



SMART Hydraulic Actuator (SHA) for Press Control

Application Success Note

Application:

Pressing

Products:

S-Model
260 Series

Industries:

Appliance /
White Goods

Challenge:

An Appliance manufacturer ordered a new servo press line from a machine builder to produce precision sheet metal panels for a new product launch. The manufacturer wanted to eliminate the use of hydraulics due to the advantages of providing significant energy savings, being environmentally cleaner, quieter operation and reducing floor space required.

The new product had stringent process quality requirements for the metal forming presses that would require precise control of force and position during the servo press stroke.

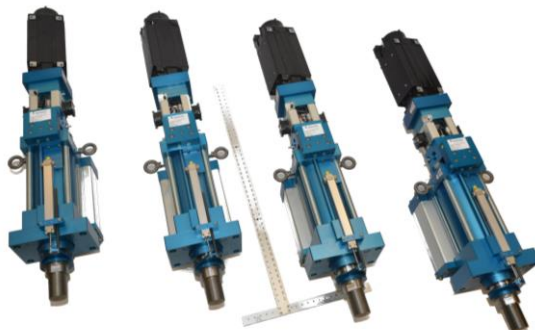
The “no hydraulics” mandate created unique challenges for the Machine Builder due to the high forces required of up to 170,000 Lbs (756 kN) in the metal forming stations.

In addition, the system would need to seamlessly integrate with Rockwell Automation motors and servo drives.



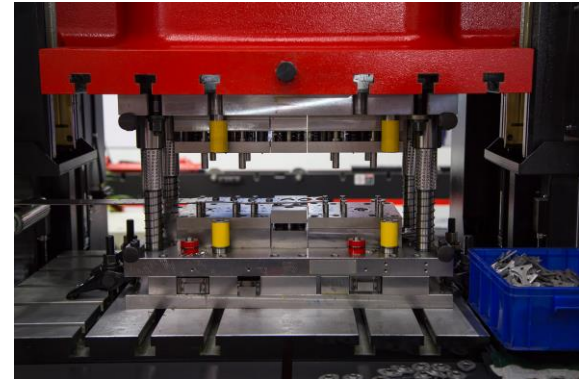
Solution:

The Machine Builder considered using electro-mechanical actuators (EMA), however, the large footprint and the prohibitively expensive



4 Kyntronics In-line SMART Electro-Hydraulic Actuators (SHA) rated at 85,000 Lbf (358kN) Force

EMA technology cost meant it would not meet their project requirements. In addition, there were concerns about EMA screw life due to the “spike loads” the actuators would be subject to during production.



After careful consideration, the Machine Builder selected Kyntronics SMART Hydraulic Actuators (SHA) for the servo press stations on the new machine. The SHAs were rated for 85,000 Lbf (358kN) of force and were provided in an in-line configuration mounted to the top of the press.

For the primary servo press station, two 85,000 Lb SHAs were synchronized together providing 170,000 Lbs of force. The SHA provides precise and repeatable control of applied force and position which was critical for the quality required from the new machine.

To meet the customers’ control specifications, the SHAs also incorporated Rockwell Automation (Allen Bradley) Servo Motors and Drives.

Results:

- The SHAs eliminated the need for an HPU and hydraulic infrastructure on the new machine resulting in a clean working environment, quieter operation, and substantial energy savings.
- Part quality exceeded the new product’s stringent requirements, even at the high forces required for the metal forming operations.
- The SHA provided very reliable, maintenance-free operation despite the “shock loads” that were present in the metal forming operations.

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