



The New Frontiers of Servo Driven Hydraulic Control



Application: Tubing Bender

Original System: 25 HP hydraulic power unit driving multiple axes hydraulic cylinders utilizing a 50 gal reservoir, flow controls, and pressure reduction valves cooling loop.

A mandrel style bender incorporates a sphere that is inserted into the tube. As the tube is bent, the spheres location is maintained in the area that is prone to deformation (collapse) of the tube as it is formed. All motion throughout the desired bend is controlled for pressure, velocity and position. Finished product is ejected, and a new stock segment is feed into the machine where the process is repeated. If excessive pressure is detected by the UNiGY system the process is halted and "out of spec" stock then removed. The finished product can be of various diameters, wall thickness and bend angles. The UNiGY system allows "recipes" to be created for consistent production regardless of these variations

Challenges:

- Large Energy Waste – Power readings identified high power consumption – external cooling required
- High Oil Temperature – indicative of system inefficiencies and resulting in shortened oil life.
- High Maintenance – Continuous hydraulic service due to pressure spikes.
- High Maintenance – Required on limits switches, linear transducers
- Process variation(s) affected quality



Solution:

- Complete new Hydraulic control design incorporating a UNiGY Model 03HS015005DA as the machine's prime mover

Results:

- **Electric Power Consumption Reduced By More Than 80%**
- **Elimination Of Process Adjustments Resulting In More Consistent Product Quality**
- **Elimination Of Oil Reservoir Cooling Requirement & Reduction In Reservoir Size**
- **Elimination Of Proportional, Shock, Pressure Reduction, And Flow Control Valves**
- **Reduction Of Noise Level From >77 To <66 DBA**
- **Reduced Shock Loads Due to Precise Electronic Control Of Machine Performance**
- **The UNiGY "leak detect" feature shuts down pump if a hydraulic leak is detected, such as a burst hose.**

