



## FACTS AT A GLANCE

**Company:** EnBW, Energie Baden-Württemberg AG

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

**Description:** EnBW Energie Baden-Württemberg AG with headquarters in Karlsruhe is the third largest utility company in Germany with about 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:** Over 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 one 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 sigraph.CAE)

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



### IDENTIFYING GOALS

In Stuttgart, EnBW operates two combined cycle heat and power plants, which are used by the Stuttgart-Münster operating control center to process both hard coal and waste. All 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 also generated district heat in addition to electricity, and in 1965 the plant started to use waste in addition to coal to produce energy. As of 1986 the power plant has been regularly adapted to suit the increasing environmental protection requirements; at that time catalytic denitrification units were put into operation. In 1988 a flue gas desulphurization unit was put into service for the coal-fired boilers. In 1993 a flue gas scrubber was finally installed to clean exhaust emissions from the waste incineration plant. In 2007, two new waste-fired boilers were put into operation.

The above list shows the main challenge when it comes to documentation: an industrial plant that started operation more than 100 years ago and has continued to grow over the years has been modified, retrofitted and modernized such that documentation without any burden from the past is practically unimaginable.

The documentation is or was available in part on paper and in a wide variety of CAD formats and encompassed the entire power plant; that is to say from the gatehouse to the last coal conveyor line. Up until the turn of the century, that worked well, as 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. Today, one person is sometimes responsible for a complete station, only possible with the aid of a compelling and intuitively structured documentation software.

That resulted in the need to develop a comprehensive solution that focuses on the entire suite of documentation. The documents are provided by plant constructors in a wide variety of formats with the result being that many different CAD and documentation tools have to 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 be capable of providing 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 the project was launched to transfer all of the documentation for an existing waste-fired boiler to CADWorx E&I. This system was selected deliberately since it posed the most obstacles.

Kerstin Müller from Technical Documentation did not only have to compile the metadata and documents and transfer them to CADWorx E&I but 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 has already been completed.

The objective was to prepare consistent and coherent documentation and then make the resulting documents available to colleagues, e.g. 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, e.g., by entering an inventory number. CADWorx E&I stores the data in database such that it is even possible to manage and use very large documents.

## REALIZING RESULTS

Worms says while talking about his experiences: “With CADWorx E&I we were able to eliminate any inconsistencies that existed before in the documentation. There were no longer any entries such as ‘See Plan X...’ that lead nowhere or pointed to a different documentation that possibly had a different structure.” Now the data are all available in a database, all plans are interconnected, and the system constantly monitors all entries and points 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 – just because the system pointed out wherever it noted any loophole or inaccuracies in the documentation. Müller adds: “Before a cable could easily be routed, for instance, to the wrong terminal with manually prepared documentation. That just does not happen with CADWorx E&I.”

Documentation is nowadays more important than ever before, in part due to increased statutory and safety requirements. Moreover staffing levels are currently very low. In the past, five people were responsible for a system, today there is one person for three systems. That is why EnBW must glean the knowledge of its employees and incorporate it in the documentation database and be able to rely on the accuracy of the data. Worms says: “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.”

Müller concludes: “We worked closely together with Intergraph both during the phase , in which we were documenting the waste-fired boiler, and while programming the SAP interface. That worked out very well. 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.

## ABOUT INTERGRAPH

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