

Clean, green and flexible

As part of its development of the Port of Abidjan, Côte d'Ivoire, terminal operator sea-invest has installed a samson Eco Hopper to facilitate efficient, cost-effective and environmentally-friendly material handling.

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The economy of Côte d'Ivoire is booming. With average annual GDP growth of nine per cent and a projected infrastructure spend of GBP42bn (US\$54.9bn) in 2016-20, its cement producers are already enjoying an increase in demand, which has led to an upscaling of national production as well as an increase in imports.

The Port of Abidjan is an ideal hub to support the development of the country's cement industry. Situated on a lagoon and connected to a network of inland waterways, it also boasts major road links serving the heart of the country.

As part of its ongoing development at the port, Belgian terminal operator SEA-invest has recently expanded its import facilities with the installation of a SAMSON Eco Hopper to enable dust-free imports of clinker, gypsum and slag.

As a mobile piece of equipment, the Eco Hopper does not require extensive civil works, allowing for quick set-up and operation. It receives materials directly from shore-based grab cranes and is



Example of a rail-mounted SAMSON Eco Hopper

rail-mounted, allowing it to travel up and down the quay alongside the warehouses. Supported on a rail-bogey assembly, which includes powered travel, it can be efficiently repositioned along the quayside adjacent to relevant import and discharge areas. Furthermore, as the port layout or operations evolve, the Eco Hopper can be re-employed at a different location with different configurations.

Flexible discharge

The Eco Hopper has been developed with two options for the discharge of materials – either to a high-level quayside conveyor or to a specialised truck discharge outlet. The high-level quayside conveyor delivers an output rate of 1200tph (based on a material density of 1.6t/m³) and feeds directly through a transfer tower to several new cement plants, thus reducing transfer points and the associated possibilities of waste and spillage that extra transfer points can involve.

For onward transport to cement plants (only accessible by road), a dust-controlled discharge chute is provided by means of an Aumund Telescopic Truck Loading Chute. Material is discharged through the truck loading chute at an output rate of 700tph. Material flow is regulated via a clam shell control gate before reaching the trucks. This allows the material stream to be stopped if, for any reason, the loading capacity of the trucks has been reached.



Example of SAMSON Eco Hopper to truck discharge

Curtained area for truck loading



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Secondly, the receiving aperture is topped by a flared shroud extending some 2m above the inlet grille. This limits material being released from the grab crane from being distributed across the port in cross winds.

Thirdly, as the material enters the hopper it passes through the Flex-Flap system which acts as a one-way valve, allowing material to pass into the hopper but stopping dust particles from escaping back into the atmosphere.

Fourthly, any areas of the hopper where the potential for material escape is identified are fortified with rubber seals and dust filters. Dust filters are located around the top edge of the grab crane discharge area and any product salvaged is returned to the material flow. Finally, at product discharge, the truck loading chute is contained within a curtained area. The receiving trucks position themselves within the curtained area and are informed via an audible alarm when they can reposition during loading and subsequently when they can exit the area. Discharge via the quayside conveyor is similarly protected via a dust filter.



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Inlet grille providing protection from grab impact

Minimising costs and protecting the environment

Material spillage suggests inefficient processes. Not only does wasted product result in reduced revenue, it also necessitates costly cleaning operations. When products are particularly dusty, environmental and health considerations must be taken extremely seriously. Governments as well as companies are now insisting on high levels of environmental protection when executing any process and it is clear from its National

Development Plan that the government of Côte d'Ivoire considers protection of the environment to be a key issue.

The SAMSON Eco Hopper is designed to protect the environment by reducing the escape of dust when unloading products with fine particles. It helps SEA-invest keep the import area of the Port of Abidjan free from fugitive dust through a variety of measures.

Firstly, the whole structure is protected by a steel frame cover which is removed by a grab crane prior to using the hopper.

Future opportunities

Côte d'Ivoire will continue to offer a wealth of opportunities for development over the coming years. An efficient supply chain for cement bulks will permit SEA-invest to maximise the potential of this growing market.

The commissioning of a SAMSON Eco Hopper allows for flexibility in operations, enabling a port operator to vary its distribution network as the market and the port evolves. ■