



Sheet Metal Forming Line

Application Success Note

Application:

- Sheet Metal Forming Line
- Closing & Clamping
 - Punch & Pierce

Products:

S-Series SMART Hydraulic Actuators

Industries:

Appliance

Challenge:

An appliance manufacturer had to re-tool a production line for a new product launch. The manufacturer had several key objectives required for this new line including:

- Eliminating the use of HPUs, hydraulic cylinders and related hoses and components.
- Reduced energy consumption ("Going Green") with an improved working environment: cleaner, quieter, safer with less maintenance.
- Improved process control and quality.

These objectives presented some difficult challenges for the Manufacturing team and the Machine Builder chosen to design and build a new line. On previous lines, HPUs and hydraulic cylinders had been used due to the large forces required (> 40,000 LBs) in the metal forming operations. In addition, the new line required more precision in the material clamping stations to achieve the quality and productivity required.

Finally, the manufacturer required the new line utilize Rockwell Automation servo motors/drives to integrate into their Rockwell controls platform.

Unlike HPUs that run continuously and consume significant energy, the SHAs "power-on-demand" feature only consumes energy when in cycle. Its modular design allows the SHA to be configured to fit the limited space available.



SHA In-Line Configuration rated at 12,000 LBs force with Rockwell Automation servo motor

Another unique benefit to the Machine Builder was the availability of an Add-On-Instruction (AOI) developed by Kyntronics for Rockwell Automation Servo Drives/PLC enabling faster integration of the SHA with Rockwell controls.

Results:

The Kyntronics SHAs utilized on the new metal forming line allowed the manufacturer to achieve their targeted objectives including the following:

- The SHAs eliminated the need for HPUs and related components resulting in:
 - Substantial energy savings.
 - A smaller machine footprint.
 - A quieter, and cleaner working environment
 - Significantly less maintenance and safer (no oil spills).
- The precision servo control of the SHAs improved the quality and repeatability of the clamping and metal forming operations.
- The Rockwell AOI developed and supported by Kyntronics included a software template that provided precision force and position control and the AOI significantly reduced the Machine Builder's integration time and streamlined commissioning of the line.

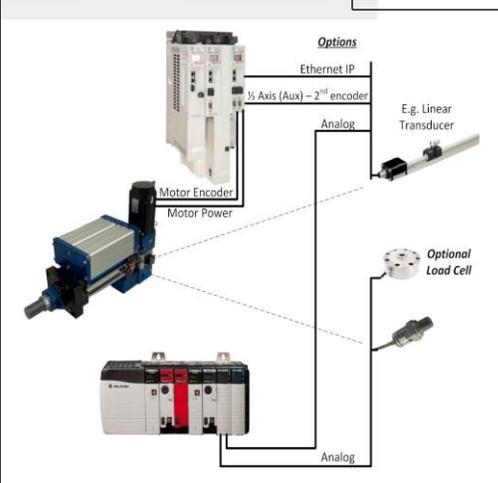


SHA Right-Angle Configuration rated at 46,000 LBs force with Rockwell Automation servo motor

Solution:

The Machine Builder considered using electro-mechanical actuators (EMAs) but found the large size and high cost of EMA technology would not meet their project goals. They also had concerns about EMA screw life and reliability due to the shock loads that would occur in the metal punch/pierce operations during production. The team selected Kyntronics SMART Electro-Hydraulic Actuators (SHA) for the new line. The totally self-contained, sealed design of the SHA removed the need for HPUs, hoses, valves, hydraulic cylinders and other components eliminating the potential for leaks and minimizing maintenance. Kyntronics assisted the Machine Builder with sizing the correct Rockwell Automation motors for the 14 SHAs used for this project.

Rockwell Automation / Kyntronics SHA System Configuration



14 - Kyntronics SMART Electro-Hydraulic Actuators staged for shipment

The Kyntronics all-in-one SHA combines the power of hydraulics with the precision of servo control resulting in an innovative solution for this appliance manufacturer's new production line.

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