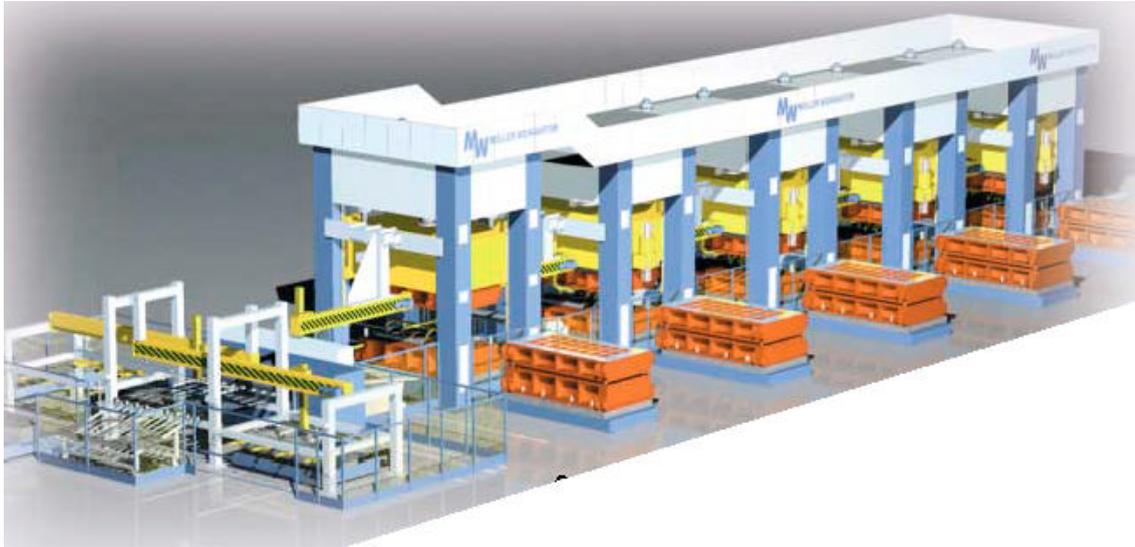


(Translation from AUTOCAD Magazine, 5/2002, Section "CADPraxis", pp. 58ff.)



Hydraulic Power Press  
with Linear Spring

## Large Format Perspectives

**For many years the manual drawing board served as the standard tool to design and construct hydraulic press machines mainly for the automotive and aerospace industry at Mueller Weingarten, Germany. As a global plant system supplier for metalforming, the company has virtually eliminated the use of analog paper throughout their process. Since 1998 all drawings have been electronically scanned and stored as a computer file and thus, become ready to be edited with softelec's VPraster software inside of AutoCAD.**

The Mueller Weingarten history spans back 137 years when Christian Friedrich Mueller opens "Fritz Mueller", a locksmith shop in Esslingen, close to Southern Germany's tooling capital Stuttgart. Mueller specialized in ornate work press design and manufacturing. A few years later Johannes Michael Schatz built a factory for the manufacture of metal forming machinery in nearby Weingarten. In 1982 both companies agreed on a public merger to form Mueller Weingarten AG while keeping their operations at both original sites. Today, with the acquisition of UTE GmbH, a specialist in metalforming services, in Erfurt, Germany, Mueller Weingarten has been able to strengthen its top position in a highly competitive global marketplace.

The Esslingen plant's primary focus is on the hydraulic press production and the Weingarten site mainly produces mechanically driven machinery such as vacuum transfer presses for large metal components. Also the Weingarten plant is capable of manufacturing complete side panels for automobiles and performs automatic sampling and storage. In addition, entire press mills complete the manufacturing portfolio utilizing the most advanced mechanical and digital control devices.

## Modern Times

Until 1993 the press construction design had been carried out manually on paper. Due to the machinery's complexity it often resulted in many heavy and oversized paper drawings. In 1993 this was the primary motivation to employ AutoCAD and Genius CAD software. "Since then, we have observed continuous growth. Since 1998 we have been using CAD for practically every design task. Today, there are close to 220 seats equipped with AutoCAD and Genius (Mechanical Desktop)," reports Kurt Herfurth, Head of Technical Systems at Mueller Weingarten.

In addition to the CAD implementation, a product data management system (PDM) also became an objective. As a result, Mueller Weingarten installed Eigner & Partner's PLM 5 PDM Solution. This implementation set the grounds for widespread digital distribution of all technical documents, including legacy hard copy designs. To serve the new data system, a total of 150,000 paper documents were initially scanned between 1993 and 1999. The result of the scanning operation led to a digital document mix of various files and file types. CAD data was generated for new construction designs and scanned raster data provided the base for revisions of existing design information. The primary and overwhelming benefit of the scanning exercise is the fact that "Old" data, now available in electronic format is massively used for Mueller Weingarten's "derivative construction" approach. This means that new designs can be created from existing, older information electronically. Thus, each "old" drawing which contains precious enterprise know-how and hours of manual work and knowledge is preserved and fully accessible in the new system.

## Digital Recycling

The demand for continued access to the legacy drawings came from both the construction and service departments. Changes to raw materials specifications, measurements or norming regulations were some of many aspects that required precise revision tools.



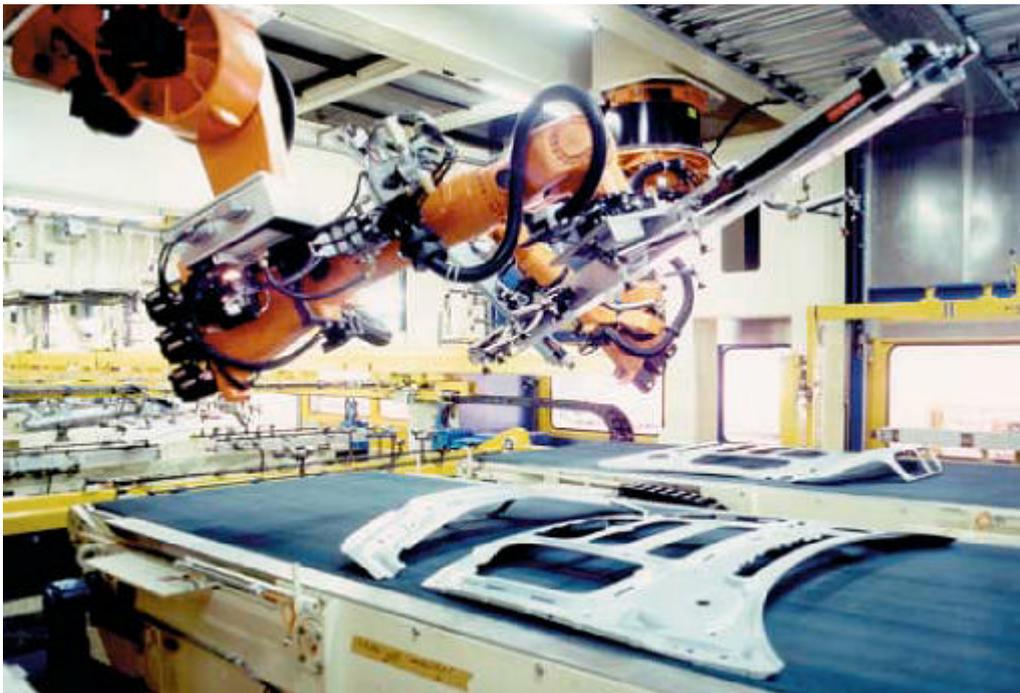
Vacuum Transfer Press for Large-Surface Automobile Body Parts

The service departments at Mueller Weingarten played a central role in demanding a software solution to digitally edit legacy drawings quickly within the existing CAD system for their after-sales activities. To repair machines that date back as far as the 1950s, new requirements for technical details and accident prevention have to be considered for today's service staff. The necessary document revisions, redrawing or manually pasting a huge amount of details would have been a quite inefficient and costly task.

The processing of scanned raster drawings has evolved into a critical step to save costs in the process chain and as a part of the PDM system. The crucial objective has been to edit technical documents electronically and for the service departments to take advantage of reduced time spent and greater accuracy over traditional revision methods.

Kurt Herfurth came across softelec in 1998 while exploring suitable software at the SYSTEMS trade show in Munich, Germany. Excited to see a working "hybrid" integration and editing of raster drawings inside AutoCAD his instant decision for implementation of softelec's VPraster after a short test period at Mueller Weingarten. Today, there are 45 licenses in use throughout the company.

When the main building went under restoration, the hosted construction, service and archive departments were operating independently. During this period, roll and rolls of drawings would have been hand carried in and out the archives and across the company grounds as in the old days. Today, with 185,000 digital documents stored electronically in the system, there is instant access to the drawings and thus a dramatic drop in expense associated with accessing and delivering the engineering documents.



Robot Removes Part from a Large-Format Transfer Press

## Independent from Paper

As part of their daily routine, a service department will receive a repair order for a machine and will need the respective documents to determine necessary hands-on action. With the data instantly available in the PDM system, a designer may start immediately to edit the existing drawing(s) with VPraster and AutoCAD. This can be accomplished either in raster or in vector mode. If a specific document has not yet become available in digital format, the archivist will respond to his request by scanning the paper drawing and entering it into the system. Now the drawing can be loaded into the PDM system, edited and printed locally from any workstation in the network. Multiple drawings, e.g. those belonging to an entire assembly group may be printed on a central large-format plotter. Visits to the archive and to the internal blueprint-shop, where drawings had been duplicated until a year ago have now a thing of the past. As a result of the new system, the blueprint-shop has been closed to further eliminate costs. Even the 1,000 oversized drawings were scanned and merged into one document with VPraster.

A 36" scanner can process any media up to a width of about 900 millimeters. The oversized drawings were cut into parts which were then scanned separately. Then, these parts were re-assembled and saved accurately with VPraster. The software is capable of detecting irregularities in the scanned raster image resulting from folding or cutting and deletes them automatically.

With the AutoCAD/VPraster hybrid processing system in use, the entire document archive can now be accessed from each workstation without any information loss. There is immediate access to all drawing libraries, norm parts, technical documentation and legacy drawings. Thus, any details can be isolated for integration into a scan resulting in the creation of a complete new document with all AutoCAD functions available.



Virtual Reality: Vacuum Transfer Press at 95,000 kN for Automobile Body Parts

Timo Seifert, a veteran CAD service specialist attests that the VPraster program is as simple to use as the main program, AutoCAD. All of the VPraster functions are applied in full compatibility: "If a person is familiar with AutoCAD he or she will be able to use VPraster right away."

In addition, according to Kurt Herfurth, the hybrid editor's advanced functionality has also benefited Mueller Weingarten's outsourcing strategy. Design construction is often performed by outside contractors, while internally, only a core team is necessary for specific, smaller tasks. This has offered a tremendous cost savings over the traditional legacy methods. Mueller Weingarten's outside contractors also have been directed to utilize VPraster to increase their efficiency. Today the data exchange is without problems and "nobody will ask for an A0 fax machine to be invented anymore", says Herfurth.

Regine Appenzeller-Gruber, Editor

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