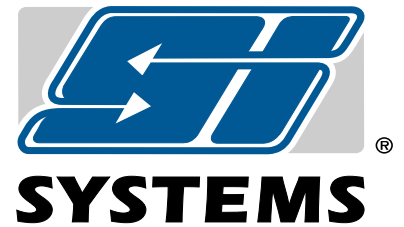


Unit Load Handling Systems



LO-TOW® IN-FLOOR TOWLINE CONVEYOR

Broad Applicability

Since 1963 SI has installed over 1200 towline systems worldwide. SI towline systems have been widely used for years because of their dependability, efficiency and low investment cost. The simple, robust component design allows for configuration into innovative systems tailored to meet any warehousing or distribution center application requirements. Remarkably versatile, SI towline can move materials horizontally — vertically in multi-story buildings using ramps or lifts or to connect multi buildings using overhead passages or underground tunnels. SI towline can be installed in new or existing buildings in loops of unlimited length. SI Lo-Tow will enhance productivity by integrating receiving, bulk storage, order fulfillment operations and shipping functions.

Operation

SI towline uses a low profile track recessed into the floor with a powered chain. Carts of any size or design are pulled by the chain from pick-up points to their assigned destinations. Switching and merging components allow carts to automatically divert into spurs or move efficiently from one towline loop to another. Cart programming can be accomplished manually by setting magnetic probes on the cart rack to match the spur or transfer destination code or automatically using RF ID tags, bar code labels and computer tracking systems.

The Smart Choice

The rugged, proven design of towline system components, combined with more sophisticated control systems, make SI towline a more logical choice over other material transport systems. Simple and easy to maintain, SI towline systems require a lower cost initial investment, are less costly to operate once installed, and provide a useful system life far greater than alternative technologies.

SI SYSTEMS

600 Kuebler Road, Easton, PA 18040

Phone: 610•252•7321

Fax: 610•250•9677

www.sih.com

800•523•9464



Figure 1. Distribution Center for a major retailer.

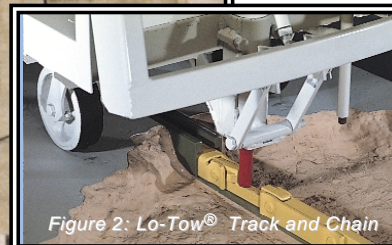


Figure 2: Lo-Tow® Track and Chain

Features - Benefits

- **Reliable and Efficient**
- **High Throughput Capabilities**
- **Low Initial Investment Cost**
- **Minimal Maintenance**
- **Outstanding System Longevity**

SI LO-TOW®

IN-FLOOR TOWLINE CONVEYOR

Control —

Intelligent Towline

To meet the information management needs of today's logistics systems, SI has developed advanced towline control capabilities. State-of-the-art, PC hardware, coupled with easy to use menu-driven software, can incorporate real time cart management throughout the towline system. This can be used to manage



Figure 3: Bar code readers, RF communications, and state-of-the-art computer controls can provide automatic cart tracking/routing, inventory management, system diagnostics, and host computer interface.

the flow of inbound or outbound merchandise or direct empty carts to areas of highest need. When combined with bar code labeling of merchandise and RF cart ID tags, the SI Information Management Control System (SIIMS) can accomplish inventory management, cart and merchandise tracking and computer interface with other integrated material handling and storage systems and complete system diagnostics.

Interface Capabilities

SI has developed several innovative devices which have increased the interface capabilities of towline with other material handling systems. Automatic cart unloaders allow for transfer of pallet loads from a moving cart to an adjacent conveyor. Carts can be automatically loaded, interfaced directly with AS/RS systems or lifted by fork trucks.



Figure 4: Carts can be designed with special devices, such as lockable fork pockets for lifting by fork trucks.

AS/RS Interface

Using the SI Information Management Control system and precision accumulation stops, carts transporting pallets can automatically interface with AS/RS systems to drop off or pick up loads. The SIIMS control system communicates to the AS/RS control system providing information with respect to the palletized merchandise being off loaded. Conversely, it will receive information from the AS/RS controller upon pick-up of pallets and direct the cart to the appropriate destination.



Figure 5: Precision interface can be accomplished for automatic loading and unloading by an AS/RS.

Automatic Cart Unloader

Using a floor mounted mechanism that harnesses the forward motion of a roller deck cart to produce a lateral motion, unloading can be accomplished without stopping the cart. Where necessary, loading and unloading can be performed with the cart stationary.



Figure 6: Pallet loads can be automatically unloaded "on-the-fly" at the correct roller conveyor line.

Carts for All Purposes

SI engineering expertise can custom design carts for special needs or functions. Simple modifications to the basic cart greatly maximizes towline system utility. Some of the more common modifications include: tow assemblies for pallet jacks, shelf or tray carts, roller or rotatable decks, additions of fork pockets for lifting or pipe sockets to restrain loads.

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Figure 7: Pallet jacks modified to incorporate a Tow pin assembly can be efficiently used for Towline transport and off line for pallet movement.

Ramps or Lifts

The system can be designed to integrate multi-level buildings. The most common is the utilization of sloped ramps, but lifts can be used where floor space is not available.



Figure 8: Lo-Tow® is perfect for moving loads up and down ramps on multi-floor buildings or on overhead bridges connecting separate buildings.

Retrofit of Non-SI Systems

Because towline continues to be one of our core businesses, SI has specialized in expanding modifying, replacing or retrofitting towline systems originally installed by other towline companies. Call us for a no-charge consultation.



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