hey just don’t make ‘em like they used to.

That’s especially true of the Bullard VTL (vertical turning lathe), which went out of production a few decades ago. While the Bullard might not have state-of-the-art technology when it comes to today’s machines, they were built like few are today, with heavy, rigid almost immovable cast iron that was cured old-style, in the sun.

“Bullards are beasts for heavy cutting,” said Bob Blaschke, Chief Operating Officer of Compact Power Services (CPS; Rock Hill, SC) and a manufacturing engineer. “These are very resilient machines that will take a beating.” Perhaps

Compact Power Services is remanufacturing old Bullard VTLs, turning the hulks into “Elec-trols,” modern, efficient powerhouses

Sarah A. Webster
Editor in Chief

MAKING AN OLD WORKHORSE NEW AGAIN
that is why they are used for heavy, deep cutting in the locomotive industry and for mining trucks.

CPS has made a business out of remanufacturing Bullard VTLs, giving the hulking machines a new lease on life under contract with companies such as GE. “We’ve done 12–15 machines for them,” Blaschke said.

“Bullards are beasts for heavy cutting. These are very resilient machines that will take a beating.”

A remanufactured Bullard VTL—which CPS has branded as “Elect-trol”—combines the best of old and new manufacturing machines, and should not be confused with a rebuilt Bullard machine.

The originals were built by Bullard Machine Tool Co., which was founded in 1894 and stopped manufactur-
ing machines, Blaschke says, in the late 1980s.

An Elec-trol has been redesigned and re-engineered with new technology and equipment, such as transmission, feed bracket and controls, among other features. The result, CPS says, is a machine with an "old school" high-quality base that has more strength and rigidity than found with many new welded machines, but with modern components, systems and programming capabilities.

A New-Old Machine

The resulting Elec-trol is still a cutting beast, but it has many modern advantages.

Energy savings is key among them. The old-style Bullard system had a 70-hp (52.2-kW) and 10-hp (7.5-kW) motor running whether idling or processing. The Elec-trol has only a 1-hp (0.75-kW) and 5-hp (3.7-kW) motor running at idle. The power savings of 75% or more while at idle is significant. Because of those changes, the old Bullard used to idle at about 80–90 dB while the new CPS Elec-trol idles at about 30 dB.
There are other benefits, too:

- Transmission—The 20-speed transmission on a Bullard is very expensive and time-consuming to repair, with occasional difficulty finding replacement parts for the gears, shafts, bearings and clutch/brake. But CPS converts that old 20-speed hydraulic actuation system into a 2-range electrically activated shifter with an A/C drive and motor. A specially designed through-the-chuck encoder system provides accurate chuck rpm feedback. The changes mean any future repairs for the Elec-trol will be quick and far less expensive.

- Feed bracket—The feed-bracket system with its very expensive VD/CD pumps, the constantly running noisy power-take-off shafts, associated leaking hydraulics and complex switching system is replaced by a servo-driven, zero-backlash, ballscrew system. This results in improved accuracy and digital read-outs replace the old dial-movement system.

- Workplace quality—Aside from being a quieter machine, significantly reduced oil-misting maintains a cleaner air quality in the shop along with lower operating temperatures. Due to the redesigned and reduced hydraulic system there is also less potential for leaking.

- Ergonomics—The new control pendant provides the same functionality as the old one but it offers a significant improvement in operator ergonomics due a weight reduction of 80%. The trigger also requires 50% less finger force, reducing carpal tunnel risks.

- Carbon footprint—Aside from the energy savings already mentioned, the new spindle motor is a high-efficiency motor unlike the original 20- to 30-year-old motor.

- Production versatility—The “Elec-trol” is a machine with digital readouts, faster and better controlled axis movement and with on-the-fly increment table rpm change capability allowing controlled feed rates. This improves quality of cut and tool life. The ballscrew zero-backlash gearbox system and linear scales provide better accuracy.
Tear Down and Rebuild

Stripping down an old Bullard VTL and turning it into an Elec-trol is a manufacturing feat unto itself, taking roughly four to five months.

After a Bullard machine arrives on a truck bed, or several truck beds (if it’s one of the larger units), the machine is completely disassembled and cleaned.

The transmission, feed bracket and other systems are remanufactured. Old vacuum tube, relay logic, solid state, and micro-switch systems are removed. In their place is an advanced, integrated, motion-control solution with servodrives, high-resolution encoders, and modern readily available electrical components.

The Elec-trol has only a 1-hp (0.75-kW) and 5-hp (3.7-kW) motor running at idle. The power savings of 75% or more while at idle is significant.

Hardened-and-ground boxways may need to be replaced or remanufactured. “One of the hardest things to find is scrapers—it’s a lost and dying art, even though it’s a significant part of the process,” Blaschke said.

Once all the parts have been cleaned, remanufactured and fitted, the reassembly process begins, including adding the new control system.

Oftentimes, the new machine is shipped back to manufacturers on several vehicles and final reassembly takes place at its home base.

“One machine had to leave in five trucks,” Blaschke said.

CPS Rebuilds and Repairs

CPS has the space to rebuild two Bullard machines at a time, depending on their size, but rebuilding and servicing machine tools is only part of CPS’ business. The other part is servicing light-indus-
trial equipment in “Big Box” companies nationwide, everything from paint shakers in retail stores to carpet carousels to manlifts.

CPS purchased DOC Machine Tool Services in 2006, which was started 25 years ago by a couple of “Bullard guys,” said Blaschke, who has been with the company for 15 years. DOC started with three technicians. In 2000, with 20 technicians, DOC expanded into the light-industrial service area and currently employs over 240 technicians nationwide.

“One of the hardest things to find is scrapers—it’s a lost and dying art, even though it’s a significant part of the process.”

Like other firms, CPS has difficulty filling positions, especially when it comes to people skilled in hand-scraping and front-end CNC machine code programming. He’s been searching for a programmer to write CNC code for some time now. “I haven’t been able to fill it,” Blaschke said.

The Case for an Elec-trol

In order to justify converting a Bullard, rather than buying a new machine outright, Blaschke said CPS must deliver an Elec-trol for less than 75% of the cost of a new machine.

“That’s the tipping point where they might go new,” Blaschke said, depending on the lead times of new equipment, which can be 12–18 months.

But once a manufacturer decides to go with an Elec-trol over a new machine, they should find a dependable machine and a piece of history.

Aside from owning a part of one of the “last large machine tools manufactured in the US,” Blaschke said, the re-manufactured Bullard will “run another 20 years.” ME

Want More Information?

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