



# ESS AIR CANNONS

## INTERNAL VALVE ARRANGEMENT

*A build-up of materials in Bulk Storage systems is a common occurrence; silos and bunkers can have so much build-up that it slows or stops operation completely. Build-ups can form as bottlenecks, bridges, arches, rat holes and wall build-ups. All of these result in reduced flow, storage capacity and dead material.*

*The ESS Air Cannons are pneumatic flow aid systems that utilise the release of a volume of compressed air into bulk material.*

*This sudden release of energy is directed through a transition pipe into compacted or frozen material in a bin, silo or stockpile to dislodge that material, restore flow and regain storage capacity.*

*The ESS Air Cannons are available in both internal and external valve arrangements.*

*The Internal valve arrangements include both 4" (i4) and 6" (i6) Valves and allows for the most efficient conversion of potential energy into usable energy.*



### APPLICATION

#### APPLICABLE MATERIALS

*ESS Air Cannon's are a practical solution for;*

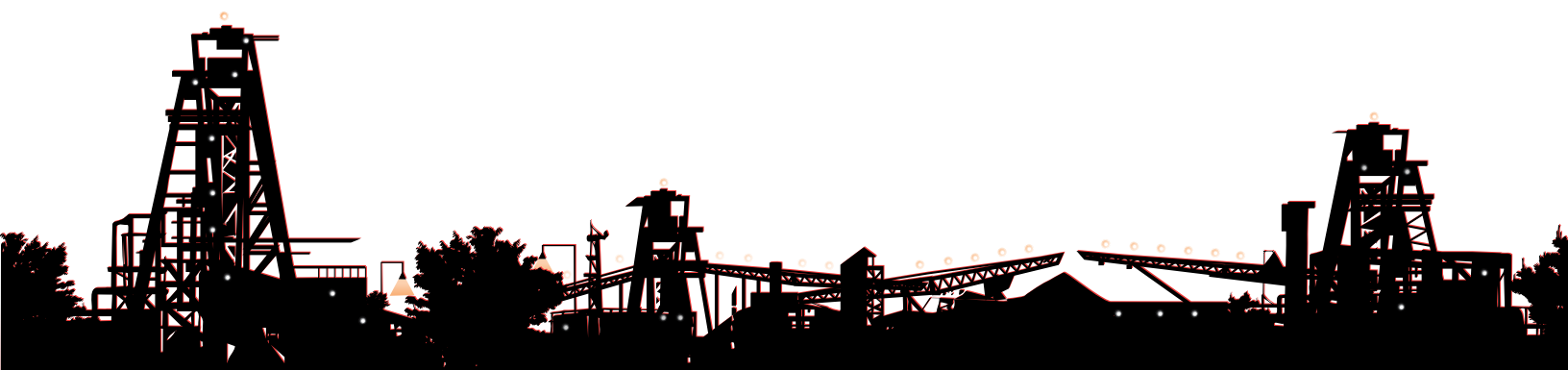
- *Wet/sticky materials*
- *Dense/compacting materials*
- *Light/fluffy/porous materials*
- *Build-ups/concretions*
- *High-temperature materials (up to 119°C)*

#### TANKS

*The ESS Air Cannon Tanks are available in a range of sizes.*

*Internal valve configurations are available in 40L (i4), 70L (i4 & i6) and 150L (i6).*

*150L Epsilon tank is available for internal (i6) valve configuration.*



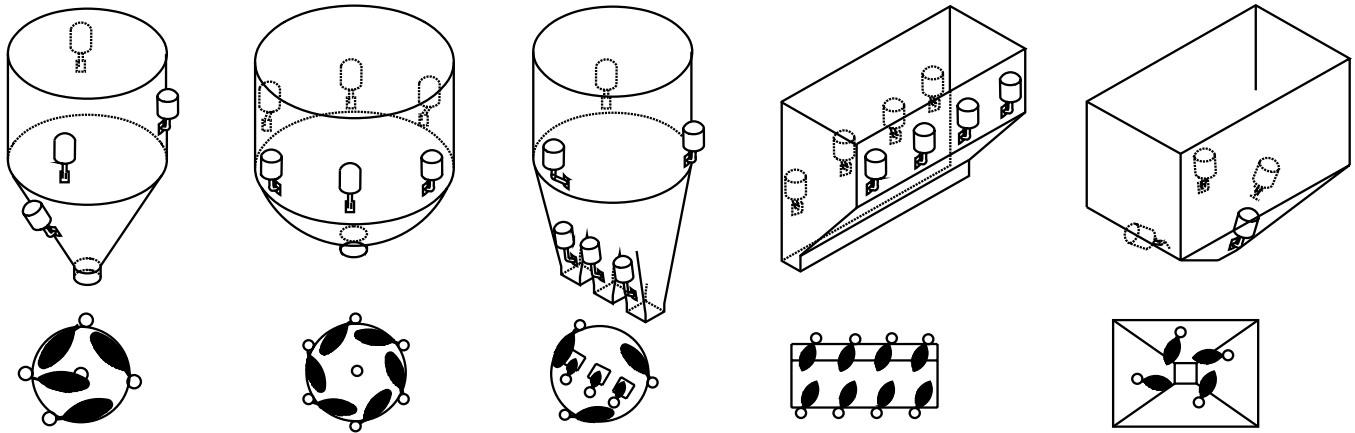
## HOW IT WORKS

The direct blast design of the i4 and i6 valves allows the stored air in the reservoir to escape directly through the valve into the discharge pipe without bends or obstructions that could impede airflow. This is important because the quicker the air discharges, the greater the velocity, impulse, and force of the blast and, therefore, the greater the amount of material affected.

Air Cannons are activated remotely via a Sequence Controller, which controls the firing time interval and sequence of one or more Air Cannons.

Three main criteria must be considered when designing an ESS Air Cannon System: each Air Cannon application is unique; the number, size and position of an Air Cannon System is critical to ensuring its effectiveness.

**Examples of Air Cannon system configurations on various chute shapes, (for indicative purposes).**



## POTENTIAL ENERGY INTO USABLE ENERGY

The reservoir size is not the most important consideration in choosing the correct air cannon for an application; the ability of the piston assembly to optimise the potential energy stored in the reservoir into usable energy is the main factor in calculating the overall performance of an air cannon. The amount of usable energy reaching the material determines the area of influence the Air cannon has on the material.

## TIMING SEQUENCE

ESS recommends the use of a timing sequence and a sequence controller to ensure that each blast achieves optimum effectiveness before the next blast is released.

## BACK UP AND SUPPORT

ESS backs up its products 100%. We proudly manufacture all our products at two separate locations in Australia.

ESS maintains local stores and service crew's in most Australian mining centers.

Service crews are available for installation, service, inspection and troubleshooting. ESS design team provide a solution to your specific plant requirements.

