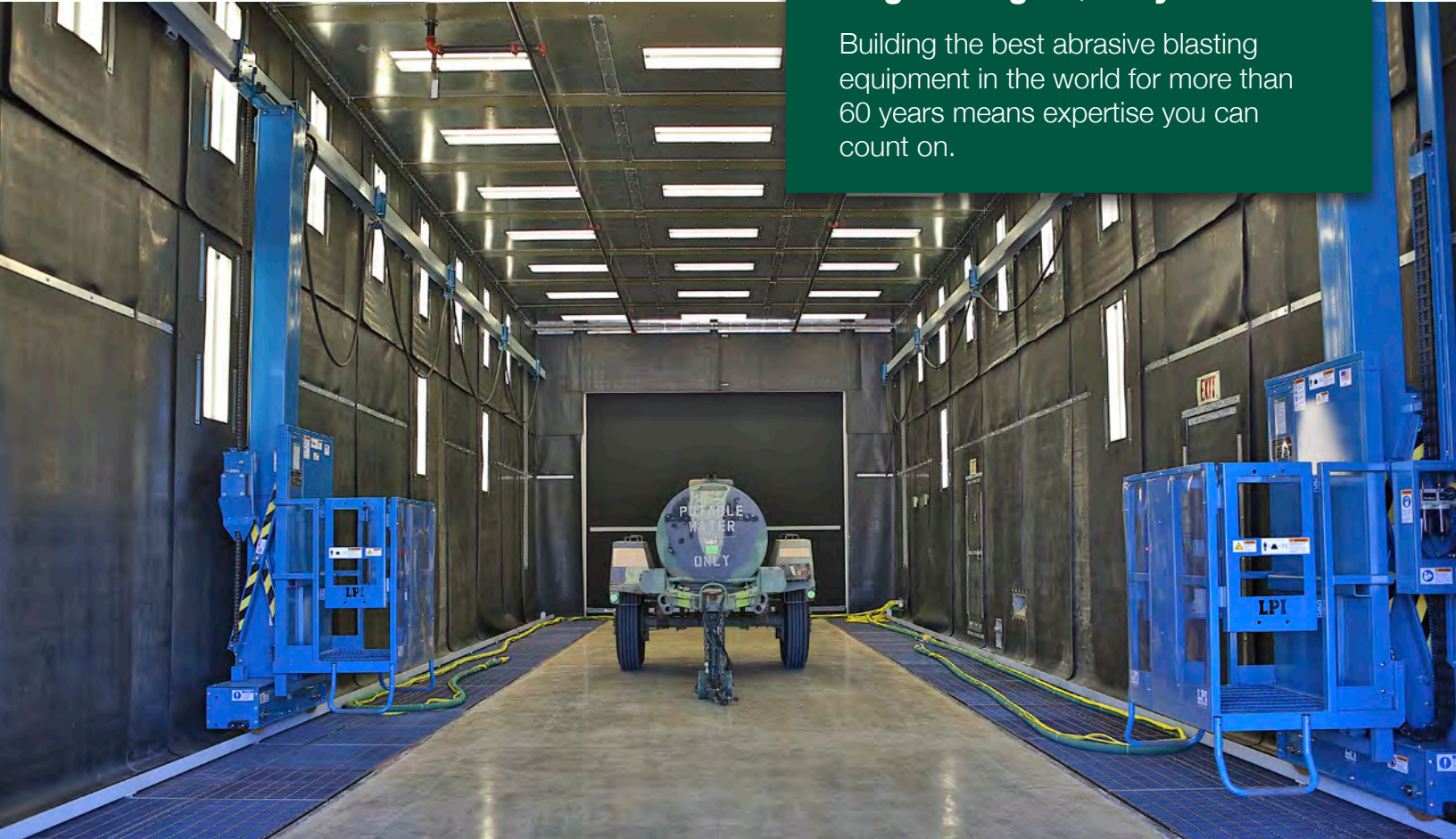




BLASTING IS OUR BUSINESS

Engineering • Quality • Service

Building the best abrasive blasting equipment in the world for more than 60 years means expertise you can count on.



INDUSTRIAL BLAST FACILITIES PLANNING GUIDE

BLAST ENCLOSURES • BLAST EQUIPMENT • OPERATOR SAFETY • ABRASIVE RECOVERY
ABRASIVE CLEANING • DUST COLLECTION • CONTROLS • WORK PIECE HANDLING



INDUSTRIAL BLAST FACILITIES BY CLEMCO

An Investment for Decades of Service

When we help our customers do their homework up front, their blast room investment pays them back for decades. To get started, review this guide and use the enclosed Request for Quotation (RFQ) form to walk you through the decision-making process. This guide applies to all industrial facilities engineered and built by Clemco for most common blast media, including those marketed as AEROLYTE® dry stripping facilities. Aerolyte facilities handle plastic, starch, and other non-aggressive, lightweight media.

Why Blast Indoors?

Pressures from neighbors, the EPA, frequent inclement weather, and generous cost-savings on abrasives make indoor blast facilities increasingly appealing and efficient.





A BLAST ROOM WILL SAVE YOU MONEY

Simply switching from expendable to recyclable abrasive used with recovery and abrasive cleaning equipment can produce significant savings. Recyclable abrasives, such as steel grit can be used 200 or more times.

An efficient blast facility for small, medium, or large work pieces can pay for itself in media savings alone, sometimes in less than one year.

The Safer Choice

Companies who opt to blast rather than chemically-strip reduce employee exposure to dangerous chemicals, often times realizing great cost savings from reduced disposal costs.

Greater Flexibility

Today's ever-tightening environmental regulations restrict outdoor blasting. Bringing the process inside offers greater operational flexibility—blasting can go on 24/7. No more worries about weather, time of day, or adjacent activities.

WHETHER YOU HAVE A GREEN FIELD PROJECT OR AN EXISTING FACILITY THAT NEEDS AN UPGRADE, CLEMCO HAS A SOLUTION TO FIT YOUR BUDGET.

WHAT COULD YOU BE SAVING?

These savings estimates are based on spending \$75 per ton for sand or slag and \$1000 per ton for steel grit.

Hours of Blasting Per Week	Savings Per Year
10	\$16,250
20	\$32,500
30	\$48,750
40	\$65,000
50	\$81,250
60	\$97,500
70	\$113,750

* Estimates based on blasting 52 weeks per year with a #6 nozzle.



COMPONENTS OF AN EFFECTIVE BLAST FACILITY

- ✓ RECOVERY SYSTEM
- ✓ MEDIA CLEANING SYSTEM
- ✓ BLAST ENCLOSURE
- ✓ WORK-PIECE HANDLING
- ✓ DUST COLLECTION
- ✓ BLASTING SYSTEM
- ✓ OPERATOR SAFETY
- ✓ COMPRESSED AIR SUPPLY
- ✓ CONTROLS

PLANNING A BLAST FACILITY

Evaluating Your Needs

A Clemco Industrial Blast Facility can be designed and engineered for your application—whatever your budget—from a fully-equipped blast room with recovery and dust collection—to a simple sweep-in recovery system for an existing blast room. There are many products to choose from, even a prefabricated, preassembled room that can be surface-mounted and put into service within days of arrival.

MEDIA CHOICE DRIVES RECOVERY SYSTEM SELECTION



The recovery system catches and transports spent abrasive for cleaning and reuse. It is the heart of the blast room system, and the key to efficiency and return on investment. Unique methods of recovery suit specific types of blast abrasive. **It is therefore critical to determine what blast media will be used before planning the blast room or requesting a quotation.**

Clemco systems are classified as mechanical or pneumatic. Mechanical recovery is for heavy abrasives, such as steel grit and other coarse-mesh abrasives. Pneumatic recovery handles lightweight materials, such as plastic, starch, glass bead and aluminum oxide up to size 16 grit.

Clemco together with our authorized distributor will help you select the recovery system most suitable for your application and budget.

Often there is confusion when specifying abrasive. **Grit is angular with defined edges** for cutting peaks and valleys into the blast surface. **Shot is round and produces a dimpled surface.** To make the most of your investment, use abrasives specifically manufactured for blasting that provide multiple blast cycles.



THE RECOVERY SYSTEM

Heavy-Abrasive Systems



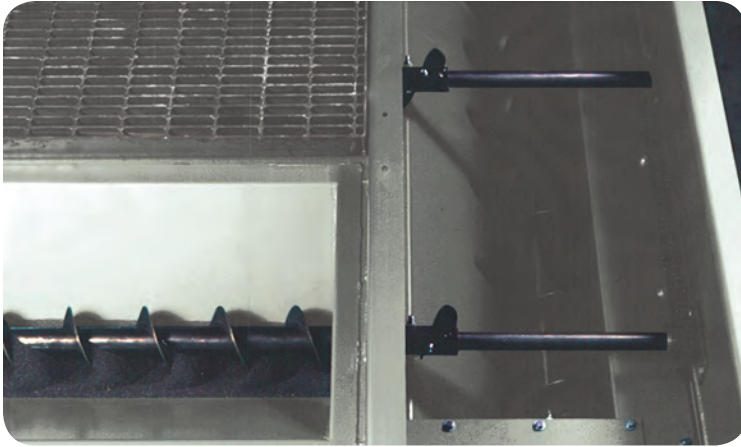
Belt Conveyor

The Clemco Belt Conveyor system is simple, reliable, and very low maintenance. The belt system can be configured as a full-area or partial-area recovery system. Spent abrasive falls to the floor and into channels covered by floor grating. Below the grating are recessed hoppers, engineered to meter the abrasive onto the belt.



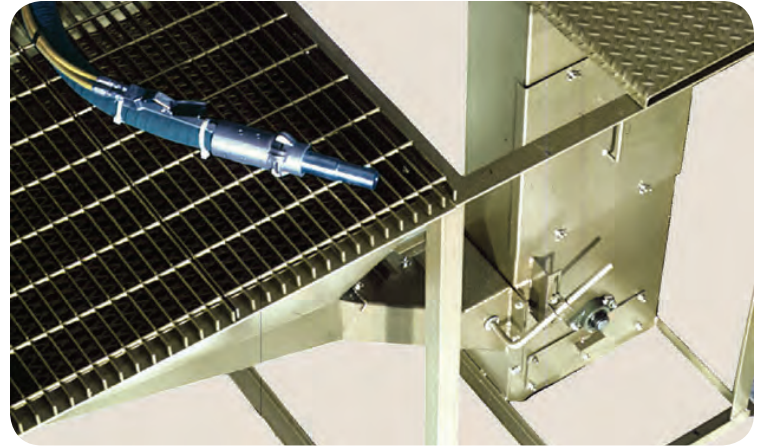
Flat-Trak[®]

Flat-Trak[®] is a full area recovery system with minimal pit requirements. The Flat-Trak[®] recovers abrasive through a series of channels. The channels are fitted with vanes that move forward and backward. On the forward stroke, the abrasive is pushed to the next vane in line.



Screw Conveyor

Clemco offers Screw recovery systems as an alternative for steel grit applications for those customers who prefer this technology. Screw floors are available in full-area and partial-area sweep-in configurations.



Hopper (Recessed or Wall-Mounted)

Normally the least expensive option for small rooms is the hopper system. The 3 x 3 is a mechanical sweep-in system installed in a recessed pit inside the room along a wall. The grating is flush with the floor level. The bucket elevator, abrasive cleaner, and blast machine are located on the other side of the wall outside the room. A wall-mounted 2 x 2 system eliminates the need for a recovery pit.

THE RECOVERY SYSTEM

Lightweight Abrasive Systems / Pneumatic

M-Section®

For lightweight media a pneumatically-powered M-Section® recovery system is best. The spent media, contaminants, and dust fall to the floor, pass through the grating, and into funnel-shaped 12" x 12" hoppers. In sequence, high-velocity air evacuates each hopper and carries the materials from the floor to the cyclone-style reclaimer for separation and media cleaning. These systems can be configured to provide full-area or partial-area sweep-in recovery.



M-Section® systems are simple with no moving parts and are easy to operate and maintain. The pneumatic power for this system is derived from the dust collector.

The best recovery system choice is based not only on media transport, but also on media cleaning.

GENERAL GUIDE TO MEDIA RECOVERY & SEPARATION

Media	RECOVERY SYSTEMS					SEPARATION OPTIONS	
	Belt Conveyor	Flat-Trak®	Screw Conveyor	Hopper	M-Section®	Magnetic Separator	Vibratory Separator
Aluminum Oxide	X	X		X	X	X	X
Garnet	X	X		X	X		
Glass Bead					X	X	X
Plastic					X	X	X
Silicon Carbide					X	X	X
Starch					X	X	X
Steel Grit	X	X	X	X			X
Steel Shot	X	X	X	X			X

This information is intended as a general guide; it may not apply to all media sizes.

ABRASIVE CLEANING SYSTEM

Critical to high performance is efficiency of the abrasive cleaning system. Separating dust and fines from reusable media affects the cost per media cycle and the life expectancy of the dust collector filters. Too much reusable media carried over to the dust collector wastes media and prematurely wears filter cartridges. Clemco offers two styles of abrasive cleaners. A mechanical abrasive cleaner for heavy media, and pneumatic abrasive cleaner for lighter media.



Mechanical Abrasive Cleaner

The Clemco Air Wash Abrasive Cleaner (AWAC) is a gravity-feed system, used with all mechanical floor recovery, such as the Belt Conveyor, Flat-Trak®, and Hopper Sweep-in systems. A rotating scalping drum culls debris from the media stream. The spent media, dust, and fines cascade over a series of baffles. A high-volume air stream is drawn through the falling media to remove dust and fines. Reusable media is carried either to a storage hopper or it drops directly into the blast machine.



Pneumatic Abrasive Cleaner

The Clemco Media Reclaimer is a cyclone separator used to clean lightweight media, such as glass bead, plastic, starch, and fine aluminum oxide. It is used with our pneumatic M-Section® recovery systems. A high-volume air stream carries media into the cyclone separator where heavier media particles are spun to the outside of the cylinder, while dust and broken media are drawn out with the exhaust air from the center. The reclaimer can be precisely tuned to minimize usable media carryover to the dust collector.

SELECTING THE ENCLOSURE

The enclosure contains the blast process. It is sized to allow sufficient space for the maximum work-piece size plus a minimum of four feet on all sides for the operator to work. Enclosures can also be sized to allow multiple operators to work within the enclosure at the same time. Make sure to assess your current and future needs so that your choices today will accommodate your operation for a reasonable period of time in the future.

Enclosure Style

Enclosures are offered in three construction styles: column-bolt, reinforced flange-bolt, and flange-bolt style.

Column-bolt enclosures offer the greatest structural strength using prefabricated bolt-on panels affixed to a structural steel frame. This style is suited to large rooms, wider than 30 feet and/or higher than 20 feet, or for rooms designed for a monorail parts handling system.



Reinforced flange-bolt enclosures use the same prefabricated bolt on panels and offer a combination of added structural strength at a more economical price point. Perfect for enclosures 12 to 30 feet wide, or 12 to 24 feet high.

Flange-bolt enclosures are more economical; they are built with prefabricated panels that bolt together without the support of a frame. Flange-bolt construction is suitable for rooms up to 12 feet wide and high. The wall panels typically are fabricated with 10-gauge galvanized steel.

COLUMN-BOLT

For Rooms
Greater than **30ft** wide
or **20ft** high

REINFORCED FLANGE BOLT

For Rooms
From **12ft** to **30ft** wide
or **12ft** to **24ft** high

FLANGE-BOLT

For Rooms
Up to **12ft** wide
and Up to **12ft** high

SELECTING THE ENCLOSURE



Lighting

Bright, well-positioned lights increase productivity. Typically between 50 and 80 foot-candles is sufficient. Lights may be mounted on the ceiling for general illumination, on the walls for shadow-free illumination, or a combination of both.



Swing-Type



Personnel Door



Rubber Roll Up

Doors

Work-pieces enter the blast room through large, full-opening doors on one or both ends of the room. Two swing-type doors on one end of the room are most common. Doors on both ends of the room allow for work to flow through to the next process, such as painting. Bi-fold doors, and rubber roll up doors are other options.

In addition, OSHA requires one personnel door for every 30 feet of room length. A personnel door not only offers an emergency exit, but also easy entry/exit for the operator or supervisor.

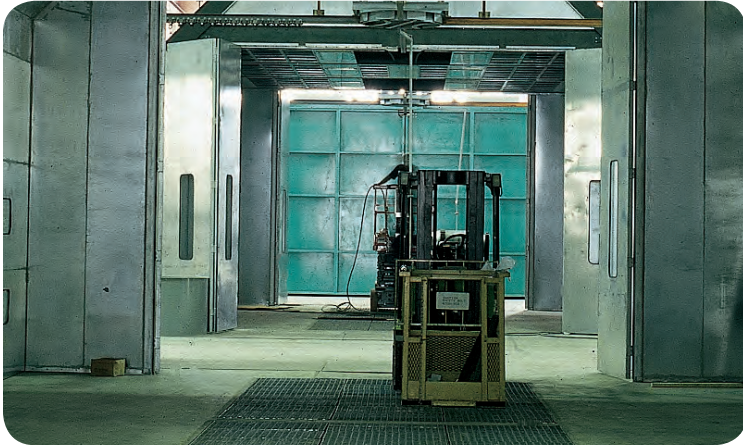
WHEN PLANNING A BLAST ROOM, BEGIN BY CONSULTING YOUR LOCAL CLEMCO DISTRIBUTOR BEFORE YOU UNDERTAKE ANY STRUCTURAL WORK. IT IS FAR MORE COST EFFECTIVE TO PLAN FOR RECOVERY, VENTILATION, LIGHTING, CONTROLS, AND BLAST MACHINES WHILE THE PLAN IS STILL "ON-PAPER."

WORK-PIECE HANDLING

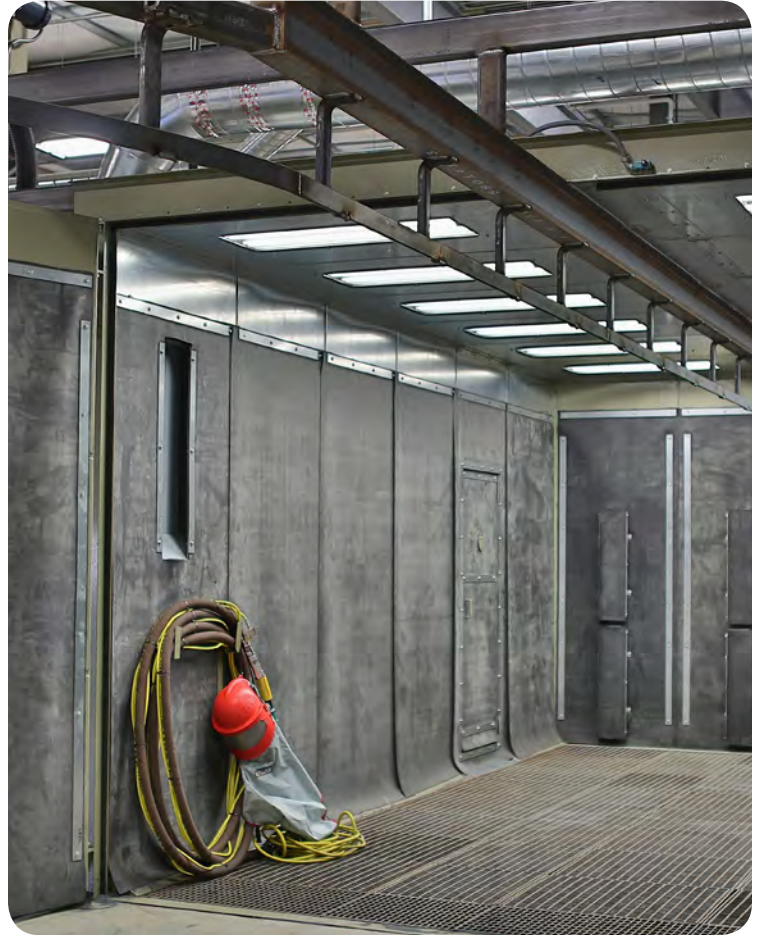
Depending upon the size, weight, and type of parts to be blasted, customers will choose the most suitable method to move product into and out of the room. Forklifts, rail-mounted work cars, overhead monorails, and other common systems can be integrated into the room. Their integration may impact the design and specifications, so it's important to consider these handling systems when beginning to plan your blast room, and to specify them on the RFQ form.



Rail-mounted Work Car



Fork Lift Handling in Room



Overhead Monorail System



Panel with Optional PLC Controls

Control System

A control panel serves as the interface between your existing power supply and the blast room equipment. A central control panel dedicated to the blast room and related components is recommended. Standard panels are in NEMA-12 enclosures. Panels rated as explosion-proof or other special specification can be accommodated as requested. Note your requirements on the RFQ form.

DUST COLLECTION



The Dust Collector

Dust collection removes airborne dust and particles and maximizes visibility. Reverse-pulse dust collection provides the most efficient solution for blast room dust collectors today.

A Clemco CDF Dust Collector with a powerful exhauster motor performs the critical function of ventilating the blast room by drawing air through the room at an adequate velocity. Most applications call for air movement at a rate of 60 feet per minute; while for particularly dusty or hazardous-dust applications, rates as high as 100 feet per minute may be required. Local regulations may affect air-movement requirements.

Room size (width and height) and several other factors come into play when determining dust collector size: the condition of the part being blasted, the amount of dust produced by the blast abrasive/media, and any additional ventilation demanded from the media reclaimer. With M-Section® recovery a separate reclaimer is often installed for the most efficient media cleaning.

Dust collector operation is simple.

Dust from the blast room is ducted to the dust collector where it enters the filter area. The filter cartridges trap the dust on their exterior surface and release it with periodic reverse pulsing of air flowing from the inner circumference of the cartridge. Seasoning of the cartridge prior to initiating the periodic pulse protects the cartridge filters from premature wear and extends the cartridge life.

Clemco CDF dust collectors are reverse-pulse style with filtering provided by pleated polyester cellulose filter cartridges of our own design. The cartridges are arranged horizontally for easy access. CDFs provide a nominal 2 to 1 air-to-cloth ratio. CDF collectors feature a sloped roof so that precipitation sheds naturally, as they are often installed outdoors.

The collector is most often installed outdoors and should always be located as close to the room as possible to minimize ducting and maximize dust collection efficiency.

BLAST MACHINE SYSTEM

Blast Machines

Stationary six-cubic-foot capacity single-operator blast machines are the standard for most rooms. Multiple-operator machines are also available; however single-operator blast machines beneath a storage hopper for refilling offer the simplest set-up, allowing each operator to blast independently. When lightweight media, such as plastic or starch, will be used, an AEROLYTE® blast machine, featuring a steep cone for smooth media flow is recommended.

The blast machine package that comes with the room includes remote controls, abrasive metering valve, abrasive cut-off system, coupled blast hose, nozzle, air filter, and personal protective equipment for the blast operator.

Personal Protective Equipment

The Clemco PPE package supplied with most rooms includes a NIOSH-approved Clemco Apollo respirator, air conditioning device, hoses, spare lenses, a breathing-air filter, a heavy-duty blast suit, and a pair of gloves.



Apollo 600 with optional CMS-3 CO monitor.

Carbon Monoxide Monitoring

To ensure the safety of the blast operator, most facility owners choose to include carbon monoxide (CO) monitoring of the air coming from the compressor.

Two options for blast rooms are the CMS-1, a wall-mounted unit, or the CMS-3 personal monitor, which mounts inside the Apollo respirator. The benefit of the CMS-3 is its immediate warning directly to the wearer of the respirator.



COMPRESSED AIR SUPPLY



Compressed air powers the blast machine, the controls, the dust-collector pulse function, the recovery floor (pneumatic systems for lightweight media) and the breathing-air supply. When compressed air is used for both blasting and breathing, it must meet the specifications for Grade-D as defined by the Compressed Gas Association in their commodity specification G-7.1.

Most problems associated with blasting can be traced to the compressed air supply. Blasting requires an abundant supply of clean, dry air delivered to the blast machine through a large-diameter hose. Damp abrasive hinders flow through the machine. Too-small a hose cannot supply enough air quickly. The orifice size of the blast nozzle, the size of the recovery floor, the respirator and any breathing air conditioning devices impact compressed air consumption (air volume).

A CLEMCO REMINDER — WORK IS DONE IN DIRECT PROPORTION TO THE VOLUME OF AIR AND PRESSURE AT THE NOZZLE. HAVING A COMPRESSED AIR SUPPLY OF SUFFICIENT VOLUME AND PRESSURE IS EXTREMELY IMPORTANT.

Preassembled Blast Rooms



Shown with optional rails



To speed the purchasing process and minimize installation expense, the Clemco preassembled blast room fills the bill. A preassembled room measures 7 feet wide by 14 feet long by 8 feet high. It arrives ready to be positioned, and for ducting and electrical supply hookups. While it requires no excavation, it may be placed in a pit to minimize entry height. The system includes the enclosure, full-floor recovery, abrasive cleaner, blast machine, PPE, and dust collector. Wall curtains are optional. Two standard models of preassembled rooms are available: one for glass bead, harsh/aggressive media, lightweight media, the other for heavy abrasives.

INSTALLATION, START-UP, SUPERVISION AND TRAINING

Installation

Clemco has professional relationships with experienced installation contractors. These professionals can prepare the site and install the blast room and all components. The scope of the installation can range from turn-key to selected component installation assistance. You choose the level of assistance you require.

Some customers elect to do their own installation or hire local contractors. Your Clemco blast facility purchase includes drawings for site preparation, equipment arrangement, electrical and ducting connections, as well as finish work.



Start-Up Supervision and Training

Training is an important but frequently overlooked component of a successful blast facility installation. To get the most from your facility, Clemco recommends start-up supervision for major new components and complete facilities. Even experienced operators and maintenance staff can benefit from learning about new systems, operational and preventive maintenance procedures, and troubleshooting techniques. Start-up is provided by Clemco Field Service Engineers or qualified distributor representatives, who are specially-trained to check installation and ensure proper functioning of all components of the room.



Request For Quotation – Industrial Blast Facilities

Please use this form to convey your equipment needs, and explain your application and site requirements. Fully completing the form is a critical first step in the proposal process. Fully-completed forms expedite the quote process, eliminating delays for additional information and clarification. Email completed form to info@clmcoindustries.com or fax to 800-726-7559.

FOR CLEMCO INDUSTRIES USE ONLY	Opp#	Estimate#
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What type of quotation is required?

- Budget Estimate NOTE: GA drawing to be provided, when requested, at firm quotation stage.
 Firm Quotation GA drawing

Company name and name of person completing this document	Date
--	------

Has the end-user/customer approved the content of this document? Yes No

Distributor Metal Finishing Supply Co., Inc.	Customer	
Company Name	Company Name	
Dist Contact Lee Caracci	Contact/Title	
Address PO Box 526	Address	
City/State/Zip Brookfield, WI 53008-0526	City/State/Zip	
Email lcaracci@metalfinishingsupply.biz	Email	
Office Tel: 262-782-0555	Cell: 414-477-2977	Office Tel: Cell:

What is customer's primary industry? (e.g. metal fabrication job shop, manufacturing etc.)

Why is this capital investment being considered?

Replacement of existing blast room
Room equipment being replaced _____
If replacing existing Clemco room, provide JO/PRJ number reference _____

New process/product line

What is the stage of your blast facility planning?

Forecast Budgetary Approved

Indicate budgetary constraints _____

What is the application?

- Surface preparation for coating or bonding Scale removal Deburring Finishing Peening

If hazardous coating or material will be removed, specify hazard _____

What parts will be processed in this facility?

Part Name(s) _____

Substrate Material _____ If varied, identify typical materials _____

LENGTH	
Maximum	Minimum

DIAMETER	
Maximum	Minimum

WIDTH	
Maximum	Minimum

WEIGHT	
Maximum	Minimum

HEIGHT	
Maximum	Minimum

Other (Specify _____)

Maximum	Minimum
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Blast Media

What abrasive/media will be used in this facility? (It's important for selection of recovery system etc.)

- Steel Grit Steel Shot Aluminum Oxide Glass Bead
 Plastic Media Ceramic Media Starch Media Soda/BiCarb

For the above, please specify grit/mesh size _____

Other type of abrasive/media and size _____

Blast Room Enclosure

- Include in proposal

If not to be included, specify size and construction of existing or room to be provided by others

Long _____ Wide _____ High _____ Construction _____

Info about existing facility that Clemco should be aware of _____

Info Needed for Blast Room Quote

Desired Room Size (Allow minimum of 4 feet around maximum size of part to be blasted)

Long _____ Wide _____ High _____

- To be installed within another building (standard)
 To be installed outdoors

Work Doors One End Only Both Ends

Number of Personnel Door(s) _____ [NFPA requires one personnel door per 30 ft of room length]

Protective Abrasive-resistant Wall Curtains Yes No

Blast Room Lighting

- Ceiling Side Walls Both Ceiling and Side Walls
 Standard (50 Foot Candles) Other (Specify foot candles) _____

Power Supply - Is 277 voltage available? Yes No

Parts Handling/ Handling Types

NOTE: Whether or not Clemco will quote, please provide handling equipment info below.

By Clemco	By Others	Type of System
<input type="checkbox"/>	<input type="checkbox"/>	Work Car: Bed Size _____ Capacity _____ <input type="checkbox"/> Powered <input type="checkbox"/> Manual
<input type="checkbox"/>	<input type="checkbox"/>	Rails (RR): Gauge _____ (width of rail set) Size _____ Length _____ <input type="checkbox"/> Recessed <input type="checkbox"/> Raised
<input type="checkbox"/>	<input type="checkbox"/>	Rails (inverted "V"): Gauge _____ (width of rail set) Size _____ Length _____
<input type="checkbox"/>	<input type="checkbox"/>	Monorail: Capacity _____ Length _____ Clearance _____
<input type="checkbox"/>	<input type="checkbox"/>	Hoist: Capacity _____ <input type="checkbox"/> Fixed <input type="checkbox"/> Moveable <input type="checkbox"/> Pneumatic <input type="checkbox"/> Electric <input type="checkbox"/> Manual
<input type="checkbox"/>	<input type="checkbox"/>	Other – specify: _____

NOTE: If handling by customer-provided forklift, please specify:

Fork Lift: Weight _____ Capacity _____ (max load)
Tire Size _____ Tire Type _____ Number of Tires? _____

Recovery System

Include in proposal Type to be recommended by Clemco

Provide sketch of desired layout; attach separate drawing.

Desired Area Full Floor Recovery Partial Floor Recovery

NOTE: Flat-Trak® recovery is for full-floor recovery only.

- Recessed** (requires excavation) specify water table _____
 Belt Conveyor Screw Conveyor 3 x 3 Hopper M-Section® Flat-Trak®
- Surface-mount** (requires no excavation)
 2 x 2 Wall-mount Flat-Trak® with ramp plates M-Section® with ramp plates

Grating: 250 lbs/sq ft 1,000 lbs/sq ft 2,000 lbs/sq ft Other - specify _____

Vacuum Recovery (in addition to floor recovery) Yes No

Blast and Safety Equipment

Total available compressed-air supply _____ cfm at _____ psi. Specify Compressor HP _____

Blast Machines

- Include in proposal Blast Machine, remote controls, blast hose, nozzle, and blast machine air filter
 Existing (If existing, specify quantity _____ capacity _____)

Safety Equipment

- Include in proposal Supplied-air respirator with Air Conditioner, Breathing-air Filter, Leather Gloves, Blast Suit
Specify Blast Suit size: Med L XL 2XL 3XL
Carbon Monoxide Monitor/Alarm Fixed, wall-mount Individual inside-respirator

Dust Collection for Room Ventilation

Include in proposal

Required Ventilation Rate (feet per minute through blast room enclosure) _____

NOTE: Ventilation rate to be determined by ANSI standard Z9.4 Table I based upon abrasive to be used.

Maximum Ambient Humidity: _____ %

HEPA Filter Yes No

Dust Collector Location

Inside Building Outside of Building/Explosion venting Yes No

Indicate Location (Distance From Room): _____

NOTE: If Dust Collection is existing or to be provided by others,

Specify – Brand _____ Model _____ CFM Rating _____

Differential Pressure (Operating Range): _____ inches W.G.

Fan Static Pressure: _____ inches W.G.

Electrical Controls

Include in proposal

Control Panel

Electrical Requirements NEMA 12 UL CSA/CUL CE

Power Supply: _____ Volts _____ Phase _____ Lighting voltage _____

Electrical Classification / Explosion Proof Class _____ Division _____ Group _____

Other Critical Information Needed for Quote Development

Overall Allocated Space for this Equipment (It's very important to tell us about all limitations)

Length _____ Width _____ Height _____

Describe how this blast facility will integrate with other processes

Before and after processes: _____

Installation/Erection

By Clemco Contractor By Distributor Contractor By Others

Special Instructions or Requirements

NOTE: When submitting the RFQ, attach a sketch of desired layout, indicating adjacent equipment and structural elements.



INDUSTRIAL BLAST FACILITIES

OVER 60 YEARS OF EXPERIENCE
YOU CAN TRUST

*ISO 9001 certified. Clemco is committed to continuous product improvement.
Specifications are subject to change without notice.*

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