

Importing dry bulk materials with SAMSON Eco Hoppers

*SAMSON Eco Hopper on rails
(photo: SAMSON).*



The worldwide demand for Eco Hoppers is growing as stakeholders involved in the import of dry bulk materials are increasingly being held to account for the ecological and health implications of fugitive dust, writes Karl Woodhouse, SAMSON Materials Handling Ltd. Ely, UK. Port operators are working under strict guidelines to reduce dust levels and by employing Eco Hoppers, rather than simple hoppers, material throughput remains high without adding to environmental pollution.

DESIGNED TO FIT EXISTING PORT OPERATIONS

SAMSON Materials Handling designs and manufactures Eco Hoppers for the economical and ecological importation of dry bulk materials. Eco Hoppers receive material directly from grab cranes which can be situated either on the ship or on the

quay. Eco Hoppers provide a flexible solution to importing bulk materials as they can be rail- or wheel-mounted, allowing the operator to manoeuvre them off the quay when not in use.

Each Eco Hopper is designed to take into consideration the material specifications, the type and size of the grab, the reception hopper dimensions considering the dust control requirements, filter sizing, discharge options, framework, mobility and any specific features required.

Depending on the layout of the port and the material process, the discharge of the material can be made directly to a belt conveyor, into a truck for further transportation, or via a Samson® Material Feeder.

This third option is particularly useful for more cohesive materials that are

difficult to handle and liable to block the hopper.

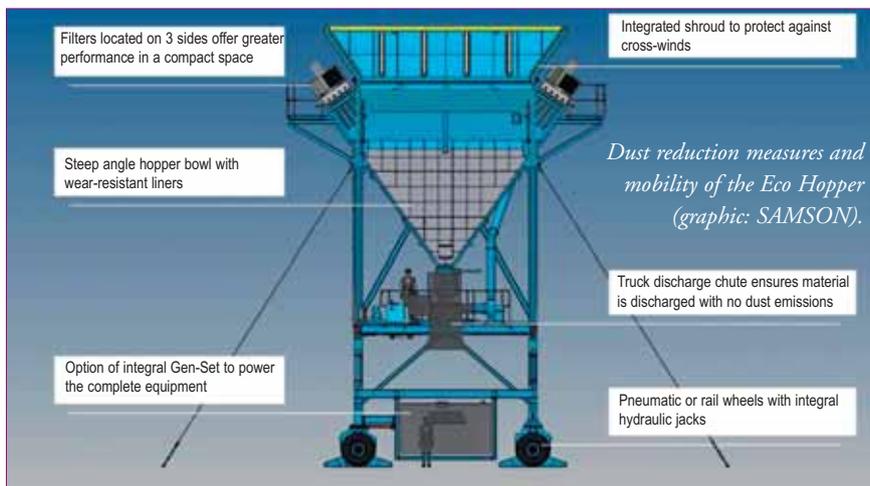
WHAT KIND OF MATERIALS ARE SUITABLE FOR ECO HOPPERS?

Eco Hoppers are designed to suit virtually any bulk material including: clinker, slag, gypsum, limestone, iron ore, bauxite, coal, copper concentrates, fertilizers, sulphur, biomass, bentonite, nickel ores, soda ash and many others. The exact configuration of the Eco Hopper, discharge options and special features are tailored to suit the material and port configuration. Any naturally dusty material or material which becomes dusty due to particle degradation during transport can benefit from Eco Hopper import. SAMSON Eco Hoppers are used extensively in the cement industry, particularly for clinker import due

to their multiple dust control measures.

MULTIPLE FEATURES TO REDUCE THE SPREAD OF DUST

The SAMSON Eco Hopper possesses a variety of measures to reduce dust emission. The inlet of the Eco Hopper is topped with a metal grille and surrounded by a sturdy metal shroud. Whilst protecting the hopper from grab impact, this configuration also reduces the effects of crosswinds. Integral filters are positioned around the top of the Eco Hopper in order to extract dust from the localized area and any extracted product is returned to the



Dust reduction measures and mobility of the Eco Hopper (graphic: SAMSON).



SAMSON Eco Hopper Inlet Grille (photo: SAMSON).

COMMERCIAL ADVANTAGES OF ECO HOPPERS

There are many advantages to the use of SAMSON Eco Hoppers for the importation of dry bulk materials particularly in industries where product demand and supply can fluctuate. Mobile equipment is very important for multi-purpose berths. Dry bulk importers can take advantage of changing market conditions; locate the equipment where needed and quickly set-up for each operation.

material flow which in turn reduces waste. The material then enters the lower section through a dust retention feature called Flex-Flaps. The Flex-Flap system is a series of pressed steel sections attached to vertical rubber flaps. As material passes through the Flex-Flaps the displaced air

from the lower chamber rushes up and closes the flaps, keeping the dust contained within the Eco Hopper. At the discharge point (usually to onward conveyors or through a telescopic truck loading chute) further dust reduction measures such as seals and filters are also employed.

The Eco Hopper can be quickly inserted into the material reception process without the downtime associated with installing fixed equipment. Investments in Eco Hoppers are also a prudent option for multiple-stage developments so, as import facilities evolve, the Eco Hopper can be relocated to a



Discharging various bulk materials (photo: SAMSON).



Discharging clinker into SAMSON Eco Hopper (photo: SAMSON).

different quay and/or used elsewhere within the port.

The SAMSON Eco Hopper was conceived to be operational as quickly as possible once on site. The modular, scalable Eco Hopper design enables easy local assembly or it can be delivered fully assembled. Once commissioned, regular operation of the Eco Hopper requires minimal pre-preparation allowing the port to react quickly and maximize the operational time.

The dust limitation and waste reduction measures of the SAMSON Eco Hopper design increases the proportion of successfully conveyed material, thus reducing waste and resulting in increased revenue.

By reducing dust emissions in the localized port area operators do not need to spend as much time and money in cleaning up their surrounding facilities. Cleaner facilities improve the efficiency of the overall process as well as the working environment for port personnel.

CONTINUOUS DEVELOPMENT AND INNOVATION

The SAMSON Eco Hopper is designed to be incorporated into the client's existing infrastructure providing a reliable and easy-to-use import method.

While total throughput rates are limited to the performance of the grab crane

delivering the material, understanding the client's process and responsive engineering can improve the discharge capabilities and maintain high outputs. SAMSON has developed a variety of methods to discharge efficiently to trucks and ongoing conveyors.

SAMSON Eco Hoppers have an increased filter area to improve dust containment yet this is contained in an incredibly compact filter design. This means that the overall hopper size is relatively small, which frees up valuable space on the quay.

Space and manoeuvrability are also important factors in positioning filters which are situated on three sides of the hopper leaving the sea side free avoiding any obstructions for operation of the grab.

As Eco Hoppers become more efficient in terms of dust reduction and space-saving design they must remain simple to set-up and operate. SAMSON Engineers design for functionality in daily operation and accessibility for preventative maintenance to make the entire process is as easy as possible for the end user.

WORLDWIDE SUPPORT

SAMSON Eco Hoppers are in operation worldwide by companies such as LafargeHolcim in the Philippines and Vietnam, Cement Industries (Sabah), Jurong

Port Singapore, SEA-invest in the Ivory Coast and Cimento Apodi amongst others. SAMSON Materials Handling Limited has also designed four Eco Hoppers to be used by the Kenya Port Authority at the Port of Mombasa for its port expansion project currently in manufacturing to be delivered early next year.

SAMSON Materials Handling is part of the AUMUND Group of companies which is active worldwide in the sphere of conveying and storage of bulk materials. Eco Hopper users can be assured of support wherever they are based as the AUMUND Group operates service centres and warehousing for spare parts in Germany, the USA, Brazil, Hong Kong, the UK and Saudi Arabia and has almost 60 dedicated supervisors to tend to clients' needs across the globe.

CONCLUSIONS

SAMSON Eco Hoppers are in use worldwide to provide an environmentally respectful solution to importing dry bulk materials.

Mobile Eco Hoppers provide a host of commercial and environmental benefits to port operators giving them the flexibility to react quickly to evolving market demands. Because of this more and more ports are considering the addition of Eco Hoppers to their import facilities. **DCi**