

EVI Waste Treatment Plant, German-Dutch Border

STB Beratende Ingenieure VBI, Bremen-Potsdam

Efficient Energy Production

Climate protection, energy scarcity and waste management are keywords that have become an indispensable part of daily life. Modern, state-of-the-art waste treatment plants are much in demand when it comes to creating alternative energies. Because not only do these plants help to remove residual waste, they also provide valuable energy by means of new processes that keep environmental pollution to a minimum. Exactly this kind of waste treatment plant was built on the Dutch-German border, with the help of Allplan.

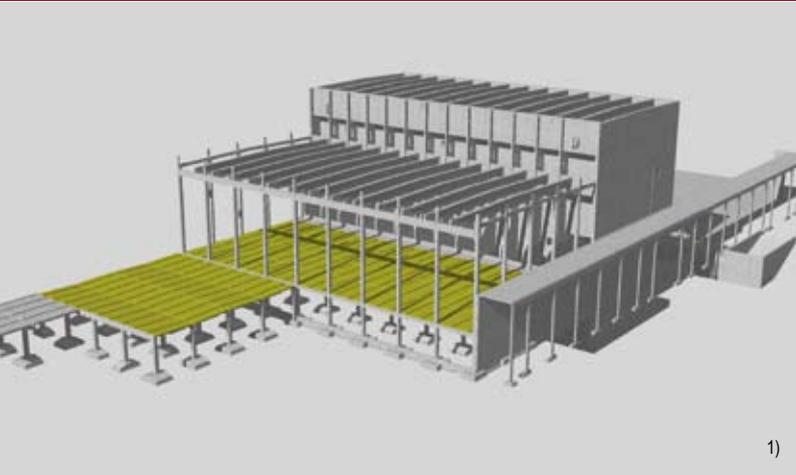
After a construction time of two years, the EVI waste treatment plant at the German-Dutch border is now in operation. The plant uses waste materials to produce electricity and heat. State-of-the-art waste treatment plants are much in demand when it comes to creating alternative energies. Not only do these plants contribute to the removal of residual waste, they also make it possible to create valuable energy through the use of new processes that keep environmental pollution to a minimum. With an investment volume of 180 million euros, the two operating companies, EVI Abfallverwertung B.V. & Co. KG and EVI Nederland VOF, worked together to build the plant consisting of two waste incinerators on the premises of the industrial park "Europark Coevorden-Emlichheim" that straddles the border between Germany and The Netherlands. This location was selected primarily because the premises are very well accessible by road, rail and waterways in Germany, as well as in the Netherlands. The EVI waste treatment plant became operational in late April 2008. The plant has the capacity to process 365,000 tons of waste annually. The plant's turbines became operational in July 2008. The steam created during the combustion process at 850 degrees, is fed into the plant turbines, which in turn convert it into electrical energy, which is then fed back into the Dutch electrical grid.

For the planning process of this large German-Dutch project, the operating companies hired consulting engineers STB Döhren Sabotke Triebold & Partner Beratende Ingenieure VBI. STP was a competent partner with comprehensive know-how in the implementation of demanding concepts in structural engineering, civil engineering and industrial construction. Founded in 1948 in Bremen, the engineering firm has 40 employees and specializes in the planning of innovative structures that are safe and economical. In February 2006, STB began the general arrangement and reinforcement design process for the reinforced concrete building elements of the waste treatment plant. The planning process took place at nearly the same time as construction, which was started just one month later. Explains Dr. Maike

Timm, who holds a doctorate in structural engineering and was project manager for the waste treatment plant project: "Given the high investment and financing costs for the construction of the plant, the project had an ambitious planning and construction time schedule. Since the design was not yet completed at the start of the construction phase, we built the foundation for the EVI project without knowing in detail what the plant would look like during the remaining phases of construction. This meant that we had to build looking forward and be ready to deal with all eventualities." The Bremen-based engineering firm mastered these demanding requirements by optimizing the coordination process among planning partners and the use of high-performance 3D planning software Allplan Engineering.

Visual Checks with an Intelligent 3D Model

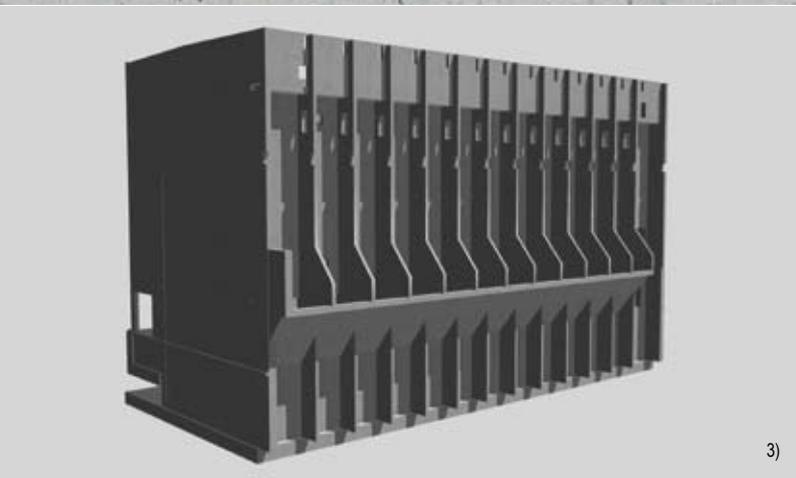
According to Dr. Maike Timm: "Our primary reason for working with Allplan Engineering was the display of building objects and reinforcement in a central model. In addition, planning in 3D was a recipe for success ensuring an error-free structural design during this complex project. During the process, we had to switch back and forth between 2D and 3D displays, so we counted on a program that can optimally master both approaches." When STB received the architect's design plan in 2D, the data could be transferred without problems into Nemetschek's planning software, which became the basis for the development of the 3D model. This made it possible to switch at will between the key plan, general arrangement drawings, reinforcement drawings and other various drawing types at the click of a button. Regardless of whether or not the engineering firm worked with intelligent components or simple lines, the correct design plan display was always ensured. Another advantage for Dr. Maike Timm was the planning security guaranteed by working continuously with an intelligent building model: "Sources of error could be avoided due to the fact that planning data, entered into the program once, was sufficient to derive all relevant sections, views and lists and that all changes were automatically entered in all design plans. In addition, we were able to reduce processing time in comparison to conventional design planning in 2D."



1)



2)



3)

Workgroup Planning enables parallel Project Processing

In addition, one aspect of the planning process that turned out to be particularly demanding was the general arrangement and reinforcement planning. The in-situ concrete components at the location that had to be erected to a height of 45 meters using a sliding assembly method. This design challenge required intensive collaboration and an extensive coordination process amongst the planning partners.

To achieve unified management of the design plans and construction process, STB used the Workgroup Manager that enables quick access to the project from every workstation. This made it possible to edit the data at one workstation and integrate more computers, if needed, for additional designers or drafters. The workgroup principle thus ensured consistent data storage and formed the basis for smooth, concurrent teamwork. Dr. Maik Timm sums up the situation: "The option to take care of several work steps simultaneously and to have a complete overview of all data in a model makes a seamless workflow possible."

"With Allplan Engineering, we had a transparent planning system from the beginning that supported us even during complex reinforcement tasks. The positive experiences with the EVI project have convinced us even more that Nemetschek Allplan is our choice for future construction projects as well."

1) 3D model of the entire complex (factory/plant/facilities)

2) Detail of the garbage chute

3) Waste storage pit



1. How beneficial is it for you to be able to work with a software solution that enables you to derive structural analyses from the CAD system?

Many engineering firms still work with CAD and structural analysis software from different vendors. This means that for structural analysis calculations, planning data must be re-entered in the structural analysis software – a time-consuming process that is prone to error. For steel construction in particular, I think that using an integrated structural analysis / CAD solution like Nemetschek Allplan makes a lot of sense. For demanding construction projects with complex structural analyses in particular, Nemetschek Allplan substantially facilitates the work process when the connections of load-bearing components can be derived automatically from the structural analysis software.

2. What do you think about the user guidance in the software that you are using?

In order to make planning for architects and engineers as efficient as possible, software vendors must continuously improve the user-friendliness of their programs. Over the last ten years, much has happened in this area. For example, planning was made even faster and simpler due to the wizards available in Allplan, which offer numerous components, lines and symbols that are ready for use.

3. How does Allplan support you when you coordinate with your external planning partners?

We use the data exchange option via PDF for inter-office communication with specialist planners and clients. The Allplan model created in 3D can easily be exported in PDF format from the CAD system and sent to all planning partners. Only through intensive collaboration with all the parties involved in the construction process are we able to find an optimal solution that meets our requirements with respect to efficiency and building safety.

4. What are the future trends for technical planning of construction projects?

Since planning and construction times must be kept to a minimum due to increasing cost and shorter deadlines, there is a growing trend towards consulting services during the construction process. Thus, during the construction phase, more changes occur than one sees during fully planned projects. Associative views in the intelligent building model in Allplan Engineering ensure that changes are automatically reflected in all plans and lists. This enables us to react flexibly to all design changes.