

Idlers ESI

A graphic consisting of several overlapping circles in various shades of green and teal. The text "Energy Saving Idlers" is centered within the largest, most prominent teal circle.

Energy
Saving
Idlers





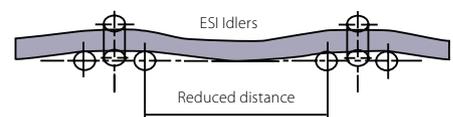
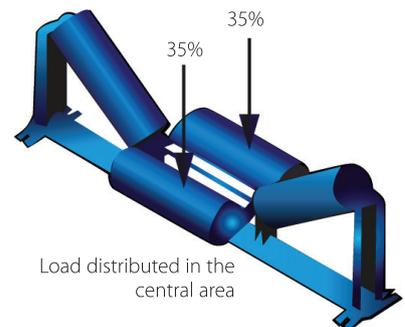
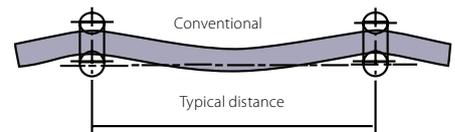
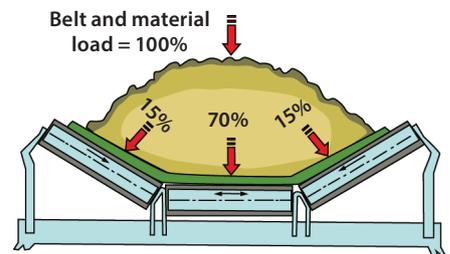
The property rights of the ESI project are protected by patents MU6700453 and PI9104213. Extensions of these patents were requested in the USA, Germany, Australia, Chile and other countries.

Idlers ESI Energy Saving Idlers

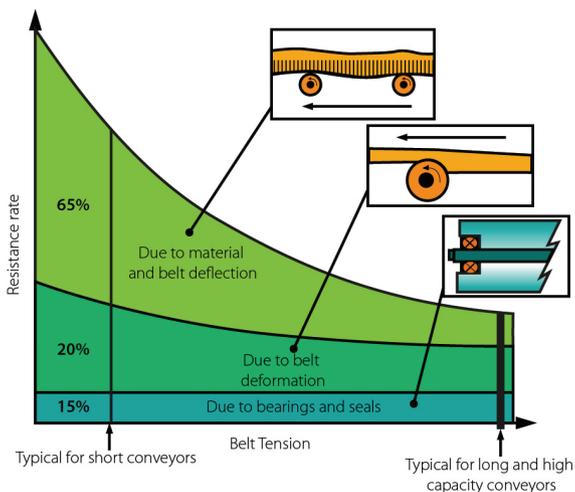
Idlers ESI

The ESI system can provide reductions of up to 35% in power consumption of long distance belts, besides increasing the service life of the equipment. Any friction reduction in a belt conveyor directly reduces the pulling force and, therefore, the required installed capacity.

There are three basic types of running resistance applied to the belt and material on the Idlers: (1) material and belt resistance due to their lifting and movement between the two brackets, resulting in constant displacements during transportation; (2) resistance caused by the deformation of the belt lower cover when contacting the roller and (3) bearing and seal resistance.



With this new configuration, belt spacing is reduced and the load applied on each roller, as well as the contact pressure with the belt, are reduced by 50%.

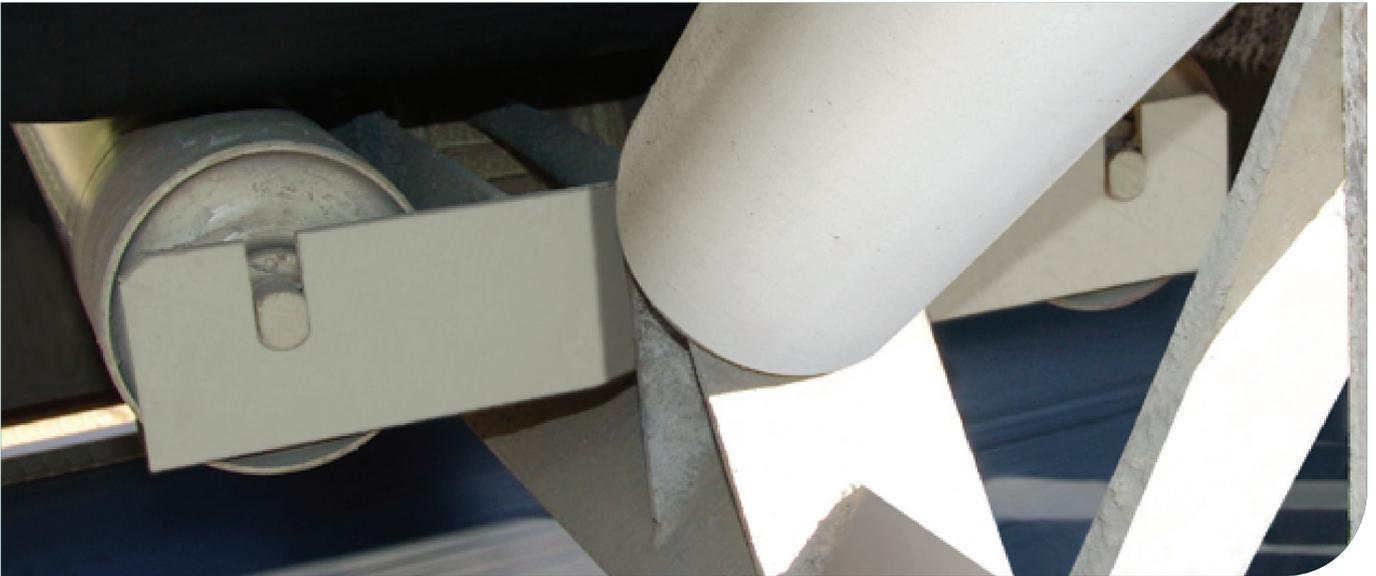


Types of Resistances

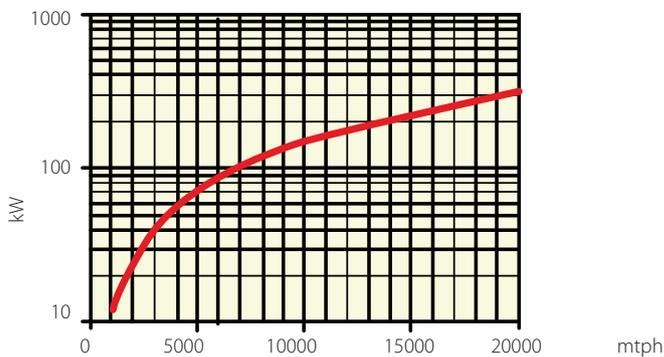
The ESI system consists in replacing the central roller with a pair of lighter Idlers mounted on a pivoted rocker arm, decreasing the spacing on the belt and the pressure on the central roller, which normally receives 70% of the total load.

Main benefits

- Reduced conveyor power consumption
- Use of lighter rollers
- Increased belt service life



The chart below shows the power gain in kW with ESI Idlers along 1 km of the conveyor length.



Applications

The ESI system can be used in existing belt conveyors, as well as in new projects.

- Existing belts: replace the central roller with a rocker arm and lighter Idlers. Important to note that the ESI may be introduced gradually within the maintenance program and each converted meter starts to generate immediate benefits. The pivoted rocker arm bracket is supplied with the same attachment configurations of the conventional roller and it may be mounted on a conventional bracket without requiring any adjustments.
- New belts: ESI system installation (rocker arm and four lighter Idlers).
- Application areas: long distance conveyors, high capacity conveyors.

ROI

- Existing belts: reduction of up to 35% of electric power consumption, belt service life 3 times longer and roller cost reduction
- New belts: reduction of motorization (lower capacity electrical motors, reducers and couplings). Lighter Idlers, drums, metal frames and counterweights.

Interchangeable Idlers

ESI central Idlers are identical to the side Idlers, which makes them interchangeable, representing additional savings in the stock of spare parts.

Field Evidences

In 2002, ESI Idlers were installed in MBR belt conveyor, at Mangaratiba Port, RJ. The main data of this conveyor are:

- Horizontal length: 560 m
- Rated capacity: 11,000 t / h
- Transported material: iron ore
- Belt width: 1,400 mm
- Belt speed: 4.36 m / s

Note that the arrow on the belt is smaller when compared with the conventional Idlers due to the smaller spacing among rocker external Idlers, resulting in decreased running resistance. Consequently, the consumed power was reduced and power consumption was decreased in 21%. These reductions have been proved after the system installation.

According to MBR, there was a significant increase in the service life of this belt conveyor with the installation of ESI Idlers in 2002.

Expect results

Expect results is our promise to our customers and the essence of our strategy. It is the attitude we share globally. Our business is to deliver results to our customers to help them reach their goals.

