The **LEITNER Vehicles**

LEITNER®
ropeways


LEITNER
4

The **LEITNER Vehicles**

Comfortable, wind-resistant, heated if desired

When LEITNER design engineers develop a vehicle, ride comfort and convenience have top priority. Moreover, special attention is paid to achieving a high degree of wind resistance for all vehicles, particularly for cabins, because the availability of an installation is also enormously important to the customer.

All vehicles are in-house developments, designed and manufactured according to the latest European ropeway regulations and approved by a notified body. LEITNER offers the entire range of vehicles – from the fixed-grip 2-seater to the detachable 8-seater to the large cabin for aerial tramways or funicular ropeways.

The LEITNER cabins are unique on the market thanks to their spacious design and large picture windows that offer a clear panoramic view of the surrounding area.

All LEITNER chairs, both fixed-grip and detachable versions, offer excellent seating comfort at all times. The optional weather protection hood (bubble) for automatic systems provides protection in all weather conditions and its convex shape always gives passengers a sense of safety and comfort. Furthermore, the lockable safety bar and the LEITNER KidStop® significantly increase the safety of the passenger, so that operators can be rest assured even if they have to transport many children.

For detachable systems, all LEITNER vehicles are also available with seat heating.

The **LEITNER Gondola**

Sigma on the inside, Pininfarina on the outside

Basis

The LEITNER gondolas are manufactured by Sigma, a 100 % subsidiary of the LEITNER Group. In cooperation with the Italian design company Pininfarina, Sigma develops, designs and builds gondolas with elegant interiors and exteriors as well as plenty of space for passengers.

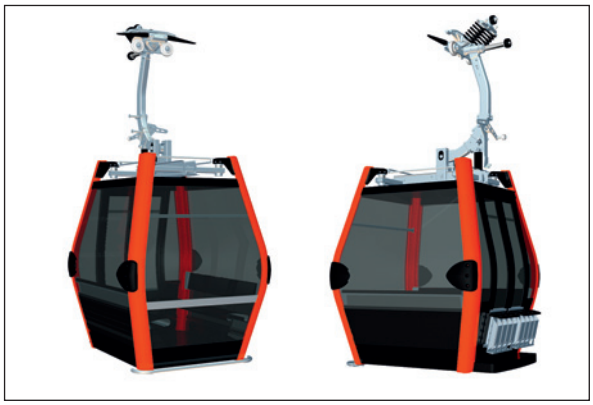
Description

The LEITNER gondola for detachable ropeways is available with a rectangular (Diamond range) or round design (Ruby range). All gondolas have an aluminium supporting structure with extruded profiles. The area between the profiles is mainly made of glass, giving passengers a unique sense of space and a clear view to the outside.

The exterior design of the gondola has been tested in a wind tunnel and creates an extremely low wind resistance, allowing for a safe and comfortable ride even at higher wind speeds.

A great number of additional features as well as a free choice of colours offer a high level of customization, guaranteeing that the gondola of each customer is unique in its design and equipment.

The damped parallel suspension provides excellent comfort during the ride and when entering the station. With the Saphir and Crystal gondola ranges, LEITNER also offers perfect solutions for 3S ropeways and aerial tramways.



Benefits

While the special design of the supporting profiles offers **as much space as possible**, the all-around window of the gondola gives passengers a **clear panoramic view** of the surrounding area.

The outstanding **wind resistance** of LEITNER gondolas increases the **availability** and **reliability** of an installation.

The damped parallel suspension provides **extraordinary ride comfort** and **convenience** for the passengers.

Thanks to the simplified design of the gondola, **maintenance and inspections** can be performed **much easier**.

Technical data

Transport capacity	Diamond range: 4, 6, 8, 10 seats, standing room for up to 20 persons Ruby range: 8 or 9 seats Saphir and Crystal range: large gondolas for 3S ropeways and aerial tramways
Optional features	Ski rack Top-hung window Air conditioning system Free choice of lacquering Free choice of seat and back upholstery Seat heating Vehicle identification system

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The **LEITNER Comfort Chair**

Sit with comfort, ride with even more comfort

Basis

All automatically detachable LEITNER chairs offer an extremely high level of seating comfort and always guarantee a smooth ride.

Description

A wide seat bench, a high seat back and an optimally shaped footrest provide best seating comfort. The smoothness of the ride is ensured by a three-step comfort suspension comprising springs, dampers and a torsionally flexible joint, which connects the suspension with an intermediate frame.

The rotation of the chair is limited by a spring-damper system, which provides optimal damping for vibrations caused when entering the station, especially when the chair's load is unbalanced.

The intermediate frame and the chair frame are connected via a two-step vibration isolator. While a spring system reduces the low-frequency vibrations and shocks caused when crossing towers, a damper system isolates the high-frequency vibrations caused by the carrying-hauling rope.

The LEITNER bubble chair is characterised by the unique convexity of its weather protection hood. It offers a clear panoramic view of the surrounding area even if the hood is closed.

Benefits

The LEITNER comfort chair provides **maximum ride comfort** through **optimal damping** of the vibrations and shocks caused during the ride and when entering the station.

Moreover, the **three-step damping system** significantly reduces the stress on the chair's components, thus considerably increasing their lifetime.

The comfort suspension is also **available as a retrofit** for existing LEITNER chairlifts.

Technical data

Transport capacity	For 4, 6 or 8 persons With or without weather protection hood
Optional features	Comfort padding in various colours Seat shells in various colours (for bubble chair) KidStop® Lockable safety bar with swivelling footrest Seat heating Vehicle identification system
Retrofit option	Retrofit from open chair to bubble chair Comfort suspension for old-type chairs Comfort padding

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Premium Extras

Individual equipment for LEITNER chairs

Basis

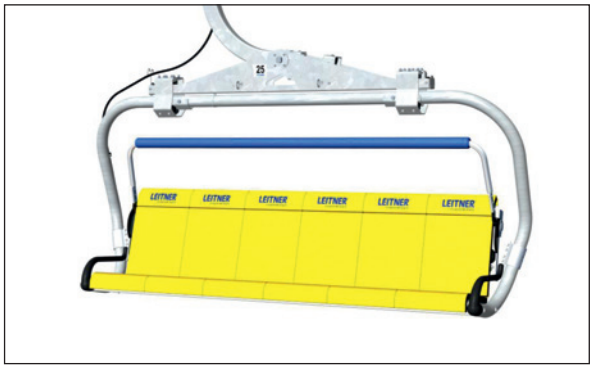
In addition to the unique comfort during the ride that they offer, the chairs of LEITNER ropeways can now also impress customers with a variety of individually adjustable special features.

Description

Thanks to a cooperation with eyeglasses manufacturer SCOTT, LEITNER chairs can also be equipped with blue or yellow colored bubbles. These bubbles not only make the chairs look extraordinary, they also enable the passenger to experience new, colorful impressions of the surroundings during the ride.

Engraved, embroidered or printed logos on the comfort padding open up new opportunities for branding and prestige advertising for ropeway operators. The chairs can also be printed all over with all sorts of images.

Finished with comfort padding in two colors and powder-coated suspension and chair frame, the extraordinary design of the LEITNER chair can be presented in a particularly high-quality way – especially since there are no limits in terms of color combinations.



Optional features

Colored bubbles	optionally blue or yellow
Individual logos	engraved, embroidered or printed on comfort padding
Individual comfort padding	two-colored
Powder-coated suspension and chair frame	in any RAL color

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LEITNER Safety Systems and **KidStop®**

More safety without loss of comfort

Basis

In order to avoid the dreaded scenario of a passenger falling out of the chair, LEITNER offers various safety systems.

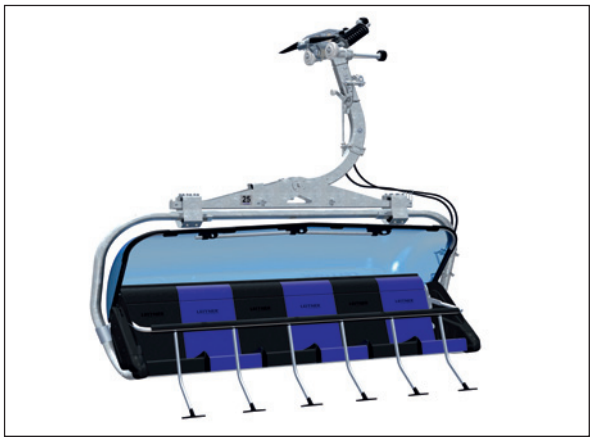
Description

A lockable safety bar offers additional safety. The safety bar is closed either manually by the passenger or automatically by a closing rail. The closed safety bar is locked automatically and remains locked until the vehicle enters the arrival station.

The safety bar with standard footrest is optionally equipped with the LEITNER KidStop®, an additional clip which is mounted onto the safety bar of the chair. The KidStop® reduces the distance between safety bar and seat to prevent children from slipping under the closed safety bar. While the KidStop® can be rotated inward, its outward rotation is limited mechanically. Optionally, the safety bar can also be locked by means of an additional locking mechanism.

The safety bar with central footrest can also be optionally locked and offers the highest level of safety through the positioning of the connecting pipe to the footrest between the passenger's legs. For comfort and safety reasons, each sitting position is also separately marked in color.

The safety bar without footrest always comes with a locking mechanism and is best suited for use on short ropeways.



Benefits

The lockable safety bar and/or the **safety bar** with **central footrest** between the legs of the passenger offer **highest levels of safety**, including the **familiar comfort** of a footrest.

By **preventing passengers from slipping** under the safety bar, the LEITNER KidStop® further **increases the safety** of an installation, especially for the transportation of children.

Technical data

Possible application	all chair types
Operating mechanism of safety bar	detachable systems: automatic or manual fixed-grip systems: manual
Locking mechanism of safety bar	self-locking when closed
Unlocking mechanism of safety bar	automatic when the vehicle enters the top station (detachable systems) or at the last tower (fixed-grip systems)
Retrofit option	KidStop® – easy retrofit to all existing chairlifts safety bar and safetybarPlus – on request

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The **LEITNER Grip**

High functionality, technical perfection

Basis

In the design of safety parts, simplicity and accessibility are the guiding principles. LEITNER grips are therefore designed with a minimal number of optimised parts.

Description

All detachable grips have only one moving part, the moving grip jaw, which also functions as the coupling lever. This allows the direct opening and closing of the grip – without cams, pivots or lever systems – which is the best solution in terms of safety.

The grip force is generated by parallel coil springs. In normal position, the grip remains closed, thus eliminating the possibility of a dead-centre position. The grip geometry is designed to keep the grip force constant even if the rope diameter varies (e.g. splice).

Thanks to the strictly modular design, the grips can – at constant grip geometry – be perfectly adjusted to various system-specific requirements.

In order to increase the ride comfort, each detachable LEITNER grip has an integrated longitudinal damping system. Oscillating movements caused when crossing towers are therefore quickly reduced, significantly improving the comfort of the passengers.

Benefits

Parallel coil springs achieve **maximum safety** through their redundant arrangement. Even if one spring fails, the grip is reliably prevented from sliding.

The exposed coil springs and a minimal number of moving parts allow for an **easy** and **efficient visual inspection** – another contribution to a high level of safety.

The simplified design and the use of **low-maintenance bearings** reduce maintenance time and costs.

Optimum ride comfort during the crossing of compression towers is ensured by an optimised, **low upper surface of the grip** and an **extended grip tongue**.

Technical data

Rope diameter	Mono-cable systems with LPA grip: 36–60 mm Bi-cable systems with LP-BD grip: Carrying rope max. 70 mm Hauling rope 40–56 mm Tri-cable systems with LP-TD grip: Carrying rope max. 70 mm Hauling rope 40–60 mm
Max. possible rope inclination	100 % for all systems

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The **LEITNER Seat Heating**

For chairs as well as gondolas

Basis

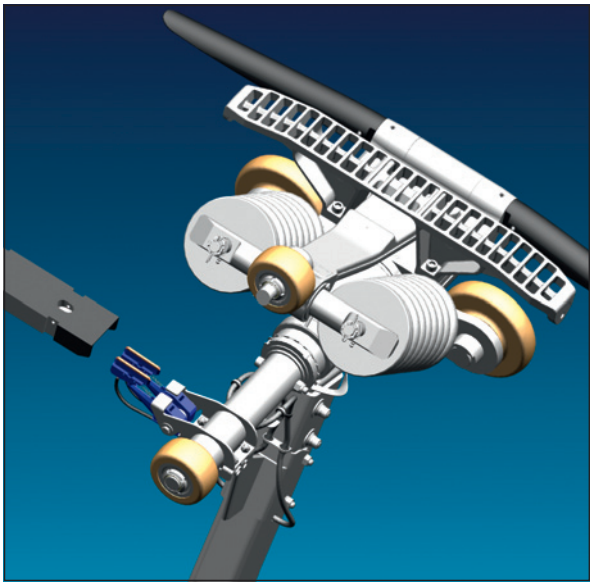
For detachable chairlifts, the seat heating can almost be considered as standard equipment. More and more, this comfortable accessory is also being used in gondolas. In 2008, LEITNER was the world's first provider of a seat heating for gondola lifts.

Description

The LEITNER seat heating consists of electrical resistance elements, which are integrated into the comfort padding between the upholstery and the seat cover.

While the vehicle passes through the station, the resistance elements are supplied with power via current collectors on the grip and heat up the seat upholstery. The electrical energy supply is provided by a power rail, which is mounted on the grip guidance rails within the station rotation. Cables conduct the current to a junction box installed below the seat bench, which distributes the current to the individual resistance elements. Each seat has its own resistance element and its own safety fuse.

The seat heating has its own control system, which is independent of the main control system. Among other things, this system monitors the ambient temperature, the heating time and the heating power, and always provides a seat temperature that is pleasant to the passenger. At ambient temperatures of over +10 °C, the seat heating is cut off automatically.



Benefits

Even at icy temperatures, passengers can enjoy a **comfortable** and **pleasantly warm ride**.

The LEITNER **seat heating** can also be **retrofitted** to existing chairlifts, gondola lifts and telemix installations.

As each seat is equipped with its own resistance element and safety fuse, the system achieves an extremely **high level of availability and reliability**.

Technical data

Power supply	110 V, DC
Current collection	Power rail in the station and moving current collector on the grip of the vehicle
Control system	Independent, fail-safe SPS
Scope of application (ambient temperature)	-30 °C to +10 °C

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The **LEITNER Vehicle Identification System**

A safety system with economic benefits

Basis

LEITNER ropeway systems can be optionally equipped with an automatic vehicle identification system. The system consists of a transceiver module installed in the station and transponders installed on each vehicle. The transceiver and the transponders communicate with each other in the radio frequency range.

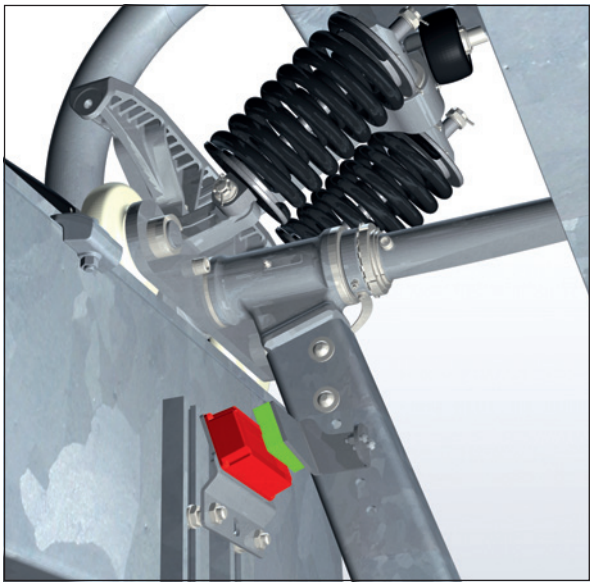
Description

The transponder principle has been established for decades. LEITNER has now successfully adapted this proven technology to the requirements of detachable ropeways.

If a vehicle passes the transceiver module in the station, the transponder is activated by the electromagnetic field of the transceiver and sends back an individual code. The value of the electronic grip force test measured in the station can thus be unambiguously assigned to the tested vehicle and can be recorded by the control system.

In this way, the grip force development of every single grip can be monitored and analysed on a long-term basis. Weak points such as a decrease of the grip force or an increase of the internal friction in the grip are detected in good time and necessary maintenance measures can be planned and scheduled effectively.

The vehicle identification system itself is completely maintenance-free. The passive transponders installed on the vehicles do not require any energy. The entire energy and data transfer is carried out via the transceiver module in the station.



Benefits

With the **early detection of weak points** at the grips, the LEITNER vehicle identification system makes a crucial contribution to **increasing the safety** and **availability** of an installation.

The systematic analysis of the measured grip force values allows operators to **plan** and **perform maintenance** work in an **effective** and **economic** way.

With the LEITNER vehicle identification system, LEITNER is the first provider in the ropeway industry which can **provide access to a technology** that has **proven** its worth **over decades** of application in various areas.

Technical data

Possible application	All vehicles of detachable systems
Technology	Passive transponder in the radio frequency range
Data processing	Recording of grip force values on the visualisation PC of the control system, data transfer and analysis with common MS Office programs

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The **LEITNER Lateral Damping System**

Feeling safe, even if there's more wind than usual

Basis

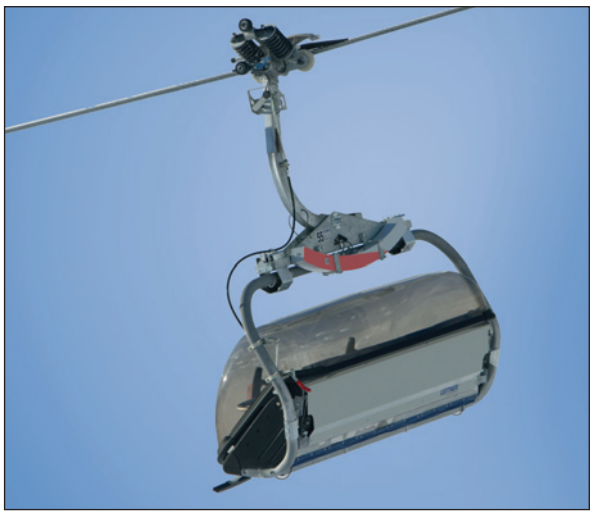
A common reason for failures and downtimes of installations is wind that causes lateral oscillating movements of the vehicles and thus prevents a safe continuation of the ride. The patented LEITNER lateral damping system offers an efficient remedy for this problem.

Description

The damping system consists of a bent-up rectangular frame, which is filled with a frost-proof liquid. The frame is mounted onto the intermediate suspension of the chair. Thanks to the bent shape of the tank, the liquid travels directly opposed to the oscillating movement of the vehicle, thus shifting the vehicle's centre of gravity and having a stabilising effect on the overall oscillation of the vehicle.

Dangerous rocking of the vehicle during strong and gusty winds can be easily prevented with the LEITNER lateral damping system. In combination with the longitudinal damping system, which is a standard integrated part of the grip, this solution provides an ideal stabilisation system for installations exposed to the wind.

The LEITNER lateral damping system is also an efficient option for increasing the availability and ride comfort of gondola lifts exposed to the wind. The system can also be retrofitted to existing installations.



Benefits

Even during **strong and gusty winds**, the LEITNER lateral damping system ensures the **safe operation** of the installation.

Failures and downtimes due to wind can be **reduced**, thus considerably **increasing** the **availability** of the installation.

The LEITNER lateral damping system significantly **reduces oscillating movements** of the vehicle and gives passengers a **sense of safety** and **comfort** even during strong winds.

Technical data

Possible application	Basically all vehicles, especially recommended for detachable 6-seater and 8-seater bubble chairs, retrofit for existing installations (on request)
Liquid	Frost-proof water-glycol mixture
Additional weight	Approx. 22 kg – container and contents

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