Automation Control for Stamping Press Machines

**Advantages**

**Power of One**
- Broad range of control and information disciplines with one single, fully-integrated platform
- The Rockwell Automation Integrated Architecture™ system offers single-source buying to ease design, development and maintenance
- Fully integrated control and information platform provides actionable, real-time data for secure, information-enabled machines

**Complete Automation Supplier**
- Broad range of control, safety, information solutions, services and support, and locally available spare parts
- Our end user relationships and dedicated OEM team help extend your market reach
- Safety expertise and off-the-shelf integrated safety solutions

**Low risk deployments**
- Use of standard “tried and tested” solutions

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**Overview**

A stamping press is a metalworking machine tool used to shape or cut metal by deforming it with a die. Some of the key stamping press types are mechanically-driven presses, hydraulically-driven presses and servo-driven presses.

Stamping presses are typically used with auxiliary equipment such as coil stations, straighteners, transfer systems, stackers/de-stackers and slug/chip conveyors. Typically, presses are electronically linked with a controller to an automatic feeder which feeds metal raw material through the die. The raw material is fed into the automatic feeder after it has been unrolled from a coil and put through a straightener.
Challenges

Metal forming OEMs are seeking a balance between machine performance, safety requirements and machine cost. Quality product and global support remains important because machines can be shipped anywhere in the world in any kind of working conditions.

Precise tension control, safe and efficient stamping, and reliable press automation is desired in a metal forming application. In addition, OEMs are aiming to build machines according to accepted standards and that are easily integrated with other equipment.

Press line production runs today are smaller and faster, so setup and changeover times must be reduced. Machines with easy changeovers and shorter down times will drive a more profitable stamping press operation.

Productivity and safety is critical in a metal forming application. Repeatability, is required even with variations in material characteristics, and minimized scrap.

Manufacturers have always depended on machine builders and equipment suppliers to help them reduce costs and improve profitability. Today, more and more companies have social responsibility on their minds. And they are asking OEMs to help them achieve sustainability goals such as reducing energy consumption, cutting the costs of running machines, reducing downtime and line inefficiencies and increasing productivity and safety.

Solutions

To improve machine builder efficiency, Rockwell Automation features design productivity tools that help reduce engineering time. Some of these tools include standard, reusable software modules and Add-on-Instructions (AOIs), Motion Analyzer and a product library file for use with the SISTEMA safety calculation tool.

Rockwell Automation Integrated Architecture is a powerful system that combines control, motion, networking, visualization, and motor control technologies. The Logix control platform offers scalable, flexible, programmable automation controllers (PACs) with a common control engine and development environment. The Allen-Bradley® Kinetix® servo drives and PowerFlex® AC drives deliver high-performance integrated motion and motor control on EtherNet/IP, the world’s leading industrial Ethernet network. EtherNet/IP simplifies the integration of the entire system including HMI, PAC, I/O and motion.

Rockwell Automation offers the broadest portfolio of scalable safety products for press applications - from simple safety components to integrated safety systems. Rockwell Automation offers functional safety compliance to improve global acceptance and safety network common communication standards for safety systems. This not only mean producing built-in, flexible, high-performance machines at a competitive price, but also equipping them with safety control features like safe off, safe speed and safe networks that meet global standards.

Rockwell Automation also offers pre-engineered systems that OEMs can take advantage of. These proven, off-the-shelf solutions include PressGuard™ and Compact PressMaster™ pre-engineered press control systems; ClutchGuard™ solution for clutch brake control; FeederPro™ packages for press feed or cut-to-length applications; and STFPro™ for servo transfer feed systems.

Rockwell Automation solutions deliver improved production capabilities and reduced total cost of ownership by providing unparalleled functionality, flexibility and scalability. OEMs can respond more quickly to customer or market demands, reduce maintenance costs and downtime and allow their customers to easily gain access to actionable plant and production information for improved management and decision-making.
Stamping Press Profile – Typical Architecture

Compact GuardLogix™ PAC

Main Motor
Lube
Slide Adjust
Die Clamp
Bolster
Hyd/OL
Die Change

EtherNet/IP

Left Front Upright
Die Block, E-Stop, Run Bar

Right Front Upright
Die Block, E-Stop, Run Bar

Left Rear Upright
Die Block, E-Stop, Run Bar

Right Rear Upright
Die Block, E-Stop, Run Bar

Magnetics Enclosure
CES Interface (optional)

Motor Starter Outputs
Aux Contact Inputs

Basement
ROSS Valve Interface
Clutch Valve Reset
Reset OK

Left Rear Upright

Mod Switch, Inch P/B
Clutch Control Reset
Control Reset
Clutch Valve Reset

PowerFlex® Drive
Flywheel Motor Drive

Non Safety PB/SS/LT

PanelView Plus™ HMI

Die Block, E-Stop, Run Bar

Die Block, E-Stop, Run Bar

Die Block, E-Stop, Run Bar