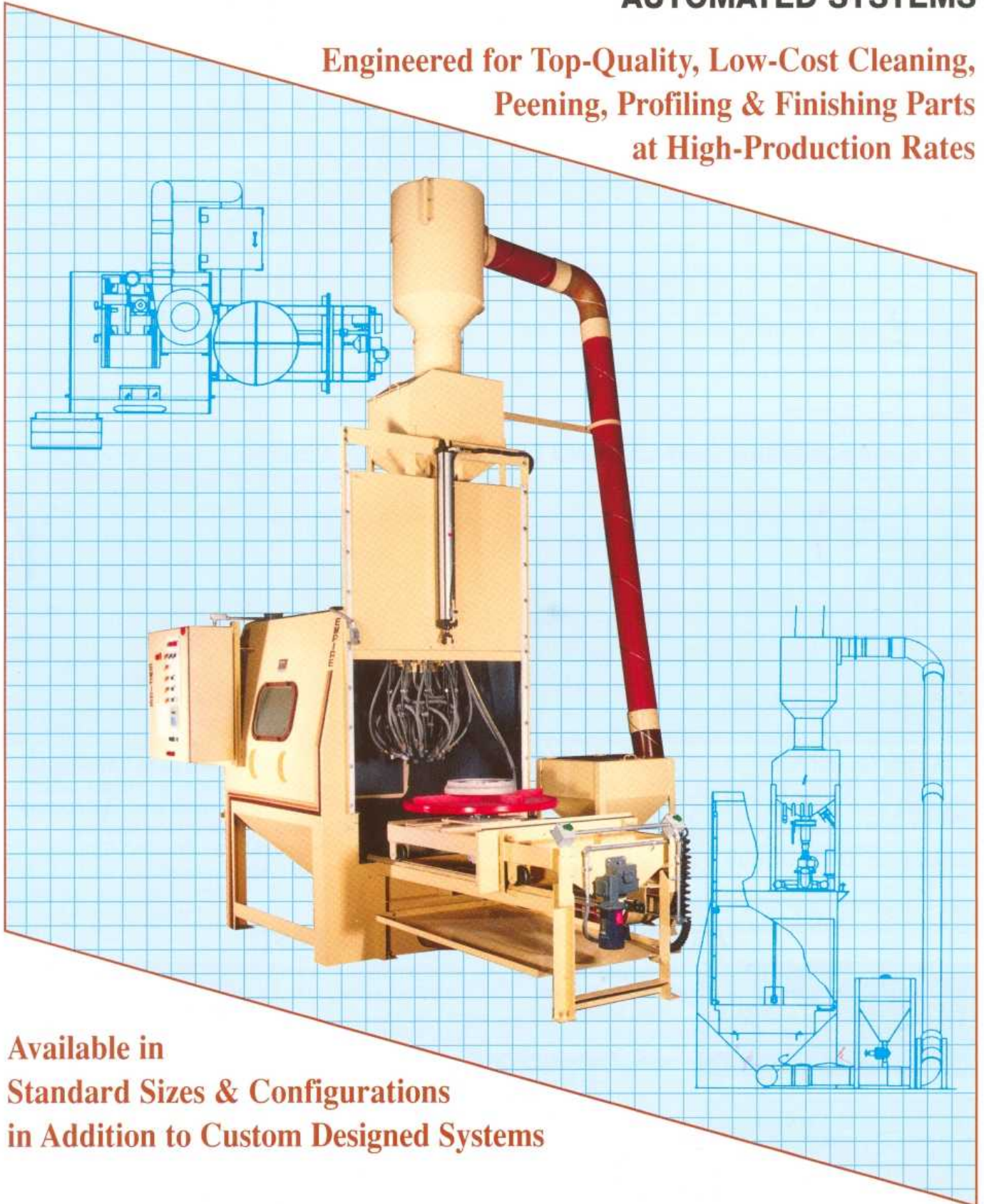


EMPIRE

AUTOMATED SYSTEMS

**Engineered for Top-Quality, Low-Cost Cleaning,
Peening, Profiling & Finishing Parts
at High-Production Rates**



**Available in
Standard Sizes & Configurations
in Addition to Custom Designed Systems**

EMPIRE: A LEADER IN AIR-BLAST TECHNOLOGY FOR OVER 50 YEARS

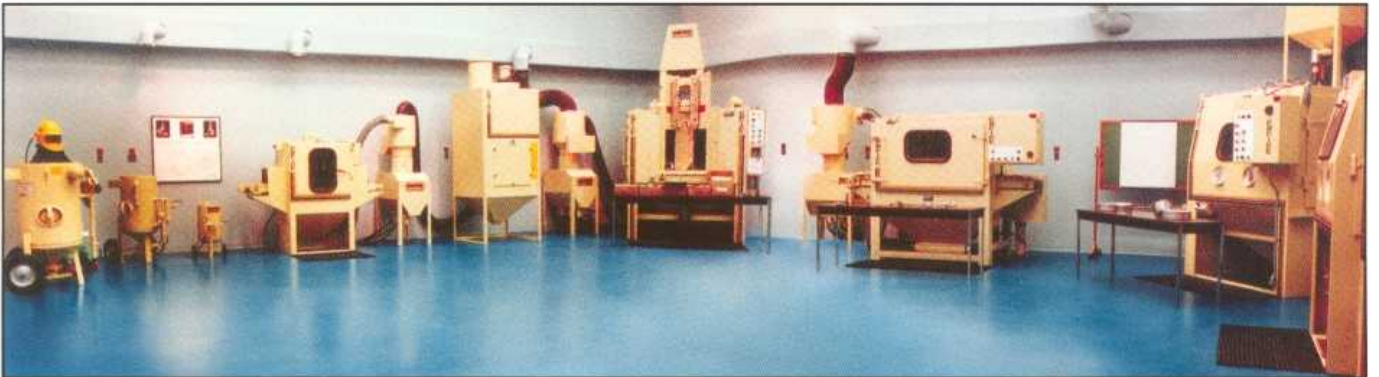
Air-blasting equipment is our specialty. As a leader in the field, with more the fifty-years' experience, Empire has developed a complete line of pneumatic blasting products including portables, cabinets and rooms, in addition to standardized and custom-engineered systems that automate the blasting process.

We have designed and produced hundreds of *automated systems*, ranging in sophistication from continuous running turntable cabinets to computer-controlled machines developed specifically for unique production processes. Today, our *automated systems* descale, decorate,peen, etch, deflash, deburr, clean and finish parts and products in major industries throughout the United States with users enjoying major increases in productivity; typically, customers report gains of between 100 and 700 percent. At the same time, companies using our *automated systems* point out the additional benefit of enhanced quality control—inherent to well-designed automated systems and essential in increasingly competitive world markets—as a major reason for automating with Empire.



Empire Abrasive Equipment Company, headquartered in Langhorne, Pennsylvania, specializes in the development of air-blast systems and equipment.

BEST-EQUIPPED TEST LAB AND DEMONSTRATION CENTER IN THE WORLD



Our test lab and demonstration center in Langhorne, PA, is the world's largest. It enables us to sample blast parts, as well as demonstrate various standard approaches to automated blasting. Machines shown, which should be of particular interest to prospective users concerned about the higher equipment costs associated with custom engineering, include a standard in-line machine (Model: IL-885), one of our indexing turntables (Model: TT-36-S), a cabinet equipped with a rotary blast head (Model: PF-6060-RS), and a batch-processing basket blaster (Model: BB4-A).

A TRACK RECORD OF "FINISHING FIRST"



Armature cleaned with glass beads

Cylinder surface profiled with ALOX



Parts BEFORE and AFTER air-blasting with EMPIRE machines

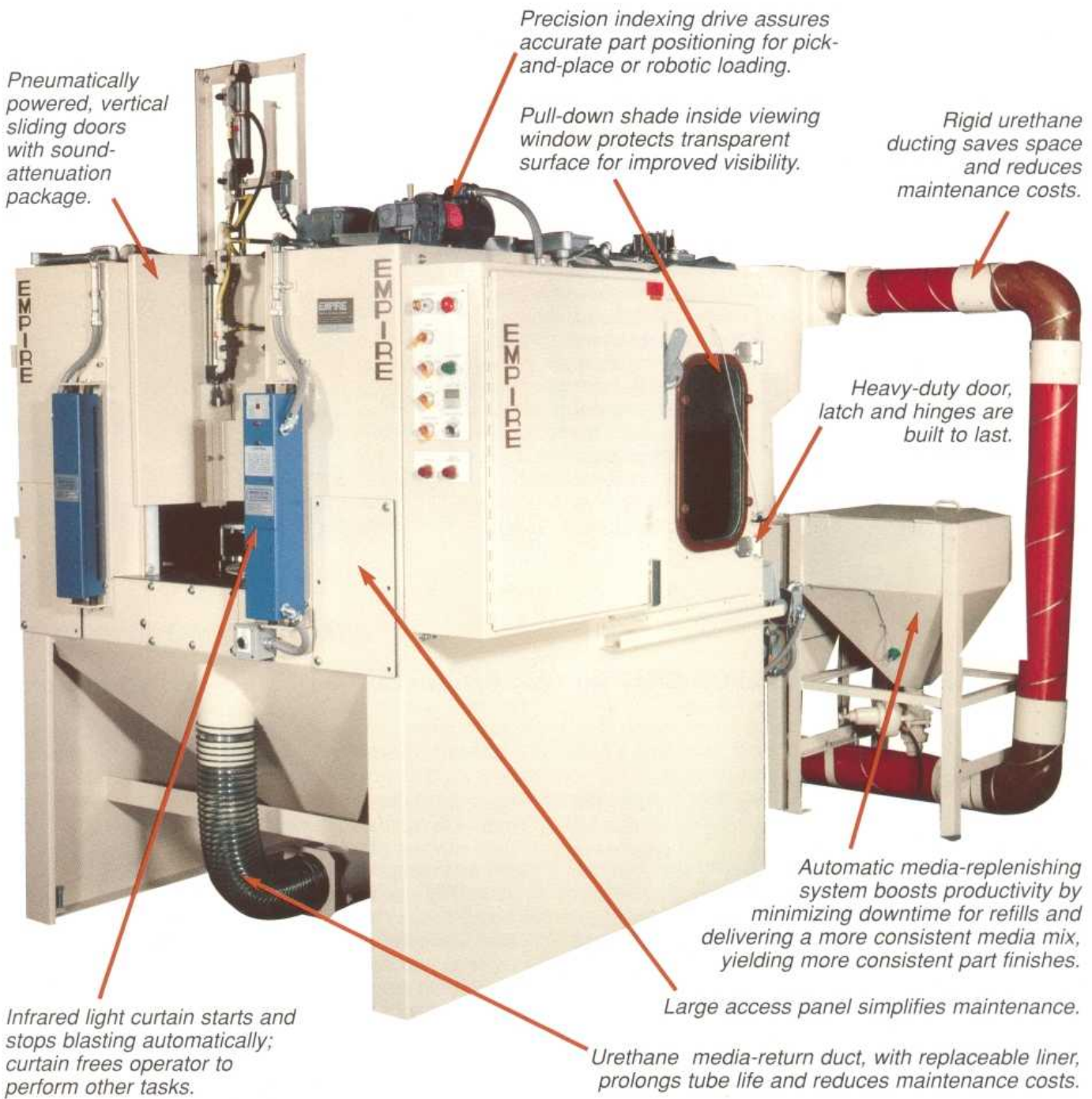


Copier tube etched with silicon carbide

Coin etched with silicon carbide



INDEXING TURNTABLES



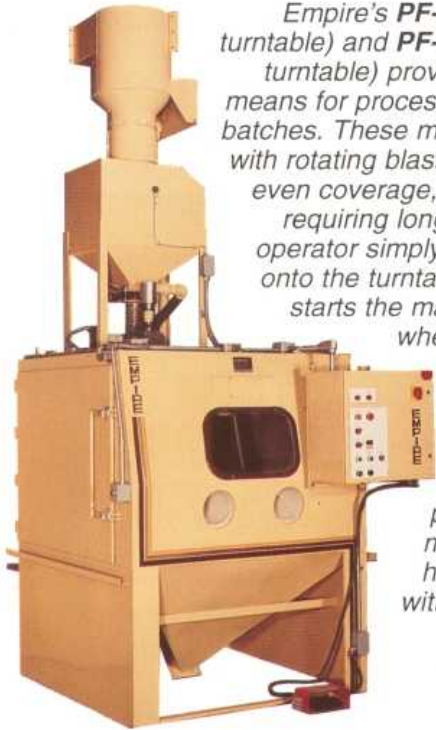
Because of their versatility, our indexing turntable machines can handle a wide range of high-production challenges at a very attractive cost.

Some of these machines' standard features and options are shown above. Others include:

- Three standard sizes (our "small footprint" 20-inch turntable plus 36-inch and 48-inch models) capable of supporting 6, 12, 18 and 24 work stations with up to 4 fixtures per station index cycle
- Your choice of a suction, pressure or continuous pressure blast system

- Adjustable, fixed or vertically oscillating guns or nozzles in addition to rotating part blowoff; post-processing options including an ionized-station to reduce static electricity and assure cleaner parts
- Multi-tasking on up to three different types of parts with the same machine and custom fixturing, such as clutch bands, enabling processing of three different size parts with a universal fixture
- **Most important**—We can tailor these machines to meet a wide range of production requirements with a minimum of costly custom engineering.

ROTARY-HEAD MACHINES FOR BATCH PROCESSING



Empire's **PF-6060-RS** (with 48" turntable) and **PF-7272-RS** (with 64" turntable) provide an economical means for processing workpieces in batches. These machines, equipped with rotating blast guns that provide even coverage, are ideal for parts requiring long blast cycles. The operator simply loads workpieces onto the turntable, sets the timer, starts the machine and returns when blasting is completed. Blast-head and table-rotation speeds are both variable to meet a wide range of production requirements. Rotary blast heads are available with either six or nine suction guns.



This custom model of the **PF-6060-RS** features a vertical-sliding door, a heavy-duty coated turntable and rib, in addition to a rolling dolly

and manual work station—equipped with operator gloves, a viewing window and hand-held gun. This custom unit is truly multi-purpose and gives you a small glimpse of our ability to meet almost any production need or special customer requirement.

ROTARY-HEAD MACHINES FOR CONTINUOUS PROCESSING



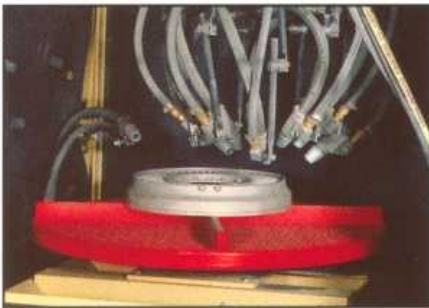
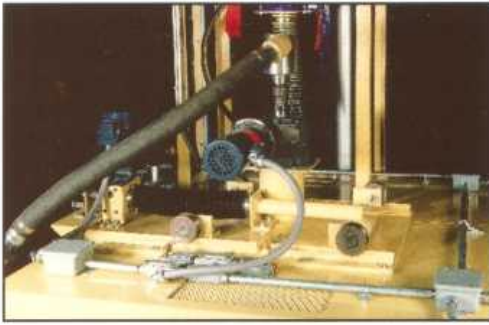
Empire's **IL-4884-RS** machine processes parts in line on a continuous basis. The unit accepts and unloads workpieces handled manually or robotically. Standard conveyor belts are available in 20" or

24" widths and belt speed is variable to maximize production efficiency on different types of workpieces. Standard units come with either six-gun or nine-gun rotary blast heads. As always when you deal with Empire, these units can be custom engineered to meet your particular requirements precisely.

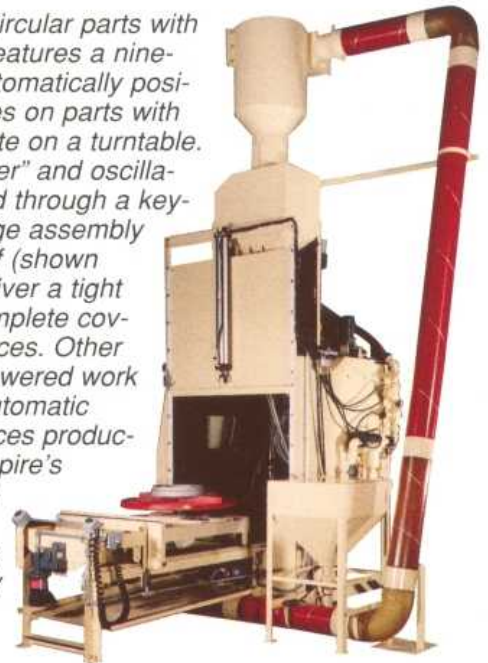
Our continuous turntable machines come in four standard models with table diameters ranging from 48" up to 108". The operator loads and unloads parts from the front while the machine is blasting and can easily finish both sides of workpieces by simply flipping them over for a second pass. The larger units are available with two rotary blast heads, which can be oriented to perform separate functions, such as blasting the interior and exterior of parts, at the same time. Standard features include a rubber cabinet lining and a urethane coating on the turntable to extend service life.



ROTARY-HEAD MACHINES WITH PROGRAMMABLE CONTROLS



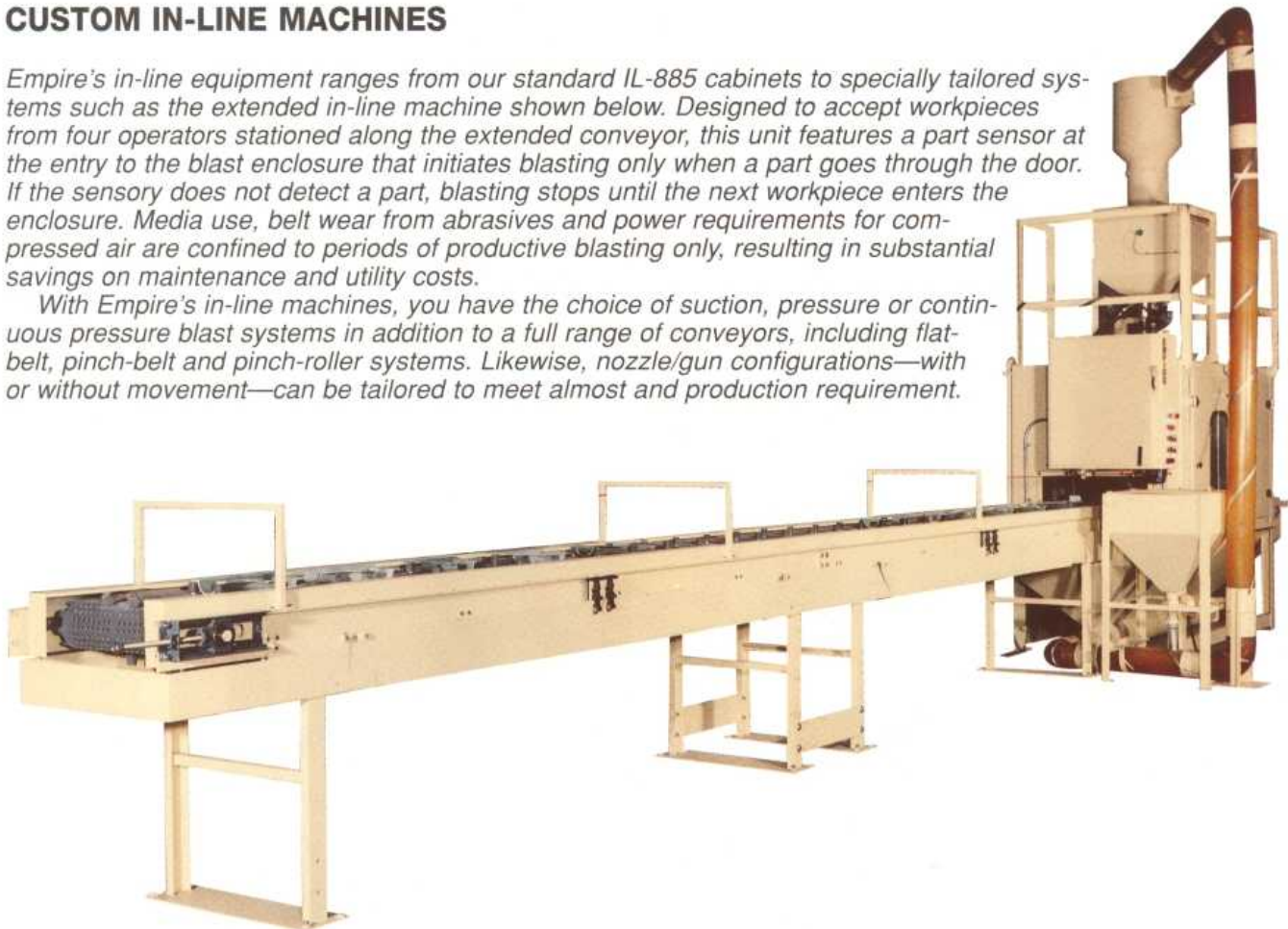
Designed specifically to finish circular parts with recessed areas, this machine features a nine-gun rotary head that can be automatically positioned to trace the work surfaces on parts with different diameters as they rotate on a turntable. The head's "distance from center" and oscillation rate are easily programmed through a keyboard controlling a head-carriage assembly (shown top left). The head itself (shown bottom left) is configured to deliver a tight blast pattern for "deep" and complete coverage of recessed and oblique surfaces. Other features of this machine include a powered work cart, a vertical-sliding door and an automatic media-replenishing system that reduces production time lost for refills. Like all of Empire's automated systems, this unit is available with media-reclamation accessories designed to optimize recycling efficiency and reduce HVAC costs by filtering and recirculating air into the work environment.



CUSTOM IN-LINE MACHINES

Empire's in-line equipment ranges from our standard IL-885 cabinets to specially tailored systems such as the extended in-line machine shown below. Designed to accept workpieces from four operators stationed along the extended conveyor, this unit features a part sensor at the entry to the blast enclosure that initiates blasting only when a part goes through the door. If the sensory does not detect a part, blasting stops until the next workpiece enters the enclosure. Media use, belt wear from abrasives and power requirements for compressed air are confined to periods of productive blasting only, resulting in substantial savings on maintenance and utility costs.

With Empire's in-line machines, you have the choice of suction, pressure or continuous pressure blast systems in addition to a full range of conveyors, including flat-belt, pinch-belt and pinch-roller systems. Likewise, nozzle/gun configurations—with or without movement—can be tailored to meet almost any production requirement.



AUTOMATED PEENING SYSTEMS

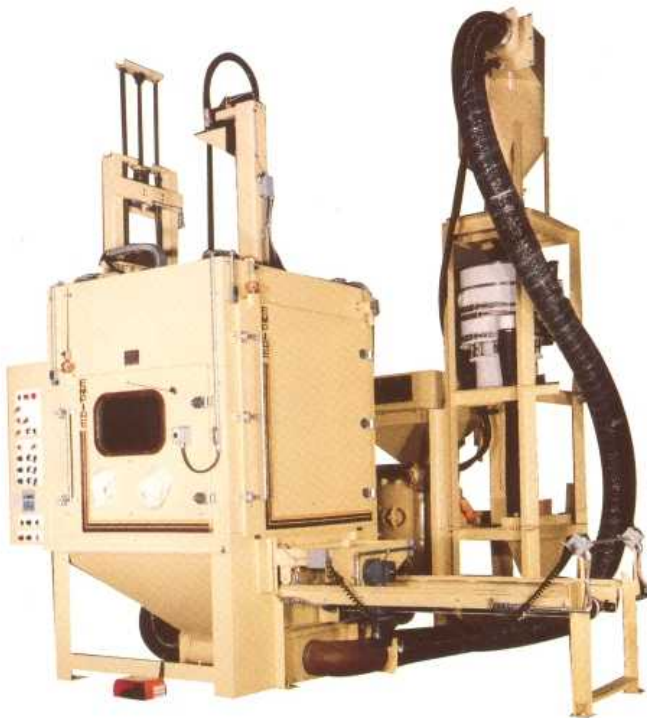
Empire continues to develop air-blast peening systems with advanced computer-control, blast-coverage and material-handling features that not only increase productivity, but also assure repeatability—a major concern in these quality-intensive applications affecting the structural integrity of critical components.



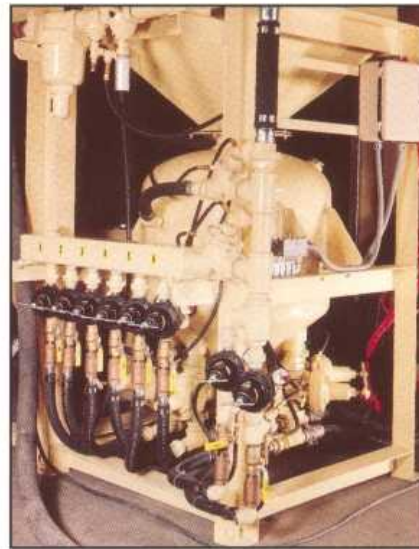
ALLEN-BRADLEY PanelView 550 interface terminal enables operator to designate blasting parameters such as nozzle stroke length and oscillation speeds, "on-off" status of selected nozzles, part rotation speeds, and blast duration by simply inputting the appropriate part identification number.



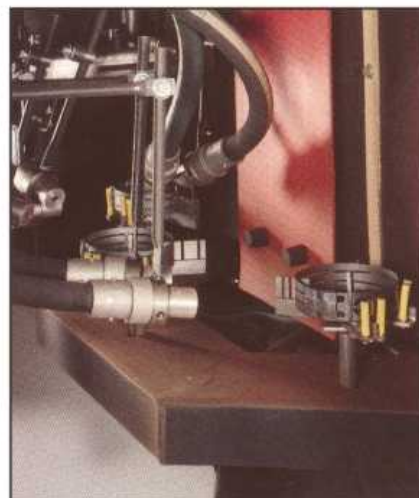
Continuous-pressure, glass-bead system for peening jet-engine turbine blades incorporates vertically oscillating nozzles, a vibratory classifier, and six rotating work stations.



This multi-purpose shot-peening system includes an ID blast lance topeen recessed surfaces on parts, a powered loading cart, independently adjustable pressure nozzles, a shot classifier, and a combination of vertical/horizontal oscillating blast nozzles. Operating parameters are adjustable, making this machine ideal for job-shop work. Because of its versatility, this machine can be set up topeen a variety of parts.

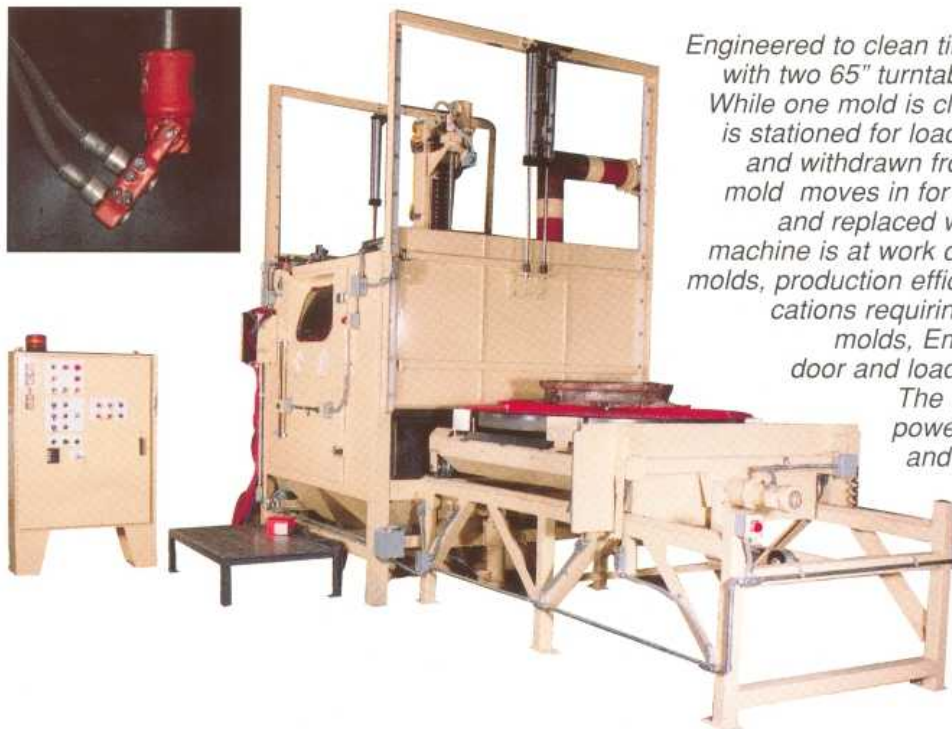


Independently adjustable nozzles are powered by a 10-cubic-foot pressure system which reduces downtime for media refills.



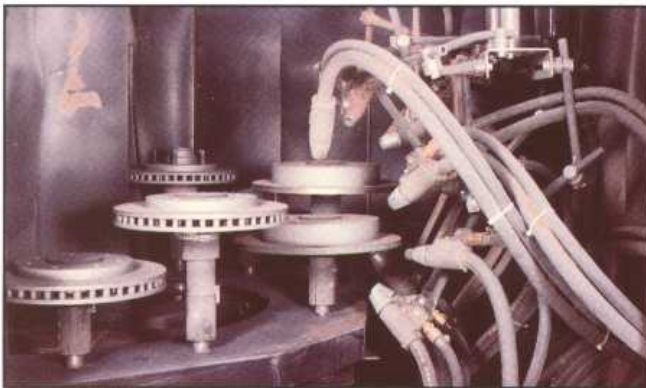
Versatile fixturing gives a single machine the ability to process multiple parts.

MOLD CLEANING



Engineered to clean tire molds, this machine is equipped with two 65" turntables positioned on powered dollies. While one mold is cleaned inside the machine, another is stationed for loading. Once the first mold is finished and withdrawn from the blast enclosure, the second mold moves in for processing as the first is unloaded and replaced with a new workpiece. Because the machine is at work during loading and unloading of the molds, production efficiency is nearly doubled. For applications requiring only occasional blast cleaning of molds, Empire builds machines with a single door and loading assembly in any size required. The unit shown includes two vertical-lift powered doors, two powered turntables and two powered dollies. In addition, it features programmable pressure nozzles (photo inset, top left) enabling both vertical and horizontal movement, as well as the blast angle, to be pre-set and recalled with push-button ease so users can clean molds of different diameters and topologies with one machine.

A FULL RANGE OF FIXTURING



If you want to improve productivity by cleaning different-size brake rotors simultaneously at each work station in an indexing air-blast machine, finishing four teacups at a time in a six-index unit, or shot-peening multiple types of clutch bands in one machine, make Empire your first choice. The fixturing devices shown provide only a small sample of the many Empire has engineered. We have the experience in air-blasting technology and fixturing to deliver systems that work automatically, effectively and economically.



EMPIRE**MOST EXTENSIVE PRODUCT LINE IN THE INDUSTRY**

Blast Cabinets—The spacious 7272 blast cabinet with piston-lift door (shown above) is just one example of how much our non-stop-production Pro-Finish® line has to offer. We also produce modified blast cabinets to meet special production requirements, in addition to an Econo-Finish® line designed for lighter duty service. For stripping and cleaning workpieces with sensitive substrates, we produce a line of FaStrip® cabinets designed specifically to handle plastic media.

Blast Rooms—We build both packaged and field-erected blast rooms with recovery options ranging from “sweep and shovel” hoppers to full recovery floors supported by media wash and recycling systems. Vibratory and screw-type floors are both available. We also design and build custom rooms capable of meeting your most exacting production requirements.

Portable Blasters—Empire manufactures economical mini-blasters, a full line of SuperBlast® portables designed to strip outside structures and large workpieces, plus recovery systems compatible with our equipment as well as other manufacturer's pots.

Our FaStrip portable systems, engineered for use with plastic media, and PRS Blast & Recovery machines include a media recovery hopper, a tunable media reclaimer capable of segregating most types of reusable abrasives from dusts and fines, in addition to a highly efficient dust collector that reduces HVAC costs by recirculating cleansed air to the work environment.

**RODECO COMPANY**

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Printed in the USA on Recycled Paper

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