PRESS AHEAD

The top 10 reasons hydraulic presses are the way to go

// by Thomas M. Lavoie, applications engineering manager, Greenerd Press & Machine Co. //
Today’s hydraulic presses are faster and more reliable than ever and the technology has gone through significant changes and refinements. Improvements in seals, more efficient pumps and stronger hoses and couplings have virtually eliminated leaks and minimized maintenance.

Taking a serious look at your current applications and press processes is well worth the time and effort. Check out the top 10 benefits of hydraulic presses below; you may find it’s time to get serious about going hydraulic.

1. Save time
Hydraulic presses can save time during setups and changeovers. Because the full power of a hydraulic press can be delivered at any point in the stroke, there is no need to determine the exact location of maximum tonnage. Thus, hydraulic presses eliminate the very tricky, time-consuming task of setting the stroke as on a mechanical press. Hydraulic press users are often amazed at how quickly they can change dies and get on with a new job during changeovers.

2. Flexibility
Hydraulic presses are becoming more common on high-volume production lines. A single hydraulic press can perform a variety of jobs within its tonnage range. Commonly seen applications include deep draws, shell reductions, urethane bulging, forming, blank and pierce, stake, punch, press fits, straightening and assembly. Hydraulic presses are also used for powdered metalforming, abrasive wheel forming, bonding, broaching, ball sizing, plastic and rubber compression, and transfer molding.

PLCs and other electronic-based controls have improved speed and flexibility. With new computer

↑ This 100-ton capacity shaft straightening press was produced to straighten gun barrels for the Navy. The gun barrels required straightening to prepare them for further machining.
interfaces and monitoring, hydraulic presses are now widely used in advanced computer-integrated manufacturing systems.

Out of the hundreds of jobs being done on hydraulic presses today, here are just a few.

- Electric motor manufacturers assemble motor shafts to rotors, compress laminations and press cores into housings.
- Automotive manufacturers press tiny shafts into water pumps, assemble shock absorbers, blank and form diaphragms, and stake disc brakes together.
- Aerospace companies form tough titanium housings.
- Hardened road grader blades and machine ways are straightened.
- Computer disc shafts are pressed into precision bearings.

3. Full power in the stroke
The full power of a hydraulic press can be delivered at any point in the stroke. You don’t have to buy a 200-ton press to get 100 tons throughout the stroke. Other advantages are faster setups and no time spent adjusting the stroke nut on the slide to accommodate different dies.

4. Built-in overload protection
Hydraulic presses provide built-in overload protection. For example, a 100-ton hydraulic press exerts only the tonnage you have specified – 100 tons of pressure if you have it set for 100 tons, or less, if you have set it for less – no matter what mistakes you make in setup. This eliminates worries about overloading or breaking the press or smashing a die. When a hydraulic press reaches its set pressure, that’s all the pressure there is. The relief valve opens at that limit and there is no danger of overload.

The built-in overload protection applies to the tools, too. If they are built to withstand a certain load, there is no danger of damage because of overloading. Tools can be sized to
withstand the load of a particular job, not a particular press. The pressure of the press can be set down to suit the job. The lack of impact, shock and vibration promotes longer tool life.

5. Lower operating costs

Hydraulic presses are relatively simple, and provide a significant cost advantage over mechanical presses in comparable sizes. The number of moving parts is few, and these are fully lubricated in a flow of pressurized oil. Breakdowns are infrequent but when they do occur, are usually minor. Typical routine maintenance may include replacements of packing, solenoid coils and, occasionally, a valve. Not only are these parts inexpensive, but they are also easily replaced without having to disassemble the entire machine. This allows for more uptime and lower maintenance costs.

6. Larger capacities for less

It is easier and less expensive to buy certain kinds of capacity in hydraulic presses. Stroke lengths of 12 in., 18 in. and 24 in. are common. Extra stroke length is easy to provide. Open gap (daylight), too, can be added without much additional cost. Similarly, larger table areas and small presses with big bed areas are available. Large 200-ton presses with relatively small beds are available; tonnage of the press doesn’t dictate the bed size.

7. Greater control

With a hydraulic press, the ram force, direction, speed, release of force and duration of pressure dwell can be adjusted to fit a particular job. Jobs with light dies can be done with the pressure turned down. The ram can be made to approach the work rapidly, then shift to a slower speed before contacting the work. Tool life is thus prolonged. Timers, feeders, heaters, coolers and a variety of auxiliary functions can be brought into the sequence to suit the job.

8. Noise reduction

Fewer moving parts and the elimination of a flywheel reduce the overall noise level of hydraulic presses compared to mechanical presses. Properly sized and properly...
mounted pumping units meet and exceed current federal standards for noise, even with the pump under full pressure. Because each phase of the ram movement can be controlled, noise levels can also be controlled. A hydraulic ram can be programmed to pass through the work slowly and quietly.

9. Maximize space
Hydraulic presses feature a compact design. A typical 20-ton hydraulic press is 8 ft. high, 6 ft. deep and 2 ft. wide. A 200-ton press is only 10 ft. high, 9 ft. deep and a little over 3 ft. wide. At 10 times the capacity, the 200-ton press only takes up 50 percent more floor space. This means maximizing floor space with more streamlined machinery.

10. Safety
When improperly used, all machines are potentially dangerous. But because ram movements can be controlled with hydraulic presses, it’s easy to make it safe. Non-tie-down, anti-repeat, dual palm button controls are used. The interlocking

↑ A 1,000-ton, eight-point gib-guided hydraulic press.

↑ A 50-ton capacity press for deep draw applications.
WE’VE TAKEN SOME OF THE WORK OUT OF METALWORKING.

Whether you’re replacing capital equipment or purchasing consumables, finding and qualifying new suppliers adds to the workload of an already busy shop owner or production manager. Sorting through the thousands of companies that provide products to the metalworking industry can be both time consuming and frustrating. But that’s about to change.

U.S. Metalworking Sourcebook is a powerful, easy-to-use online resource that brings buyers and sellers together.

The Sourcebook is a research tool already seen by over 280,000 job shop and OEM buyers of all levels throughout the U.S., Canada and Mexico. It was developed by Techgen Media Group, publishers of Fab Shop Magazine, Shop Floor Lasers and Welding Productivity. We know metalworking, and we know how to help you find the supplier that best matches your needs, and with only a few keystrokes.

Log on to USMetalworkingSourcebook.com today to activate your listing. More than 3,000 companies are already included.

GREENERD PRESS & MACHINE CO.

A Triple-Action draw press with a 600-ton capacity main ram/punch, 300-ton blank holder platen and 125-ton cushion for drawing sheet metal into aerospace and aeronautical components.

of guards, as well as other safety devices, is relatively easy because of the nature of a hydraulic press control system.

After a careful assessment, you may well find that hydraulic press technology is the solution to improve productivity and your bottom line. This is not only in difficult economic conditions, but for the ever-growing demands for smaller lot sizes and varied applications – a trend that will only increase in the future.