



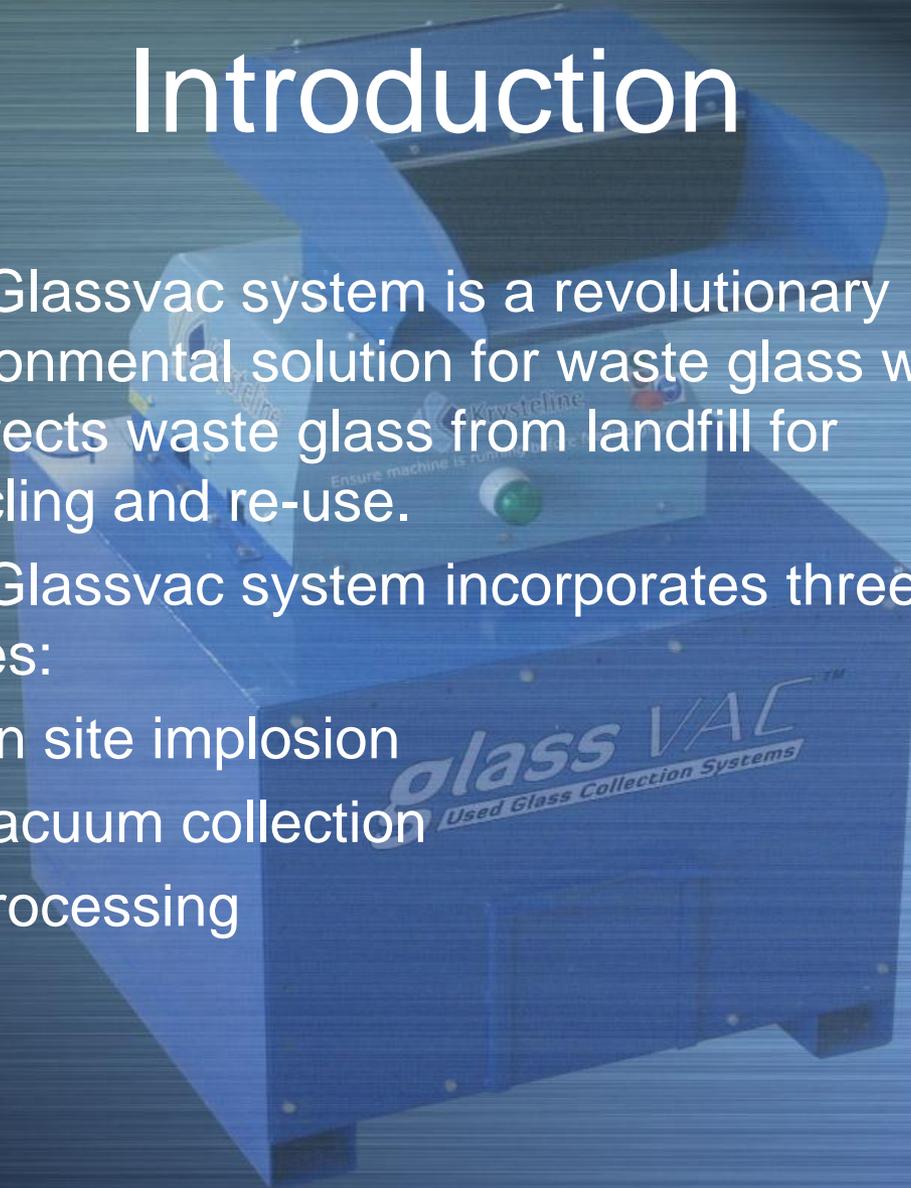
Glassvac Presentation



Introduction



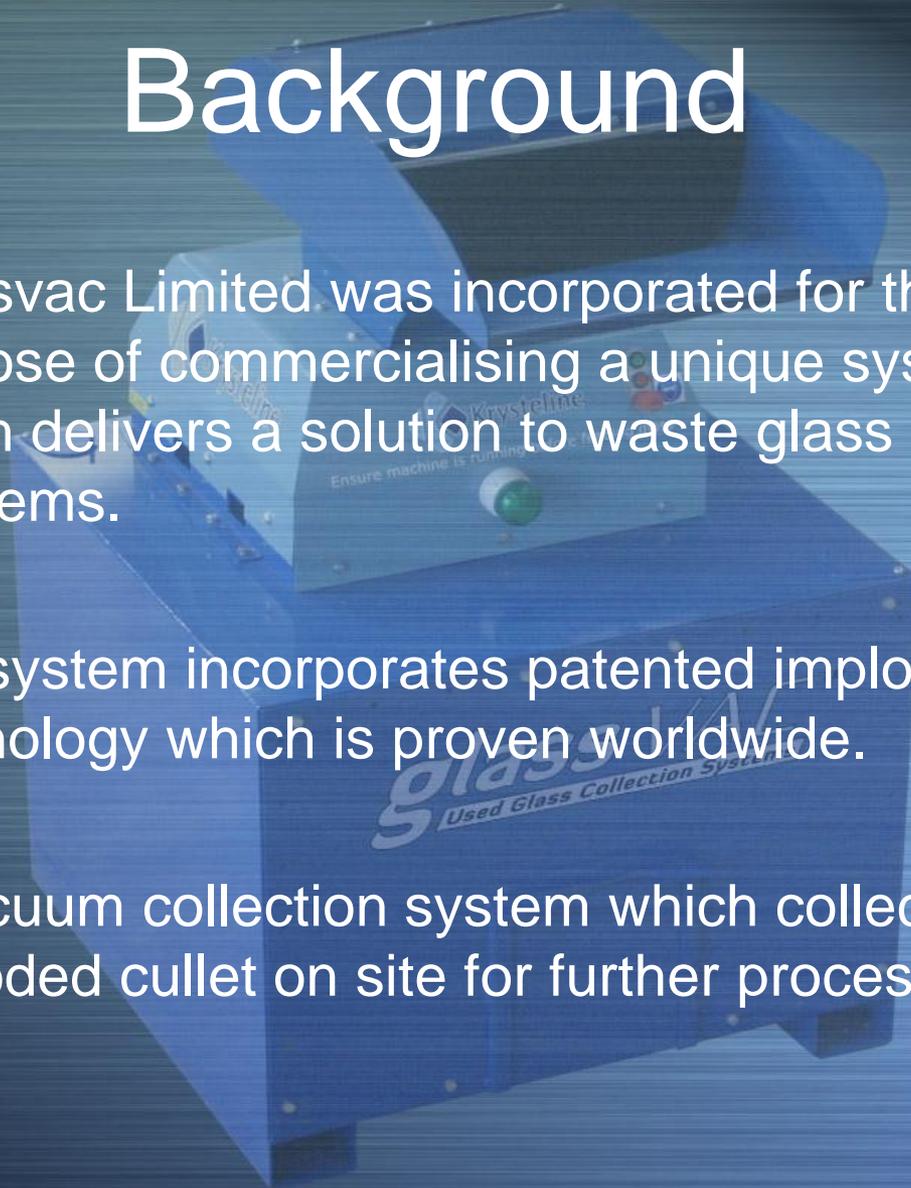
- The Glassvac system is a revolutionary environmental solution for waste glass which re-directs waste glass from landfill for recycling and re-use.
- The Glassvac system incorporates three key stages:
 - On site implosion
 - Vacuum collection
 - Processing



Background



- Glassvac Limited was incorporated for the purpose of commercialising a unique system which delivers a solution to waste glass problems.
- The system incorporates patented implosion technology which is proven worldwide.
- A vacuum collection system which collects the imploded cullet on site for further processing.



The Problem



- The handling, collection and storage of waste glass is a highly labor intensive and expensive process.
- Current collection systems for waste glass are inadequate and as a consequence businesses and municipalities suffer the expensive costs of these inappropriate systems. The Glassvac system is capable of:
 - Reducing the cost of collections
 - Reducing the associated labor costs
 - Reducing glass storage requirements
 - Reducing the carbon footprint of collection trucks
 - Reducing noise levels

The Solution



- The Glassvac system incorporates three key processes:

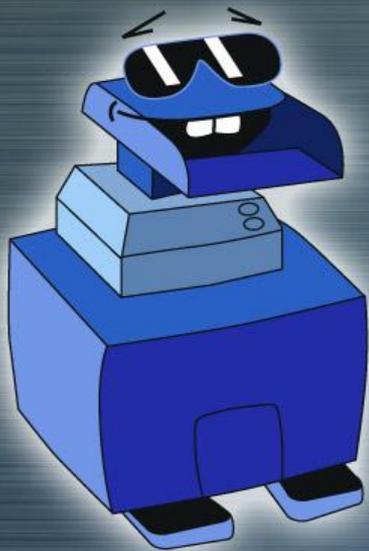
– On site Implosion

– Vacuum Collection

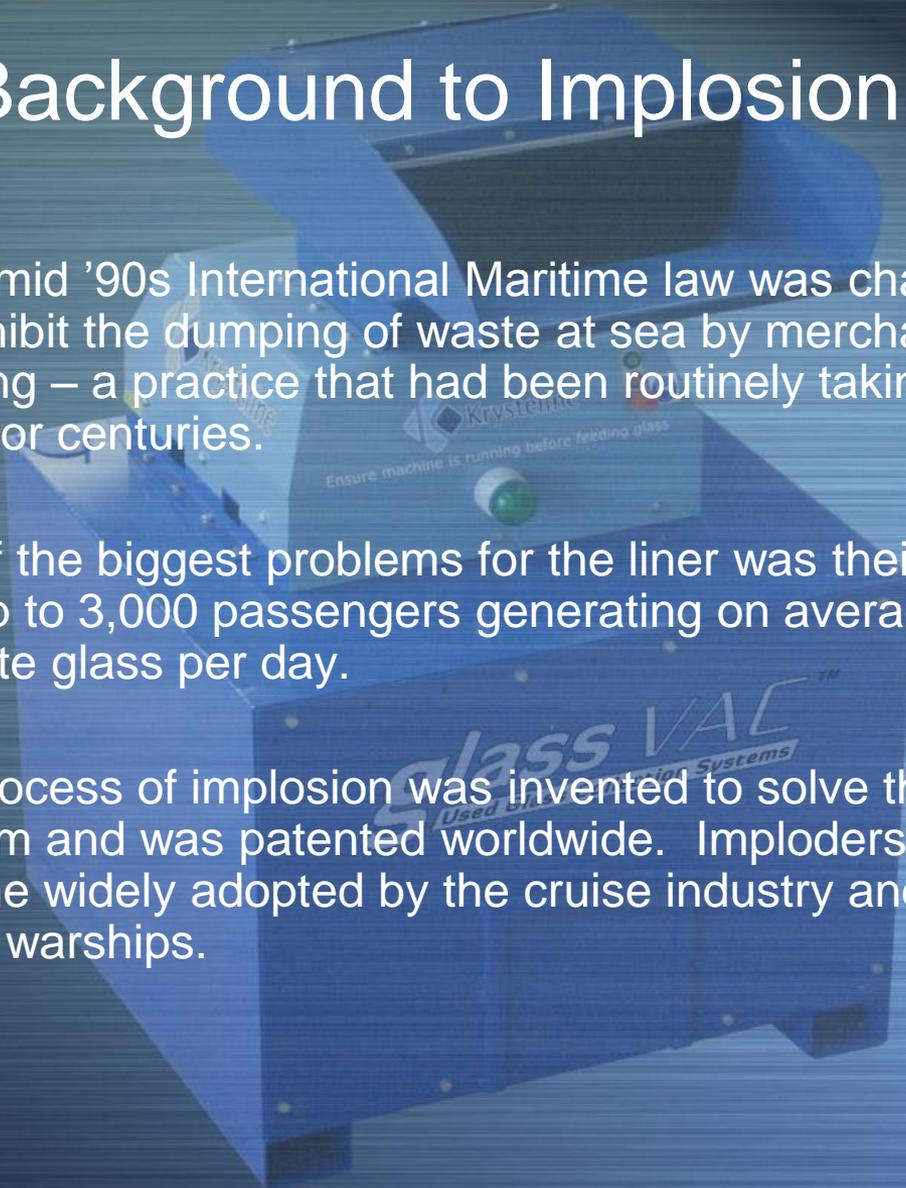
– Glass Processing

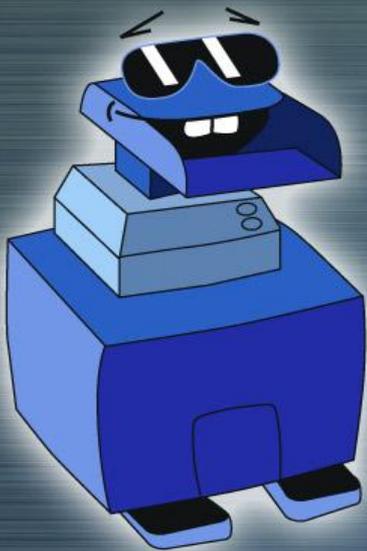


Background to Implosion



- In the mid '90s International Maritime law was changed to prohibit the dumping of waste at sea by merchant shipping – a practice that had been routinely taking place for centuries.
- One of the biggest problems for the liner was their glass with up to 3,000 passengers generating on average 5lbs of waste glass per day.
- The process of implosion was invented to solve this problem and was patented worldwide. Imploders became widely adopted by the cruise industry and later NATO warships.





Implosion Explained

- Implosion is a mechanically induced high speed process that creates a harmonic resonance that results in the destruction of glass while rendering it sharp free.
- The result is similar to the effect of an opera singer shattering a wine glass when hitting a very high note, except that implosion shatters the glass inward on itself and creates no glass shard or sharp edges.
- Implosion does not grind, mill, hammer or flail the glass, therefore the high wear typically associated with traditional glass processors is vastly reduced.
- Implosion produces a range of fraction sizes from approximately 0.2mm up to 16mm. The size range can be varied from smaller or larger fractions.
- Implosion is tuned to only process glass, therefore non-glass objects such as bottle tops, labels, corks and straws pass through untouched allowing them to be easily screened off.



On Site Implosion – The Cube



The Cube, which is located on site, incorporates patented implosion technology. This technology is integrated into a sealed container which is capable of holding 1 ton of imploded glass – the equivalent of six one-yard containers.

A unique feature of this system is that the implosion process renders the cullet sharp free and removes the majority of labels from the glass.





Features

- 1 Ton capacity (3,000 to 3,500 bottles).
- Sharp free cullet ideal for vacuuming.
- Compaction ratio of 6:1.
- Optional GPS technology which monitors fill levels.
- Multiple bottle feed hopper.
- Robust patented technology.
- Manufactured to BS EN ISO 9002.
- Powder coated sturdy steel construction.

**glass
VAC**
Used Glass Collection Systems





Vacuum Collection – Truck

The Cube is emptied using the Glassvac proprietary vacuum system. This system can access the Cube from a distance of up to 250 feet and empty the 1 ton capacity cube in under ten minutes.

Optional route planning software has been developed in conjunction with the GPS technology for each cube to enable Glassvac staff to coordinate collections for the truck and maximise efficiencies.

Features

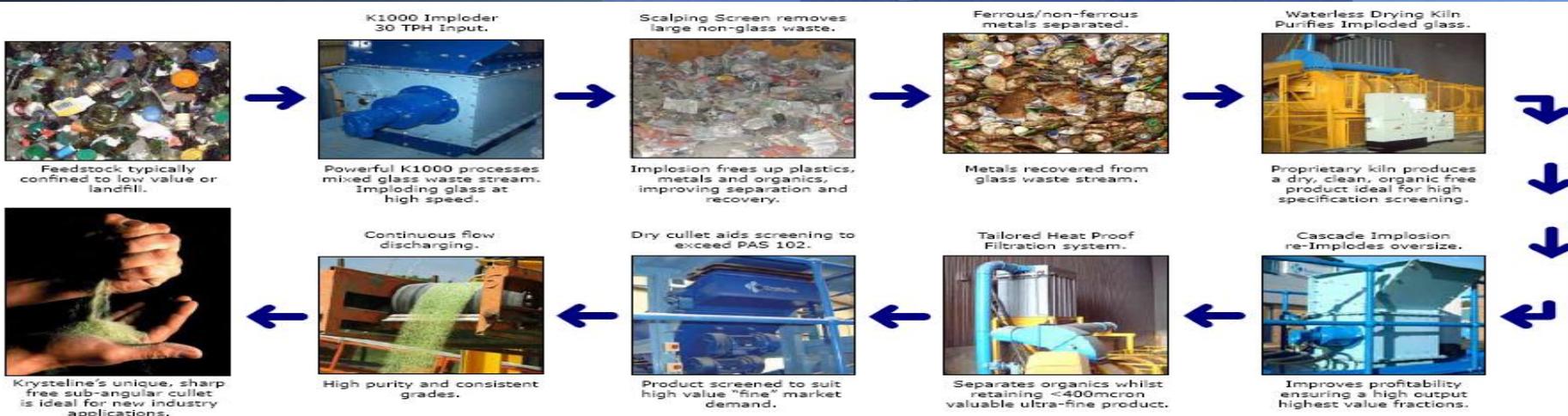
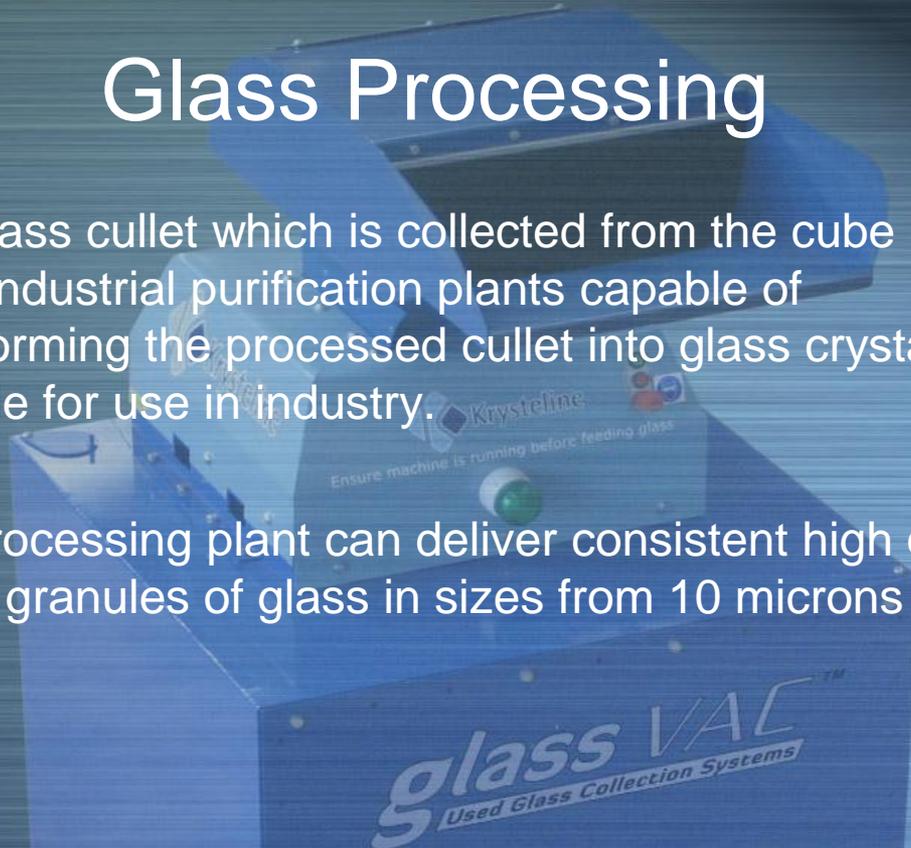
- 20,000 Lbs processed glass capacity.
- Access cube from 250 feet via Hose and Reel system.
- Empty Cube in under 10 minutes.
- Eliminates manual handling of containers.
- Route planning software in each truck.
- Reduce emissions, congestion and carbon footprint.



Glass Processing



- The glass cullet which is collected from the cube is sent to an industrial purification plants capable of transforming the processed cullet into glass crystals suitable for use in industry.
- The processing plant can deliver consistent high quality, sterile granules of glass in sizes from 10 microns up to 30cm



Processed Glass



Applications:

- Sandblasting Material
 - The final processed glass is sub-angular in shape making it an ideal blast abrasive for surface preparation.
- Filtration Media
 - The final processed glass is not abraded and retains a smooth shiny surface giving it high percolation and low bio-fouling characteristics beneficial in water filtration applications.
- Surface Dressing
 - The final processed glass is applied to synthetic surfaces such as astro-turf.

Environmental Considerations



- The efficiencies of both the GPS technology and the route software reduces the number of collections and inefficiencies of other collection systems. This helps to reduce the carbon footprint of the business.
- The Glassvac system helps re-direct glass from landfills and increases glass recycling rates.
- Congestion is significantly reduced as the Glassvac collection system has the capacity to collect the equivalent of three existing trucks.
- Noise levels are also significantly reduced as the glass is firstly imploded on site and then collected via vacuum





Contact Information

- Glassvac USA Environmental Solutions
- Airport Business Complex
- 10 Industrial Highway
- MS-37
- Lester, PA 19029
- Mr. Ernest J. Zavoral, Sr.
- Phone 330-233-0498
- Fax 330-286-0332
- Email : ezavsr@gmail.com
- **Email: ernest.zavoral@glassvac.com**
- Website: www.glassvac.com

