Ship loaders for dry bulk materials
Cargotec’s Siwertell ship loaders are selected by operators who strive for high efficiency with minimal impact on the environment through advanced technology. We focus on each customer’s need and create a tailor-made solution accordingly.

The ship loader programme offered by Cargotec exploits technologies and philosophies originally developed for the well known Siwertell unloader range. In defining and developing the most operationally efficient and safest dry bulk handling terminal, we emphasise environmental, performance and versatility features in both our products and services.

In developing bulk material handling equipment our goal is to ensure that operators using systems supplied by Cargotec contribute to preserving the environment. That is why the Siwertell ship loader is designed with totally-enclosed conveying lines, transfer points and specially designed loading spouts.

A Siwertell loader system is totally enclosed from the transfer point at the jetty conveyor, which delivers the cargo to the loader, all the way to the discharge of the cargo into the ship’s holds. A cleaner and safer environment is thus achieved through elimination of spillage and dust.

Outstanding performance is not only a question of developing high capacity loading facilities. It is equally, if not more, important in the context of efficiency. A properly designed loader should be able to maintain its rated capacity throughout the complete ship loading process. Outstanding performance should be linked not only to loading rates and efficiency in the loading process but also to the ability to load sensitive cargoes without degeneration of the cargo and with limited power consumption.

Depending on the design parameters, terminal conditions and operational requirements, a truly versatile loader can in one case be designed to be equally environment-friendly and efficient in loading, for example, cement and clinker - two commodities used by the same industry but with totally different characteristics - or in another case designed to serve anything from barges to ocean going ships.

With experience in dry bulk handling equipment dating back to 1974, Cargotec has earned a reputation for competence by delivering diverse bulk handling systems to all parts of the world for handling all kinds of dry bulk materials in many different shoreside and offshore applications.
Conveying technologies

Screw conveyors
Screw conveyors are particularly well suited for handling powdery and dusty materials and where limitations in height need to be considered. A screw-type loader is thus commonly used for handling commodities such as cement, cement clinker, combinations of cement and cement clinker, sulphur and minerals, and is applicable to ships up to Panamax size.

Aeroslide conveyors
Aeroslide conveyors are well suited for handling fluidised commodities and where height restrictions dictate installation of the conveyors in a downhill slope for all operational angles. A loader using aeroslide technology is commonly used to handle commodities such as cement, dry fly ash and alumina, and is applicable to ships up to approximately 80,000 dwt.

Belt conveyors
Belt conveyors are typically used for handling lumpy or granular materials as well as sticky materials. A Siwertell loader using belt conveyor technology can be designed in a covered and environmentally protective manner but without the total enclosure of screw- and aeroslide conveyor-type loaders. From that perspective, there is thus an inherent drawback with the belt conveyor type loader. On the other hand, such loaders use a commonly applied technology, which is well suited to handling a broad range of commodities at low power consumption. A Siwertell belt conveyor loader is typically used to handle commodities such as grain, feedstuff, fertilisers, coal, ores and minerals, and is applicable to ships up to 130,000 dwt.

Stationary loader
A stationary loader requires shifting of the ship during operation in order to reach all parts of the hold and all holds of the ship, undermining operational efficiency. The obvious benefit lies in significantly reduced costs in civil works and lower investment costs for the loader itself.

Slewing
The horizontal arm slews over a range of typically ±110° to enable reaching into the hold and spreading the cargo reasonably well. This type of loader is available with all varieties of conveyors.

Slewing with scissor-arm conveyor
The horizontal arm slews over a range of typically ±110°; connected at its end is another arm which independently slews ±110°. Such a configuration provides a significantly better reach into all parts of the hold and enables loading of ships with closed hatches and only a few dedicated loading openings with reduced need for shifting the vessel. This type of loader is available in the screw conveyor configuration only.

Telescoping
The horizontal arm linearly telescopes to allow positioning of the loading spout at several positions across the width of the hatch opening. Telescoping can be combined with slewing and used with all types of conveyors, although it is more frequently used with belt conveyors.

Rail-travelling loader
A rail-travelling loader can - if the travelling length is adequate - reach all holds of the ship without requiring shifting of the vessel. Such a feature enables highly efficient loading processes but does call for an adequate site size. To facilitate a truly efficient and continuous operation the loader is fed by a jetty conveyor either through a tripper car or through shuttling jetty conveyors.

Power feeding is managed through a cable reel or with onboard generators. The loader can also be fed through fixed outlet positions on the jetty conveyor where power feed can also be arranged. This system therefore allows all cargo holds to be reached without shifting the vessel, but it is not as efficient because the loading process must be stopped while moving from one fixed outlet to another.
Slewing
The horizontal arm slews over a range of typically ±110° to enable reaching into the hold, and in conjunction with the travelling possibility the cargo can be well spread over the entire hold area. This type of loader is available with all varieties of conveyors.

Tailor-made solutions
The Siwertell loader programme is tailored to suit operators with high demands on performance and environment-friendly operation linked with requirements for exchanging information to/from the loader. To excel in dust-free operation a Siwertell loader is equipped with de-dusting facilities at all conveyor transfer points. The loaders can be equipped with all kinds of loading spouts, ranging from double-walled flexible spouts to cascade-type bellows. To meet the above demands, the loader range is adjustable to handle ships up to 130,000 dwt at loading capacities up to 2,500 m³/h - however, even higher capacities can be achieved. Whether the loading operation is sensitive, demanding and requiring extraordinary equipment, or the material is hazardous and hard to handle, Cargotec’s Siwertell systems are designed to meet each customer’s specific needs and to find the best solutions for efficient, cost-effective and environment-friendly bulk handling.
Cargotec, scope of supply for dry bulk handling systems includes:

- plant and terminal systems
- ship unloaders / loaders
- conveying systems
- transfer terminal solutions
- storage systems

Siwertell products are designed, marketed and supplied from Cargotec’s offices in Bjuv, Sweden, with support from local representatives worldwide.
Cargotec improves the efficiency of cargo flows by offering solutions for loading and unloading goods on land and at sea – wherever cargo is on the move. For handling dry bulk materials, Cargotec provides engineering solutions through its Siwertell brand. Designed to ensure environmentally-friendly and efficient cargo operations, Siwertell ship unloaders and loaders are based on unique screw conveyor technology, in combination with belt conveyors and aeroslides and can handle virtually any dry bulk cargo.