

## Automatic Full Floor Recovery Blast Room

There is a world of difference inside WEBLAST full floor recovery blast room. A WE-BLAST blast room is a complete abrasive blasting system with its own controlled environment. The user gets 24 hours of daylight and 365 days of good weather. Both production and environmental problems are solved at the same time, and lower overall costs as well.



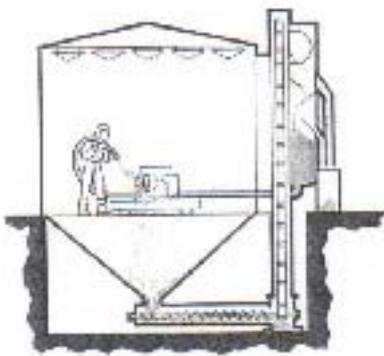
Whether you are planning a large, high production blast facility or occasionally used blast room, WEBLAST provides each design with the right equipment to produce the best results. For a limited production with constrain in painting quality, WEBLAST offers rooms in which both abrasive blasting and painting can be accomplished.

WEBLAST enclosed blasting facility reflect years of experience in using, designing and building abrasive blasting equipment. We believe in simple, easy to operate and maintain equipment, integrated into well thought out system. Each feature of WEBLAST blast room is designed for easy installation, simple maintenance and increase productivity with superior overall performance.



## Selection of Abrasive Recovery Methods

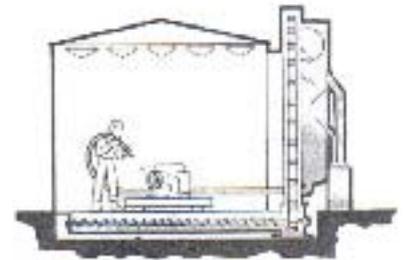
Every component of a system has a direct bearing on the overall efficiency of the total system, but the heart, and the most critical area, is the floor recovery system. It is obvious that old conventional methods, including mechanical and pneumatic, are inadequate for a number of reasons.



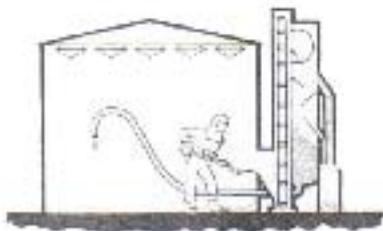
Mechanical system with deep under floor hopper can be the simplest in design but the most costly and impractical for implementation on a large blast room. The deep pit adds to both cost and moisture problem. Component parts are generally covered, making maintenance and inspection difficult.

Multiple parallel hoppers and screw conveyor help to reduce the depth of floor pit but add to the costs of construction and operating maintenance in the long run.

Mechanical vibrating floor pans may be applicable for small blast rooms where compact design is more suitable. It becomes a problem to maintain for a larger blast room due to its many components installed for the vibrating motion. Slow recovery of vibration on small gradient also could not cope up with higher production demand.

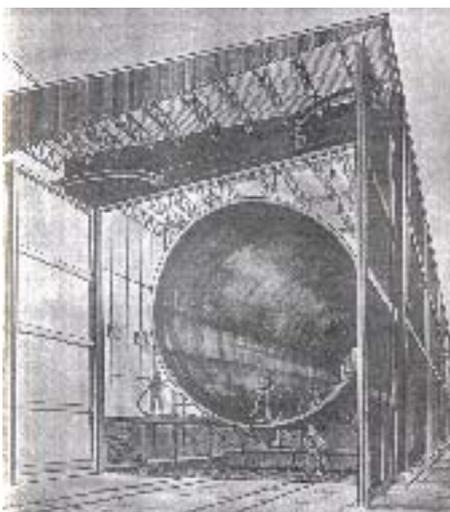
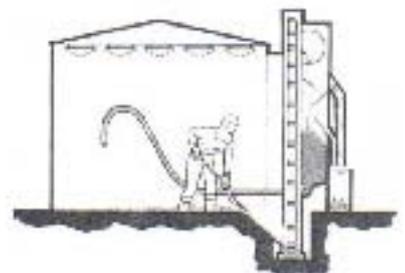


Pneumatic recovery by vacuum or blower requires excessive horse power to maintain the velocity of air flow necessary to carry the heavy steel abrasives. Uneven distribution of abrasive and debris, such as welding rod stubs, cause serious problems. Wear and tear of components is high due to the high velocity recovery of abrasive.



For a lesser demand blast room, semi-automatic recovery may be the best choice. The set-up costs would be the least and maintenance is also minimal.

Such a semi-automatic recovery blast room is also applicable to very big rooms such as those used in the ship-block blasting. The system will include the installation of under floor belt recovery, vacuum recovery, dehumidifier and integrated spray painting ventilation system.



Modern days blast rooms shall have the following features.

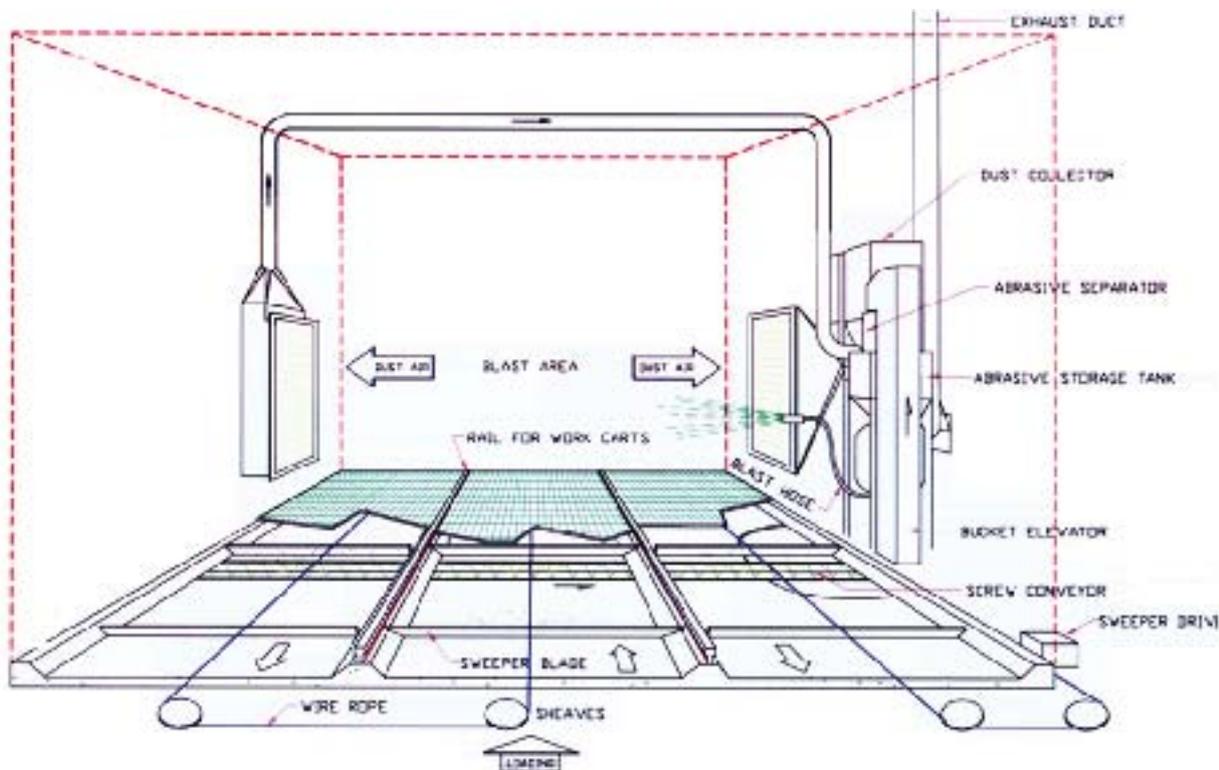
1. A full floor recovery system that is cheap to operate and has minimal mechanical installation under the working floor.
2. Provide heavy duty rail tracks for work car to move in and out of the room with ease.
3. Fully ventilated and lighted space to meet industrial standard required for blasting work to be carried out inside.

WEBLAST has the system for you.

## How Does a Full Floor Recovery Works

The shallow depth required by WEBLAST full floor system is achieved by using flat rectangular pans arranged in rows on the foundation floor. The pans are closed on three sides and leaving one side open for connection to a central cross screw conveyor system. Each pan is installed with a sweeper frame that is mounted with two units of sweeper blades. The sweeper frame is being pulled forward and backward in a repeated manner, at a selected speed and timing, sweeping the accumulated abrasive on the pan to the central conveyor. The simple sweeping action is similarly created in all adjoining pans, all linked together and driven in group by a positive motorised system.

You can see from the schematic diagram below that, sweeper frames are pulled by wire rope, wrapped around sheaves and connected to roller chain driven by gearmotor. Dedicated control system is built in to ensure proper tensioning of the wire rope and the precision of sweeping motion.



WEBLAST full floor recovery system has the following advantages:

**Shallow excavation** required that the system be installed in an area as shallow as 14” deep. No excavation is needed if the user can accept to have the external rail track raised just the same height from the ground.

**Positive mechanical sweeper** to avoid problem of foreign matter and uneven distribution or loading.

**Minimum number of working parts** and modular in construction where each sweeper module maintains its independency from the failure of others, to keep the complete system operating.

**Easy visual inspection** of all working floor components for routine maintenance ease.

**Sealed floor pans**, which is a major consideration requiring that all shot must fall onto a recoverable surface.

**Easy installation** is a primary design feature in WEBLAST full floor recovery system. The most difficult and time consuming works are done in the factory before shipment to site. A few months of work done in the factory can be completely erected at site in just a matter of a week or two.

## Recovery System Equipment

### Sweeper, Conveyor & Elevator

Two sweepers are framed as a unit with aluminium tubing and section which cater for the light weight assembly. The sweeper blades actually oscillate up and down in tandem with the backward or forward motion, hence completing the sweeping job designed for it. The screw conveyor effectively pushes the abrasive away and outside the blast room towards the bucket elevator unit.



*Sweeper Drive Unit Assembly*



*Sweeper, Pan & Screw Conveyor Assembly*



*A Single Double Chamber Blast Pot Silo-Separator-Bucket - Elevator Set-up*

### Storage Hopper

An elevated hopper is provided for storage of abrasives and for surge capacity. This is necessary when work overload exceeds blasting system capacity. This frequently occurs when blasting the interiors of compartments as found in container tanks or item with internal compartments. Hoppers are available in capacities from 30-80 tons of steel abrasive, to meet demand at maximum system requirement.

### Recycling & Classifier

Abrasive Separator is a component engineered to clean the collected abrasive of dust and debris as efficiently and economically as possible. The design permits maximum retention of usable abrasive which means potential saving in abrasive cost. Many separators operate by dropping a curtain of abrasive past a slot opening, through which a current of air passes to blow away the dust. Large debris is mostly retained by the filter screen mesh located below the abrasive curtain, and before the abrasive is returned to the storage silo. Some separators are designed to have the abrasive goes through a cyclone collector.

WEBLAST abrasive separator air washes the abrasive a minimum of two times. A rotating drum is lined with axial pockets which lift the abrasive at a uniform feed rate. Reusable abrasive falls through the drum screen into the storage hopper. Dust and debris fines are carried via ductwork to the system collector, and large particles and trash are disposed of through the trash chute.



*Sweeper Floor Pans Assembly 7.6W x 20mL*

## Ventilation & Humidity Control

There are three primary reasons for ventilating an enclosed space during cleaning and coating operation: operator health & safety, operator visibility and curing of coating. Ventilation can be described in terms of airflow and the exchange of clean incoming air and dirty outgoing air. A design with the balance of incoming and outgoing air is critical for eliminating air turbulence in the work chamber. A balance air flow ensures effective directional removal of dust and vapor. A slightly negative air pressure is maintained in the room to ensure dust does not blow out through small openings.



**Dust Collectors** are used for removal of blasting dust. It also serves to maintain a designated number of fresh air changes inside the room. A room of size between 850m<sup>3</sup> to 2800 m<sup>3</sup> is recommended to use an air change of every five minutes.

**Spray Booths** are used during painting operations in confined spaces. The air becomes laden with paint overspray and solvent vapour. The ventilation rate should be sufficient to dilute solvent vapour to 10% or less of the lower explosive limit (LEL) of the specific solvent being sprayed.

The volume of air required during abrasive blast cleaning will, in most cases, also maintain solvent vapour concentration below 10% of the LEL. It will also maintain good visibility.

*< From left: abrasive silo installed with blast pots underneath, spray booths and dust collector.*

**Dehumidification** may be required for three reasons:

The first being, a coating specification may require a maximum relative humidity (RH) that is below the ambient RH of the room.

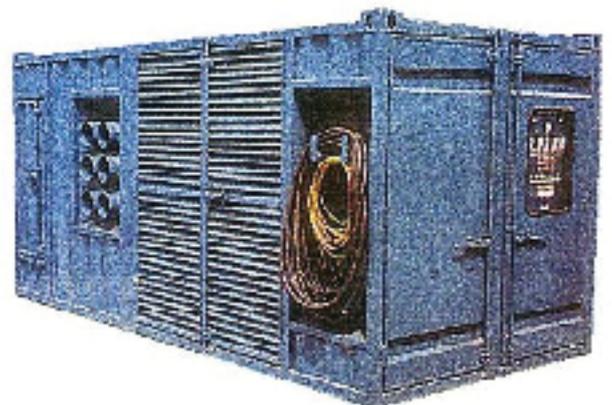
The second is to prevent condensation on a steel substrate, when the dew point is at or above the surface temperature. Most coating specifications require the surface temperature to be at least 3 deg C above the dew point temperature.

A third reason for requiring dehumidification is that it can create a working conditions that can improve productivity and reduce downtime. Dehumidification lowers the ambient air temperature, so it alleviates hot and humid conditions inside the room that contributed to work fatigue.

WEBLAST supply and install refrigeration, aircool type dehumidifiers. They are meant for lowering the dew point temperature in room, maintaining RH below 45%, thus allowing blasting and painting operation to continue regardless of weather condition.

The dehumidifier features:

Fully automatic 4-stage digital cooling and heating control. Enhanced electrical and system pressure safety protection. Fully monitored system running and faults status display.



Typical Dehumidifier Construction



## Blast Room Size & Construction Guide

Give us the following information to size up a suitable design for you.

1. The Maximum Size of Work You Would like the Room to handle. This shall include,
  - a. The length
  - b. The width
  - c. The height
  - d. The weight
2. How much works are to be produced through the use of the blast room? This can be expressed in,
  - a. Tons of material per week or month.
  - b. Type of work - structural or bulk construction like vessel.
  - c. The number of blast guns normally used to do your works.
3. How much floor space is available for the facility construction? This shall also show how the space is situated in relation to the fabrication shop. The information shall lead to,
  - a. The design of the room configuration, should it be,
    - i. Through doors end to end with long floor tracks.
    - ii. Single door in and out of the room.
    - iii. Double tracks going in parallel to the room.
    - iv. Two rooms in parallel utilizing the same ventilation & recovery system.
  - b. The material handling method & floor support construction for load bearing.
    - i. Work car on track only.
    - ii. Hoist for manipulation of blast position.
4. Spray Painting Facility design shall be integrated in the design.
  - i. The space for it.
  - ii. The intended method for spray painting.
5. The Roof Over the Room.
  - a. Will it be housed in the existing building?
  - b. Shall it have its own roof covers?
6. The type of blasting media you would be using.
  - a. Garnet?
  - b. Steel grit?
  - c. Or a combination of use for different works?
7. Any other information that you would like to highlight.
8. If you would prefer to choose a basic configuration from our existing production program.

	Internal Room	Internal Dimension from any combination below.			
i.	Length	16ft	24ft	32ft	48ft
ii.	Width	12ft	15ft	20ft	25ft
iii.	Height	10ft	12ft	16ft	18ft

We shall then follow up with a few more questions & a proposal to you.