



FACTS AT A GLANCE

Company: EnBW Energie Baden-Württemberg AG

Website: www.enbw.com

Description: EnBW Energie Baden-Württemberg AG, with headquarters in Karlsruhe, is the third largest utility company in Germany with approximately six million customers and about 20,000 employees. Over the next few years, EnBW aims to increase the implementation of renewable energies (in particular, wind energy and hydroelectric power) and safeguard energy supply at the same time with state-of-the-art conventional plants.

Employees: More than 20.000

Industry: Energy supply

Country: Germany

PRODUCTS USED:

- CADWorx® E&I with process data model
- CADWorx E&I archive management

KEY BENEFITS:

- Standardization of documentation of a waste incineration plant
- Complete documentation in a single database
- Documents for repairs, retrofit projects, or modifications assembled at the click of a mouse via web or PDF

EnBW TAKES CONTROL OF PLANT DOCUMENTATION WITH CADWORX® E&I POWERED BY SIGGRAPH.CAE

EnBW consolidates the electrical engineering documentation of two power plants in one database system

IDENTIFYING GOALS



EnBW operates two combined cycle heat and power plants in Stuttgart, which are used by the Stuttgart-Münster operating control center to process both hard coal and waste. In all, the Stuttgart-Münster facility offers an electrical output of 164 MW and a thermal output of 450 MW. The Stuttgart-Gaisburg facility is purely a district heating and power plant. Stuttgart-Münster is a tradition-rich location. The power plant was originally built in 1908 as a steam power plant of the municipal utility company. Since 1935, it has generated district heat in addition to electricity, and in 1965, the plant started to use waste in addition to coal to produce energy.

The power plant has been regularly adapted to meet increasing environmental protection requirements, beginning in 1986; when catalytic denitrification units were put into operation. Two years later, a flue gas desulphurization unit was put into service for the coal-fired boilers. A flue gas scrubber was installed in 1993 to clean exhaust emissions from the waste incineration plant. In 2007, two new waste-fired boilers were put into operation. EnBW's rich history is a wonderful asset, but it also presents the company's main challenge when it comes to documentation. An industrial plant that started operation more than 100 years ago has continued to grow over the years. The facility has been modified, retrofitted, and modernized so much that documentation without any burden from the past is practically unimaginable.

Documentation is or was available in part on paper and in a wide variety of CAD formats. This encompassed the entire power plant – from the gatehouse to the last coal conveyor line. Up until the 21st century, this system worked well, because EnBW had many knowledgeable employees who were responsible for one area of the entire plant and thus were familiar with the characteristics of that plant section. But today, one person is sometimes responsible for a complete station. This can only be made possible with the aid of a compelling and intuitively structured documentation software.

EnBW needed to develop a comprehensive solution that focuses on the entire suite of documentation. Documents are provided by plant constructors in a wide variety of formats. This means that many different CAD and documentation tools must be used. In 1995, EnBW implemented its own CAD system, deciding in favor of CADWorx® E&I from Intergraph®. The goal was to homogenize processes and, by having a uniform documentation management system in place, to gain the ability to provide staff with up-to-date documents at all times.

OVERCOMING CHALLENGES

Uwe Worms, certified electrician in charge at Stuttgarter Heizkraftwerke, recalls, "CADWorx E&I was the only system that was able to link together schematic diagrams distributed over several project levels and files, and completely describe individual structural elements in the form of objects. A fuse in CADWorx E&I is not just a symbol, but also includes features such as size or breaking capacity."

In 2008, an introductory project was launched to transfer all of the documentation for an existing waste-fired boiler to CADWorx E&I. This project was specifically chosen because it posed the most obstacles for a successful implementation.

Kerstin Müller from Technical Documentation compiled the metadata and documents and then transferred them to CADWorx E&I. Müller had to also simultaneously draw up the necessary guidelines, symbols, and all other objects required as a basis. The first boiler represented a major task, which in turn benefited the operators when it came to documenting the next systems, since the preparatory work had already been completed.

The objective was to prepare consistent and coherent documentation, and then make the resulting documents available to colleagues, such as electricians or system engineers. Although these employees do not have CADWorx E&I, the system does include a web-based interface that can be used to find individual components and subassemblies, by entering an inventory number for example. CADWorx E&I stores the data in a powerful central database, which makes it possible to manage and use even the largest documents.

REALIZING RESULTS

While talking about his experiences, Worms said, "With CADWorx E&I, we were able to eliminate any inconsistencies that previously existed in our documentation. There were no longer any entries such as "See Plan X..." that led nowhere or pointed to different documentation that possibly had a different structure."

Now all information is available in a central database, all plans are interconnected, and the system constantly monitors all

entries to point out any inconsistencies. For instance, it is no longer possible to assign a terminal twice, since the system recognizes such errors. While importing existing documentation, Müller and her colleagues found many errors thanks to CADWorx E&I and were able to correct them. CADWorx E&I pointed out wherever it noted any loophole or inaccuracies in the documentation. "In the past, with manually prepared documentation, a cable could easily be routed to the wrong terminal, for example," said Müller. "That just does not happen with CADWorx E&I."

Documentation is now more important than ever before, in part due to increased regulatory and safety requirements. In addition, staffing levels are very low. In the past, five people were responsible for a system. Today, one person supports three systems. This is why EnBW must glean the knowledge of its employees, incorporate that knowledge into the documentation database, and gain the advantages of data accuracy and data quality.

"Quality must be much better and the data must be accessible, even for non-CADWorx users. And we have managed to do this with CADWorx E&I," said Worms. "We worked closely together with Intergraph while we were documenting the waste-fired boiler and while we were programming the SAP® interface. That worked out very well," said Müller. "Today we have a very good solution that is closely linked with our SAP system, which optimally supports us with our complex tasks."

MOVING FORWARD

Currently EnBW is introducing the interface that was jointly developed with Intergraph and which exists between CADWorx E&I and SAP's ERP-System. SAP is used at EnBW as an operations management system, in which all internal processes and orders are handled, from repairs and maintenance through to retrofit projects. SAP is also used as a document management system. As long as there is a connection to CADWorx E&I, it is possible to use SAP to access documentation, which can then be directly included, for instance, to a repair order relating to the respective subassembly.

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