



Ports and Terminals

Solutions for
Dry Bulk Cargo Logistics

SAMSON
AUMUND GROUP

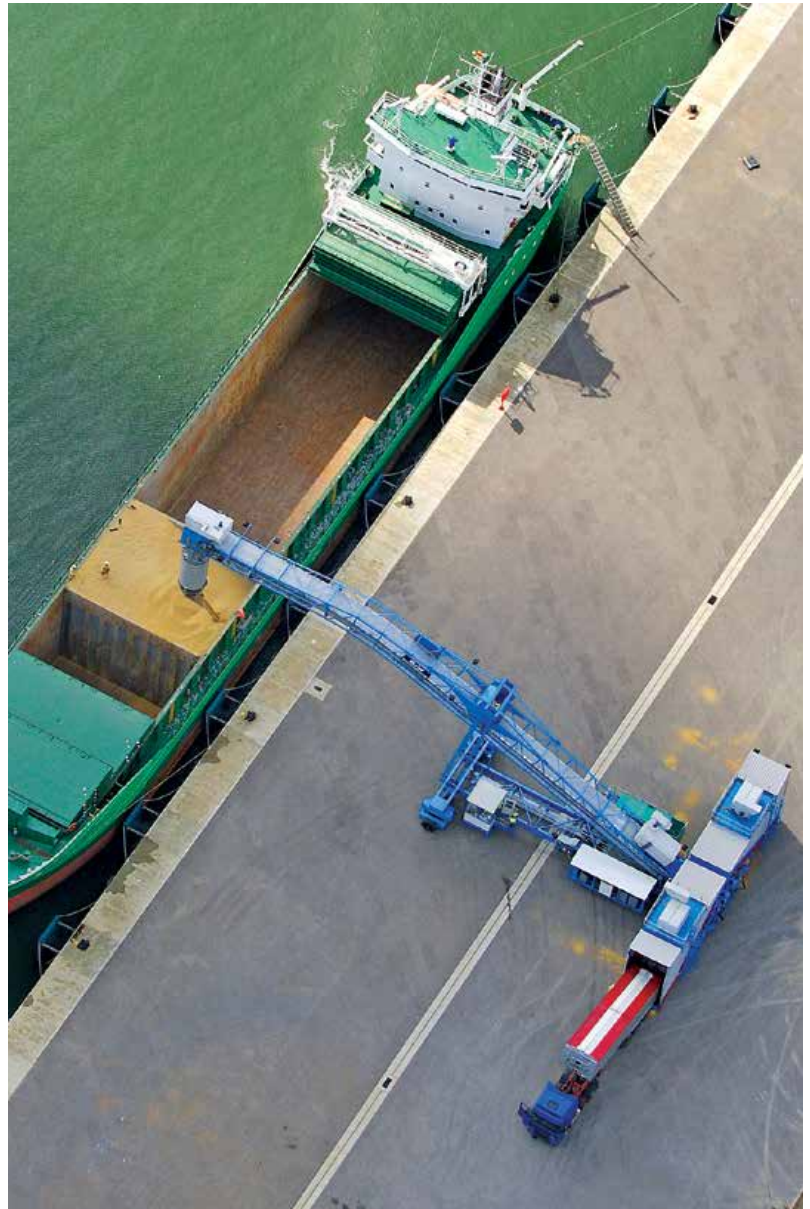
CONTENT

-
- 3** Truck to Ship and Truck to Storage
-
- 4** Maximising Berth Utilisation
-
- 5** Absolute Mobility
-
- 6** Granular Materials
-
- 7** Stacking and Ship Loading
-
- 8** Import Mobility
-
- 9** Truck Intake to Local Storage
-
- 10** Truck Intake to Silo Storage
-
- 11** Rail Intake to Local Storage
-
- 12** Samson™ Material Feeder for Wagon Tippers
-
- 13** Multiple Road and Rail Intake
-
- 14** Flexible Intermediate Storage
-
- 15** Universal Application
-
- 16** Intermediate Feed Points
-
- 17** Loading from Narrow Jetties
-
- 18** Import to Flat Storage
-
- 19** Fixed and Mobile Solutions
-
- 20** Export from On-Port Storage
-
- 21** Export from Quayside Stockpile
-
- 22** Import from Rail Mounted Eco Hopper
-
- 23** After Sales and Services

Ports and Terminals Flexible Solutions

SAMSON Materials Handling Ltd. have established a suite of ship loading and discharge appliances tailored to the Ports and Terminals business handling dry bulk cargoes. Specifically developed to offer both flexibility in operation from existing berths and high performance loading, whilst respecting the highest environmental standards for dust and pollution control.

Mobile Shiploaders, Stackers and Import Hoppers may be utilised independently on any suitable flat quay or integrated to a permanent storage facility, using mobile conveyors on the berth to retain flexibility and allowing the berth to be used for other duties when not required for bulk export.





Truck to Ship and Truck to Storage

The Samson™ Material Feeder is the key feature that enables the SAMSON Mobile Shiploader and Stacker systems to handle a whole range of loose dry bulk cargoes from light and free flowing, such as grains, through to wet and sticky materials such as Synthetic Gypsum.

The unique ability of the Samson™ to receive almost any dry bulk cargo without underground pits and hoppers eliminates the need for any fixed port infrastructure and permits operation on any suitable existing berth.



Independent Mobile Samson™ Material Feeder feeds an existing shiploader



Mobile Stormajor™ Boom Feeder incorporates a Samson™ Material Feeder



Independent Samson™ Material Feeders with Mobile Shiploaders



Maximising Berth Utilisation

The Mobile Shiploader immediately converts an existing multi-purpose berth for handling loose dry bulk cargoes delivered to the port direct from tipping trucks. When not required for bulk export the Shiploader is simply travelled clear to a suitable parking position.

The Mobile Shiploader may be used for loading bulk carriers to Post Panamax size and when equipped with Twin Samson™ Material Feeders of peak loading rates to over 2,000 tons per hour are possible, with Through-the-Ship rates in excess of 1,500 tons per hour. Operating at this rate, a 75,000 DWT Panamax size ship would be loaded in less than 60 hours; taking into account proper hold trimming for safe cargo stowage.



Samson™ mounted to a slew ring for easy alignment



Maximum flexibility with limited quay space



Absolute Mobility

The Port of Immingham located on the East Coast of England is a large import and export terminal handling both bulk and containerised shipments. Flexibility is paramount, allowing the port to maximise the efficiency of every inch of berth space within the enclosed dock section.

The Sterling Series Mobile Shiploader, illustrated here, employs vertical elevation to raise cereals from the four Samson™ Material Feeders to the radial and luffing outloading boom conveyor.

This unit has a compact and efficient design loading rate of up to 1,200 tons per hour handling wheat.

Even with this 400 ton leviathan, full mobility is included allowing the Shiploader to be travelled under its own power to clear the berth for other port operations.

A total of 24 tyres carry the load, mounted in sets of six, to drive bogies mounted to slew rings allowing the wheel units to be aligned for any direction of travel and

for steering using electronically controlled Ackermann geometry, without mechanical linkage. Similar systems are available for all machine sizes and specifications.



Drive bogie



Independent Multi-Tip Samson™ Material Feeder with extended entry section to permit four trucks to discharge simultaneously

Granular Materials

For free flowing materials that may be discharged through the “Grain Door”, the flow rate from the truck may be regulated. Therefore material may be tipped directly to the feed boot of the Mobile Shiploader or narrow belt intermediate feeder conveyor, as shown below.



Regulated flow from the Truck Grain Door



Independent Feeder Conveyor for flexibility on the berth



Lancaster Series Mobile Shiploader



Loadmaster Series Loading small bulk carriers



Stacking and Ship Loading

The Lancaster Series Mobile Shiploader and Stacker provides the ideal solution for storage and export of coal from this Russian baltic port. Supplied with a larger feed hopper, the unit will accept coal or similar light bulk cargoes direct from Wheeled Loaders.

Replacing the large shovel hopper with a standard feed boot allows the Lancaster Series or Shiploader unit to operate with one or two Mobile Samson™ Material Feeders to receive non-free-flowing cargoes direct from tipping trucks.

The Samson™ Material Feeder eliminates double handling and is a receiving unit, feeder and buffer hopper all in one, delivering a controlled feed rate, and, thanks to the buffer capacity, an increased average overall loading rate.



Loading coal to small bulk carriers



Multi-level undergear for maximum stacking height



Import Mobility

The import of loose dry bulk cargo direct by grab crane using either geared vessels or independent mobile harbour cranes offers complete flexibility. The equipment is moved clear after use for the discharge or loading of other freight.

The Eco Hopper and Shiploader may be supplied with any combination of towed or self powered travel systems, including stabiliser jacks for the larger machines.

Drive may be from own on-board gen-set providing independent electrical power for the complete equipment.



Truck transfer from Eco Hopper to inland storage



Towed travel



Samson™ Material Feeder discharges direct to a surface mounted belt

Truck Intake to Local Storage

The Samson™ Material Feeder is the ideal reception unit for the intake of almost any dry bulk cargo, from road tipping trucks or mining dump trucks for discharge to off-port storage thus eliminating the need for expensive deep underground hoppers and associated civil works.

Coal and pet-coke intake to a cement plant located adjacent to the port using a fleet of road trucks operating on a merry-go-round basis are able to discharge small bulk carriers at an average rate of 600 tons per hour.

Combining mobile equipment on the berth with surface mounted solutions at the plant offers the most economical and flexible overall handling solution.



Truck Intake to Silo Storage

For silo storage, the combination of Samson™ Material Feeder with Vertical Elevator offers a compact plant footprint with the minimum of transfer points and much simplified installation and maintenance demands; if compared to traditional underground hoppers and feeders.

Integrating a Samson™ Material Feeder with an AUMUND Central

Chain Bucket Elevator offers high handling rates and fast truck discharge. Ideal for the intake of imported cement clinker, gypsum and other additives to a cement grinding plant.

The Samson™ Material Feeder provides a buffer capacity and regulated discharge to the elevator boot.



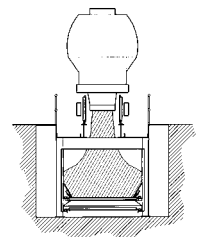
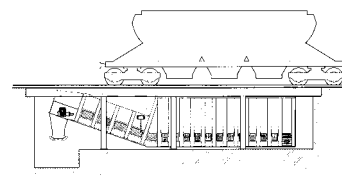


Rail Intake to Local Storage

The Samson™ Material Feeder - Under Rail is the ideal solution for the intake of dry bulk cargo to terminals and associated process plants, or as part of a Railborne to Waterborne transshipment operation including often local internal or external storage facilities.

The Under Rail shallow pit concept is ideal in a port environment to minimise civil works, construction cost and groundwater ingress.

Low free fall reduces dust generation and material degradation.



Pit depth of less than 4.0 metres

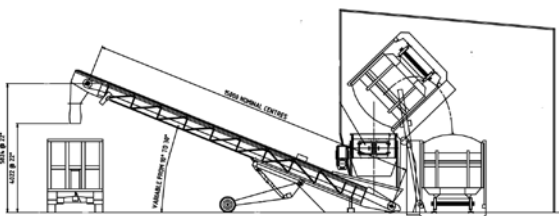


Samson™ Material Feeders for Wagon Tippers

The Samson™ Material Feeder - Under Rail may be incorporated beneath conventional wagon tippers or supplied as a “Box-Feeder” to receive material from pivot frame or hydraulic box tippler designs, particularly handling cohesive materials liable to bridge and block.



Skid Mount Box Feeder Receives from Wagon Tippler



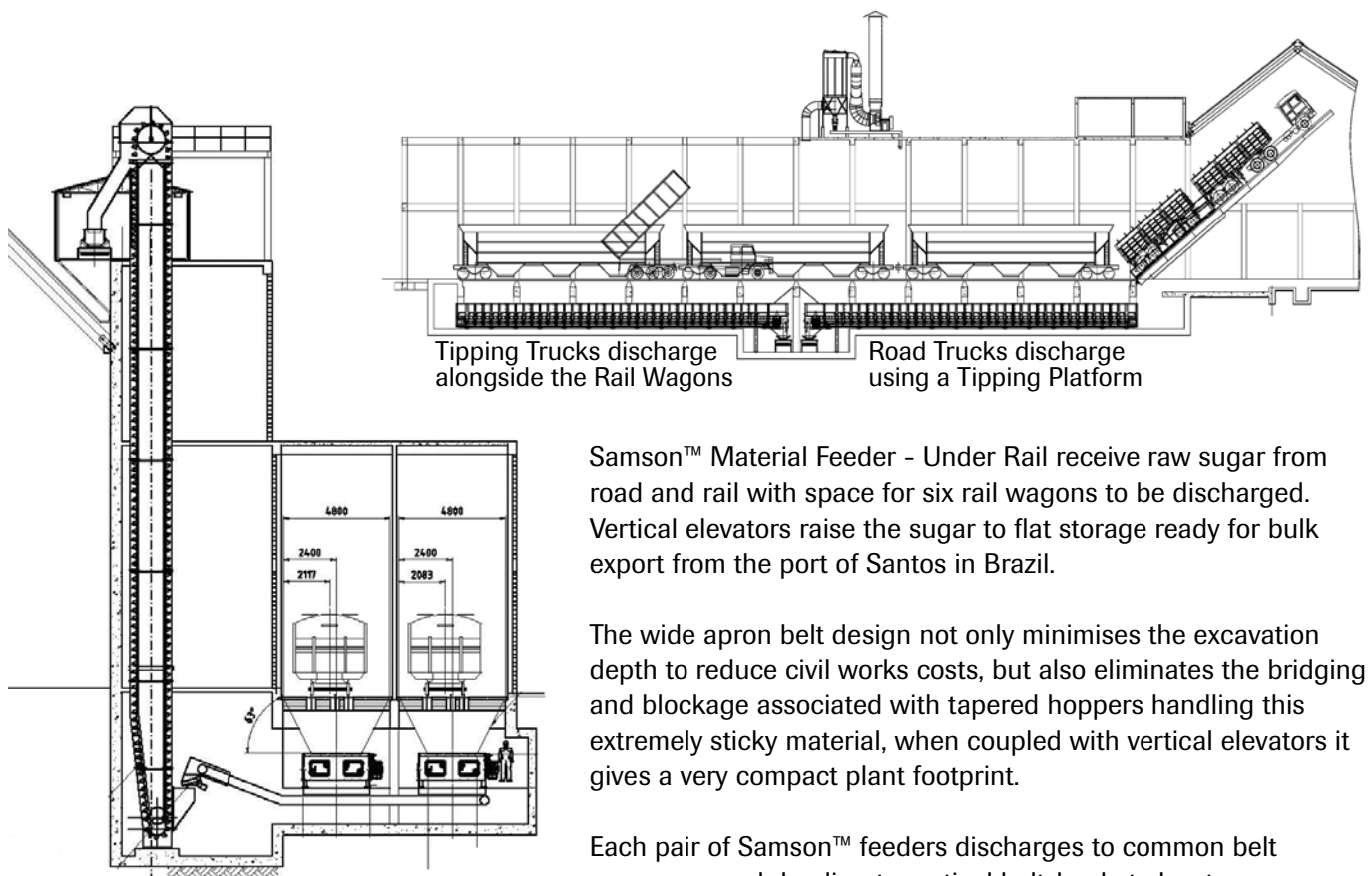
Surface installation with mobile transfer conveyor



Transhipment from Rail Wagon to Tipping Truck



Multiple Road and Rail Intake



Samson™ Material Feeder - Under Rail receive raw sugar from road and rail with space for six rail wagons to be discharged. Vertical elevators raise the sugar to flat storage ready for bulk export from the port of Santos in Brazil.

The wide apron belt design not only minimises the excavation depth to reduce civil works costs, but also eliminates the bridging and blockage associated with tapered hoppers handling this extremely sticky material, when coupled with vertical elevators it gives a very compact plant footprint.

Each pair of Samson™ feeders discharges to common belt conveyors each loading to vertical belt-bucket elevators.



Flexible Intermediate Storage

The Stormajor™ Boom Feeder offers a flexible alternative to fixed storage systems for intermediate stockpiling of dry bulk cargoes prior to onward shipment by rail. Illustrated here, coal and pet-coke are imported through Grab Hoppers to trucks for movement to the off-port storage.

Using the Radial and Luffing Boom feature, a vast stockpile may be generated with a level plateau to maximise the stored volume on the available stockpile area.

Thanks to the integrated Samson™ Material Feeder the equipment may receive material from almost any type of tipping truck, providing a buffer holding capacity with controlled feed rate to the radial and luffing boom conveyor to maintain the stacking rate continuously between truck changeovers.



Stormajor™ Boom Feeder supplied with powered travel and hinged truck ramps for easy manoeuvring around the stackyard





Universal Application

Stormajor™ Boom Feeder is equally at home loading small bulk carriers or receiving from grab discharge transferring to an existing port handling and storage facility. This equipment may handle a variety of cargoes including wood pellet, fertilisers, fish meal and cereals.

The same equipment is perfect for loading bulk materials into rail wagons handling crushed rock from tipping trucks to both open top flat bottom and hopper bottom rail wagons. The Boom Feeder is therefore a road to rail transshipment facility without any fixed intake, hopper, feeder or conveyor systems.

The Stormajor™ Boom Feeder offers complete flexibility in any bulk cargo handling operation within the port, stockyard and marshalling yard or rail siding.



Intermediate Feed Points

As port or associated operations develop often the need arises to introduce new materials to an existing conveying installation. Either imported fuels or raw materials perhaps from a new source may be received by Stormajor™ Boom Feeders or Samson™ Material Feeders with minimum disruption.

Integrating a Truck Tipping Platform with a Samson™ Material Feeder enables high-cube trucks to be rapidly discharged onto an existing overland conveyor.



Samson™ Material Feeder - Box Feeder for up to 120 tons live storage





Loading from Narrow Jetties



Raised chassis shiploaders available for Panamax ships

Where the jetty's width does not permit the use of conventional mobile equipment, the combination a Raised Chassis Shiploader with a Stormajor™ Boom Feeder acting as a receiving unit and feeder provides an economical solution for a range of vessel sizes from small Coasters through to Panamax.



Trimming for small vessels using simple rotating chute



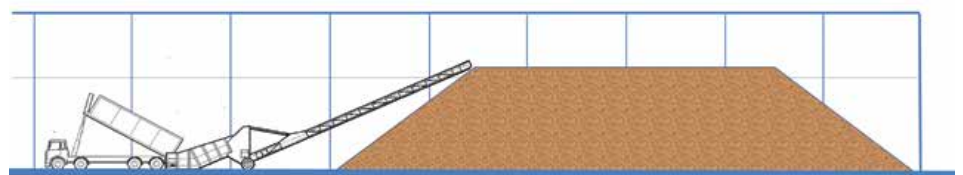
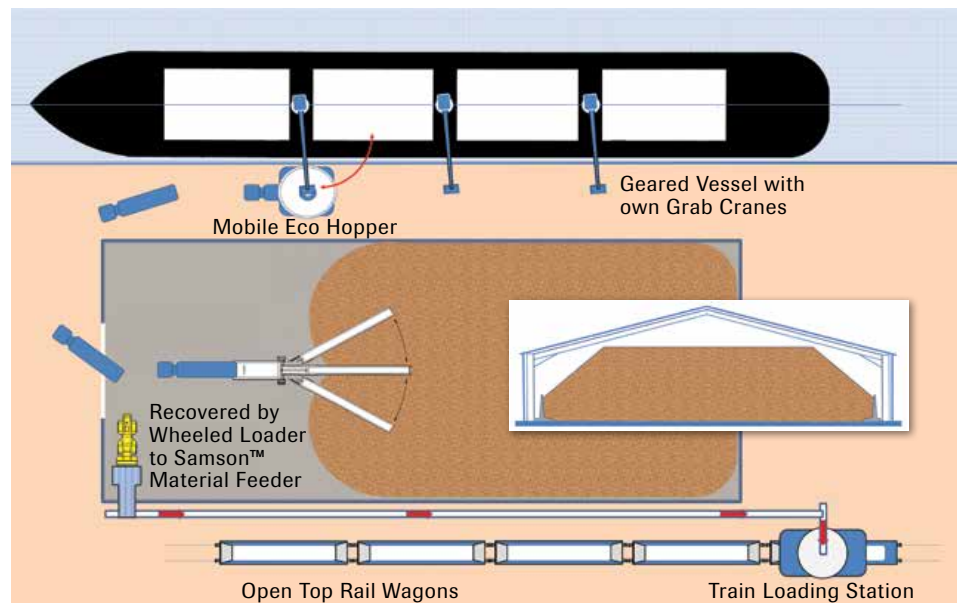
Shiploader + Stormajor™ Boom Feeder for truck to ship loading

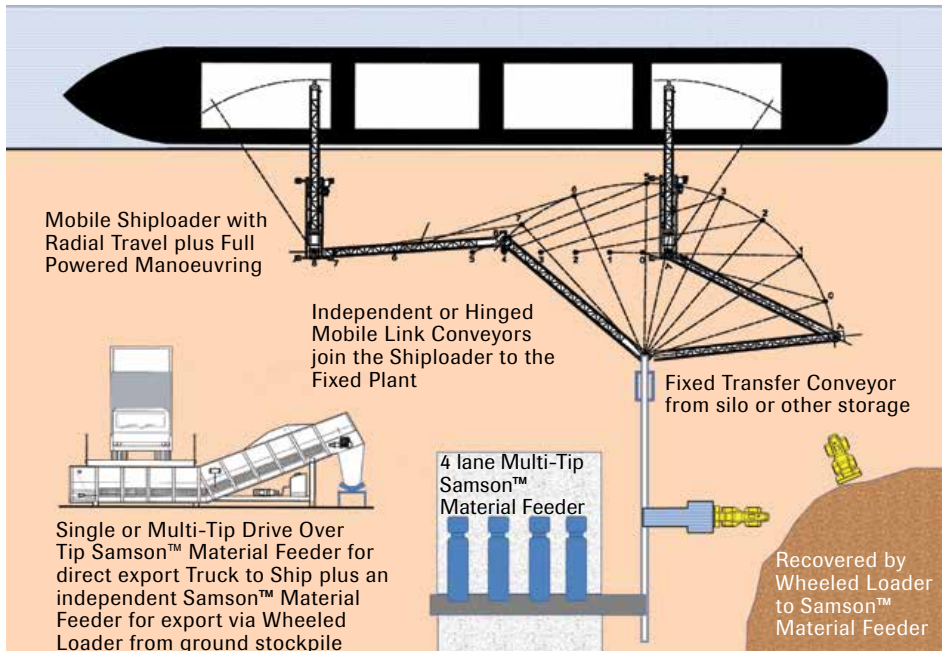


Import to Flat Storage

Using an existing open warehouse or erecting a low cost flexible skin building provides an economical solution for the inside storage of dry bulks. Shown here cargo is imported from geared vessels through a mobile Eco Hopper and trucked to a Stormajor™ Boom Feeder mobile stacker.

Loading to Open Storage by Stormajor™ Boom Feeder with recovery by wheeled loader transferring material either direct to truck or as shown here to a rail wagon loading station.





Fixed and Mobile Solutions

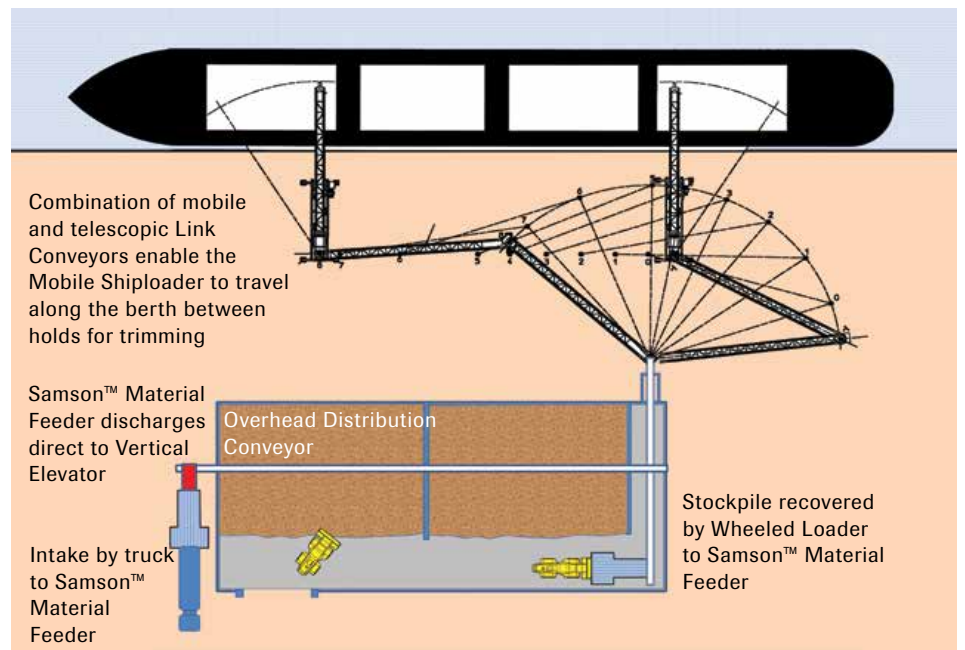
Combining fixed intake and conveying equipment with Mobile Link Conveyors and a Mobile Shiploader gives the best of both worlds, using a single entry surface mounted Samson™ Material Feeder with Wheeled Loaders or Multi-lane Drive-Over-Tip Samson™ Material Feeder for truck intake.

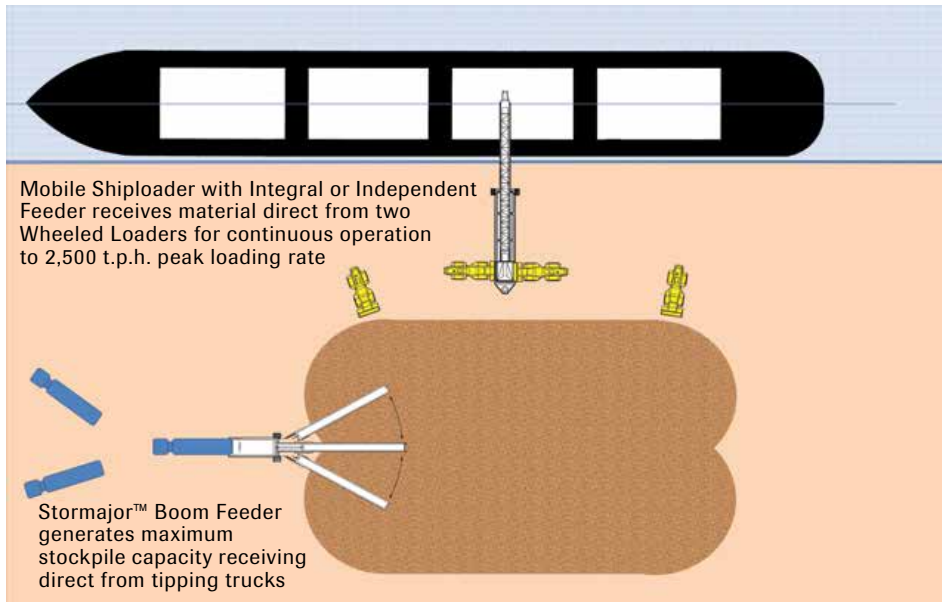


Export from On-Port Storage

Combining fixed intake and storage facilities with Mobile Link Conveyors and a Mobile Shiploader on the berth gives maximum flexibility so allowing the berth to be cleared for other port operations between bulk shipments.

Material intake to Samson™ Material Feeder, raised by vertical elevator to overhead storage including plough or tripper distributor. Recovery by wheeled loader to a second Samson™ Material Feeder for onward conveying to the berth.





Export from Quayside Storage

Exporting direct from a quayside stockpile offers maximum flexibility where bulk shippers may permanently occupy an area of the quay back from the berth allowing fast loading by Wheeled Loader from the stockpile to the Mobile Shiploader as illustrated below handling hot pet-coke.

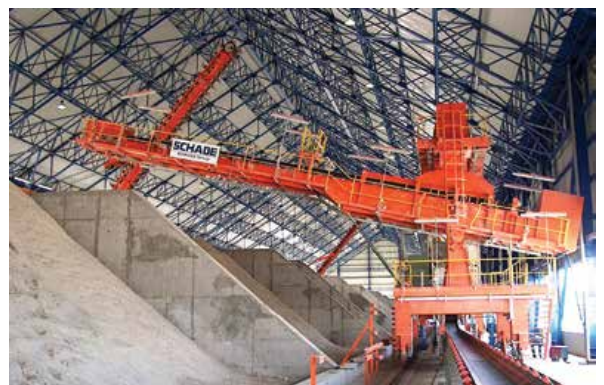
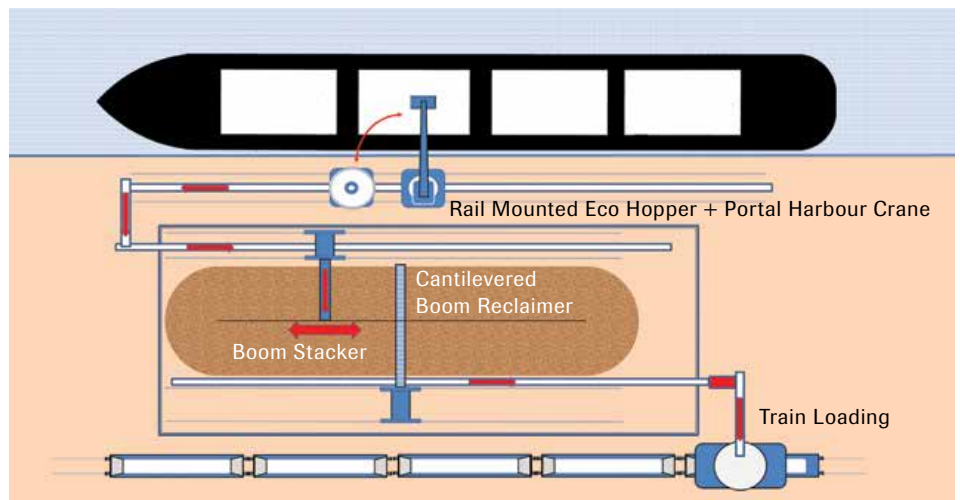




Import by Rail Mounted Eco Hopper

The SAMSON Rail Mounted Eco Hopper may be integrated to complex port storage and distribution systems using conveyor haulage and travelling stacker/reclaimer systems based on forward distribution by Rail, Road or Barge.

The picture on the right shows dry bulk cargo imported by Rail Portal Mounted Travelling Harbour crane discharging to Rail Mounted Eco Hopper with belt conveyor transfer to on-port storage if includes a SCHADE travelling Stacker and Cantilevered Boom Reclaimer with final output to rapid train loading station. Other options, such as re-loading to barge, are also available.



After Sales and Services

SAMSON Materials Handling Ltd. strive to deliver the highest standards of customer support and after sales service worldwide with the collaboration of the local AUMUND Group daughter companies and representative offices and including:

- Application advice
- Port or Plant Infrastructure Survey
- Performance and Selection Criteria
- Operational Guidance
- Machine Selection and Specification
- Supervision of Site Assembly
- Commissioning
- Advice on Maintenance Programmes
- Rebuilding and Refurbishment
- Genuine Spare Parts
- Service Contracts

Our engineers are highly trained and experienced in the SAMSON Materials Handling products and familiar with port operations and the demands of shipping schedules where equipment availability is critical to avoid demurrage costs.



THE AUMUND GROUP

GERMANY

AUMUND Fördertechnik GmbH

Saalhoffer Str. 17
47495 Rheinberg
Phone: +49 - 2843 - 72 0
Fax: +49 - 2843 - 6 02 70
e-mail: aumund@aumund.de
www.aumund.com

Aumund Logistic GmbH

Saalhoffer Str. 17
47495 Rheinberg
Phone: +49 - 2843 - 72 0
Fax: +49 - 2843 - 7 24 73
e-mail: logistic@aumund.de
www.aumund.com

SCHADE Lagertechnik GmbH

Dorstener Straße 360
44653 Herne
Phone: +49 - 2325 - 58 74 0
Fax: +49 - 2325 - 58 74 74
e-mail:
info@schade-lagertechnik.de
www.schade-lagertechnik.com

GREAT BRITAIN

SAMSON Materials Handling Ltd.

Gemini House Cambridgeshire
Business Park, 1 Bartholomew's Walk
Ely, Cambridgeshire CB7 4EA
Phone: +44 - 1353 - 665 001
Fax: +44 - 1353 - 666 734
e-mail: sales@samson-mh.com
www.samson-mh.com

INDIA

AUMUND Engineering Private Ltd.

2nd Floor, Lakshmi Neela Rite Choice
Chambers · 9, Bazulla Road,
T. Nagar Chennai - 600 017
Phone: +91 - 44 - 4393 63 00
Fax: +91 - 44 - 2815 60 46
e-mail: aumund@vsnl.com

HONG KONG SAR

AUMUND Asia (H.K.) Limited

Unit 3B & 5, 30/F.
148 Electric Road
North Point
Hong Kong
Phone: +852 - 3695 - 43 33
Fax: +852 - 3695 - 43 11
e-mail: info@aumund-asia.com

DUBAI U.A.E.

AUMUND Fördertechnik GmbH Representative Office

P.O. Box 35291
Dubai, UAE
Phone: +971 - 4 - 2823762
e-mail: catalina@aumund.com

THE NETHERLANDS

AUMUND Holding B.V.

Wilhelminapark 40
5911 EE Venlo
Phone: +31 - 77 - 320 01 11
Fax: +31 - 77 - 320 07 28
e-mail: info@aumund-holding.nl

SWITZERLAND

AUMUND AG

Arther Str. 3
6301 Zug
Phone: +41 - 41 - 710 10 82
Fax: +41 - 41 - 710 42 02
e-mail: info@aumund.ch

RUSSIA

AUMUND Representative Office

German-Russian House, Office 44
ul. Malaja Pirogovskaja 5
119435 Moscow / Russia
Phone: +7 - 495 - 287 90 02
Fax: +7 - 495 - 287 90 06
e-mail: info@aumund.ru

FRANCE

AUMUND France S.A.R.L.

43, rue de Trévisse · F 75009 Paris
Phone: +33 - 1 - 42 46 72 72
Fax: +33 - 1 - 42 46 72 74
e-mail: aumund@aumund.fr

BRAZIL

AUMUND Ltda.

Avenida Eng. Luis Carlos Berrini
716 - 4.andar - conj. 41
04571-000 - São Paulo / SP
Phone: +55 - 11 - 3059 0160
Fax: +55 - 11 - 3059 0161
e-mail: aumund@aumund.com.br

USA

AUMUND Corporation

1825 Barrett Lakes Boulevard
Barrett Lakes Center II
Suite 520
Kennesaw, GA 30144
Phone: +1 - 770 - 226 - 95 78
Fax: +1 - 770 - 953 - 48 44
e-mail: sales@aumundusa.com

P.R. CHINA

AUMUND Machinery Trading (Beijing) Co. Ltd.

Rm. 7-8, 22-F, East Ocean Centre
No. 24 Jianguomenwai Avenue
Chaoyang District
Beijing 100004
Phone: +86 - 10 - 65 15 58 13 / 14
Fax: +86 - 10 - 65 15 58 15
e-mail: aumund@aumund.cn



SAMSON office building Ely, U.K.

AUMUND GROUP Headquarters in Rheinberg, Germany

SAMSON

AUMUNDGROUP

Dedicated to providing the most comprehensive range of mobile solutions for bulk materials handling in Ports and Terminals, Mining, Environmental, Cement, Foodstuffs, Agriculture and Power.

Built around the unique concept of the Samson™ Material Feeder, SAMSON Materials Handling offer flexibility, reliability, quality, and industry leading performance from truck intake right through to mobile stacking and ship loading solution.

SAMSON Materials Handling Ltd.

Gemini House, Cambridgeshire Business Park, 1 Bartholomew's Walk, Ely, Cambridgeshire CB7 4EA, England

Tel.: +44-1353-665001 • Fax: +44-1353-666734 • e-mail: sales@samson-mh.com

www.samson-mh.com