

Modified Cabinets Expedite Specialized Finishing Jobs

Air-blast machines process "parts" as big as bridges and as small as screws whose surfaces range in hardness from steel to rubber. At the same time, they perform a multitude of tasks including stripping, finishing, frosting, profiling, peening and cleaning, just to list a few. Most often, each of these many jobs can be handled by one of four types of blast equipment: a portable blaster, a room, a cabinet or an automated system.

Sometimes, however, physics and/or economics present obstacles to an off-the-shelf or automated approach. A workpiece, for example, may not fit into a standard blast cabinet, while the alternative, a blast room, may not fit into a production facility or its budget. Likewise, manual blasting within a room or cabinet may not be sufficiently repeatable, but moving up to an automated blast system could be cost prohibitive. For in-between applications, modified cabinets offer opportunities to expedite surface treatment at an attractive price.



Fig. 2: Standard cabinets, connected by an expander with its own workstation, simplify finishing of long workpieces.

Controlling Costs

The concept of modified cabinets focuses on configuring standard hardware to meet specialized application requirements with a minimum of custom engineering, a job for which Empire Abrasive Equipment Company is particularly well suited. Within our standard cabinet line, for instance, we offer over 100 models based on seven platforms, which include blast enclosures exceeding 140 cubic feet (4 cubic

meters). Next, we draw on an array of standard factory options to facilitate part handling, system control and compatibility with the customer's process and workplace. Finally, as a producer of custom rooms and automated systems, we have the internal engineering and manufacturing resources to modify equipment on spec and on budget (Figure 1). In some cases, our modified cabinets have reduced capital costs for air-blasting equipment by as much as 70 percent in operations that might have otherwise required a blast room or an automated system.

Containing Large Parts

Because workpieces over six feet (two meters) long will not fit into even the largest standard cabinet, we have developed a number of ways to process oversized and awkward parts. One combines two cabinets with a center expander containing its own operating station, including a glove set and foot-treadle control, that enables two operators to blast a single workpiece at the same time (Figure 2). In a separate application where limited floor space presents a problem, a vertically extended cabinet provides operator access to tall, flat workpieces through first- and second-story workstations; aided by clamps mounted on a rotating turntable, the operator blasts both sides of these hard-to-handle pieces with a 180° spin of the turntable, thereby saving time for reloading.

Another tactic for blasting large parts that conserves floor space relies on single cabinets with openings that accept workpieces while containing dust and debris. In one case, a cabinet employs dual-baffle plates within circular entrance and exit vestibules through which long, cylindrical parts such as pipe are fed manually and blasted in sections. With the addition of powered rollers and a feed mechanism, the operator can work continuously as the pipe spins and progresses through the cabinet. Similar arrangements are



Fig. 1: Empire integrates manufacturing, engineering and testing at its headquarters in the eastern United States where the company produces a full range of air-blasting equipment.

used for cumbersome metal and glass plates. In these cases, entrance and exit slots replace the circular load/unload vestibules.

Even with smaller parts, modified entry points can be time savers. By ferrying electrical components in and out of the blast enclosure, for example, a small shuttle assures proper part orientation during deflashing and eliminates opening and closing of the cabinet door. A similar device used in treating the ends of U-shaped glass tubes also performs a masking function.



Fig. 3: With a capacity of over 10,000 lb (4,500 kg), this rugged cabinet includes three viewing windows, two workstations and a powered turntable to facilitate cleaning of heavy molds.

Handling Heavy Parts

Our modified cabinets handle parts weighing as much as 10,000 pounds (4,545 kilograms) (Figure 3). The addition of powered work carts that move parts in and out of the blast enclosure expedite loading and unloading as do crane slots that accept parts from overhead. Processing can be facilitated with a powered turntable controlled by an external foot treadle. Tilting turntables that enable operators to adjust the

orientation of heavier workpieces add even more capability.

Automating

Modified cabinets can be equipped to automate a variety of functions including part loading and unloading, part movement, blast gun (or nozzle) travel, operating sequences, blast duration, blast intensity – and more – with devices ranging in sophistication from timers and stroke counters to programmable controls. In addition to saving labor, these features often improve repeatability, which typically translates into enhanced quality and more efficient use of compressed air.



Fig. 5: Pressure-blast cabinet using plastic media combines a powered turntable with four nozzles, mounted on two linear oscillators, to strip wheels under the guidance of a programmable controller.

Although basket blasters are standard rather than modified equipment, they serve as a good example of rudimentary automated blasting (Figure 4). As parts tumble within the basket, the moving blast streams emanating from oscillating nozzles assure even coverage. Timers control blast duration and blow-off cycles. Operator involvement is reduced to loading and unloading, which is simplified by a parts discharge chute.

Today, cabinets with powered accessories expedite specialized jobs in ways too numerous to list. Coordinating part and nozzle movement alone opens a host of possibilities, all of which can be stored and recalled with the addi-



Fig. 4: Basket blasters (modified basket shown in foreground) provide an economical means for batch processing small parts.

tion of increasingly sophisticated and affordable programmable controls (Figure 5).

No Job is Too Odd

A modified cabinet built to finish canisters employs one set of rollers for loading and another for part manipulation, plus it has two workstations, but everything – with the exception of the blast system – is manual (Figure 6). Another cabinet, along with its pressure vessel, media-storage hopper and media reclaimer, is constructed from stainless steel to prevent contamination of parts by mild or carbon steels. In summary, modified cabinets perform a lot of odd jobs, usually in applications involving shorter part runs, which is exactly where these bit players pay the biggest dividends. Empire welcomes the opportunity to demonstrate how.

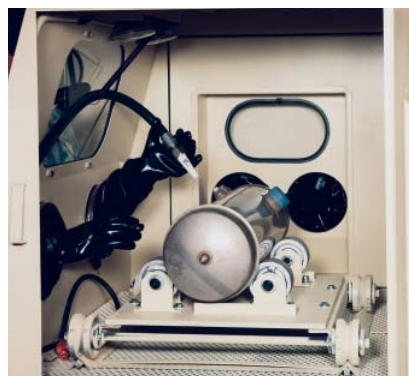


Fig. 6: Despite being all manual, this cabinet expedites work with a loading cart, part rollers and a second workstation.

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