



Why have Protoblast Company chosen the above systems for you?

Protoblast Company have designed, built, installed and operated many methods of abrasive recovery systems. All the Systems available today, Screw Conveyor Systems, Pneumatic Recovery Systems to Wiper Floor Systems, Protoblast Company has built and operated, but always come back to the Oscillating Conveyor/ Bucket Elevator System as by far the most reliable, efficient and maintenance friendly Recovery System available in the industry today.

The distinct advantages of the Oscillating Conveyor/ Bucket Elevator System are –

- Reliability.
- Low ongoing maintenance costs – no high speed abrasive in the recovery system to wear componentry like suction hoses / ducting.
- Low down time relating to maintenance – no waffles or suction pipes to jam up or block.
- Low power requirements = low running costs, a lot less than inefficient pneumatic systems with large motor requirements.
- The whole system can be accessed, so in the rare event of flooding the system can easily be cleaned and ready to go in a short time.
- The Oscillating Conveyor System is totally self-cleaning, no residual abrasive is left in the system after shut down for moisture ingress = less down time.

Not just the most efficient system but the most economic long term

The principle of the Oscillating Conveyor / Bucket Elevator System has been perfected over many years of operation, incorporating many unique features that will benefit your operation for years to come. Rubber mounts secure the tray to the base and “rock” the tray as it is oscillated by an eccentric cam. The rubber mounts stretch slightly, and thus pull back under internal tension to the original position. Torsion bars keep the whole movement synchronised. The tray virtually rocks with only minimal power consumption. The Abrasive is slightly lifted on the forward “stroke” and is placed further along the tray as it “rocks” back to the original position. This means there is virtually no wearing parts.

As there is no residual abrasive in the conveyor or elevator, moisture ingress is minimised.

The simplicity and reliability of this system is the reason why they are so successfully operating in hundreds of installations around the world. In the rare event of flooding, the whole system can be fully accessed and cleaned, unlike pneumatic systems. There is no **abrasive left on the conveyors** after a few minutes, so no abrasive is left exposed to attract dew or dampness.

A pre-screening ‘**live sieve**’ ensures oversize rubbish, rocks and larger debris etc. cannot enter the bucket elevator. The ‘**live sieve**’ operates continually, removing the dross all the time, to keep the



abrasive clear of oversize rubble. The rubbish falls into a bin which can be emptied periodically, and the screen is also removable, in the unlikely case it becomes partially blocked with small stones.

DUST COLLECTOR – VENTILATION

The Dust Collector required for your Chamber would have a capacity **designed to meet regulations** for your size of Chamber. The Cellulex cartridges will give an **air to media ratio of 2.212:1**. Filtration efficiency when new will be **99.99% of 0.5 micron particles**. The cartridges will be mounted horizontally for ease of changing when required, this over comes the need of personal entering the Dust Collector chamber, which is regarded as confined space. The dust is pulsed from the cartridges directly into the hoppers then into 200 litre dust bins below.

The cartridges are cleaned by a state-of-the-art **Maxipulse Reverse System**. This incorporates high-flow easily removed valves, pulse optimiser nozzles and a solid state controller to give features such as continuous differential pressure readout, “on demand” cleaning, clean-up cycle and hour meter.

The Dust Collector will be fitted with a **backward inclined centrifugal fan for efficiency** with limit load design to prevent motor burnout.

Other features of the Dust Collector include fully welded 3mm construction, steep hopper angles, convenient over-centre door latches and rugged ball bearing hinges.

The customer is required to provide good, clean and dry compressed air to the Blast Pot and Dust Collector header tank. **Pressure must be 100 p.s.i. for efficient blasting.**

ABRASIVE CLASSIFIER – BUCKET ELEVATOR –Included in pricing.

The Abrasive Classifier is an essential piece of equipment in any recovery system in any Abrasive Blasting Equipment. There are three main reasons for this:

- a) In order to receive the maximum benefit from abrasive, it is necessary to remove contaminants and fine dust. If the abrasive cleaning system does not work efficiently. The abrasive will quickly become so contaminated that it will need to be disposed of before the maximum use is derived.
- b) A good Classifier should also remove the abrasive fines. This is particularly important if a high profile is specified as the particle size needs to remain above a certain point in order to maintain these profiles. On the other hand, the **right amount of fines in the abrasive mix will greatly increase production.**
- c) Visibility is also affected by the cleanliness of the abrasive. If the abrasive is cleaned effectively, the main source of dust will be from the work-piece being cleaned, not the abrasive. In some cases, **35% of the dust in a blast chamber** has been attributed to **poor abrasive cleaning.**

We are recommending an elevator with an integrated **Abrasive Classifier** for your Blast Chamber, as these are the most effective means of abrasive cleaning and classifying. The abrasive is spread out



into a thin (about 2-3mm thick) abrasive “curtain”, about 400mm wide. This curtain of abrasive is flowing purely under gravity.

The curtain of falling abrasive is subjected to a cross-draft of air which “fans out” the falling abrasive. This allows the splitter plate to accurately split the good, clean abrasive from the “fines and “dust”. The dust is carried out to the Dust Collector, the fines fall into the fines bin and the clean abrasive is returned into the abrasive storage bin above the blast machines. The bucket elevator is fabricated from 3mm steel and uses heavy duty 2.5mm steel buckets for extended life.

The “fines” chute is the secret to the correct operating mix of abrasive. If good abrasive is present in the fines, the splitter plate and air damper needs to be adjusted to ensure no good abrasive is wasted. If too much dust is present in the abrasive, the system need adjusting to remove more fines and dust from the good abrasive. Your fines bin is your window to the operation of the Classifier.

(Some claim pneumatic cyclones that move abrasives at high speeds also “air-wash” the abrasive. This is not a true air wash, and although cyclones work well in the wood working industry, they do not have the ability to accurately separate dust, fines and good abrasive. Protoblast still do build these when we have to, but are very inefficient)

The Industry Handbook written by A.B. Williams from USA states that for abrasives larger than 100µm (0.1mm) the gravity air wash system (Classifier) is the best method for cleaning abrasives.

This technology is proven to be the only accurate way to classify and separate fines, dust and clean abrasive, and is fully adjustable. It performs with steel grit, garnet, steel shot, aluminium oxide and all other recyclable abrasives.

Thank you for reading and please don't hesitate to contact the team if you have any questions.