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# Less Power, More Production from New Press Brakes

Besides supplying parts and assemblies for aerospace, appliance, automotive, building hardware, medical and other markets, Wisco Industries offers its own line of food-service equipment including pizza ovens and display cases.

To accomplish all of that, the Oregon, WI, manufacturer employs a variety of stamping, fabricating and assembly equipment. The 140,000-sq.-ft. facility, with 160 employees working over two shifts, operates 26 mechanical presses in capacities from 38 to 330 tons, two automatically fed laser-cutting machines, automatically fed turret punch presses and a host of press brakes. Wisco's Oregon operations are augmented by a 122,000-sq.-ft. assembly plant across town as well as a smaller stamping and fabricating operation in Cullman, AL, to supply customers in the South.

The company constantly upgrades production equipment to gain efficiencies, and that's no different with its press brakes. The Wisco Oregon plant now runs eight press brakes from Toyokoki—three HYB and five APB models, in sizes to 125 tons with 10-ft. beds. (MC Machinery Systems, Inc., Wood Dale, IL, markets Toyokoki press brakes in the United States.)

"At one time we had mechanical press brakes and then worked our way up to automated machines with back-gauges," recalls Bill Wolf, Wisco plant superintendent. "We bought our first Toyokoki APB in 1993, and we've added more and replaced press brakes more than 10 years old with HYB models."

Wisco Industries saves power and time by upgrading to all-electric and electric-hydraulic equipment.

BY LOUIS A. KREN, SENIOR EDITOR

## Use Less Power

The APB, a fully electric press brake, consumes virtually no power—only enough to run the control display—until an operator steps on the pedal. With no hydraulic pump, the brake uses no oil, thus requiring minimal maintenance. It

features a ram repeatability of 0.00004 in.

Because a direct-drive AC servo motor, which provides the APB's pressing force, limits tonnage capabilities, Wisco operates the higher-tonnage electric-hydraulic hybrid HYB brakes. Unlike a conventional hydraulic press



Tom Short operates a new all-electric press brake at Wisco Industries, Oregon, WI. The company employs eight electric and electric-hydraulic brakes, enabling faster, more accurate production with a significant drop in power consumption, as only the control draws power until a brake's foot pedal is depressed.

brake, oil flows on an HYB only when the foot pedal is actuated. This reduces power consumption by 50 percent or more as compared to hydraulic press brakes, according to officials from MC Machinery Systems.

"With our old press brakes, even if we were just setting up a job or inspecting a part, the hydraulic motors kept running," says Wolf. "The new press brakes are quiet—nothing running except the PLC until our operators press the foot pedal. Energy consumption was something we looked at when deciding how to upgrade our press brakes."

In fact, Wisco received a credit from its power supplier after verification of energy savings resulting from the new brakes.

"With the increasing cost of operation due to rising electricity prices, fabricators must look for ways to reduce power consumption when their machines sit idle," says John Wettstein of Northand Laser, Milwaukee, WI, a Toyokoki dealer. "This particularly is true with press brakes. The ram on a brake cycles less than a quarter of a shift in a typical short-run job shop. Yet the pump on a conventional hydraulic brake runs, and oil flows, 100 percent of the time, wasting power and profits. This could be likened to leaving a delivery truck idling in the parking lot."

The HYB uses no solenoid valves or heat exchangers, and AC servo motors control oil flow rather than the valves used for ram positioning on conventional hydraulic brakes. That enables the HYBs to maintain constant velocity with positioning not dependent on oil temperature or viscosity, thus providing  $\pm 0.00012$ -in. ram-positioning accuracy.

### Faster Production via Automatic Crowning, Backgauging

Wisco feeds its press brakes primarily thinner-gauge stainless-steel sheet, often preprocessed on the company's laser cutters or turret-punch presses. And the APBs and HYBs turn the parts around quickly, thanks to automatic crowning, backgauging and thickness-sensing features.

## Study Backs Up Power Savings

MC Machinery Systems, which markets Toyokoki press brakes, recently conducted a study at Midwest Products & Engineering (MPE), Milwaukee, WI, to meter the company's press brakes when in idle mode—power on, but not cycling. MPE has three Toyokoki HYB hybrid electric-hydraulic press brakes, four Toyokoki APB electric brakes, and two conventional hydraulic brakes.

#### Power-usage data:

- Toyokoki APB-286 (30-ton): 1 A
- Toyokoki HYB-1753 (192-ton): 1.5 A
- Toyokoki HYB-2503 (275-ton): 1.5 A
- Conventional hydraulic press brake (60-ton): 9 A
- Conventional hydraulic press brake (230-ton): 18 A

Based on the data, the 60-ton conventional hydraulic press brake consumes six times more electricity than a 275-ton HYB in idle mode. Even with a busy press-brake schedule, MPE officials believe that a press-brake ram only cycles one-fifth of the time during a shift, making power usage when idling a significant issue for the company.

"With automatic crowning, when we make a bend across a long piece, we don't have to shim along the way, so that makes for much quicker setups," says Wolf. "And simplified and improved controls allow us to produce intricate parts in the press brakes. For example, an inner part for one of our food-service display units is about 18-in. square and has 10 bends, with multiple bends to produce lips and flaps. Something like that would take a long time to tool up for on our old hydraulic press brakes, and it would take a long time to go from one bend to the next. Imagine the time consumed to produce a 10-bend part. With the HYBs, the backgauges move where they need to in sequence and very quickly, so that by the time we turn the part around and place it in the brake for the next bend, that backgauges are where they need to be and we don't have to wait for them."

That capability has helped Wisco speed production and reduce inventory.

"The ease of setup and ability to perform multiple bends more quickly has allowed us to make shorter part runs and produce more for demand than for stock," Wolf says. **MF**

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