



Minerals Logistics

Solutions from Mine
to Port and Processor

SAMSON
AUMUND GROUP

CONTENT

- | | |
|----|----------------------------------|
| 3 | From Mine to Processor |
| 4 | In Pit Feeders |
| 5 | Integrated Solutions |
| 6 | Sand and Aggregates |
| 7 | Eliminating Truck Haulage |
| 8 | Stockpiling and Heap Leaching |
| 9 | Flexible Minerals Export |
| 10 | Export Truck to Ship |
| 11 | Economical Distribution by Barge |
| 12 | Efficient Distribution by Rail |
| 13 | Haul Truck Feed Station |
| 14 | Mineral Import to Silo |
| 15 | Drive Over Dump |
| 16 | Dedicated Import Facilities |
| 17 | Import - Road and Rail Logistics |
| 18 | Road Truck to Rail Wagon |
| 19 | After Sales and Services |

Mining & Minerals Flexible Solutions

Since the early 1970s SAMSON Materials Handling Ltd. have developed a range of materials handling solutions dedicated to the reliable intake, storage, export and import of minerals and concentrates at the mine, terminal and processor.

Flexibility is at the core of our product concept; from truck intake, using the Samson® Material Feeder, through to mobile stacking and ship loading solutions able to operate from existing or temporary berths.

Our goal is to deliver this flexibility without compromising performance, environmental standards, safety or reliability. Delivering the same performance as you would expect from a traditional fixed installation with the benefit of complete mobility.



Intake direct from Haul Truck to Samson® Material Feeder



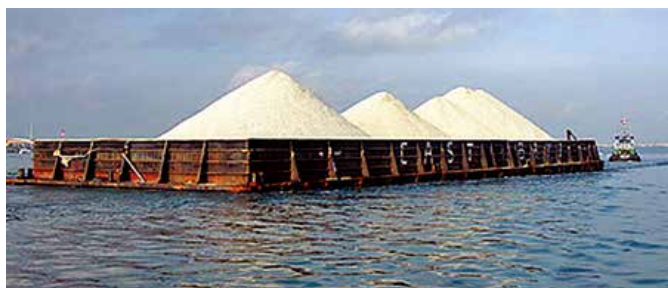
From Mine to Processor

Many of the industrial minerals, used in the major processing industries worldwide, originate in mines often located many miles from the user requiring a complex logistic operation to deliver materials on time and to specification with minimum environmental impact.

Economical transportation with minimum carbon footprint will generally demand efficient use of rail, barge and sea shipment for long distances with truck or conveyor haulage reserved for short runs at the mine or quarry or processor.



Panamax and Capesize bulk carriers for major sea routes



Barges for short sea or inland waterways



Cement Plants consume vast volumes of minerals and fuels



In Pit Feeding Systems

Mobile Samson® Material Feeders with Primary Sizer offer the flexibility of using articulated dump trucks for short haul operations from the working face with the improved economy of conveyor haulage from the mine to the process plant.

Limestone is blasted from the face and recovered by excavator direct to articulated dump trucks which transfer the as mined rock to the Mobile Samson® Material Feeder unit with integrated twin shaft sizer.

Illustrated here the conveyor is sled mounted for easy movement as the bench advances and the crusher is mounted to rails allowing the feed point to be easily moved along the face to minimise the haulage distance.

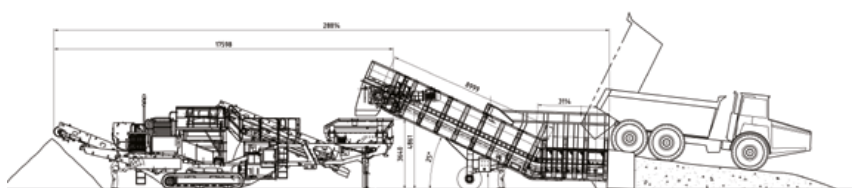


Overland Conveyor with Sledges for Lateral Movement
Sizer with Drives and Controls mounted to Rail Bogie

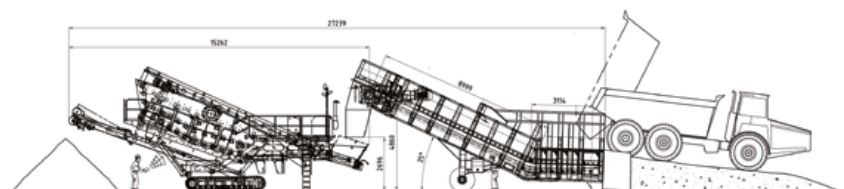


Road Haulage

Samson® Material Feeders provide a flexible solution for intake to both mobile crushing and mobile screening plant eliminating double handling using wheeled loaders; the buffer holding capacity and controlled discharge rate of the Samson® increases plant productivity.



Combined with a mobile secondary crusher the Samson® provides a flexible intake solution for sized rock



For final screening into multiple grades the Samson® intakes crushed stone or as raised aggregates

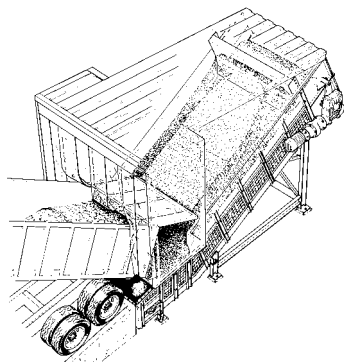


Levelling blade output control for regulated feed rate

Sand and Aggregates

The Samson® used directly to an overland conveyor or with intermediate mobile screener provides a mobile loading point able to receive as dug sands and aggregates direct from rigid or articulated trucks eliminating double handling by shovel with reduced operating costs.

Material is drawn into the Samson® body in a controlled stream thus mitigating fugitive dust problems at source



Samson® Material Feeder intake to process or batching plant



Surface installation eliminates deep pits underground hoppers and offering maximum flexibility in location



Eliminating Truck Haulage



SAMSON Materials Handling Ltd. pioneered the self propelled Mobile Link Conveyor concept working with a track mounted mobile face crusher to connect the mobile crusher to the in-pit overland conveying system to transfer the crushed or sized rock from the face direct to the preparation plant.

By bringing the primary crusher to the working face it is no longer necessary to use truck haulage to move the as mined rock to the central primary crusher of a conventional mine.



In-line or parallel travel for easy transfer point alignment



Two 50 metre x 1400 mm link conveyors

With fast and easy positioning, the Face Crusher and Link Conveyors may be conducted clear of the blast area and quickly repositioned.



Stockpiling and Heap Leaching

Using the Radial and Luffing Boom feature, the Stormajor® is able to create a huge stockpile with the minimum of machine movements and operator intervention. Automated stockpile control produces a plateau to maximise the stored volume.

The Stormajor® is available with an extensive range of options allowing the basic unit to be tailored to the specific application demands.

Including powered travel and steering with onboard diesel gen-set for total autonomy; able to operate on a remote leach pad without any supporting infrastructure. Easily and quickly relocated with a minimum lost of time.



Self propelled Stormajor® for easy positioning



Level plateau stockpile for heap leaching Copper Ore



Direct receive from tipping or dump truck



Flexible Minerals Export



Using a Mobile Shiploader minerals may be exported economically and with fast track availability from almost anywhere. Shown here a temporary export facility in Greenland loads Olivine from a jetty formed in loose rock with simple fenders for vessels to Panamax size.

Professional Mobile Shiploaders offer high loading rates (2,500 t.p.h.) with complete flexibility operating on a simple jetty using either a wheeled loader operating from a local stockpile or dump trucks delivering the material from an inland preparation plant.



Cambered boom for maximum lift and outreach



Simple jetty formed in loose rock backfilled



Export - Truck to Ship

Integrating the Samson® Material Feeder allows the Shiploader to receive minerals and concentrates directly from tipping trucks with no extra handling. After the vessel is loaded the equipment may be travelled off the berth to storage freeing the area for other port operations.

The Mobile Shiploader range extends from small Coasters through to Panamax sized ships with a comprehensive range of standardised components including fully integrated dust control features from the truck down to the hold floor. Full systems integration with an onboard diesel gen-set allows the unit to operate autonomously independent of any fixed port infrastructure or power supplies.



Twin Independent Samson® units feed a single Shiploader



Simultaneous intake from two trucks



Independent Samson® feeds an existing shiploader



Economical Distribution by Barge



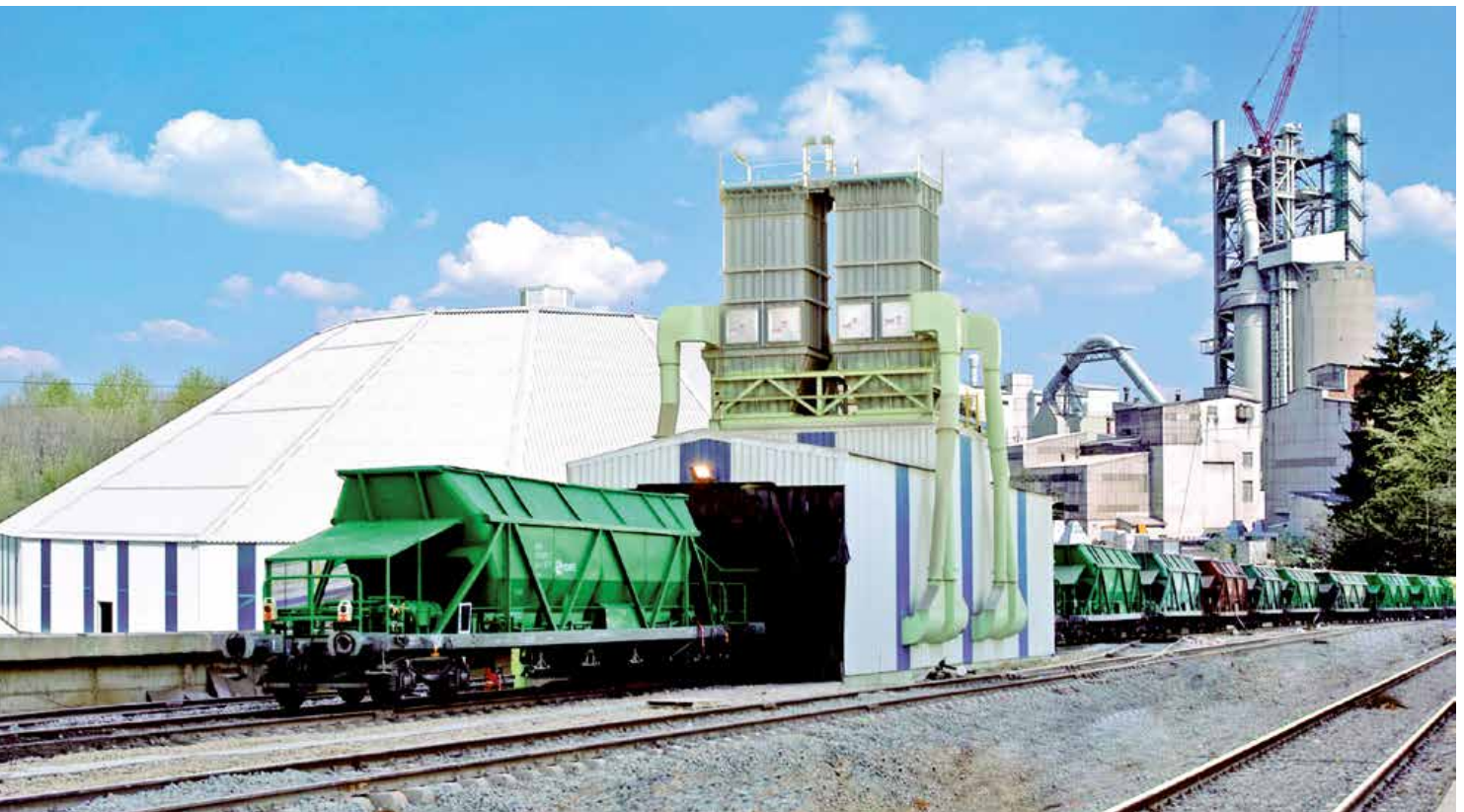
The Stormmajor® combines a Samson® receiving unit feeder with a cantilevered radial boom conveyor mounted to a common mobile chassis, providing the ideal solution for the export of stone and aggregates from a simple river berth.

With an outloading boom length of 30 metres the 5,000 ton barges may moor off the shore line in deep water using simple dolphins; eliminating any need for expensive dredging or a very expensive permanent quay.

The Stormmajor® may simply stand stationary on hard made-up ground and the boom raised up clear of the vessels for berthing. The radial boom simplifies trimming and minimises barge movements and lost time.



Stormmajor® loading Gabbros on Lake Onega in Russia



Circular Storage and Blending Bed by SCHADE

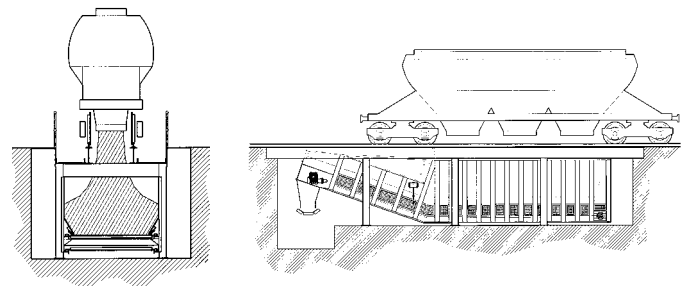


Wagon Tippler for Open Top Flat Bottom Wagons

Efficient Distribution by Rail

Where the end user is rail connected this is generally the preferred method of shipment with low carbon footprint. Efficient and easily integrated to on site storage and blending systems. The AUMUND Group offer a range of solutions for wagon discharge and subsequent handling.

Samson® Under Rail installation for reduced pit depth and minimum dust pollution by minimising material free fall and displaced air velocity; with the wide belt design the Samson® reliably handles the most difficult materials.





Haul Truck Feed Station

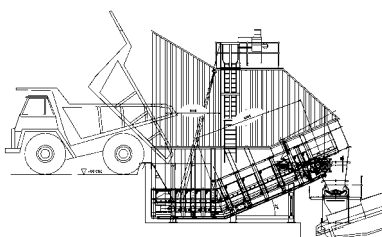


Minimum excavation but 120 tons live holding capacity

By eliminating deep pits and underground hoppers, the Samson® provides a flexible solution for the introduction of minerals to any process plant; illustrated here handling Limestone from haul trucks and other additives to a cement plant including automated storage and reclaim.



Automated reclaim from storage by SCHADE



No deep pits and easy transfer to following conveyors

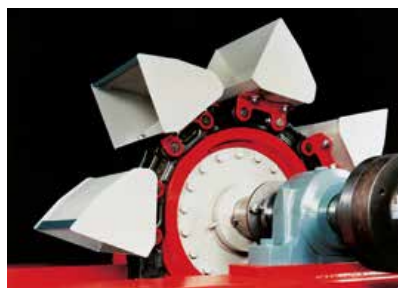


Minerals Intake to Silo

Unless the end user is directly rail connected or linked to a port or inland waterway generally the crushed and screened minerals are delivered to the process plant by road tipping trucks; the Samson® Material Feeder provides the ideal intake facility linked to vertical elevation and silo storage.

For screened minerals the Samson® may discharge direct to an AUMUND Central Chain Elevator as illustrated above.

For very coarse materials a Rotary Sizer and oversize screen may be introduced between the Samson® and elevator as illustrated below.



Integral Rotary Sizer





Sliding doors open to reveal the Samson® below

Drive over Dump

The wide apron belt Samson® design is ideal for handling wet and sticky materials, such as Nickel Tailings, received from special vehicles discharged by moving bulkhead. Opening doors above the Samson® entry allow the truck to drive over and discharge.



Hinged opening door combined with Tipping Platform



Samson® discharges directly to overland conveyor



Dedicated Import Facilities

Rail Mounted Eco Hoppers on a dedicated jetty for the import of bulk materials from geared small bulk carriers. From the Eco Hoppers material is conveyed inland by a system of troughed belt conveyor to a longitudinal enclosed storage facility on the port.



Dedicated concrete jetty with rails for the Eco Hoppers



Storage hall linked to jetty by belt conveyor



SCHADE blending bed storage with travelling stacker



SCHADE bridge reclaimer for output homogenisation



Import - Road and Rail Logistics



Mobile Stormajor® direct from tipping truck to stockpile



Import and Truck Transfer to Off-Port Storage



Mobile Stormajor® loading to Rail Wagons

Import of Dry Bulk Cargoes by Grab to dust controlled Eco Hopper loading to road tipping trucks for inland transfer to local storage area. Combining Mobile Eco Hopper with Mobile Stacking and Rail Wagon loading using the Stormajor® offers maximum overall flexibility.



Comprehensive dust enclosures minimise pollution risk allowing controlled loading in this hyper sensitive inner city location

Road Truck to Rail Wagon

Where the mine is not rail connected, the mobile Stormajor® opens the option of loading to rail wagon at any convenient siding or marshalling yard with the flexibility of short haul truck transport from the mine and the economy of long distance rail haulage to the processor.



Using the self drive Stormajor® with diesel motor provides the added flexibility of loading the stationary rake by moving the Stormajor® parallel to the rail line loading each wagon in turn. This way the main line loco may deliver the empty rake in the morning and collect the loaded rake in the afternoon thus reducing costs by eliminating any shunting.



Rotating loading chute for accurate material placement



Powered travel and steering for easy travel along the rake

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

Saalloffer 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

Saalloffer 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: sales@schade-lagertechnik.com
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 Trévis - 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



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