Press Line Simulation

Optimizing press line operation to reduce time, cost and errors in design, planning and production

Benefits
- Increase production throughput
- Increase stroke rate
- Reduce try-out time
- Reduce tooling design costs
- Reduce die design errors

Features
- Intelligent press models
- Material flow analysis
- Automated tooling design
- Die validation and setup
- Offline programming and testing
- Real controller interface
- Force calculation
- CAD interface for data exchange in JT™, Catia and NX™ software formats

Summary
Tecnomatix® software’s Press Line Simulation solution provides a comprehensive set of press line programming, simulation and analysis tools that enable you to digitally prepare and optimize key elements in a press line job early in the planning phase. By allowing you to virtually represent the press line, tool equipment and work pieces, Press Line Simulation is able to deliver valuable information to designers and planners long before any part is actually manufactured. Press Line Simulation supports multiple tasks in the sheet metal stamping process, including material flow planning, tooling design, die design and shop floor setup.

Press Line Simulation helps you optimize and validate the full working design of press line equipment long before it is built and installed. The solution’s ability to reduce preproduction correction time results in faster time-to-market for the final product. When you combine this advantage with Press Line Simulation’s ability to facilitate higher production throughput, you are able to greatly improve the return on investment for the high cost of your press line installation.

Press Line Simulation enables engineers to eliminate design errors, optimize throughput and maintain a quality product by providing a full working digital model of the press, its associated tooling equipment and the equipment’s product-related behavior.

Press Line Simulation’s advantages
Press Line Simulation is designed to generate immediate value for turnkey operations and press line manufacturers while providing press line suppliers with a higher degree of confidence in a proposed press system. It facilitates shorter press line implementation and rampup times, reducing the cost of rework and corrections. In addition, the solution delivers key advantages to
Press Line Simulation

OEMs, including higher return on their capital equipment investment, faster time-to-market and improved plant productivity rates.

Using Press Line Simulation
Press Line Simulation utilizes an accurate model of the press line, and its associated tooling, die set and the sheet metal parts to perform full 3D kinematic press line simulation. The solution generates numerical reports, graphical charts and a full 3D display of the kinematics model. Synchronization of the press, stroke rate and the sheet metal handling equipment can be validated, enabling collisions to be detected and contact forces to be reported.

Automated tooling design
Press Line Simulation enables you to automatically design tooling and directly assemble it by leveraging the solution’s transfer system. You can create collision-free and verified parts lists, assembly structures, documentation and CAD data.

Die design validation and setup
You can create interference-free spaces and check the die structure and kinematics in the virtual press. The solution enables you to synchronize the press with the sheet metal part transport and cam drives while testing for internal collisions.

Offline programming and testing
You can use Press Line Simulation to generate optimized and tested programming data. You can check and validate the overall job and press parameters, as well as transfer validated programming parameters and settings directly to the press.

Force calculation
Press Line Simulation automatically calculates holding forces for cups or grippers based on corresponding press parameters.

Integrated press controller interface
Press Line Simulation interfaces to actual press controller software, generating realistic motion curve data, maximizing stroke rate and eliminating potential bottlenecks.

Connecting virtual to real
Press Line Simulation facilitates rapid commissioning and targeted performance through virtual try-outs of highly flexible press lines. For the next level of press line validation and optimization, you can use Press Line Simulation to directly read and simulate the motion curves from the SIMOTION Motion Control System, Siemens’ fully featured control system for electronically-driven press lines.

Intelligent press models
Press Line Simulation uses fully configurable, high-precision models of your press to match your requirements. You can visualize scalable press models, including assembly and kinematics data, programming parameter functions, die change procedures and signal handling.

Material flow planning
You can verify the planned positions of the sheet metal parts. Press Line Simulation enables you to check whether the part can be withdrawn from the die without collisions or whether the intermediate station orients the part’s position adequately.

Example collision curves of upper die into the lower.

Transfer and feeder motion curves generated during press line simulation.

Example curves highlighting transfer clearance.

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