



## Application Success Note

**Application:**  
Metal-Forming Line

**Products:**  
S-Series SMART Hydraulic Actuators

**Industries:**  
Appliance / White Goods

## Metal Forming Line

### Challenge:

Implement an automated sheet metal panel line for a new product launch. The new line was required to meet several corporate mandates including:

- Eliminate the use of hydraulics.
- Support the company's Sustainable Manufacturing initiative specifically targeting energy efficiency, improved operator ergonomics, and reduced environmental footprint.
- Reduce operating costs through eliminating hydraulic fluid disposal and replenishment, energy savings and lower maintenance.
- Improve part quality and floorspace productivity.



**SHA Right-Angle Configuration rated at 20,000 LBs force with Rockwell Automation Servo Motor**

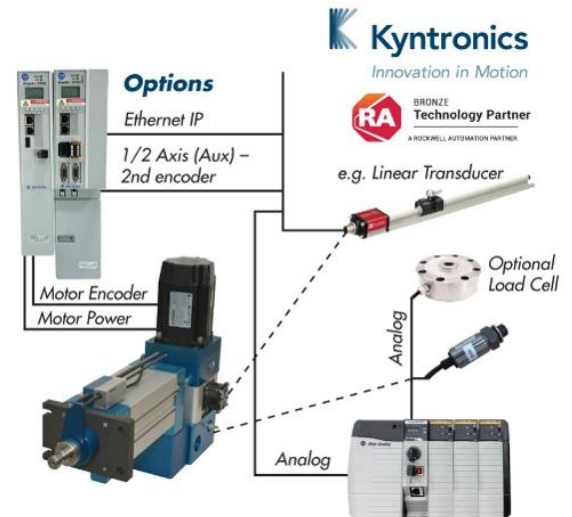
These objectives presented some tough challenges for the Manufacturing team and the Machine Builder chosen to design and build the new line.

Traditionally, HPUs and hydraulic cylinders had been used on other metal-forming lines due to the large forces required (50,000 LBs) in the metal-forming and hole punch operations. In addition, the new line required significantly 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 and drives to integrate into their Rockwell Automation controls platform.

### Solution:

The Machine Builder considered using electro-mechanical actuators (EMAs) but found that the large size and high cost of EMA technology would not meet their project goals. They also had concerns about screw life and reliability due to the shock loads and repetitive screw wear that would occur during production operation.



**Rockwell Automation / Kyntronics Controls Diagram**

The team selected Kyntronics SMART Electro-Hydraulic Actuators (SHA) for the new line. The project consisted of 16 SHAs in two configurations.

The totally self-contained, sealed design and other features of the SHA met the corporate mandates while eliminating the need for HPUs, hoses, valves, hydraulic cylinders and other components.

**SHA Rotated Right-Angle Configuration rated at 50,000 LBs force with Rockwell Automation Servo Motor**



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

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

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## Results:

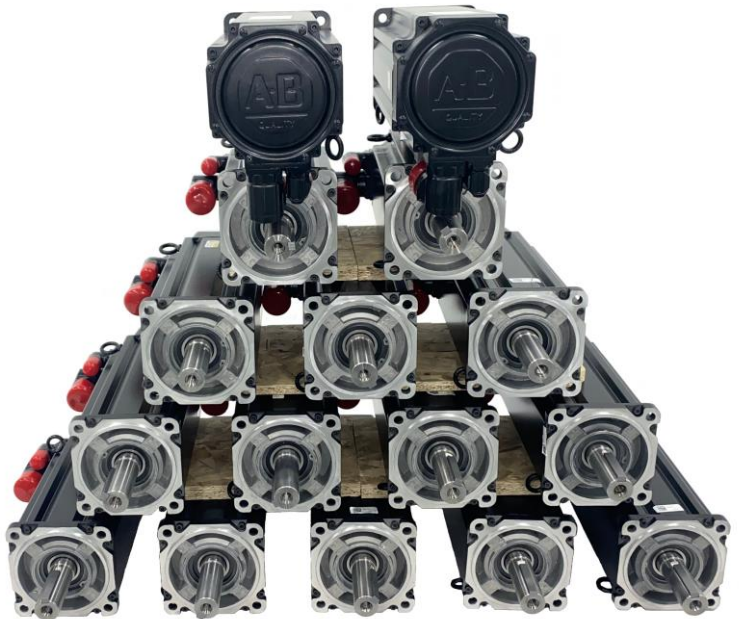
Kyntronics SHAs utilized on the new metal forming line allowed the manufacturer to achieve their targeted objectives and reap significant benefits:

- Elimination of Hydraulics:
  - SHA's Power-on-Demand provides substantial energy savings.
  - A quieter, and cleaner working environment
  - Significantly less maintenance and safer (no oil spills).
  - Reduced space required.
- Sustainable Manufacturing
  - Smaller environmental footprint - eliminated fluid disposal and potential for leaks.
  - Healthier and safer workplace – quieter, no spills, less cluttered.
- Lower Total Cost of Ownership (TCO)
  - Substantial energy savings.
  - Elimination of hydraulic fluid disposal and replenishment.
  - Significant reduction in maintenance costs.
- Precision servo control improved the quality and repeatability of the metal forming operations.

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.



16 – SMART Electro-Hydraulic Actuators in two Configurations used on the Metal-forming Line



16 sets of Rockwell Automation Servo Motors



Visit our website and Learn more about Total Cost of Ownership (TCO) by clicking on this icon.

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