

Liebherr-Werk Ehingen Gets off the Ground with CoCreate's Engineering Solution

"The parametric system we first installed did not help us, but with CoCreate's Engineering Solution we are able to make changes quickly and without great effort. As a result, our design process has been speeded up and made more effective."

**Werner Knehr, Leader CAD Selection Team
Liebherr-Werk Ehingen, Germany**



The Challenge

Liebherr-Werk Ehingen GmbH manufactures and distributes telescopic and lattice cranes with mobile and crawler-track travel gear. These cranes are used for industrial and plant construction, bridge-building, and housing construction. Each year, the company's 120-strong development and design team develops at least two new models of crane, and more than 800 cranes are built in ultra-modern factory facilities on 33-hectare premises. In 1998, Liebherr had 1,720 employees in Europe and overseas and sold 835 new cranes and 560 used cranes, achieving sales of more than \$665 million.

To ensure its continued success in an increasingly competitive international market, Liebherr needed to be able to make design changes quickly and easily.

This was necessary in order to:

- Respond to strong competitive pressures to reduce the weight of its cranes.
- Optimize torsion when designing telescope cranes.
- Respond promptly to market changes, and quickly incorporate new technologies into its products.

The Solutions

- Switch from a largely 2D-based design environment to 3D modeling without disrupting the existing process.
- Abandon initial choice of a parametric design solution because it slowed down the design process.

- Implement 24 seats of CoCreate's Engineering Solution initially, later increasing to 80 seats.
- Use SolidDesigner Annotation to generate drawings which can be used for downstream 2D applications to minimize risk.
- Use WorkManager's engineering data management (EDM) functionality to manage modeling data and associated drawings.
- Import 3D models from the system currently used the STEP standard, and use Dynamic Modeling Open Extensions (DMOX) to modify imported geometry directly.

The Benefits

- Unlike parametric design solutions, CoCreate's SolidDesigner provides Liebherr with the flexibility to carry out unforeseen design changes quickly and easily.
- New members of a project team can work on models developed by their colleagues without having to consider what relationships have already been defined between elements of the geometry.
- Imported models can be worked on without difficulty. This allows Liebherr to re-use all existing 3D data.
- The Dynamic Relations function can provide quasi-parametric relationships for existing models if required.
- Assembly of parts can be simulated in order to identify possible design conflicts prior to manufacturing.

- Designers find SolidDesigner very easy to learn, with minimal training required, thus allowing to specify design intent.
- SolidDesigner Annotation generates 2D drawings which can be used in well-established 2D manufacturing applications, minimizing transition effort and risk: 2D geometries are generated in NC-compliant format, and CNC programs for automatic flame-cutting machines can be derived directly from the drawing module.

The Results

- In a test project, there were immediate time savings of 10 per cent compared to the established 2D process. Once the new environment is fully up-and-running, much larger savings are expected.
- Liebherr designers with experience of ME10 were able to design in 3D after only eight days' training.
- Training expenses were half what they had been with the parametric design system used previously, and there was much less need for consultancy.
- The EDM functionality of CoCreate's Engineering Solution has enabled Liebherr to implement concurrent engineering. Different stages in product development are now executed in parallel rather than sequentially as before.

The Outlook

- Liebherr will implement SolidWeld, a SolidDesigner add-on program designed by CoCreate partner Klietsch. SolidWeld enables welds to be defined as form elements in the 3D system.
- Another Klietsch program, SolidSteel, will be used for the generation of tubular steel designs for lattice jibs and lattice masts.
- 3D models developed using SolidDesigner will be used when bidding for contracts to build cranes to order.

Werner Knehr, CAD Selection Team
Liebherr-Werk Ehingen

Liebherr-Werk Ehingen, CoCreate and Hewlett-Packard

- Liebherr-Werk Ehingen runs their SolidDesigner software on Unix machines (C360) from Hewlett-Packard, with excellent performance. It's planned to order more hardware from HP for additional 3D CAD seats. Of very high importance in the choice of the hardware was the close relationship of CoCreate and Hewlett-Packard and the good experiences Liebherr-Werk Ehingen had with HP hardware in their development and design department.

LIEBHERR



Co|Create

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