

TECHINFO

LEITNER STATIONS





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Every ropeway station is unique because of the way it is incorporated into its natural surroundings or existing infrastructure. So when a ropeway station is designed, one of the main challenges is striking the right balance between standardization and variability. LEITNER stations are modular, which means they meet these requirements perfectly.

A station can be extended by up to five meters to make it easy to get in and out of high-performance gondola lifts. Not only does this mean more space, it also means more time to get in comfortably without rushing.

The LEITNER HCL station was developed to meet this need in chairlifts. By coordinating the movement of chairs and passengers, boarding is made extremely easy, while retaining impressive transport capacities.

If there is limited space, the LEITNER station can be supplied in a version which is three meters shorter. This solution saves space and is economically competitive as well, but without compromising on ride comfort.

Every LEITNER station comes fitted with the grip coupling system certified in compliance with the EU Ropeway Directive, which prevents an incorrectly coupled vehicle from launching. This eliminates the need for a safety section after the station exit, and towers in front of a station can be quite a bit lower. Sometimes whole towers can even be eliminated from the top station area.

LEITNER stations also lead the way when it comes to noise levels. Sound-insulated components allow stations to be erected near inhabited buildings, cafes and restaurants, and urban areas without difficulty.

Steel components of the utmost quality, flame-retardant plastics, a wide range of monitoring and safety systems, and stunning modern designs complete the LEITNER station concept.

The LEITNER Premium Station	04
The Short LEITNER Station	06
The Long LEITNER Station	08
The LEITNER HCL Station	10
The LEITNER Middle Station	12
The LEITNER Grip-Coupling System	14
The Integrated Maintenance Stand	16
The Quick Switch	18

The LEITNER Premium Station

Italian design, maximum functionality

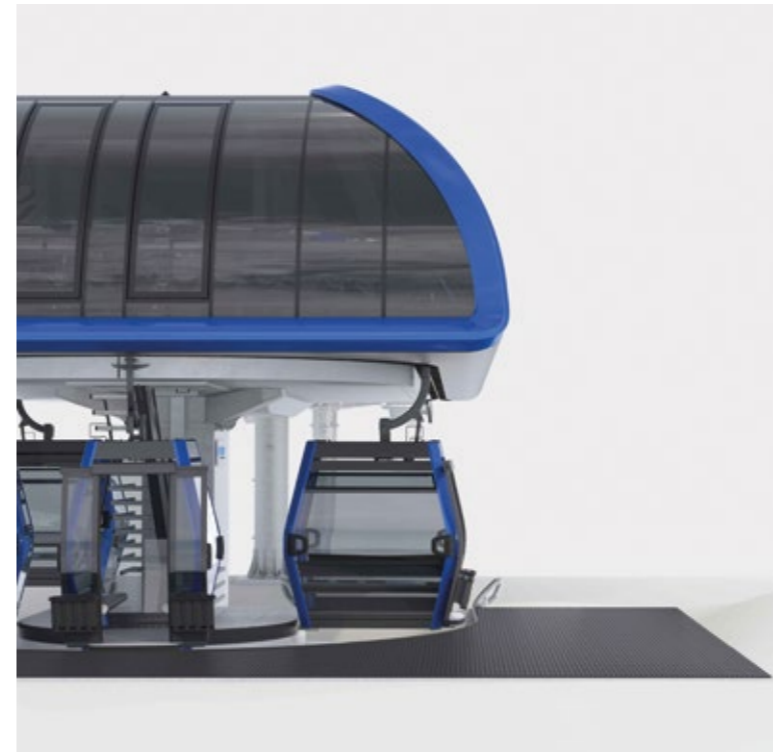
Drafted by Italian designers Pininfarina, this system meets the very highest standards of aesthetics, innovation, and technology. A major focus is on the ultimate in operational and maintenance functionality. This station really can do everything, thanks to some striking technical and aesthetic advances.

A sophisticated form minimizes snow and wind loads. This removes unnecessary burdens from the whole structure, including its foundations. What you notice immediately is the significantly wider station roof, which fully covers the vehicles beneath it. This makes things more comfortable for passengers, because they are protected against rain and snow.

Ascending into the inside of the station is much safer and more convenient. The stairs are no steeper than 45 degrees and have been moved from the front to the rear of the station, where vehicles travel at slower speeds. The design of the station and its longer covering makes it easier to monitor the ropes, for which there is now a wider viewing area approximately two meters long.

The roof access system has been redesigned to allow access from inside the station. Ropeway service workers no longer need to climb through a hatch to reach the roof. The roof now has a different pitch, allowing a ladder to be fitted on the inside of a window, which opens in a new direction, allowing them to climb safely and easily out onto the roof.

This station, developed by LEITNER in collaboration with Pininfarina, combines technological innovation with superior advances in ease of maintenance and functionality. Combined with an attractive design, this is yet another product that benefits everyone: businesses, staff, and winter sports enthusiasts.





The Short LEITNER Station

Space-saving and economical

The short LEITNER station is the perfect solution for chairlifts with limited available space in the station area and for short detachable systems.

The modular LEITNER station concept makes it easy to build a station which is up to three meters shorter than the standard version by omitting a station module.

The short LEITNER station comes with a cost-effective low covering and is used in combination with a standard-length drive-tension station.

If the short station is used as a deboarding station, the deboarding speed is between 1.3 and 1.5 m/s. This is much slower than a fixed-grip system, making it remarkably easy to operate.

The short boarding station is designed as a 90° boarding system, enabling comfortable station speeds of 1.0 m/s.

The short station also comes with a certified grip coupling system and all of the other safety features of the standard station.

Because of its cost advantages over the standard station, a short station represents an economically attractive alternative to fixed-grip systems.

TECHNICAL SPECIFICATIONS

Station covering	Low covering, custom colors
Station turnaround speed	+ approx. 1.3 – 1.5 m/s as deboarding station + approx. 1 m/s as boarding station with 90° boarding



The Long LEITNER Station

Making gondola lifts easy to board

As transport volumes steadily increase, the challenge in modern gondola lifts is to make it easy for passengers to get on and off in spite of frequent vehicle intervals and large numbers of passengers.

The standard station can be lengthened by 2.5 to 5 meters by adding an additional station module. This can extend the platform by up to ten meters, which means not only more space, but also more time for the gondolas in the station turnaround.

In fact, the gondolas spend up to 50% more time in the station turnaround than they do in a standard station.

To meet structural engineering requirements, the five meter version of the station has an additional steel bracket fitted in the station bend area.

The long LEITNER station can be used in any configuration (drive station, return station, drive-tension station) and equipped with a high or low station covering.

There is more space on the platform and the gondolas spend longer passing through the station, which makes it easier for passengers to get on and off. The station turnaround speed is even slower, making it even more comfortable and safe to board and improving ride comfort further still.

Passengers can board and disembark without difficulty, reducing shutdowns and therefore increasing system availability.

TECHNICAL SPECIFICATIONS

Station turnaround speed can be adapted to customer needs for each project
can be reduced to 0.2 m/s



The LEITNER HCL Station

High Capacity Loading – High Comfort Loading

An elongated station can easily be employed to make gondola lifts easier to board, while with chairlifts, the coordination of movement between the chairs and passengers needs to be optimized.

In the LEITNER HCL station, the station turnaround incorporates two bends with different radii. At the first corner, the chair moves around a very tight 90° bend. The second 90° bend is immediately after that, but has a very wide radius.

This combination of bends means that, by the time it reaches the place where passengers get on, the chair has already completed three quarters of the 180° rotation which it needs to complete in the station turnaround, and there is much more space between the chairs for getting on than there is in a standard station. Furthermore, the flow of passengers passes through an entry barrier which opens at staggered intervals, thereby synchronizing the movements of boarding passengers with the geometry of the chair's passage around the bend.

The LEITNER HCL station is also the perfect solution when it comes to separating gondolas and chairs for boarding and deboarding TELEMIX ropeways.

Because the movements of the passengers and chairs are so well coordinated, there is more space between the chairs, and much more time for passengers to move in between them.

Passengers can get on comfortably and safely, without stress, even when a lot of them are being carried, and this means much greater availability for operators. When a ropeway is designed for maximum comfort, the HCL station, while carrying the same number of people as a standard station, doubles the time which passengers have to board.

TECHNICAL SPECIFICATIONS

Maximum transport capacity + up to 3,600 p/h – six-seater chairlift
+ up to 4,500 p/h – eight-seater chairlift

Station turnaround speed Standard 1 m/s, adaptable to each customer's project

The LEITNER Middle Station

Variable deflection from 0 to 90°

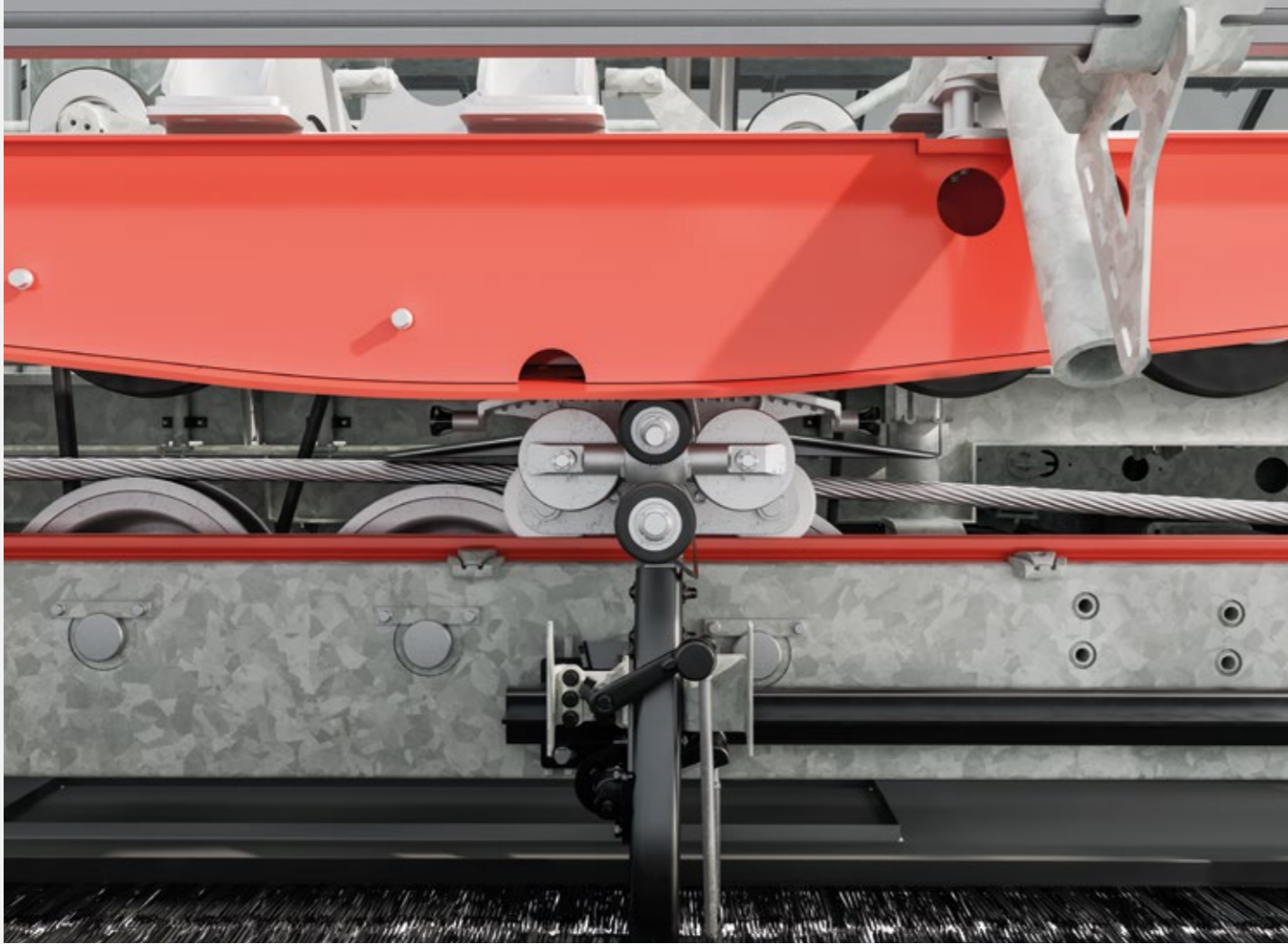
A LEITNER middle station essentially consists of two connected standard stations. The way these two stations are joined together depends on the project and its requirements.

Ropeways consisting of multiple sections with separate rope loops are linked up using a connecting conveyor in the station bend area. The different sections of the ropeway can be operated fully automatically and non-stop, or individually, depending on operating volume. In systems with one rope loop, the haul rope passes through the middle station, where it changes direction. The deceleration and acceleration systems in each section are directly connected by a tire conveyor.

In this version, the middle station can be designed with a boarding and deboarding area, or purely as a deflection station without boarding or deboarding. In the case of a single-sided middle station, for example, only the uphill side features a midway station (as an intermediate entrance for repeat runs at winter sports facilities). The rope can be routed on the downhill side without a midway station, which is more cost-efficient.

LEITNER middle stations are tailored to the requirements of each project, enabling any deflection angle between 0 and 90 degrees. By using standard station components, the LEITNER middle station can be designed as a drive, return, drive-tension or deflection station, depending on requirements.





The LEITNER Grip-Coupling System

Certified safety for station exits

The EU Ropeway Directive stipulates in its basic requirements that a wrongly coupled vehicle must be prevented from leaving the station in a detachable system.

Stopping a vehicle abruptly just before the station exit at almost full speed may prevent a fall, but it can be just as dangerous for passengers in or on the vehicle.

The LEITNER grip coupling system, which was patented in 2005, therefore prevents mis-coupling from happening in the first place. At the coupling point, the way the rope and grips are routed, and the way the grips activate, is such that the LEITNER grip always couples reliably, even in extreme cases such as:

- + breakage or damage to rope guide rollers in the station
- + rope derailment at the first tower before the station
- + ice or other objects in the guide rail
- + breakage or wear of the mechanisms in the grip and the grip running wheels

The entire coupling process is monitored at the highest electrical requirement class (AK4), thus ensuring the highest level of safety.

Our TÜV-Süd-certified grip coupling system dispenses with the need for the horizontal safety section after the station exit which is otherwise required under EN 12929-1. This significantly improves – and lowers – the routing of the rope in the critical area before the top station.

The world's first permit to build a ropeway without a safety section was issued to LEITNER in 2006. This means that stations with LEITNER grip coupling systems can be built in exposed locations which until recently were considered untenable due to the requirement for a horizontal safety section.

Lower rope routing before the station means lower towers and lower costs for ropeway and infrastructure components. Lower rope routing just before the deboarding area on chairlifts is also very beneficial psychologically, since it makes passengers less anxious.

The Integrated Maintenance Stand

Patented grip maintenance system in the station turnaround

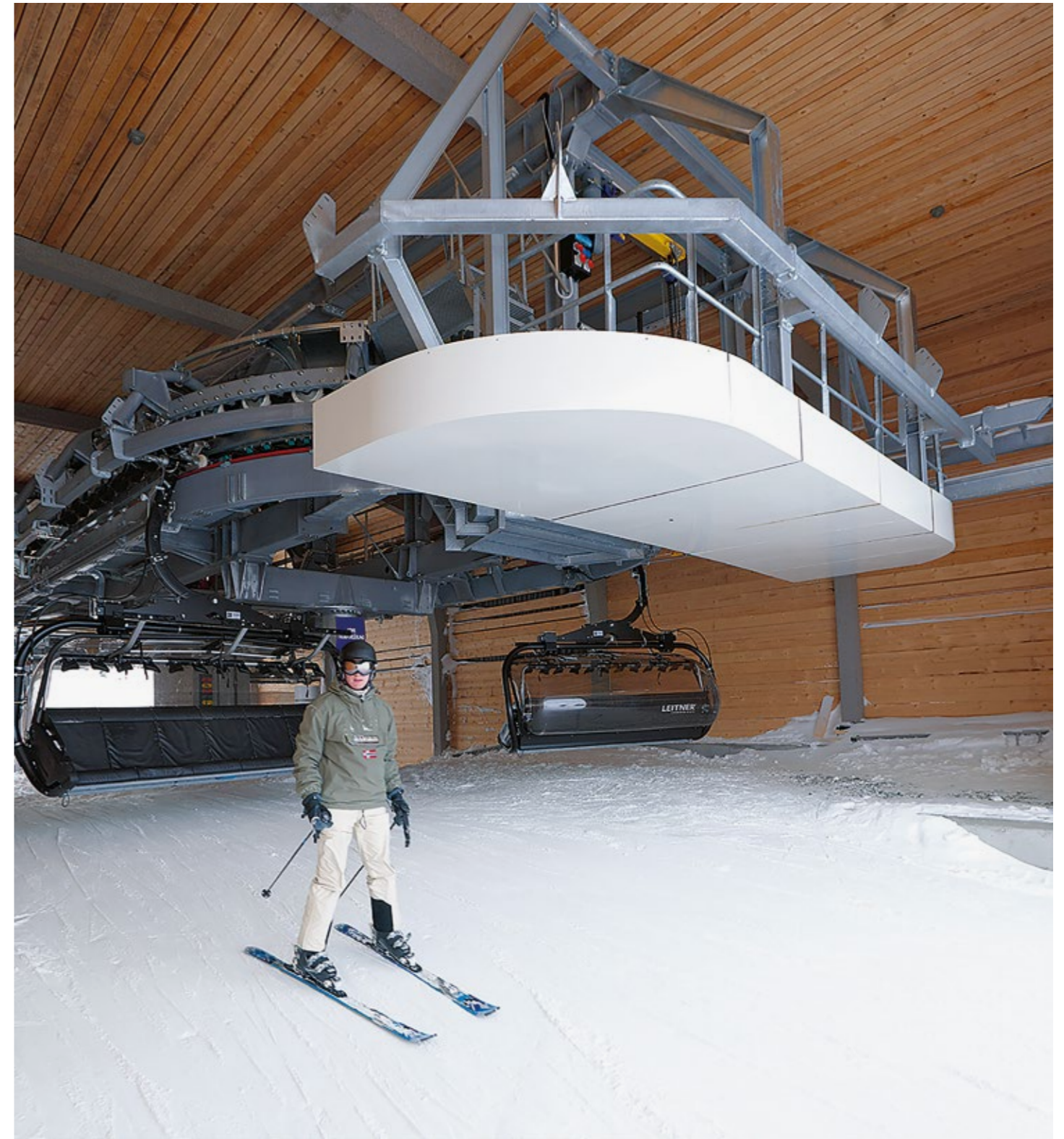
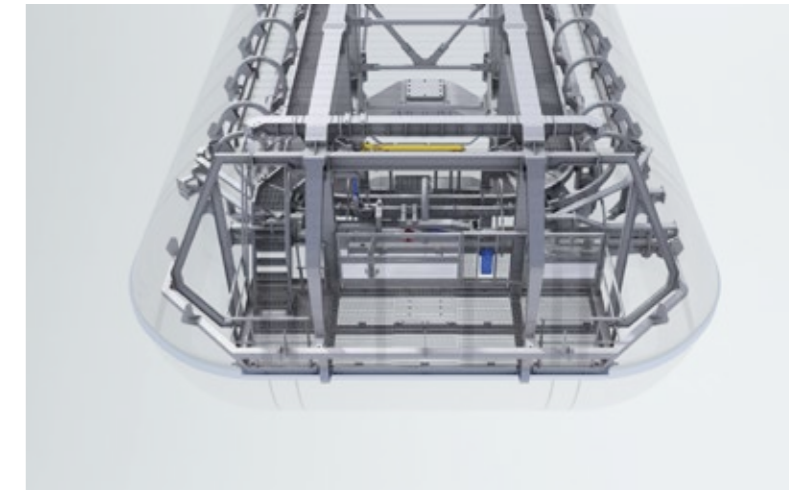
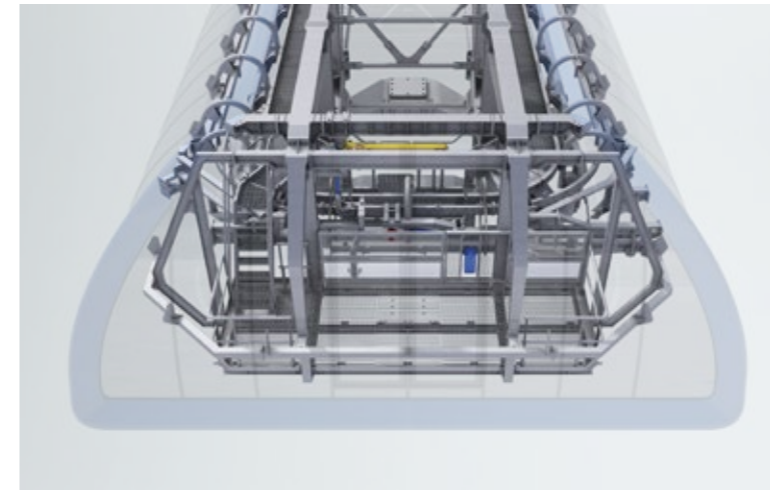
The integrated maintenance stand makes it easy to perform maintenance work on the rope grips in the station turnaround. An economic solution for ropeways without garaging facilities in a closed building.

In systems with an integrated maintenance stand, the station bend is extended by a longer station module, which is also accessible from behind the conveying equipment. The length of the track inside the station is no different from the standard station. The tire conveyor pivots vertically in the straight section of the station bend. This makes the grip freely accessible for any work that needs doing.

A pivoting crane, covers for the mechanical components, and provisions for limited system operation during maintenance work meet all of the requirements of occupational health and safety. This patented system has been used successfully throughout the world since 2002 in automatically detachable ropeways.

Periodical checks and maintenance work on the grips can be done safely and comfortably in the station turnaround at any time of year in an environment protected against the weather. Maintenance work can be performed in the system's circulation mode to save time.

A ropeway with an integrated maintenance stand and station garaging system does not need additional infrastructure like a parking building for vehicles.



The Quick Switch

The solution for flexible operations

The quick switch is designed and built to reduce switching times to a maximum of two seconds. This means that vehicles can be steered onto different tracks during operation without shutting down the system or reducing its speed.

Using a quick switch allows transport capacity to be adjusted during operation. This allows you to respond flexibly to changes in transport needs (onset of bad weather, capacity peaks in connecting systems) and keep your ropeway utilized to the maximum at all times. That in turn reduces component wear and energy costs.

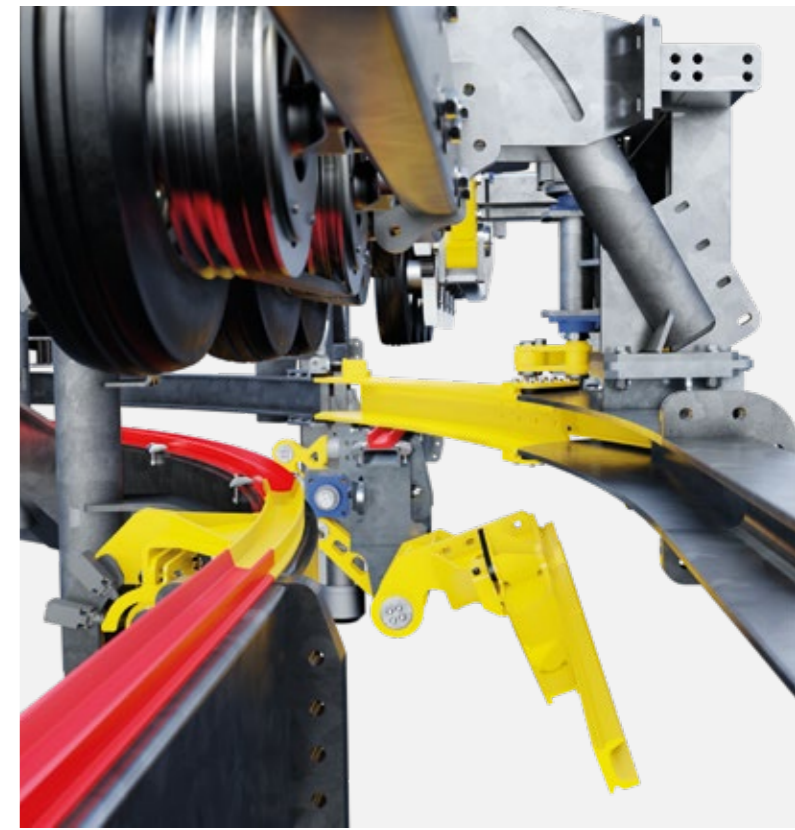
Other uses include dual entry for chairlifts with maximum transport capacities, and separate entrances for gondolas and chairs in Telemix ropeways. In multi-section ropeways, the quick switch can be used to easily accommodate different transport capacities on different sections, and to equip sections differently (chair-gondola ratio in Telemix ropeways).

TECHNICAL SPECIFICATIONS

Switching time maximum 2 sec.

Necessary vehicle spacing at least 9 sec.

Switching cycles at least 5,000,000



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