



ECO-HOPPER

B&W

AUMUND GROUP

DISCHARGE OF DRY BULK CARGOES

- Suitable for discharge by shipmounted or shoreside grab cranes
- Robust design ideally suited to cope with the tough conditions encountered in ports



The B&W Eco-Hopper, a dust controlled grab unloading hopper is an economical and ecologically sensitive solution fulfilling all needs for the efficient import of dry bulk cargoes.

The hoppers are designed to suit the characteristics and flow properties of virtually any bulk material such as

- | | |
|-------------|---------------------------|
| • Clinker | • Copper Concentrates |
| • Slag | • Sulphur |
| • Gypsum | • Biomass (Woodchip etc.) |
| • Limestone | • Bentonite |
| • Iron Ore | • Nickel Ores |
| • Bauxite | • Soda Ash |
| • Coal | • Many Others |

Rates to 5000 tonnes per hour may be achieved subject to the grab crane performance.

Unloading with traveling hoppers has the advantage of being a very flexible solution. The throughput of the terminal can be increased by just adding one or more hoppers, provided the collecting belt conveyor and the subsequent handling equipment are designed for future capacity increase with larger vessels.



EFFECTIVE DUST CONTROL

Environmental pollution by fugitive dust is a major issue for all ports handling bulk cargoes. When materials are dropped into a conventional hopper particulate separation and hence dust pollution is inevitable.

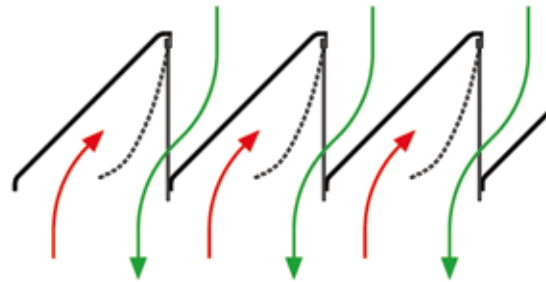
B&W Eco-Hoppers are equipped with a simple but effective dust control system to minimise the escape of dust during the grab discharge cycle.

The hopper is divided into an upper and lower section, separated by a dust retention feature known as the Flex-Flap.

The Flex-Flap Comprises a series of pressed steel sections and vertical rubber flaps.

Flex-Flaps open to allow free flow of material into the hopper (green arrow in the diagram).

Flex-Flaps close to prevent the flow of air out of the hopper (red arrow in the diagram).



When material is released by the grab it falls through the Flex-Flap and accumulates in the inner hopper below. This will displace a volume of air which will attempt to escape the hopper into the atmosphere, taking with it an unacceptable amount of material dust.

The flex flap has been designed to close due to the newly created pressure differential between the hopper and the atmosphere so forming a seal and effectively acting like a one-way valve such that the dust contaminated air is contained.

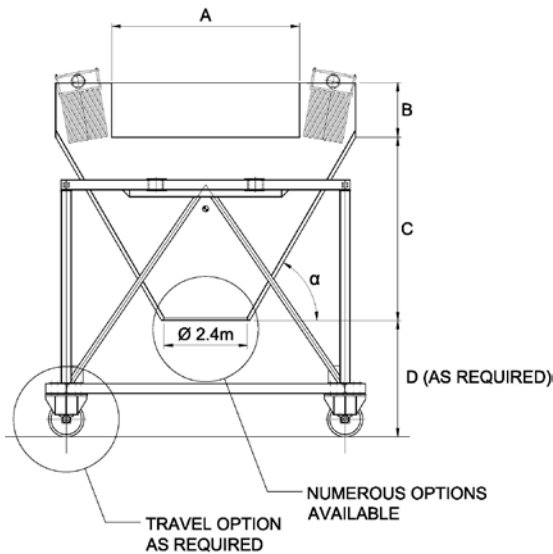
Integral reverse jet filters are positioned around the hopper inlet to extract and clean the dust laden air. Collected dust is then recycled into the main stream of material.

The Flex-Flap feature greatly reduces the volume of exhausted air necessary to control fugitive dust and hence facilitates the use of small compact filters instead of a large de-dusting system.

A simple approach reducing investment and operating costs.



STANDARD ECO-HOPPER DESIGNS

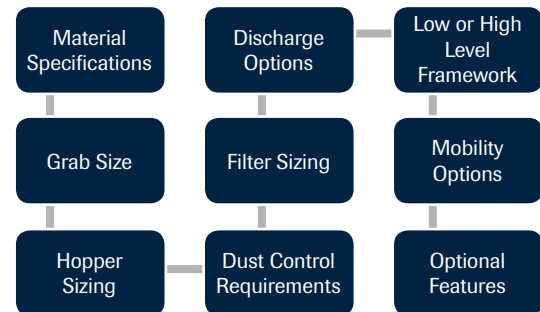


TYPICAL GRAB SIZE	ECO-HOPPER DESIGN	$\varnothing A(m)$	DIM B (m)	DIM C (m) $\alpha = 60^\circ$	DIM C (m) $\alpha = 50^\circ$
1 - 12m ³	EH 6	6.0	1.75	3.6	5.20
7 - 24m ³	EH 7.5	7.5	2.00	4.6	6.00
19 - 37m ³	EH 9	9.0	2.25	5.6	7.00

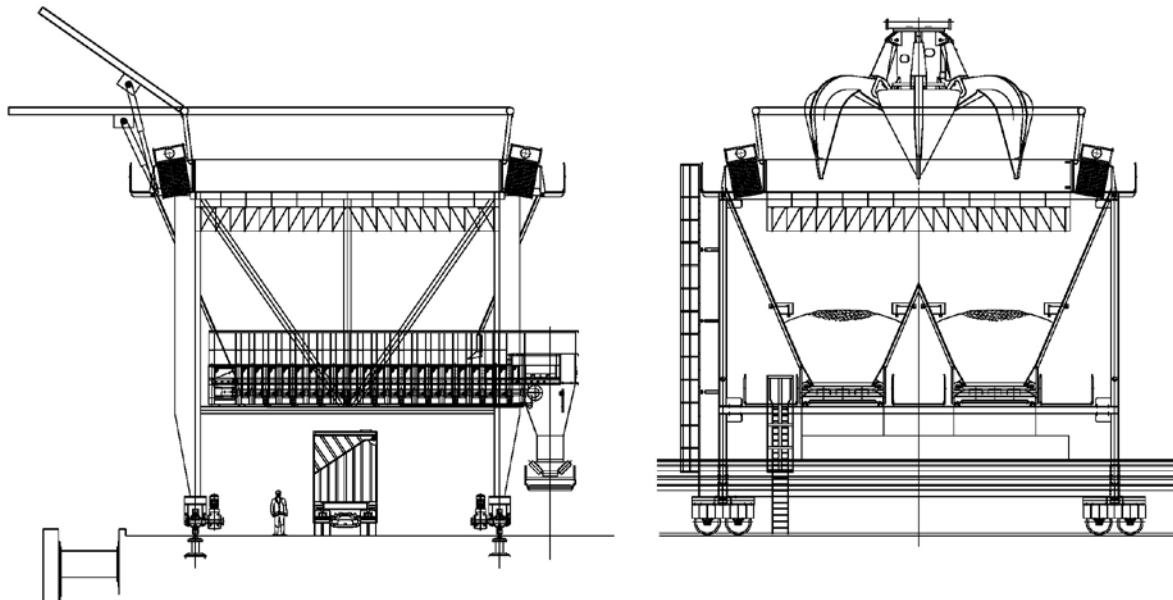
B&W standard Eco-Hopper series offers a range of circular hoppers designed to accommodate grab capacities of 1 to 37 cubic metres. Each hopper size has a corresponding high or low level framework, depending upon the discharge option chosen.

Since all our standard Eco-Hoppers follow the same design principle it has been possible to standardise component modules and therefore offer reduced lead-times.

Modular Design Process



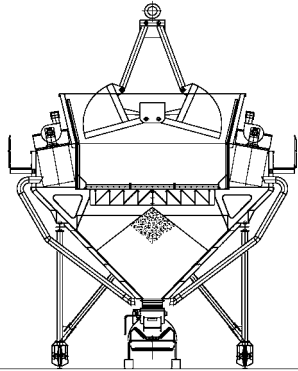
BESPOKE ENGINEERED DESIGNS



B&W also provide bespoke engineered solutions which ensure optimum performance to suit the clients' specific application requirements. For applications with difficult to handle materials such as woodchips or bauxite we may offer our unique Eco-Hopper with integral Samson™ Feeder.

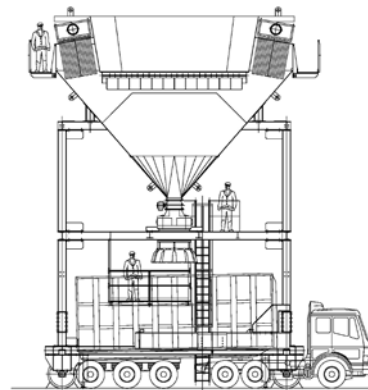
DISCHARGE OPTIONS

Discharge to conveyor



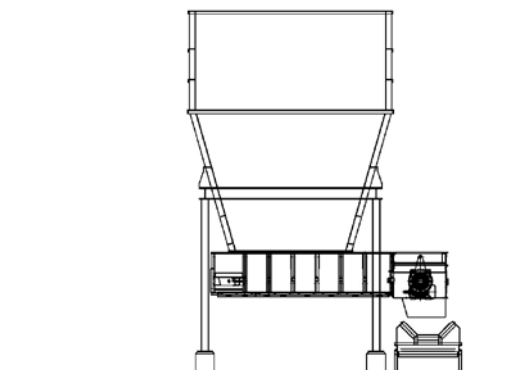
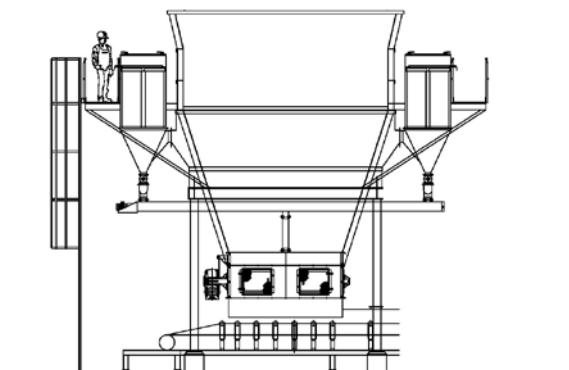
Discharge from the Eco-Hopper may be direct to a belt conveyor for a fixed installation. In this case the bulk material is reclaimed by a gravity discharge unit which feeds the material onto the conveyor at the required output rate.

Discharge to Truck



By using a dust controlled loading spout the hopper may discharge direct to tipping trucks where material is to be moved directly off the port to a remote location.

Discharge via Samson™ Feeder



For handling difficult materials that are liable to bridge and block the Eco-Hopper may incorporate one or multiple Samson™ Feeder units. The Samson™ is available in five basic design ranges to suit a variety of light to heavy duty applications. Each can be fully integrated with the Eco-Hopper and will provide controlled rate feeding of virtually any material.

TRAVEL OPTIONS

Rail Mounted



Complete installation including ancillaries supported on steel rails running parallel to the berth. Hopper may have independent controls or if suitable integrated with a crane.

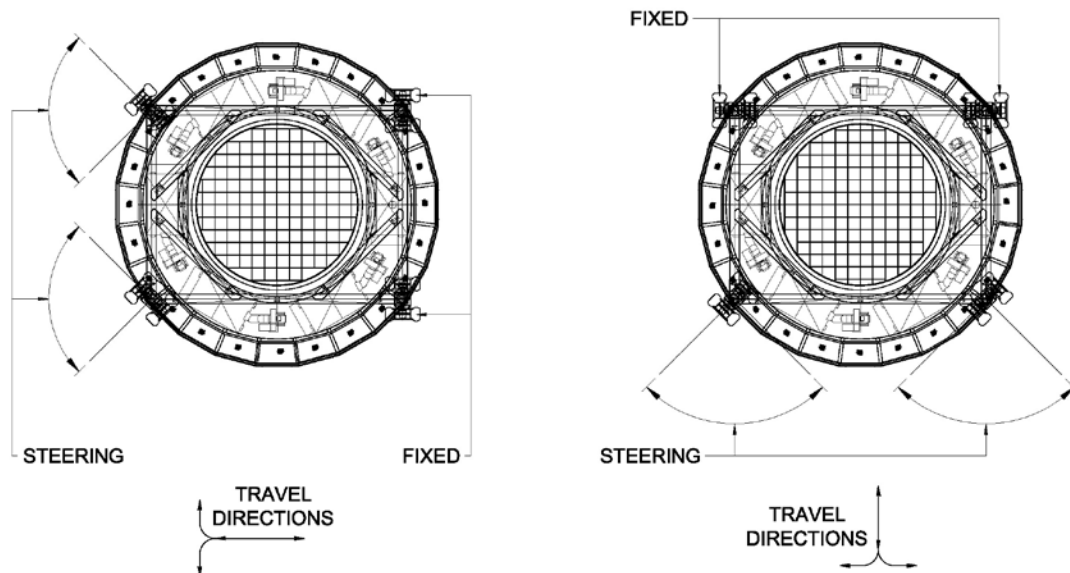
Static Installations



Where necessary the hopper may be bolted to suitable concrete foundations provided by the client.

Pneumatic Tyre Mounted

For applications requiring a higher level of manoeuvrability the Eco-Hopper is supported on solid rubber filled pneumatic tyres.



By using a combination of fixed and steering axles the Eco-Hopper may be offered with powered travel both parallel and at right angles to the Quay.

THE B&W PRODUCT RANGE



Samson™



Stormajor™



Shiploader – Truck Feed



Shiploader – Conveyor Feed

THE AUMUND GROUP

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