Almost every abrasive-blasting operation encounters misfits—difficult parts that seem to defy economical tactics for cleaning, peening or finishing. Typical reasons: the part won’t fit into an available blasting enclosure; it’s hard to load; it’s a pain to manipulate; or production specifications require a degree of repeatability that gets “iffy” with a human operator handling the blast gun.

When you’re dealing with only a few “problem” parts per week, the misfits are manageable. But at some point, the volume of difficult parts starts to drain profits in terms of higher labor costs and rework. If a “loser” part starts to stick out like a sore thumb, an imaginative equipment solution could be just the therapy you need to make it a winner.

During its 50-year-plus history as a leader in air-blasting technology, Empire Abrasive Equipment Company has tackled thousands of part-specific blasting challenges, often with modified blast cabinets that clear profit-choking bottlenecks in production. With the world’s most comprehensive test-blast facility, Empire can guide you to an equipment solution that makes sense and money for your company.

The short sample of modified cabinets described in this article provides just a taste of the technology Empire offers to meet specialized air-blasting requirements.

**I.D. Blaster**
Prepping the interior of tubes or pipes is often a “hit-and-mostly-miss” operation in which the operator directs abrasives through one end and hopes for the best. Manual blast wands, which propel abrasives at a 90° angle while snaking through the workpiece, do a better job but depend on the skill of the operator. The modified cabinet shown includes a powered lance, a rotating part fixture and programmable controls to eliminate guess work. While penetrating the workpiece, the lance directs blast media at 90° from the direction of its movement and directly onto the interior work surface. A rotating fixture assures even coverage as the lance moves down and up through the spinning part. Programmable controls allow many finger-tip adjustments, including: part-rotation speed, lance travel, and cycling sequences (blast, blow off and “stop” during designated intervals). Beyond reducing labor costs, this lance cabinet assures a degree of repeatability not possible with manual operation.

**Easy Loader**
This pass-through cabinet simplifies the handling and blasting of metal and glass plates. Features include a entrance/exit slot, with gaskets, between the cabinet’s double doors in addition to interior part guides that expedite part alignment and handling.

**Big Daddy**
If you own a blast room or are considering the purchase of one, you know about cost and regulatory hassles. (Empire knows, too; we produce and sell blast rooms.) This enormous modified cabinet, with over 125 cubic feet of work space, enables multiple tasking, plus processing of large parts. The front work station is raised so the operator can blast down to improve work angles on big pieces. Through a station on the side, supported by baffled entrance/exit vestibules (front and rear), the operator can air-blast pipe. Baffles on the vestibules prevent the escape of dust and debris, as does a piston-lift door engineered for tight sealing. Front and side work stations rely on one blast system to reduce equipment costs.
Power Lifter
This cabinet handles parts weighing over a ton, quite smoothly. No grunt, no fuss. A powered work cart moves parts in and out of the cabinet when the palm buttons at the end of the loading track are pushed. The turntable supporting the workpiece is also powered, enabling an operator to gain the optimum attack angle for air blasting. Part rotation and blast functions are conveniently controlled via a foot treadle.

Pipe Cleaner
Built to process pipe or other long, cylindrical parts, this modified cabinet features dual-baffle plates in the entrance and exit vestibules to contain dust and debris as the operator blasts parts section by section. With the addition of powered rollers and a feed device, the operator can work nonstop as the part spins and progresses through the cabinet.

Double Decker
This cabinet was built to handle a tall, flat part (40 inches wide, 60 inches high, 2 inches thick) requiring surface prep on both sides. Getting a “misfit” like this into a blast cabinet seemed nearly impossible until Empire built a two-story solution. All work is performed by the operator moving up and down from top to bottom work stations on a scissor ladder. The unwieldy slab is held in place by tight-locking fixtures mounted on a rotating turntable, which slides in and out of the blast enclosure on a dolly. When one side of the workpiece is finished, the operator opens the cabinet door, rolls out the dolly, spins the turntable 180 degrees, slips it back into the cabinet, and finishes the other side of the workpiece. Before the Double Decker, two workers were required to process each workpiece, and despite the helper’s diligence, labor time was wasted in loading each workpiece twice. One operator now completes one piece without assistance.

Modified Cabinets: Their Role
In the world of abrasive blasting, modified cabinets are bit players, but important ones. Frequently, they eliminate tedious and time-consuming manual tasks, such a hand sanding, deburring, etching, etc. More often, they fill the gaps between other air-blast options, such as standard cabinets, blast rooms and automated blast systems.

When caught somewhere in between various air-blast alternatives, it’s well worth your while to explore modified cabinets. When properly designed, they reduce labor and equipment costs while boosting productivity, adding up to a more attractive bottom line.