

# HOW YOU CAN CUT COSTS

1. *By increasing parts life . . .*
2. *By utilizing the versatility  
of shot blasting . . .*

with

**CARGILL DETROIT**

*Custom Shot Peening Service*

*Custom Shot Blasting Service*

Done under technically controlled conditions which are  
completely reliable and reproduceable.

**CARGILL DETROIT COMPANY**

**2254 Cole Avenue**

**BIRMINGHAM, MICHIGAN • Phone: Midwest 4-5400**

Processing equipment and technique used by contractors of United  
States Air Force; Ordnance Departments, United States Army and Navy

CUSTOM SHOT BLASTING - CARGILL DETROIT

# **Cargill Custom Shot PEENING** **can cut your parts costs in one or more** **of 7 different ways:**

- 1** By part life increase (from 2 to 7 times).
- 2** By permitting the substitution of lower cost materials with no sacrifice of durability.
- 3** By reducing production man hours through substitution of shot peening for grinding and polishing.
- 4** By increasing tensile strength so parts can be lighter in weight.
- 5** By giving parts greater resistance to cracking under repeated stress.
- 6** By reducing or eliminating porosity of certain metals.
- 7** By increasing oil retention of surfaces.

All Custom Shot Peening and Blasting is done under technically controlled conditions which are completely reliable and reproduceable.

# **Cargill Custom Shot BLASTING** **is versatile and done by men who** **know their business:**

Cleaning of blind holes.

Deburring —

Gears

Internal splines

Stampings

Large castings and forgings

ID cleaning of tubular and cylindrical parts.

Local area preparation for rubber bonding.

Generating nascent surfaces.



**CAREFUL HANDLING**

**FAST SERVICE**

**DELIVERY WHEN PROMISED**

These are only some of the fields in which specialized shot blasting has replaced conventional operations — at a distinct saving. We can quote from your blueprints.

✓ **EQUIPMENT WAS DESIGNED AND BUILT  
BY CARGILL SPECIALISTS.**

Shot blasting started our business. Satisfied customers keep it growing. You are invited to inquire of any of them about our custom service.

✓ **OUR BANK OF GENERAL FIXTURES WILL  
EXPEDITE YOUR JOB AND REDUCE COSTS**

✓ **GOOD FREIGHT FORWARDING BY  
COMMON CARRIER—RAIL AND TRUCK**

***Our business is doing four things:***

1. Manufacture and sale of precision Durasteel shot.
2. Custom shot cleaning and peening.
3. Design and manufacture, to order, of special shot blasting machinery.
4. Application of original engineering to General Automation, to reduce manual operations or labor costs, or both. (Fully automatic machines eliminate all considerations of labor cost. They can loaf economically, or rush without speed-up. The only gauge is keeping up with production.)

We will welcome an opportunity to discuss your problems on any of these four.

*Circulate in  
W. C. Unit &  
returns to  
Y-4 Sub File.*

# *Special Machines*

created and built  
to meet special needs

**DEBURRING • PEENING • CLEANING  
BY SHOT BLAST**



**C A R G I L L D E T R O I T**  
2254 Cole Avenue  
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**SPECIAL MACHINES by CARGILL DETROIT**

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*Any idea which can be intelligently discussed can be developed into an engineering sketch.*

*Any good engineering sketch can be developed into the working drawings from which craftsmen build fine machinery.*

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*S*elling shot was Cargill Detroit's first business.

We had developed Durasteel Precision Shot. It was (and is) higher in price. But its use produces so much economy, and so much better work, that users continue to reorder.

*There were better ways topeen and blast.*

In promoting our shot business, observation of operations uncovered the fact that shot using machinery could be greatly improved—no matter what shot was in use. We were interested in such machine improvement as it would further improve the cost-cutting performance of Durasteel shot. So . . .

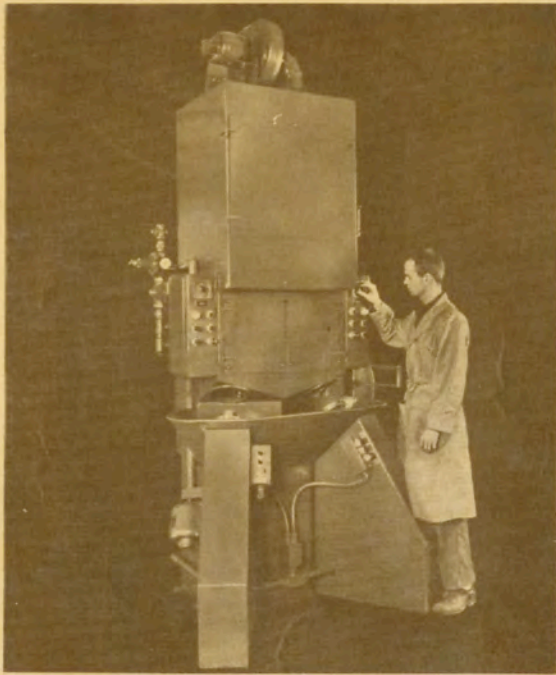
*Machines designed and built by Cargill Detroit resulted.*

Shot, shot peening, and shot blasting being our business—

and engineering being our background—

Cargill Detroit blasting and peening machines and methods proved their superiority in four major ways:

- 1** Reduced shot consumption—with *any* shot.
- 2** Faster peening and blasting—including deburring.
- 3** Lower labor costs, due largely to a higher degree of automation in Cargill Detroit equipment.
- 4** More efficient peening and blasting, resulting from better control of the operation through unique features of design.

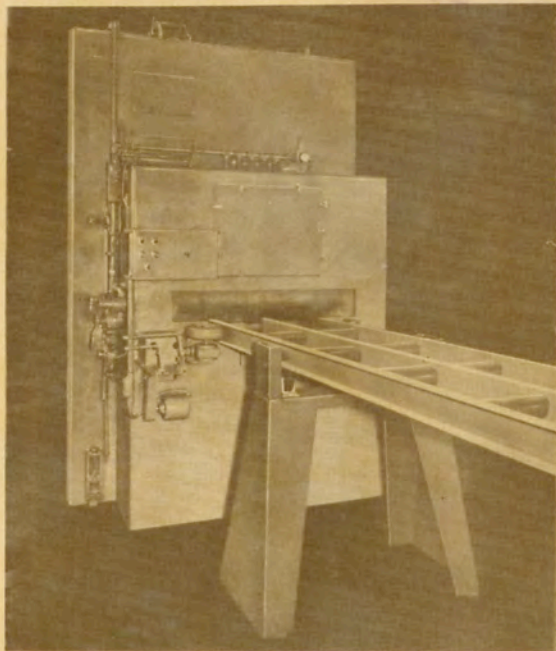


### ◀ For example--

This high production, semi-automatic gear cleaning and deburring machine. Cleans and deburrs 300 gears per hour. Can be quickly changed over to handle other sizes and shapes of gears.

An advanced model of the above machine, having three spindle stations—automatic, magazine type load and unload—processes 500-600 gears per hour—requires only 5 minutes of operator time in each half hour (for loading and unloading the hoppers).

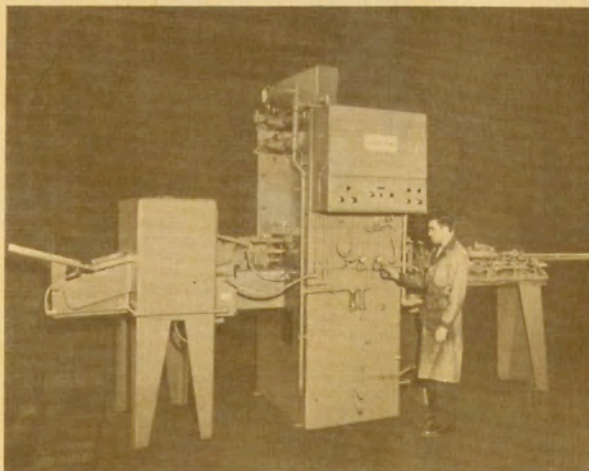
Variations of the above—single station units to run in conjunction with hobbers, shavers, induction hardeners, etc., *without an operator.*



### ◀ Another example--

A machine which gives 50-ft. aircraft wing skins correct curvature—plus *favorable residual stress*—and eliminates costly metal forming equipment. The residual stress accomplished prolongs the fatigue life and greatly increases the stress corrosion resistance.

A delicately controlled shot peening is performed on the integrally stiffened wing skin as it traverses through the machine. Traverse speed is variable. Adjustment to various curvatures and sizes is rapid and simple.



### ◀ And another--

This machine deburrs the large number of varying diameter radially drilled holes in the inside of a tubular shaft—18" long,  $\frac{1}{2}$ " I.D.—at 600 per hour. It also eliminates the high mortality in induction hardening coils brought about by short circuits caused by burrs which

were not cleaned out in the old deburring process.

*The processing line-up requires no operators.* The machine is automatically loaded from the grinders. It takes the shaft through an oven to dry up the coolant,

and through a 5-stage shot blast operation. It automatically loads, and maintains the operation of, two succeeding induction hardeners. It does a better job than the conventional process it replaced, which required six operators.

### *Perhaps you are saying, "So What?"*

**IF you have a problem** with present equipment, why not call us in to discuss it? Since we have helped others, we may be able to help you.

**IF you need special equipment** for a new or different problem, let us propose our solution. A discussion with us may be very profitable to you.

**IF you have no problem, but aren't entirely satisfied—**

**IF you'd like to explore cost reducing possibilities—in Labor, Hourly Production, Maintenance, Material Handling—**why not see what Cargill Detroit is doing?

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# **DURASTEEL PRECISION SHOT**

*Another fine Cargill Detroit Product*

A sure way to lower  
peening and blasting costs

**CARGILL DETROIT COMPANY**  
2254 Cole Avenue  
BIRMINGHAM, MICHIGAN • Phone: Midwest 4-5400



**DURASTEEL PRECISION SHOT - CARGILL DETROIT**

# SHOT ARE TINY HAMMERS!

they have a tough job to do,  
so they need to be tough

In today's shot blasting process, the stress which the shot particle experiences, many times exceeds 200,000 p.s.i.

Durasteel Precision Shot has been designed to meet these unusual, and often unsuspected, stress conditions. Here's why:

- 1** It is cut from high carbon, premium, spring steel wire.
- 2** Its tensile strength is extremely high—300,000 p.s.i.
- 3** This tensile strength, combined with a Rockwell hardness of 48-52, produces the acme of toughness
- 4** The cut, the weight, the dimensions, and the contours are held to close tolerances.

## HOW DURASTEEL PRECISION SHOT

affects peening and blasting costs

*The quick explanation is —*

- 1** Less shot consumption due to much longer shot life.
- 2** "Constant" performance and results.
- 3** Longer life for the equipment.
- 4** Less maintenance.

## Evidence (LESS SHOT CONSUMPTION) ↓

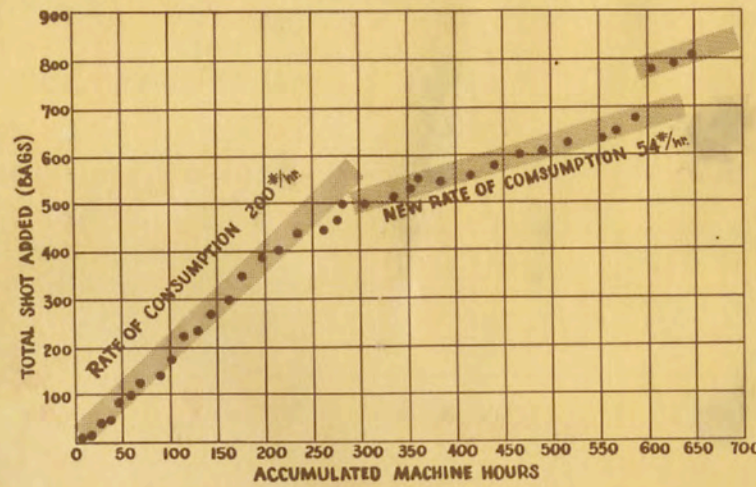
Typical production test, on a 5 wheel cabinet, blasting complex, large, grey iron castings. Inventory, 20 tons of shot.

With the ordinary shot, the rate of consumption was 200 lb./hrs. At about 250 hours, the "flushing" of the old shot was completed.

The consumption rate dropped to 54 lb./hrs.

At 600 hours, a second shift was opened. Its work was stacked until morning and contained substantial shot "carry off." The shot was reclaimed from the stack, but not returned to inventory until after discontinuation of the second shift.

Notice that the consumption, after the jump at 600 hours, continues at the same rate with Durasteel.



### "DOLLARS AND CENTS"

200 lbs. chilled shot @ 8c.....\$16.00

54 lbs. Durasteel @ 19c..... 10.26

Indicated saving.....\$ 5.74

## Evidence (LONGER SHOT LIFE) ▶

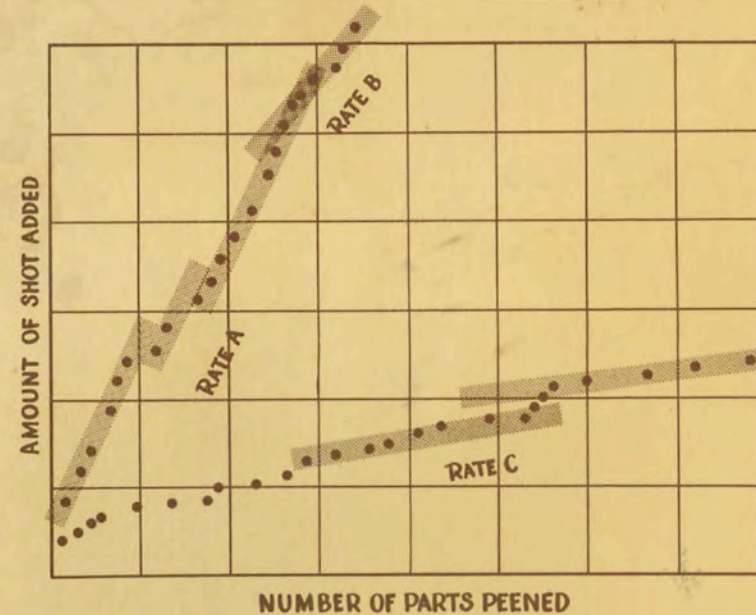
Typical production test, run on two identical peening machines—2 wheel, automatic conveyor type.

Rates "A" and "B" were with ordinary shot, in one machine. Rate "C" was with Durasteel, in the second machine.

The ordinary shot lasted approximately one-third as long as Durasteel.

The gaps in Rate "A" indicate gaps in the record keeping at those points.

The erratic start of the Rate "C" curve evidences the "flushing" of the old shot by Durasteel. The jumps at the start of Rate "C", and at the midpoint of the "C" line, reflect the arbitrary addition of shot to the inventory.

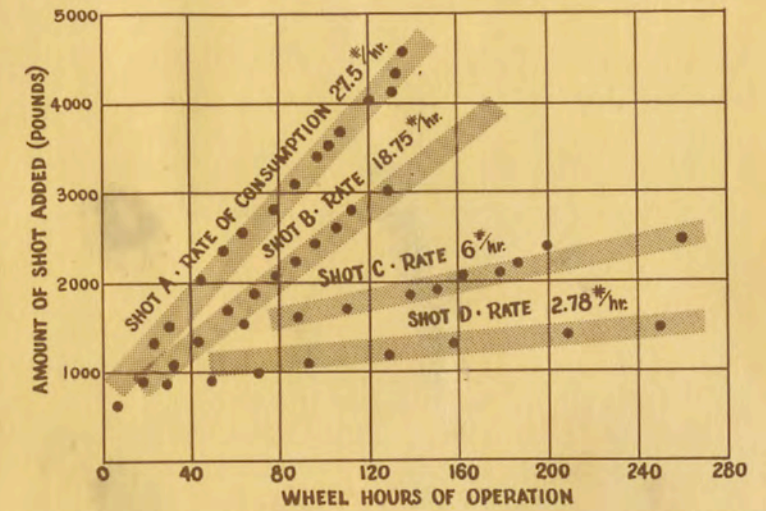


### "DOLLARS AND CENTS"

Cost of shot per piece—Rates "A" and "B".....\$ .00500

Cost of Durasteel per piece—Rate "C". .00175

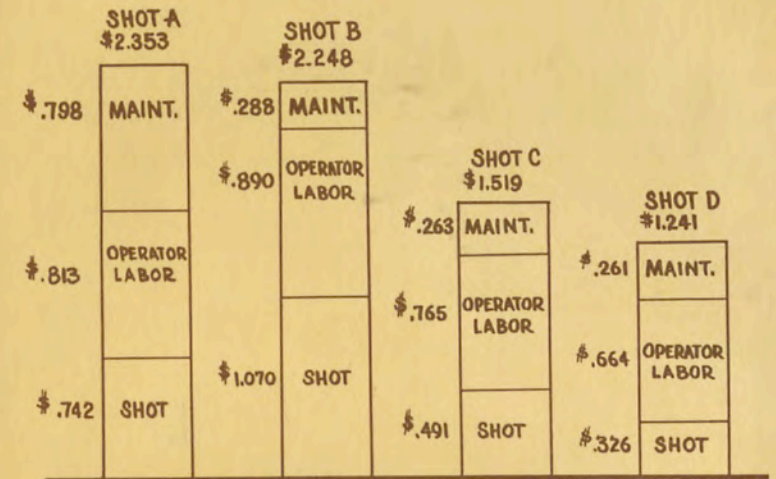
Indicated saving per piece.....\$ .00325



Typical production test, using four different shots in the same machine. Run with a batch type, airless blast, cleaning miscellaneous forgings.

Durasteel (shot D) outlasted the three others by the approximate ratios of 2-1, 6-1, and 9-1.

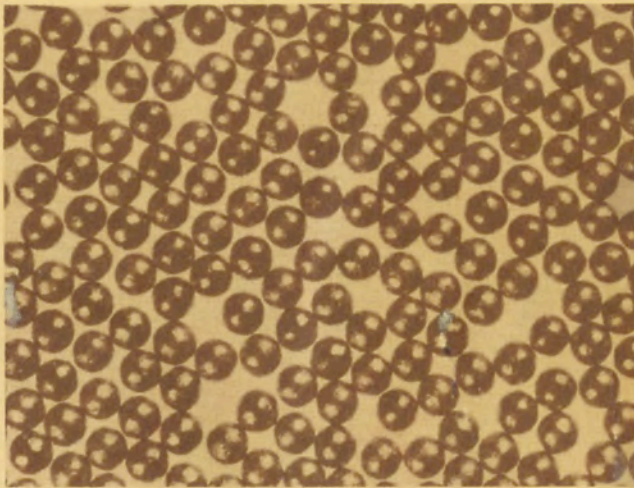
The rise in consumption of shot "C", at 180 hours, was corrected when a leak in the machine was found and plugged.



### COST PER TON CLEANED USING VARIOUS PARTS

### "DOLLARS AND CENTS"

Against Shot "C", Durasteel cost 18% less  
 Against Shot "B", Durasteel cost 44% less  
 Against Shot "A", Durasteel cost 47% less



## **DURASTEEL PRECISION SHOT**

*increases wheel blade and wear parts life  
in blasting equipment up to 144%*

A production foundry made comparisons—conventional shot vs. Durasteel Precision Shot—on a high production, multiple wheel, blast cleaning machine.

The measured wear life of the wheel blades was increased, by the switch to Durasteel, from 36 hours to 88 hours.

(It was also found that shot consumption per wheel, per hour, had been reduced from 30 pounds with conventional shot, to 2½ pounds with Durasteel Precision Shot.)

**DURASTEEL**  
*eliminates over-blasting, and permits  
blasting time to be standardized*

Because of the precision uniformity of the blast stream with Durasteel, and the constant cleaning ability of the blast from day to day, the cleaning cycle time approaches a constant for similar parts. This enables the machine operator to blast to a standard time, and eliminates the over-blasting which often takes place "just to make sure."

# **Cargill Detroit Service to You**

## **TO TAKE THE GUESSWORK OUT OF COST COMPARISON**

As in the cases described on the inside of this folder, Cargill Detroit offers to do the following in your plant—with your machines—with your workmen:

- 1 Check your equipment for shot leaks and losses.**
- 2 Check your operator's performance.**
- 3 Make an accurate, adequate record of consumption of your present shot, and of maintenance labor and material.**

This will produce a "control figure" upon which everyone can agree.

Following that, Cargill Detroit will check consumption of Durasteel Precision Shot—on the same machine—with your workmen.

Comparison of the resulting "control figure" on Durasteel can then be easily translated into a dollars-and-cents comparison.

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