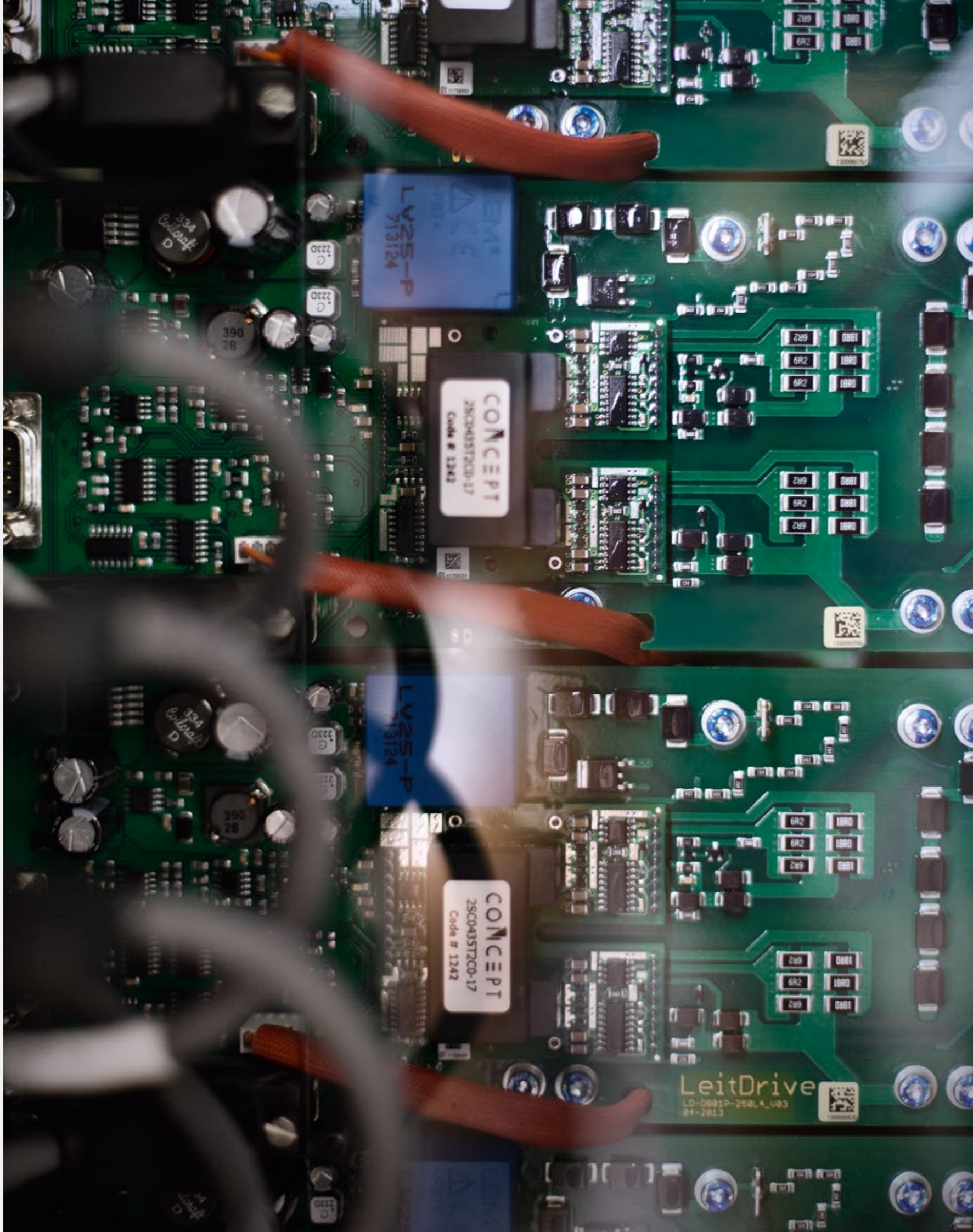


TECHINFO

The LEITNER Control System





The LEITNER Control System

Our solutions are all about innovative ideas, lasting benefits for customers, and leading technologies. LEITNER's DirectDrive with Active Infeed inverter technology represents one such milestone in the development of intelligent mechatronic components for the ropeway market.

LEITNER's renowned software reliably manages a ropeway's control and monitoring functions. We use Siemens fail-safe automation devices as a hardware environment. By combining our technological knowledge with the very best industrial electronics products, we achieve exceptional performance in the automation of ropeway systems. LEITNER control systems network the entire ropeway with Industrial Ethernet and fiber optic technology as well as decentralized I/O peripherals. This in conjunction with LeitControl reduces downtimes to a minimum.

The pioneering LeitControl operating and monitoring system offers all the benefits of web-based IT technologies. Remote diagnosis and maintenance via the Internet, along with lots of LEITNER online services, help your staff keep your ropeway properly maintained at all times. Our technicians design future-ready overall solutions and remain at your side throughout the ropeway's entire life cycle.

LeitControl	04
The Leitner Control System	06
LoadSim – Braking Simulation	08
LEITNER Tele-Assistance and Mobile Control Panels	10



LeitControl

Simple, intuitive, central

LeitControl was the first user-centered operating concept for ropeways and still sets standards years down the line. With its simple, centralized, highly intuitive control system, this LEITNER product offers ropeway operators a new level of operating convenience. The basic idea behind LeitControl was to move from hardware to a function-oriented operating concept.

The newly-developed control panel contains all of the function keys required in day-to-day operation. For instance, in a conventional control system, as many as seven operating steps have to be performed manually in succession to garage the vehicles. This starts with positioning the system correctly, then positioning the switches, then starting the conveyor chains. With LeitControl, all you have to do is activate the Garage function. Everything else is fully automatic and requires no further intervention by the operator.

This operating concept runs through the entire operation of the system, both during normal operations and when carrying out the trials and tests necessary for commissioning and regular inspections (such as braking tests). LeitControl also allows all of the systems in a ski resort to be monitored centrally on one screen. It can also be optionally integrated into cloud services or Skadii.

BENEFITS All of the controls needed for daily system operation are located at the control panel with a view of the passenger area.

Processes that previously had to be controlled manually, such as garaging and brake tests, are fully automatic.

A clear, simple control panel and intuitive touch operation via multiscreen or tablet makes things really easy for machine operators and station staff.

Training times for new employees are significantly reduced; so too are operator errors in daily operation and any associated outages, thanks to the function-oriented control concept.

Integrated help function with link to circuit diagrams and manual.

Automatic announcements can be optionally integrated, and the visualization can be switched quickly to different languages.



The LEITNER Controller

Functional safety to meet the highest demands

The highest demands are placed on a ropeway's functional safety and reliability – and the conditions it is under are sometimes really tough. The LEITNER control system ensures perfect, automatic operation and its performance helps to maintain high system availability.

All control and monitoring functions are performed by fail-safe PLCs. State-of-the-art Siemens Simatic S7 automation controllers form the hardware basis of our control systems. The LEITNER control system's pioneering architecture features decentralized I/O controllers and peripheral modules. A powerful automation system needs data and information from across the ropeway in real time.

The LEITNER control system features an Ethernet communication structure throughout. A Profinet network of fiber optic cables connects the stations. The field devices belonging to all the subsystems – such as brakes and detensioning – are connected to the central CPU in the drive station. This means consistent data from the entire ropeway is available for further processing by the LEITNER control software and for the LeitControl visualization system's powerful operating and display functions. Data transparency and the system's extensive diagnostic capability remain even when operating with the emergency drive.



BENEFITS Proven fail-safe technology and comprehensive safety engineering reduce risks accordingly. The system's functional safety is guaranteed by LEITNER's globally established ropeway software in conjunction with TÜV-certified programs and Simatic S7 F automation devices.

LEITNER's modular control concept can also be extended to a redundant two-channel design for high-availability systems – preferably in a cold standby configuration. In any event, the LEITNER bypass system helps your staff maintain system availability by safely and transparently deactivating individual safety functions. The system's decentralized design makes maintenance work easier. End-to-end Ethernet communication gives your staff powerful diagnostic capabilities, either via the user-friendly LeitControl visualization system or through remote maintenance and diagnostics (LEITNER Tele-Assistance).

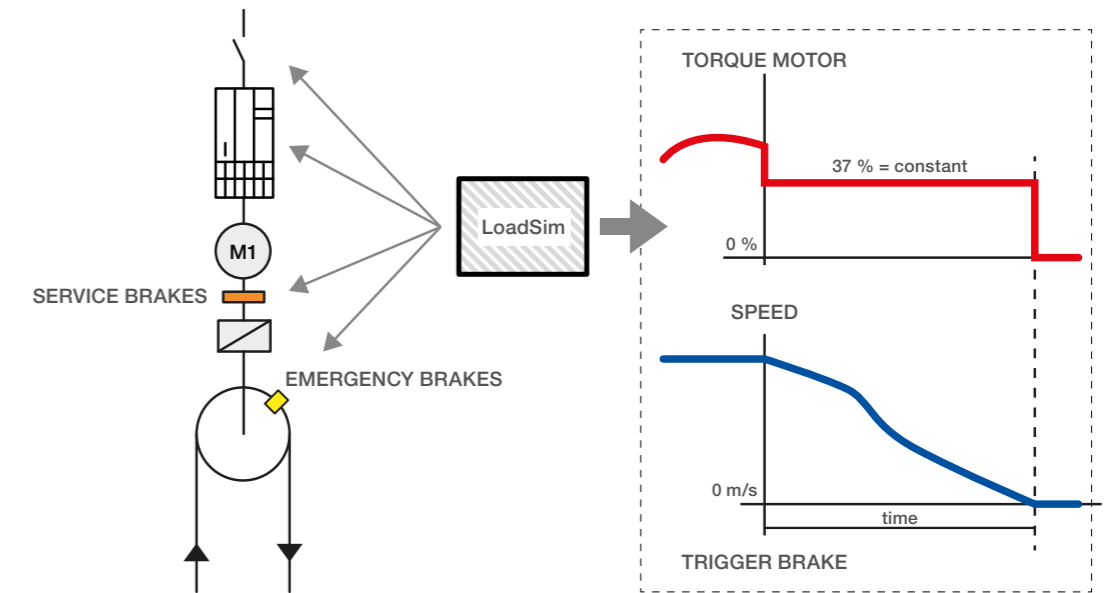
LoadSim - Braking Simulation

More safety, lower costs

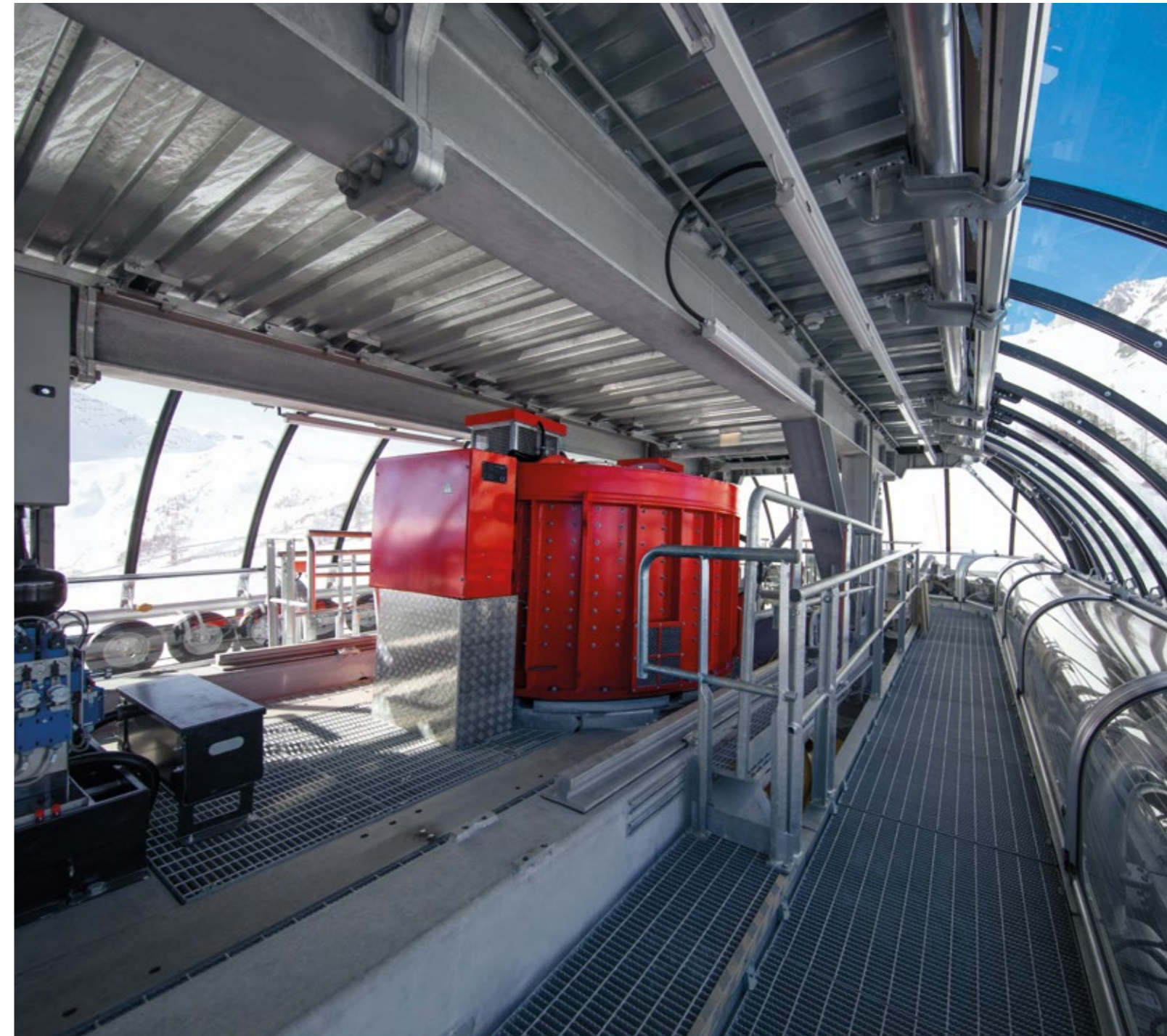
LoadSim is essentially software with which mechanical brakes can be tested without loading the cabins/chairs with weights. Ropeway loads are simulated by the drive motor's electronic programs. The brakes actually operate. This means exact brake settings can be checked reliably and safely at any time.

The efficiency of the emergency drive can also be tested.

LoadSim is very realistic, but it cannot be used for official acceptance inspections of the system. When commissioning, the actual mechanical dynamics of the system have to be tested by actually loading the vehicles with weights.



- BENEFITS**
- The vehicles no longer need to be loaded with weight for periodic braking tests.
 - The system does not need to be specifically prepared for performing the braking tests. This means that testing can be performed much more frequently than prescribed by the standard.
 - After maintenance and repair, a braking test can be performed easily and in a straightforward manner.
 - Tests are very easy to perform, which saves time.
 - Cost reduction: purchasing / leasing weights.
 - Braking behavior can be compared over the service life of the system.
- NOTE** The approval by the local authority must be examined.





LEITNER Tele-Assistance and mobile control panels

More functionality, better availability

Tele-Assistance and optional operating devices were developed for the LEITNER control system to make ropeway operators' daily work easier, to increase functionality, and to ensure availability.

In LEITNER Tele-Assistance, a VPN connection secured by a firewall is established via the Internet between the system and a LEITNER service technician's computer. This allows LEITNER headquarters to check the system's operating status and assist the operator in checking the system's function and finding solutions quickly and accurately.

LEITNER radio remote controls for station, garage, and line were designed to make it easy to operate the systems from any location. A central radio master unit is installed in the control cabinet and communicates with the rugged, modular remote control units on a 433 MHz ISM band. Radio operation has to be enabled on both the control cabinet and the radio control unit using a key switch or coded magnetic key.

A new, mobile operation monitoring system allows the visualization of the system to be sent via WLAN to additional computers and mobile devices (tablets, smartphones). This enables the system's status to be monitored conveniently from any location. Multiple LEITNER ropeways in one ski resort can also be monitored using one a single mobile device.

The ProTec radio remote control was designed to make the maintenance of ropeway systems easier and safer. The remote control can be used to control a ropeway system directly from the maintenance or rescue vehicle. This means that there are no understanding difficulties between staff in the station and at the maintenance vehicle.

The remote control can be used to adjust the speed of the system and stop and start it. This allows you to move precisely to a position on the line.

BENEFITS LEITNER Tele-Assistance helps to identify and rectify faults, thus avoiding the unnecessary mobilization of service staff. Ropeway down times are reduced and operational reliability is increased, which significantly reduces operating and service costs.

PROTEC REMOTE CONTROL

- + Low implementation costs.
- + The maintenance or rescue vehicle can be controlled very precisely.
- + The remote control is very easy to transport due to its shape and weight. There is also a mobile kit for use on multiple systems.
- + Dead man's switch for extra safety; Drop the remote control and stop pressing the button, and the system stops immediately.
- + A small remote control unit is also available.

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