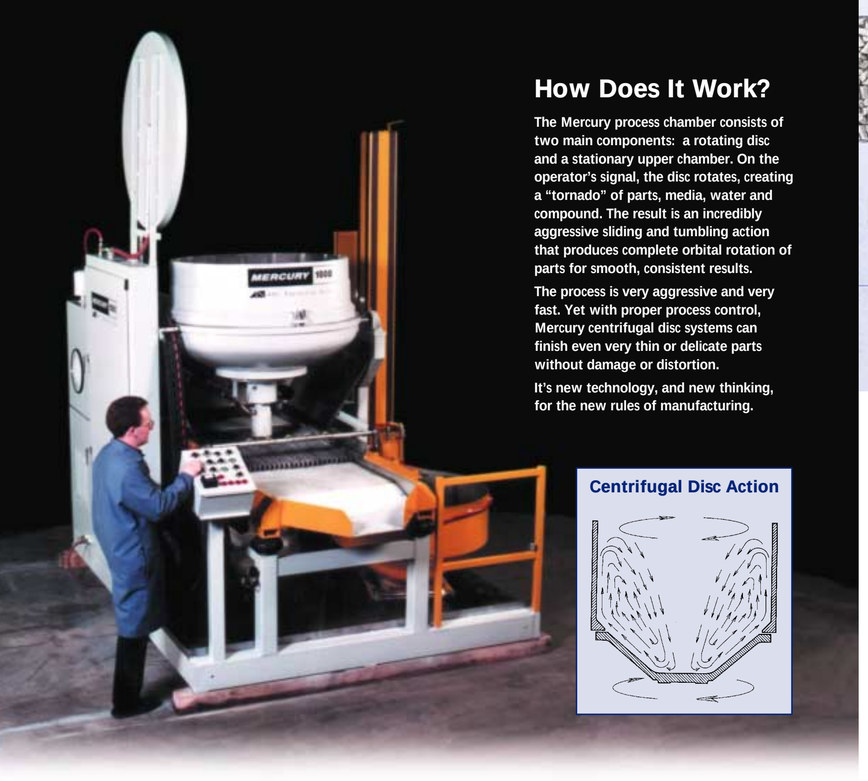

How Does It Work?

The Mercury process chamber consists of two main components: a rotating disc and a stationary upper chamber. On the operator's signal, the disc rotates, creating a "tornado" of parts, media, water and compound. The result is an incredibly aggressive sliding and tumbling action that produces complete orbital rotation of parts for smooth, consistent results.

The process is very aggressive and very fast. Yet with proper process control, Mercury centrifugal disc systems can finish even very thin or delicate parts without damage or distortion.

It's new technology, and new thinking, for the new rules of manufacturing.

Centrifugal Disc Action

Why Consider High-Energy Deburring?

Manufacturing today is a new world. There's even a new language. J.I.T., zero-defect, ISO-9000, QS-1000, cell manufacturing, 100% inspection. Much of this terminology didn't even exist until the 1990s.

But now, every component manufacturer, from the very smallest right on up to the big guys, is being held to the highest production, pricing and service standards. Better delivery, lower prices, total quality. Every customer expects it. That's what is driving modern metal finishing operations.

The game has a new set of rules. And you're going to need some new tools if you plan to win.

Stock Removal Results

(inches of material removed)

The following tests were conducted to compare stock removal over time on a standardized metal part using various mass finishing methods. Removal is measured in thousandths of an inch. Part and media remained consistent in all tests, as did RPM where centrifugal technology was used.

	CYCLE TIME (minutes)				
Finishing Method	30	60	90	120	180
Tumbling Barrel	.000	.000	.001	.0015	.0019
Vibratory Tub	.003	.006	.009	.011	.015
Vibratory Bowl	.003	.005	.007	.009	.012
Centrifugal Disc	.021	.029	.036	.041	.046

AAC 10053M

MERCURY TECHNICAL DATA

	Mercury 100	Mercury 200	Mercury 400	Mercury 600	Mercury 1000
Bowl Capacity	1.2 ft³	3.2 ft³	5.5 ft³	9.3 ft³	15.5 ft³
Working Capacity	.75 ft³	1.8 ft³	3.6 ft³	6.0 ft³	10.0 ft³
Drive Motor	5 HP	10–15 HP	15–20 HP	20–30 HP	30–40 HP
Top RPM	320 RPM	230 RPM	180 RPM	160 RPM	120 RPM
Operation	Manual	Manual or Automatic	Automatic	Automatic	Automatic
Dimensions	44"L x 30"W x 45"H	90"L x 42"W x 61"H	85"L x 56"W x 70"H	102"L x 72"W x 112"H	98"L x 96"W x 125"H

What else does Empire do?

Empire has specialized in designing and manufacturing air-blast products for over 50 years. Today, we produce the most extensive line of pneumatic-blasting equipment in the industry.

Custom Engineering? No Problem.

We've earned our reputation as a leader in air-blast technology by developing products that meet both specific and general customer needs. For example, our standard blast cabinets can be equipped with a wide range of factory options to support most production requirements with zero cost for custom engineering. That's because Empire normally has just what you need on the shelf!

Cost Effective Design Solutions

If specialized accessories are needed for material handling and/or partial automation, we have an entire division devoted to creating the right machine at a the right price. Our product managers work with you to develop the most productive solution in terms of delivering optimum performance for every equipment dollar.

Empire Abrasive Equipment Company, headquartered in Langhorne, Pennsylvania, specializes designing and manufacturing air-blast systems and equipment.

Pro-Finish® blast cabinets, the preferred choice in production applications, are available in over 10 standard sizes. These rugged, easy-to-use cabinets feature a modular design that allows us to meet your application requirements precisely. And, like all Empire products, they're covered by the best warranty in the industry: three years limited on parts and labor.

The same philosophy and engineering expertise apply to all Empire products. Our **portable blasters** incorporate seemingly small time- and maintenance-saving features that add up to substantial profit increases over the long haul. Our **blast rooms** range in sophistication from "sweep and shovel" to fully powered floors.

Our **automated systems** precisely target your needs for fixturing, material handling and production rates.

Empire is an Industry Leader

We support you with the largest distributor network, most modern production facilities and the best-equipped test laboratory in the industry.

AAC Engineered Systems

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Call: (215) 752-8800 E-Mail: Airblast@empire-airblast.com
Fax: (215) 752-9373 Visit: www.empire-airblast.com

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MERCURY

Centrifugal Disc Deburring Systems.

The High-Energy Revolution.

AAC Engineered Systems

Revolutionary Design

(Three Reasons To Not Look Anywhere Else)

1

Abrasite 26™. Because you deserve to double your wear life.

When you look into the Mercury bowl, you'll be amazed at what you **don't** see—urethane. The Mercury's process chamber and spinner are made of AAC by Empire's secret weapon—an advanced cast alloy called Abrasite 26. Abrasite is a highly wear-resistant material originally developed by AAC engineers for rock crushers and cyclones in the mining industry.

Head to head, Mercury spinners and process chambers outlast urethane liners two to one or more—sometimes a lot more. They also allow use of much more aggressive media than competitive designs, further shortening cycle times.

The Mercury's spinner and chamber are impervious to heat, grease, oil, sharp edges and most chemicals. Mercury owners run cleaning and degreasing cycles or high-heat super-abrasive processes that would literally melt down urethane-lined machines. And, the Abrasite material accepts wet or dry processes in the same machine with no special setup required. This translates directly into increased processing opportunities and decreased maintenance costs.

DOLLAR $AVER

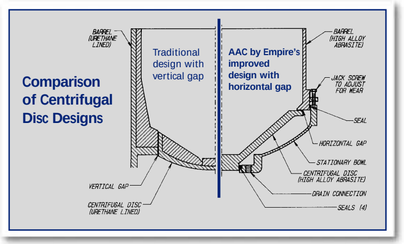
Abrasite outlasts urethane on average two-to-one. A Mercury spinner/chamber change-over takes about two hours vs. a full day for competitive designs. Using these facts, an average Mercury user can save about $3,570 per year over competitive designs.

This example assumes a four cubic foot system, running two shifts/day, vs. average hourly maintenance and urethane relining costs.

TECH NOTE

Centrifugal disc machines can be up to ten times more aggressive than vibratory, causing urethane to break down rapidly. High energy processing can also produce heat in the processing mass yet require close tolerances to run proper gap clearances. Process heat (even warm process water) can cause urethane to "grow," effectively changing spinner/chamber gap size. Abrasite 26 is impervious to temperature. Some Mercury systems routinely run processes so aggressive, they reach the process water's boiling point!

The AAC Mercury by Empire is the most versatile centrifugal disc on the market, using ceramic, plastic, sintered, natural, steel media, loose grain or part-on-part processes. Our systems successfully process parts ranging from tiny stampings to large jet engine turbine blades. Whether radiusing titanium or high-polishing aluminum, the Mercury provides process flexibility unattainable in many high-energy designs.



2

Horizontal Gap. Because jam sessions should only be for musicians.

First,what *is* the "gap," anyway? The gap is the tiny opening, usually 10 or 15 thousandths of an inch or so, between the rotating spinner and the stationary process chamber.

Most centrifugal disc machines use a vertical or diagonal gap with the spinner rotating inside the chamber. If either component is not perfectly round or installed with flawless precision, or if the processing mass develops heat, the gap can change and machine jams become more likely.

The Mercury process chamber is suspended above the spinner and mounted by a system of external adjustment/standoff bolts. As spinner/chamber surfaces wear over time, the gap is simply adjusted to compensate. The spinner and chamber can even be periodically "renewed"— removed from the unit, refaced and replaced in a matter of hours.

DOLLAR $AVER

In designs with vertical or diagonal gaps, the spinner and chamber must be poured, machined and used together as a set. If one item wears first (usually the spinner) both items must be replaced or relined. With the AAC Mercury by Empire design, you need only replace the worn item, in many cases saving maintenance dollars.

TECH NOTE

Many centrifugal disc systems tout an "upflow" water supply. The real reason for this design is simple—a urethane lining must be kept cool and lubricated to work properly. Also, a urethane gap must be kept completely free of debris (part or media chips) to ensure acceptable wear life. Fresh water accomplishes this. However, if this water supply is interrupted, the gap can deform or jam. The Mercury's Abrasite wear items are impervious to heat and the horizontal gap is adjustable and renewable. So the gap area is used for effluent discharge, delivering better drainage, cleaner processes and lower water consumption.

3

Hydraulic Drive. Because high-energy finishing needs high-energy power.

A centrifugal disc is unique among mass finishing machinery. It starts under load, possibly a very heavy load, and rotates that load at up to 300 RPM. Here's the problem. Spinner startup produces torque. Torque is a "waste product" which seeks the weakest point in the drive system. The weak spot is typically the gearbox.

We eliminated gearbox problems by eliminating the gearbox. All Mercury drive and material handling systems are powered hydraulically. Hydraulic systems deliver more power more reliably in a smaller package. The Mercury reliably handles the heaviest loads in the industry, even part-on-part processes and steel media.

Compact hydraulic motors also mean tough, space-efficient loading and material handling systems with bullet-proof designs. The Mercury handles parts and media, in and out of the machine, faster than any other centrifugal disc system.

Hydraulic power offers another built-in advantage—infinitely variable disc speed. That's an option on many others, but it's standard equipment with the Mercury.

Variations in disc speed can produce different cycle times, change finish characteristics and increase the range of parts that can be finished. More power, less space, less moving parts, greater flexibility. It all comes together with the AAC Mercury by Empire.

DOLLAR $AVER

Only AAC by Empire can make this guarantee. As long as you own your Mercury, you will never replace the gearbox. There isn't one.

TECH NOTE

Standard horsepower comparisons

Machine Working Capacity	AAC Mercury	Mfr. R	Mfr. S	Mfr. M	Mfr. T
2 cubic feet	**10HP**	5HP	6HP	5 HP	5HP
6 cubic feet	**20HP**	10HP	17.5HP	7.5HP	10HP

Source: Comparative product literature

Abrasite 26, horizontal gap and hydraulic drive. They all add up to a centrifugal disc machine that can run more aggressive processes, hold tighter tolerances, run more reliably and more often than *any* of its competitors.

Automation is standard equipment.

AAC by Empire quotes every Mercury as a complete package. Each machine (except the manual Mercury 100) comes with an automatic loading device; a loader arm on the Mercury 200 and 400 and a floorspace-efficient pivoting column dumper on the 600 and 1000. Every machine has an integrated parts/media separating screener with automatic media return to the loader. And every machine is PLC controlled, allowing unattended operation throughout the processing cycle. We've even built Mercury systems that don't need an operator at all!

Designed here. Built here. Supported here.

We design, fabricate, assemble and program the entire Mercury system right here on our floor. That's important. Because we know that every customer is different. You might want an extra conveyor here, or a custom computer program there. Your requirements may call for a special loader, parts dryer, or other secondary system to turn your Mercury into a fully-integrated work cell. No problem. We design it, we can change it. We build it, we can modify it.

AAC by Empire services Mercury systems long after the sale through a network of specially-trained local distributors. They're selected for their experience and resourcefulness. Then we educate them at our facility to handle most questions and service issues directly and with full factory support.

All fabrication and assembly takes place at our facility and every system is custom built to meet exact customer requirements.

Open architecture. Easier maintenance.

No bulky enclosures. No tight work spaces. No chain drives. No headaches. We created the Mercury with your maintenance department in mind. All drive components and key service areas are accessible either directly or within peripheral enclosures. And other than the spinner, process chamber and drive-shaft, there are no proprietary components on the Mercury. While we do stock most common parts, Mercury components can be sourced locally or through any major industrial supplier or catalog. Because there is one spare you never seem to have enough of—time!

Our philosophy.

Our job is to make each Mercury **your** Mercury. There is no such thing as an "off-the-shelf" machine that is right for every situation. From slight adjustment to major modification, AAC by Empire design engineers work with your team to create solutions to your specific needs, always with an eye toward your future. We believe that the best design is the one created specifically to fit your plant and production requirements.

Is it for me?

For more information or free sample parts testing contact:

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