

Bulk materials handling in stockyards and ports

Sandvik is a high-technology engineering group with world-leading positions in selected areas – tools for metal working, advanced materials technology, and mining and construction. We employ more than 40 000 people and are represented in 130 countries.

Sandvik Mining and Construction represents one third of the overall Sandvik Group and serves a broad range of customers in construction, mineral exploration, mining and bulk materials handling. Our construction expertise covers quarrying, tunneling, demolition and recycling, and other civil engineering applications. Our mining products and services support customers on the surface and under ground, including coal, copper and gold mining.

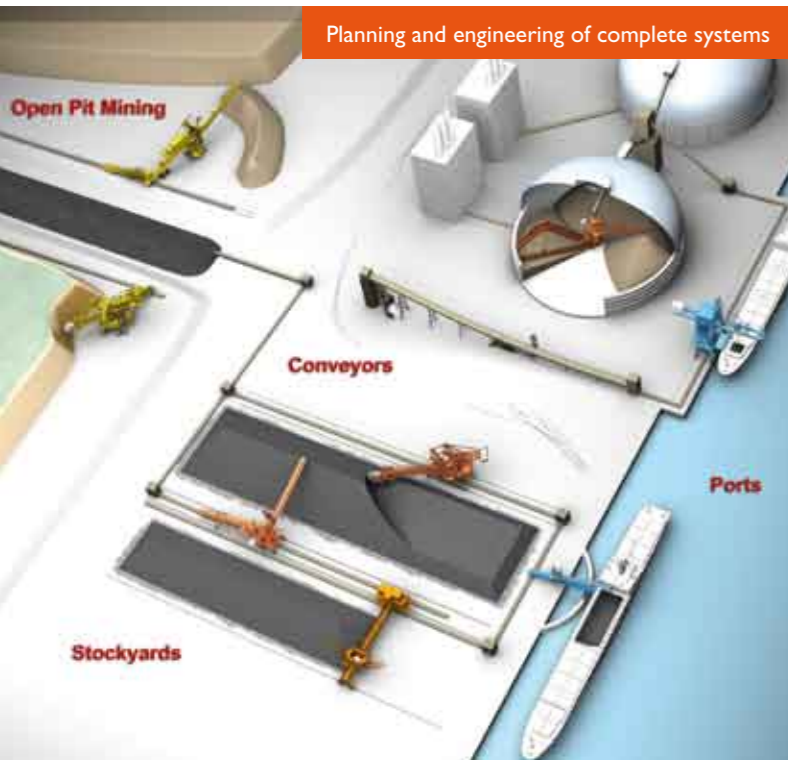


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Bulk materials handling expertise and competence

Nowhere is the breadth and depth of Sandvik's expertise more apparent than in the handling of bulk materials. Since our 19th century roots, we have developed into a global industry leader. Wherever bulk material is handled, you will find Sandvik present. In addition to meeting the needs of the mining industry, we also excel in downstream operations, such as power plants and mills, ports and terminals with an approach tailored for each application.

Reclamation, stockyard storing, sizing, homogenization and transportation are all materials handling processes we support. Our offering for turn-key projects, individual new equipment or upgrades and modernizations includes consulting, systems design, engineering, procurement, erection and support. Sandvik applies materials handling and automation technologies to help you best utilize your assets. We design and manufacture the full range of conveyor components used in materials handling equipment, whether for new systems or replacement parts to any existing system.

Our goal is to make our customers more successful through long-term cooperation and partnerships. That success comes from efficient process design, innovative engineering and a dedication to reliability. The Sandvik brand has always stood for productivity and quality. Through the well developed Sandvik Mining and Construction organization, we also have the global parts logistics and local services to keep your continuous materials handling processes running.

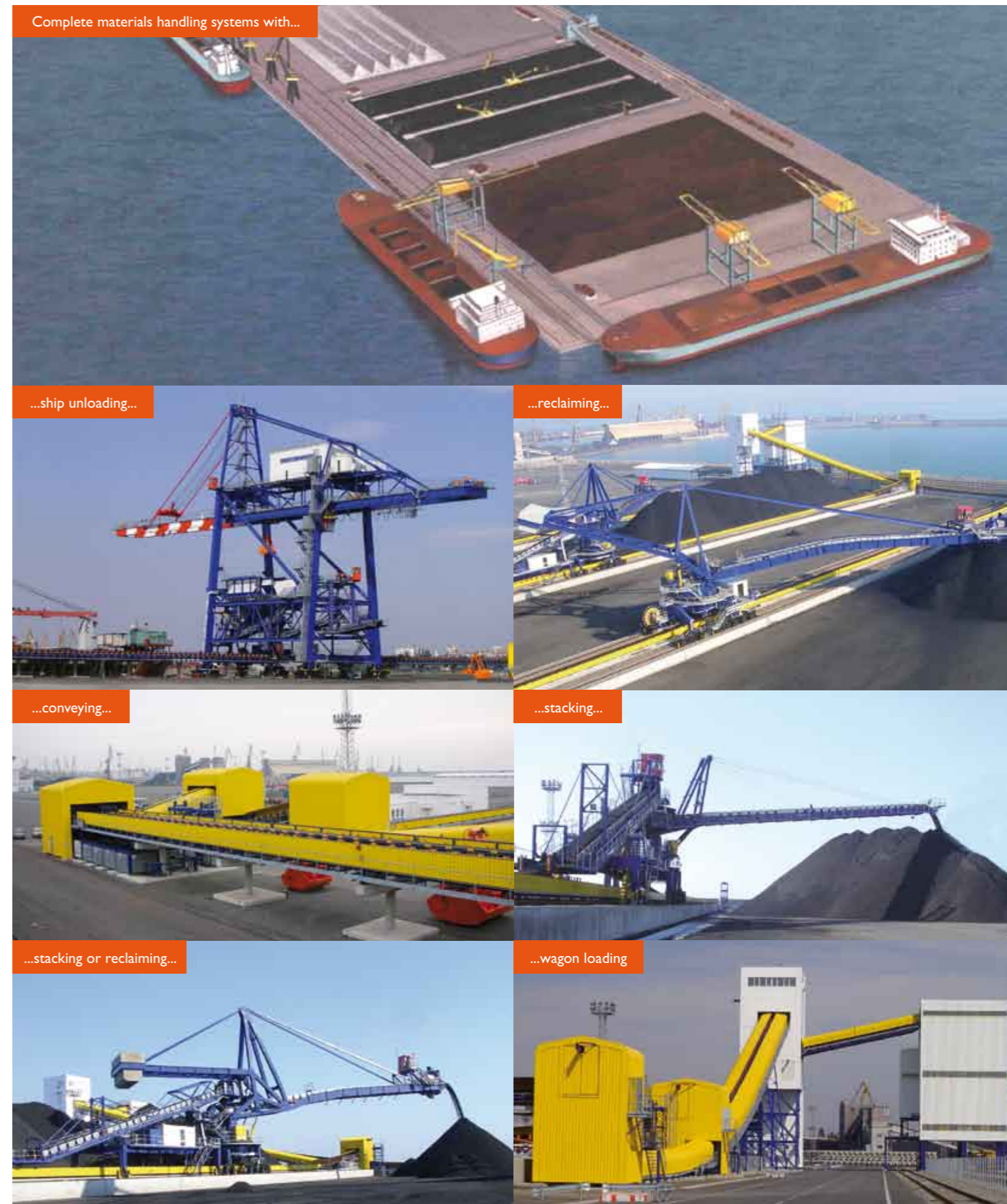
Materials handling systems

Sandvik offers all services related to bulk materials handling, including feasibility studies, conceptual plant layouts, design, engineering, and the entire execution of complete systems to handle coal, ore, bauxite and other different materials; we supply a vast range of equipment for applications such as the following:

- Conveying, stacking, reclaiming and blending of bulk materials
- Loading bulk materials into ships
- Unloading bulk materials from ships
- Crushing, sizing and feeding of bulk materials

This offering supports the continuous transfer of the material in various fields of materials handling solutions, whether as individual machines or as complete turnkey installations.

The classical application of these systems and machines relates to stockyard facilities at mines, at export and import ports and on stockyards of power stations, steel works and processing plants. According to the requirements of the downstream consumer, Sandvik's systems can reach output rates up to more than 10 000 tonnes per hour.



Complete handling systems for stockyards

Stockyards, either as a circular or longitudinal layout incorporating particularly feed conveyors, stackers and reclaimers, have a central function in the fields of materials handling as they serve as material buffers, reserve or blended storage between incoming and outgoing materials. Due to the main functions buffering, composing and homogenizing performed by a stockyard, quantity as well as quality fluctuations can be balanced out with the right chosen system.

As the priorities for each application and stockyard operations are different, it is necessary to consider various questions before selecting type and size: throughput required, characteristics of the materials to be handled, homogenizing effect required, open or roofed storage and importantly, the future upgrading of the storage.

Sandvik offers a complete range of products to provide customised solutions for each customer's specific requirements. Our equipment comprises:

- Reclaiming technology for bucket wheel boom type-, bucket wheel bridge type-, scraper type-, drum type units
- Stacking technology for the most commonly used stacking methods Chevron, Windrow and Cone Shell
- Combined stacking/reclaiming technology for bucket wheel- or circular units
- Conveying technology including transfer stations
- Auxiliary equipment with hoppers, feeders, crushers

Covered storage is used where environmental aspects require the full enclosure of the stockpiles and stacking and reclaiming activities. It can either be arranged in the form of a longitudinal/rectangular configuration or in a circular configuration covered by dome-type structures.



Complete stockyard system for coal with...



...mobile hoppers...



...stacker/reclaimers...



...in-plant conveyor system equipped with own Sandvik idlers...



...train wagon loading system

Complete handling systems for ports

All around the world, sea-going and coastal vessels are constantly being loaded or unloaded with different bulk materials. In order to ensure a thriving international sea trade, to load the material at the export terminal and unload the vessels in the import terminal, to store the material at the ports continuously and in a very short time, a high standard of perfection in port-handling methods is needed - an area where Sandvik has a vast experience.

Sandvik ensures a smooth transfer to and from bulk terminals with a complete offering of reliable ship unloading and shiploading equipment.

Many different developments for all capacities and applications are included in our range of shiploaders which provide traveling, telescopic, luffing and/or slewing as well as radial functions. The ship unloading of high-density bulk material at fast flow rates is conducive to our offering of grab-type unloaders of gantry or level luffing design. For the intermediate storage of bulk materials in ports, Sandvik's complete range of stockyard equipment and systems incorporates stackers, reclaimers and stacker/reclaimers.

The equipment can be supplied with various modes of operation, including manual operation by onboard operators, semi-automated and fully-automated operation integrated in a central, remote control system.

Overview of the complete materials handling system for iron ore with...



...conveying of the material to the pier...

...and shiploading into big vessels...



...ship unloading in ports of destination



Equipment for stockyards

RECLAIMERS

Sandvik reclaimers are designed to reclaim bulk materials from stockpiles at mines, ports, steel plants and power stations in a quick, efficient and orderly way. They are available in several main types, including bucket wheel boom-type, bucket wheel bridge-type, scraper-type and drum-type reclaimers, and in many configurations and sizes. The choice of design depends on factors such as the size and shape of the stockpile, the type of material to be reclaimed, the required reclaiming rate and the need for blending or homogenization.

STACKERS

Sandvik stackers effectively stockpile bulk materials in an efficient and orderly manner. Stationary or traveling, borne on rails or crawlers, they can be supplied in fixed, luffable or luffable-and-sleuable boom designs, with capacities from 150 to 10 000 tonnes per hour. The choice of design depends on factors such as the stacking method and size of the stockpile, the type of material, the required throughput and the demand for mobility. Tripper cars or tripper systems for transferring material from the yard conveyor to the stacker are considered part of the stacker.

STACKER/RECLAIMERS

Sandvik stacker/reclaimers come in two main types: bucket-wheel models for alternate stacking and reclaiming, and circular units, which normally stack and reclaim the material alternately but can be designed to do so simultaneously if required. Our bucket-wheel models, normally supplied complete with tripper cars, are compact and economical for longitudinal stockyards where simultaneity is not required and where there can be large variations in the demand for stacking and reclaiming capacity. Our standard circular units, which build a ring-shaped stockpile and are normally housed inside a covered dome because of environmental aspects, both continually stack the stockpile at one end of the ring and reclaim the material simultaneously from the other end.

WAGON/TRUCK LOADING

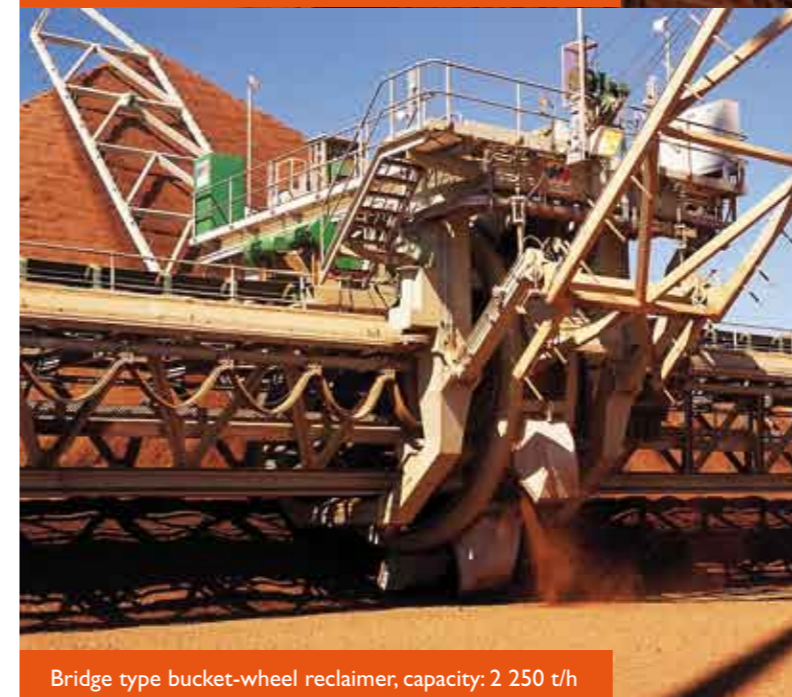
Wagon and truck loading stations supplement the transportation chain. They are the linkage points in handling technology when bulk materials are delivered and transported. Sandvik's installed rapid loading systems are one of the most highly automated and efficient systems for wagon loading world-wide.



Boom type bucket-wheel reclaimer, capacity: 12 400 t/h



Luffable and sleuable stacker - pylon-type, capacity: 6 480 t/h



Bridge type bucket-wheel reclaimer, capacity: 2 250 t/h



Portal scraper reclaimer, capacity: 1 800 t/h



Bucket-wheel stacker/reclaimer with tripper car



Circular stacker/reclaimer (scraper-type) in covered dome

Equipment for ports

SHIPLOADERS

Sandvik linear gantry and quadrant bridge type shiploaders are constructed in proven, eco-friendly designs with a wide range of sizes to service vessels from 5 000 to 250 000 dwt. Central to the Sandvik philosophy is minimal disruption of the port during installation of the shiploader and its supporting equipment. Our process for off-site construction, assembly, testing, commissioning and heavy-load transportation is highly advanced, resulting in installation of fully operational shiploaders with capacities up to 12 000 tonnes per hour in just a few days. The range includes a variety of shiploaders which provide travelling, telescopic functions, luffing and/or slewing installed onto longitudinal jetties, or radial shiploaders which incorporate a fixed pivot point.

SHIP UNLOADERS

Sandvik ship unloaders of the linear gantry and level-luffing types are constructed in proven designs and a wide range of sizes to service vessels from 5 000 to 250 000 dwt. Focusing on grab technology, they offer efficient, rational solutions to demands for quayside flexibility and are the perfect rigs for unloading materials with different bulk densities. As with continuous ship unloaders, they can be constructed, assembled, tested and commissioned off-site if necessary, then shipped to site and installed with minimal disruption to port activities.

AUXILLIARY EQUIPMENT

Sandvik's product portfolio of standard equipment for bulk materials handling applications covers HC-series belt conveyors and HF-series belt feeders, both having fixed and mobile units. With a wide range of standard modules and components these devices can be tailored exactly to meet the needs of the application. The advantages of the mobile equipment make them ideal and cost-effective in conveying and stockpiling materials.



High-capacity shiploading



Grab-type unloading



Custom-built solutions



Optimized port systems

Transportation systems

Sandvik has a highly skilled projects division specializing in the design, manufacture, installation and commissioning of conveyor systems for a full range of applications. We also upgrade and modernize systems and supply a comprehensive range of quality components and spare parts.

IN-PLANT CONVEYORS

Sandvik offers in-plant conveyor systems with capacities from 100 to 7 000 tonnes per hour for handling bulk materials in quarrying, construction, chemicals, food processing and power generation. Combining optimized ground-level designs with elevated modules, walk-through structures and open or closed gantries, we always find the right balance between space, capacity and cost. Our in-plant systems can include belt feeders, high-angle conveyors and totally enclosed conveyors.

SPECIAL CONVEYORS

Sandvik special conveyor systems include regenerative conveyors, belt feeders, high-angle conveyors and compact vertical-lift conveyors that can overcome large differences in elevation.

UNDERGROUND CONVEYORS

Sandvik has developed numerous systems for the special demands and extreme operating conditions of underground conveyor applications. Our expertise extends to conveyor systems for both coal mines and metalliferous mines, as well as for all kinds of civil engineering applications. Thanks to our close involvement in all operational sequences in the mining and tunneling cycles, we have unique insight into the demands placed on all types of underground haulage systems.

Our recent innovations include a very flexible continuous haulage system for miners in room-and-pillar operations, as well as a unique straight-line continuous haulage system to support miners in the punch mining method.



In-plant conveyors in South Africa



Regenerative conveyor in Brazil



Underground conveyor in Middle East

Idlers for transportation systems



Belt tearing detector



Loading points

Conveyor components

Transportation systems depend on the consistent functioning of conveyor components. Sandvik's complete conveyor offering includes components with an emphasis on performance and reliability, for light, medium and heavy-duty applications. Through innovation in design and manufacturing techniques, we provide operations and maintenance personnel with products that support modern materials handling practices, both as original components or as replacements in existing systems.

TRANSPORTATION

Sandvik's component business has grown up in an environment of understanding the importance of reliability and the cost of failures. The effective and trustworthy running of rollers and pulleys is our constant objective, which is supported with the entire range of conveyor components.

LOADING POINTS

A poorly designed or integrated transfer point can lead to material spillage, impact damage on conveyor belts, dust emission and poor belt tracking. Sandvik's design expertise and complete offering for loading section components provide a smooth transition from chute to belt. With the wide product range, even the most special needs are met: matching a material to the right belt cleaner, eliminating spillage and dust through a combination of sealingless loading and a dust suppression system, as examples.

SAFETY AND ENVIRONMENT

Reliability of conveying is one of the most important issues in stockyards and ports, but safety is equally important. The wide range of safety and control devices add the final touch to Sandvik's conveyor components, to be sure that both personnel and equipment are in good hands.

Life cycle services for your equipment

A first objective of Sandvik's life cycle services is to ensure maximum availability and productivity of equipment and plants, throughout their planned lifetimes. A second objective is to increase the expected lifetime by appropriate preventative maintenance and by timely investments in modernizations. Sandvik offers supervisors and specialists for regular inspections, condition monitoring and maintenance, provides spare parts and assists in major replacements or overhauls.

WARRANTY

When you partner with Sandvik, you know that we will stand behind our products, with a dedication that goes beyond a standard guarantee.

MAINTENANCE

Sandvik offers scheduled inspections or complete maintenance contracts. We also provide complete maintenance management systems utilizing electronic on-line condition monitoring systems. The maintenance management systems can discover irregularities and consequently minimize costs resulting from unscheduled downtime and failure repairs.

SPARE PARTS

Our international market strength shows our ability to source and ship material and components anywhere. This also translates into highly effective spare parts support, which is further strengthened with the global Sandvik logistics organization. We can provide all wear and spare parts to keep your equipment and plant in good condition.

MODERNIZATION

You can be assured that Sandvik will take all possible steps to modernize your equipment and processes, enhancing your productivity. Introducing new monitoring systems, improving serviceability, and upgrading training are just some examples of how Sandvik can update our offering to you.

REPLACEMENT BY NEW MACHINERY

At the end of a life cycle, Sandvik can provide recommendations for replacement with a new plant or piece of machinery, utilizing the newest technology for improved productivity and cost efficiency.

