and grounding grid design – all based on an intelligent information model. Because Bentley Substation V8i is based on an intelligent model of the infrastructure, it takes just seconds to produce highly accurate bills of material and other reports. Previously this took hours or days as manual material off-takes were calculated from standalone products. The manual processes led to frequent errors and the need for re-work. All in all, the design of a substation can now be completed 30% more quickly than before. As well as using Bentley Substation V8i, Iberdrola Ingeniería y Construcción uses Bentley InRoads to design the substation site using a digital terrain model. The site design process includes drainage, access roads and underground infrastructure as well as providing the correct information for the design of the foundations.

*"We are extremely pleased to be able to use such innovative and productivity-transforming products as Bentley Substation V8i and ProjectWise. In a competitive worldwide market for engineering consultancy products like this give Iberdrola Ingeniería y Construcción the edge to succeed."*

#### ABOUT BENTLEY

Bentley Systems, Incorporated is the global leader dedicated to providing comprehensive software solutions for sustaining infrastructure. Architects, engineers, constructors, and owner-operators are indispensable in improving our world and our quality of life; the company's mission is to improve the performance of their projects and of the assets they design, build, and operate. Bentley sustains the infrastructure professions by helping to leverage information technology, learning, best practices, and global collaboration – and by promoting careers devoted to this crucial work.

For more information, visit [www.bentley.com](http://www.bentley.com)

#### BENTLEY OFFICES

##### Corporate Headquarters

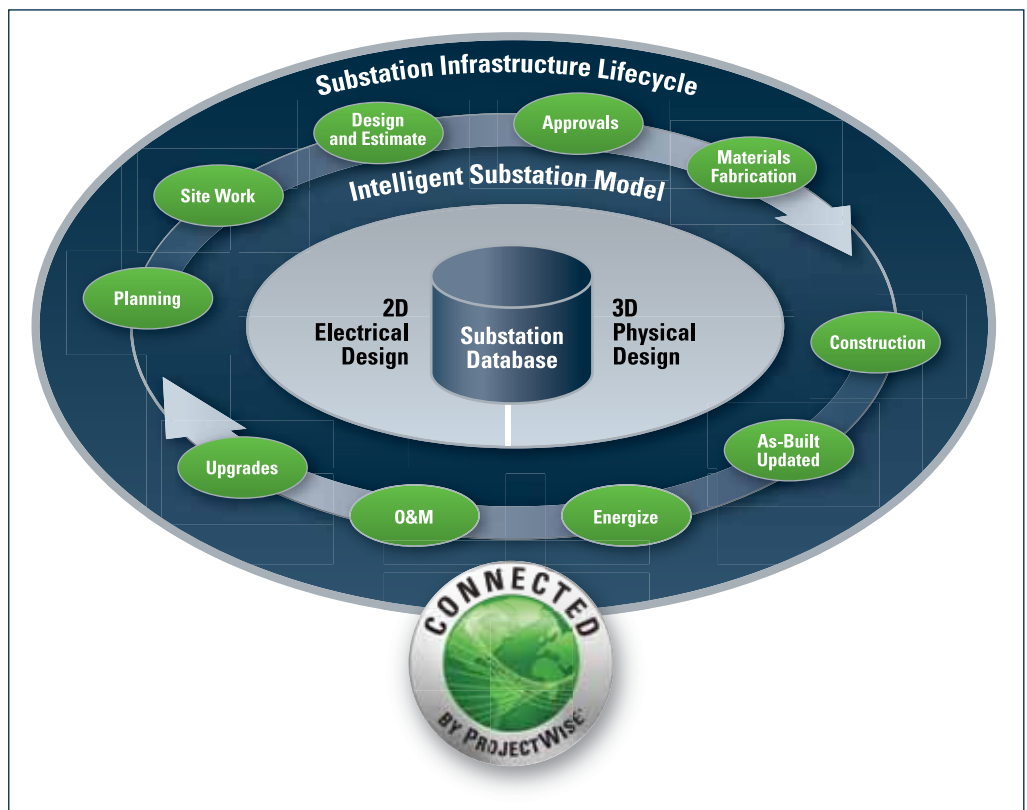
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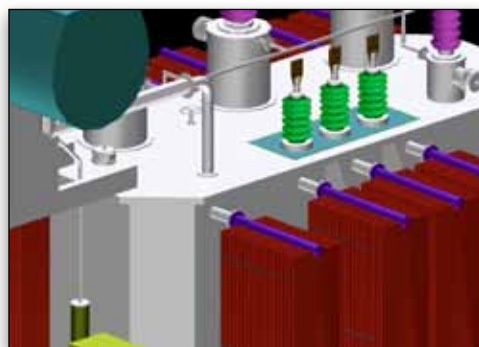
*A new integrated, database-driven approach to substation design will reduce design time by 30% and reduce the time it takes to create bills of materials by 60%.*

Although the new combination of electrical design and 3D physical design in Bentley Substation V8i is a dramatic improvement in what can be done at the desktop level, it is with ProjectWise that the biggest gains in productivity are to be found because it supports enterprise workflows. ProjectWise supports substation engineering content management across the distributed enterprise, with access to all forms of engineering documentation through a single interface. ProjectWise also brings structured workflows, audit trails and better project management to substation design teams.

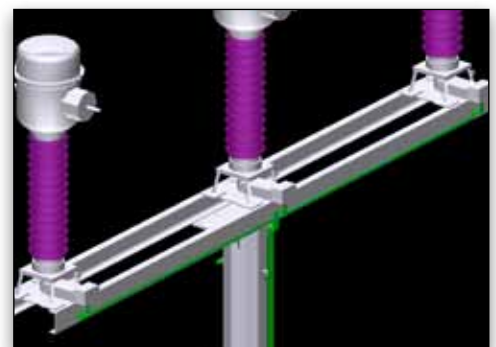
And finally, ProjectWise enables the secure exchange of documentation between a company like Iberdrola Ingeniería y Construcción and its clients and subcontractors.

The substation solution is now in the early stage of production at the company's headquarters in Madrid, from where the worldwide project is being managed. The solution will be applicable at an international level for organisations responsible for power services networks (state or privatised organisations involved in various forms of production and transportation of electrical energy), and all companies involved in power generation that have associated facilities for the distribution of energy.

Juan Torres concluded, "We are extremely pleased to be able to use such innovative and productivity-transforming products as Bentley Substation V8i and ProjectWise. In a competitive worldwide market for engineering consultancy, products like this give Iberdrola Ingeniería y Construcción the edge to succeed."



*Bentley Substation V8i allows you to design intuitively in 3D.*



*3D objects are selected from a database.*