

## COMPANY

**ELPO GmbH**

## LOCATION

**Backnang**

## SOFTWARE

Autodesk® CFD  
 Autodesk® Factory Design Suite  
 Autodesk® Product Design Suite  
 Autodesk® Vault

With Autodesk CFD, we can show the customer the functioning of the planned system and do so in such a way that our approach will actually work.

—Uwe Junk  
 Managing director of Elpo GmbH

# More than hot air

## ELPO GmbH uses Autodesk software to develop and manufacture thermoprocessing systems.

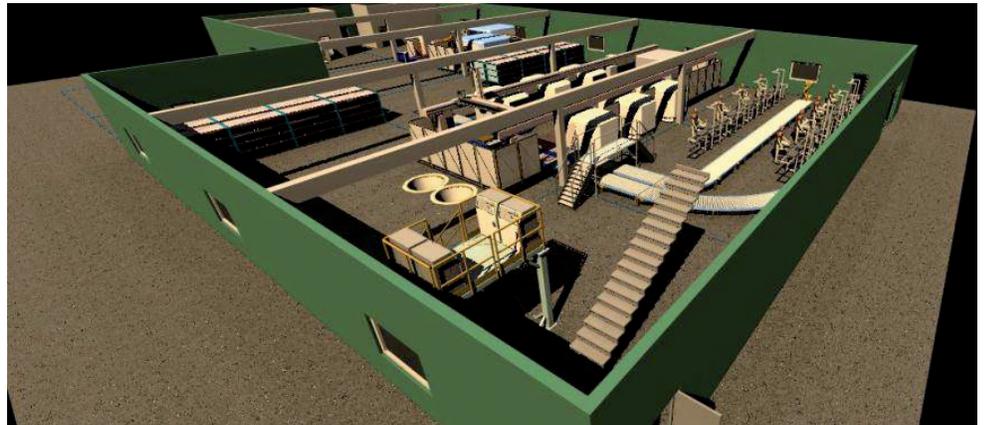


Illustration of a system and its environment with the Autodesk Factory Design Suite (Image: ELPO GmbH).

Whether it is a heat-activated sealant, plasterboards and insulating substances dried in manufacturing, filter materials treated thermally or molds that are dried and cooled, the conceptualization of the corresponding systems requires a great deal of technical knowledge and experience. Because no usage case is ever identical to another, there are always different materials in play. Thus there are different requirements for the temperature and the associated process. ELPO GmbH specializes in manufacturing thermoprocessing plants for heat treatment and drying at up to 750 degrees celsius. The plant manufacturer from Backnang in Baden-Württemberg, in the northeastern city of Stuttgart, conceptualizes and builds individual custom solutions for his customers. Clients include foundries as well as companies from the automotive, sealing, building materials and the filtration industry. The portfolio includes not only dryers, ovens and coolers but also upstream/downstream handling and feeding technology. The company's 36 employees use their know-how across the sector in order to develop purpose-oriented solutions for nearly every type of problem. That means: No plant is identical to another, so each new customer project must be conceptualized and created from scratch. Here the design engineers deal with models that are very complex due to upstream/downstream operation technology. Moreover, they must be fitted into existing structures at the customer's end, such as in existing plants.

### Planned and illustrated entirely in 3-D

To master these challenges, software solutions by Autodesk have been used at ELPO since the founding of the company in 1995. The first product was the 2-D-design program AutoCAD. Ever since then, the company has continued to develop the software used. Hence, plants are being designed since 2009 completely in 3D using Autodesk®Inventor, which is used within the Autodesk®Product Design Suite. This software package includes extensive tools that are made specially for design, simulation and visualization with three-dimensional models. "We have presented each of our systems entirely in 3-D since 2009, right up to the last screw," explains Uwe Junk, the Managing Director of ELPO GmbH. "Often the system will consist of thousands of parts." The model represents a kind of digital prototype. Using that, the design engineers can check and optimize the properties of the system even before the start of production, such as whether the parts or groups match each other or if they could incur any possible collision. Since 2012, Autodesk® Factory Design Suite, a software package with which systems, production halls and even entire plants can be planned, is also used at ELPO. With it, even the environment of a system, such as structural joists and lines for supply and drainage, can be illustrated and documented in a useful manner. Proportions can be realistically represented through this during conceptualization. The design engineers can even give the customer or project managers a better impression of the entire system in their

# With the help of Autodesk solutions, the productivity and design quality at ELPO could be improved

environment using non-technical descriptions. The software helps to prevent errors in planning during design. For example, possible collisions with the plant periphery can be recognized even before construction starts. This is a big advantage for elements that extend vertically.

In order to manage the flood of construction data that is generated during the system-development process, and to structure it more effectively, Autodesk Vault has been used since 2009. The solution for product data management (PDM) also helps in the standardization of parts used. As a result, the models thus created can be saved as templates in Vault, opened when required and then customized according to the requirements. "The introduction of Vault has perhaps worked in the best possible way for our CAD system landscape," explains Uwe Junk. "So, our design engineers save a lot of work and time due to standardization, because they can access existing parts multiple times."

## Using simulation to check and illustrate functionality

Although the visualization tools of the Product Design Suite and Factory Design Suite already contribute a lot in showing customers their plants in an impressive manner, Uwe Junk wants to be able to show the customers the functioning of the designs in an even better way. "It is understandable that customers are initially very skeptical despite all our experience, because they are investing a lot of money in this special production. If it ultimately failed to work as planned, it would be a super-MCA for them. That is why we started to use Autodesk® CFD in September 2013. It helps us to analyze current and heat analyses for a broad spectrum of applicable fields. ELPO simulates heat



Drying system for molds of car engine blocks (Image: ELPO GmbH).

development in thermoprocessing systems using CFD. "As a rule, the customer describes the usage case and we develop a suitable process for it," explains Uwe Junk. "With Autodesk CFD, we can show the customer the functioning of the planned system and do so in such a way that our approach will actually work." The solution also helps the design engineers in conceptualization. So, they can verify and optimize their ideas in advance in order to recognize and avoid functioning errors that would only be detected after construction unless simulation was used. This is because reworking is expensive and time-consuming.

With ELPO, you will start from scratch using Autodesk CFD. It is important to first integrate the solution better into the processes. Uwe Junk asserts that the solution can be used not only during conception and design but also for problem-solving. "If a process does not function, the search for errors often turns out to be difficult. With Autodesk CFD, we want to simulate and illustrate such problems in order to find and rectify the error."

## Improved design quality

The manner in which productivity and design quality could be enhanced at ELPO through the use of Autodesk solutions is shown by a comparison between two projects: In 2008, a customer wanted to get a thermal treatment system for folded filter paper he had designed. In 2013—five years later—he gave an order for a very similar system. Initially, the time required appeared to be very much the same. Approximately 750 hours were required to design the first system, and it took 700 hours to design the second system. However, there were major quality differences in the design of the system, Uwe Junk says. "We achieve much better planning quality in almost the same time. We designed just the system in 2008, and in a short while we added simulations and the entire system environment to the younger system." That has a great effect on customer satisfaction, states the managing director based on her knowledge. "The customers also obviously see the progress and are very satisfied with how our work develops."

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—Uwe Junk  
Managing director of ELPO GmbH



System to chill and dry safety-relevant car body parts (Image: ELPO GmbH).



Heat-treatment system for car engine blocks (Image: ELPO GmbH).