

Schuler AG achieves production optimization of press lines with DELMIA



Centering station with vision system for part orientation



Crossbar-Feeder Unit for interpress transfer

Schuler AG of Göppingen set a new standard in adaptability for press lines with their new equipment for the production of large car body panels. For the first time, production optimization was carried out with control and process simulation of press lines using DELMIA V5.

As the technological and global market leader in metalforming, Schuler supplies machines, production lines, dies, process know-how and services for the entire metal-working industry. Their clients include car manufacturers and their suppliers, as well as companies in the forging, household equipment and electrical industry. Schuler is also the market leader in coin-minting technology and produces complete wind turbines. The company employs more than 5,000 people and is represented by its own facilities and sales offices in 40 nations around the world.

Schuler Pressen GmbH und Co. KG develops and manufactures state-of-the-art mechanical press systems for customers in the automobile, supplier, electrical and

household appliance industries. In 2009, the world's first press line with ServoDirect technology and Crossbar Feeder automation began operation. This press line, which allows up to six presses, was developed for the production of large car body panels at the BMW GROUP.

THE PRODUCTION PROCESS MAKES THIS ONE-OF-A-KIND FACILITY UNIQUE

In order to make the entire forming process of the new press line more efficient, decision-makers at Schuler worked with equipment operator BMW GROUP during the development of the press line. Together, they explored opportunities for simulating production startup with molds and simulating the transfer of car body parts.

Efficiency calculations quickly revealed that the economic difference between optimizing equipment directly versus through simulation was enormous. "Simulation reduces the cost of equipment programming by a factor of five, and increases production capacity by 5% to 10%," explained Dietmar Schöllhammer, process development manager at Schuler Pressen GmbH und Co. KG.

Schuler and the BMW GROUP had been using CATIA V5 for many years. DELMIA V5 had long been used for blank feeding at the Gemmingen location during robot simulation. In cooperation with BMW GROUP, this solution is now being used for press simulation in Göppingen. The catalyst was an appeal from within the OEM simulation team. The request was for an integrated solution that can be linked with the CATIA V5 platform.

Such a solution permits close integration of mold design and simulation of the production cycle. A similar solution using CATIA had already been developed as a product at the Schuler Group, but a comparison with

DELMIA V5 demonstrated clear performance advantages. For this reason, DELMIA was ultimately chosen. The critical objective of integration into the entire process was achieved through intensive coordination with the BMW GROUP development team.

COLLISION-FREE MOVEMENT AND TRANSPORT

With the new press line, production optimization first took place through control and process simulation using DELMIA. A method plan was established for each sheet metal part to be produced by the press line. This described the number of forming stations, the necessary technical process, and the different positions necessary to produce the part. The method plan was followed by the flow chart, which tests whether the part positions defined are consistent with the requirements of the transfer equipment. Can the parts be transported without a collision occurring, and at what speed can they be transferred? All movements and positions of the parts were examined. Once these parameters had been determined, mold design using CATIA could begin.

During method planning, information for press and transfer was generated early on and incorporated directly into equipment simulation and programming using DELMIA V5. The range of motion, feasibility, movement, and transfer could be examined in the subsequent simulation—and at a stage where no concrete mold had been produced—a significant cost and time factor. At this phase, corrections could be implemented with a few mouse clicks.

By implementing DELMIA V5, all necessary actions and production steps of a press line could now be planned and tested in context at a work station, resulting potentially in tremendous savings: simplification of processes, reduced costs, and minimization of error sources as well as faster completion.

SIMPLE OPERATION OF DELMIA

According to Dietmar Schöllhammer, "We anticipate maximum acceptance of the integrated solution once deployed. By integration, I mean that our equipment is optimally integrated into the manufacturing process." Existing employee skills in both areas is a considerable factor in the decision to implement the system.

Introducing DELMIA V5 has proven uncomplicated. At Schuler it was hardly even noticed that a new system had been implemented. All operations were largely familiar from CATIA V5, and the few additional functions were quickly learned.

At the BMW GROUP, concerns about complexity of equipment have given way to enthusiasm, because the potential of the press line can now be fully exhausted through surprisingly effective use of the simulation system. Basis for this success

was close cooperation between BMW GROUP, Schuler, and Dassault Systèmes during development of the system. Initial experiences have been extremely positive. "Do you know the feeling of looking in astonishment at a MicroSD card with 16GB and asking, how do they achieve that? This describes our feeling, when we evaluate the performance of the press simulation using DELMIA V5. You're constantly asking

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Dietmar Schöllhammer
Process development manager
Schuler Pressen GmbH und Co. KG.

yourself, how do they do that?" marveled Schöllhammer.

Deployment of DELMIA V5 significantly simplifies simulation. Equipment functionality is displayed through the simulation user interface. Not only is the functionality of the system easy to understand, operation is equally simple. This is a great advantage for users. In addition, the solution allows for significantly improved cooperation between Schuler and the OEM during optimization of equipment operation. With the performance and elegant user interface, it is "simply a joy to work with," Schöllhammer said. 📍

For more information:
www.schulergroup.com
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