

URBAN ROPEWAYS



Challenges to tomorrow's urban MOBILITY

THE BATTLE WITH TRAFFIC AND THE CONFLICTS IT CAUSES

Many towns and cities are struggling with massive traffic problems and overcrowded streets. Citizens suffer from traffic jams, noise pollution and poor quality of air. Road networks can scarcely cope with the masses of cars any longer and the space for new public transport systems is limited. It is essential to find innovative, environmentally friendly and sustainable ways of improving urban mobility and at the same time reducing congestion, accidents and environmental pollution. Strategies to meet these challenges and to solve the problems of urban mobility vary from city to city and must be carefully analysed and examined.





A perfect **SOLUTION** for the city

ROPEWAYS AS A FUTURE-ORIENTED OPPORTUNITY FOR URBAN MOBILITY

Thanks to their unique attributes, ropeways from LEITNER can be the optimum mobility solution for a wide range of needs in urban environments. As a useful supplement to existing public transport services, a ropeway offers unbeatable arguments and is particularly advantageous where for example the topography makes it impossible to construct a road, or rivers or sensitive areas have to be bridged, or roads are already reaching their capacity limits. In particular, a ropeway can provide a good connection to parts of the city difficult to reach or to areas that are difficult to access. Away from the mountains, the ropeways are highly requested as a means of transport in urban areas.

The ropeway originally comes from the urban environment and continues to fit in well with it. However, most city dwellers are not yet aware of the opportunities that ropeways can offer for clean mobility in or near cities.

ROPEWAY SYSTEMS

Summary



Detachable gondola lifts



Bicable / tricable gondola lifts



Reversible gondola ropeways



Aerial tramways



MiniMetro



Inclined elevators

Many current traffic problems can be solved with aerial ropeway systems. They relieve the environment with both low energy costs and low emissions. Ropeways are also one of the safest means of transport in the world.

PARTICULARLY SUITABLE AERIAL ROPEWAY SYSTEMS FOR THE CITY

MONOCABLE ROPEWAYS

Monocable gondola lifts are designed with detachable grips and have one rope which acts simultaneously as a carrying and hauling rope. Boarding and disembarking areas can be passed comfortably at low speed and at the same time, the system has a high carrying capacity. Monocable gondola lifts are increasingly becoming an expression of contemporary urban mobility.

TECHNICAL DATA

TRANSPORT CAPACITY: up to 4,500 people per hour
SPEED: up to 7 m/s
CABIN CAPACITY: up to 10 people

MULTI-CABLE ROPEWAYS

Bi- and tricable ropeways have a hauling cable and roll on one or two carrying ropes. They are designed with detachable grips, offer a very high carrying capacity, guarantee a particularly high level of wind stability and can be designed to cover long spans.

TECHNICAL DATA

TRANSPORT CAPACITY: up to 6,000 people per hour
SPEED: up to 8 m/s
CABIN CAPACITY: up to 35 people



The SOLUTION for the city

Many current traffic problems can be solved with modern ropeways. They are quick and comparatively inexpensive to implement and need little space. Moreover, according to the Federal Statistical Office in Wiesbaden (DE), ropeways are among the safest means of transport². In urban areas, ropeways are deliberately used especially to

connect sensitive recreation and leisure zones. The ropeways only impinge on the ground where towers are erected and thus cause only minor intrusions into the natural surroundings. Rope-hauled transport systems in the city therefore not only offer good views for passengers in the cabins, but also good prospects for the future.

²SOURCE: Statistisches Bundesamt Wiesbaden 2011



- 1 GD8 TORREÓN | TORREÓN (MX)
- 2 GD10 ECATEPEC I+II | MEXICO CITY (MX)
- 3 GD10 TREBEVIC | SARAJEVO (BA)



GD10 AWANA SKYWAY | GENTING (MY)

SUITABLE APPLICATIONS for a ropeway

TRAFFIC BYPASS

Ropeways operate on a different level from motorised individual and conventional public transport, so they can be used as a traffic bypass for highly congested inner-city traffic areas. Transport routes that do not have any capacity reserves for individual or public transport due to their spatial limitations can also be relieved in this way.

SYSTEM EXTENSIONS

Suburban residential areas often only have local bus operated transport systems with a low service frequency. Since these residential areas often have a high passenger potential, a connection to urban areas or at least to railway feeder lines is necessary. This function can be sensibly realised by urban ropeway concepts. System extensions by ropeways can also be suitable for radial transport networks if they connect the areas outside a city tangentially.

- 1 GD10 MIO CABLE | SANTIAGO DE CALI (CO)
- 2 GD10 AWANA SKYWAY | GENTING (MY)
- 3 GD10 ECATEPEC I+II | MEXICO CITY (MX)

CONNECTION OF AREAS WITH HIGH POINT-TO-POINT TRAFFIC VOLUME

Cities often have sectors with a high volume of point-to-point traffic, such as concentrated areas of the secondary and tertiary economic sectors or tourist attractions which draw a large number of employees or visitors. Due to their capacity for continuous transport and their ability to adapt directly to the demand for transport, urban ropeways are suitable for providing a link with inner-city areas or existing local transport systems.

AUTONOMOUS TRANSPORT SYSTEM

Finally, urban ropeways can be operated as independent transport systems. By means of interchange possibilities, even areas small in size can be effectively developed. A prerequisite for the application as an independent transport system, however, is a low to medium transport demand, since ropeways cannot cope with the transport performance of conventional local transport systems.





GD8 NARIKALA | TBILISI (GE)

ADVANTAGES of a ropeway



UNIFORM TRAVEL TIMES & CONTINUOUS TRANSPORT

The exclusive route of an aerial ropeway guarantees uniform travel times, because the ropeway is not delayed by traffic on the roads. Passengers are transported continuously - without timetable or waiting times.



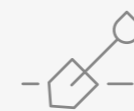
BARRIER-FREE ENTRY AND EXIT

All cabins have level-walk-in access. The speed at which the cabins pass through the stations is very low and allows easy entry and exit. With the stop-and-go technology, the cabins can even be completely stopped momentarily. Bicycles and baby strollers can be carried in all cabins.



LOW INVESTMENT AND OPERATING COSTS

Compared to other transport systems, ropeways have relatively low investment and operating costs. The cost of a ropeway is about half that of a tramway system and about 1/10th of that of a metro.



SHORT CONSTRUCTION TIME

After placing the order, ropeways can be built within a very short time. This is made possible by modular construction.



COPING WITH STEEPER TRACK GRADIENTS

Ropeways can cope with greater inclines than any other vehicle and can be adapted to any terrain.



SAFETY

Compared with other means of transport: Accident survey by the Federal Statistical Office Wiesbaden of 2011 (period 5 years - based on passenger kilometres travelled):

aircraft	1 accident per	113 million km
ropeways	1 accident per	17.1 million km
cars	1 accident per	1.46 million km
railway	1 accident per	1.31 million km
bus	1 accident per	616.000 km
tram	1 accident per	225.000 km

In relation to overall passenger carryings, ropeways are the safest form of transport.



OVERCOMING OBSTACLES

Suspended in the air, ropeways can cross obstacles of any kind.



CENTRAL DRIVE UNIT & POSITIVE ENERGY BALANCE

Ropeways operate environmentally friendly with electricity. Energy consumption can be adjusted to the number of passengers. One central drive unit in a station is sufficient to move a large number of vehicles.



ARCHITECTURE

The architecture of ropeway stations can be developed freely and influence the type of construction and colouring of the towers and appearance of the cabins.

- 1 GD8 BURSA | BURSA (TR)
- 2 BD10 SACHEON | SACHEON (KR)
- 3 LEITNER DIRECTDRIVE, 2020



- 1 GD10 YENIMAHALLE | ANKARA (TR)
- 2 GD8 NARIKALA | TBILISI (GE)
- 3 TD34 VOSS GONDOL | VOSS (NO)



LITTLE SPACE REQUIRED

Even at the construction stage, ropeways create advantages which can be extremely important in densely built-up urban areas. Towers and stations take up relatively little space and the ropeways fit perfectly into the cityscape.



UNIQUE VIEW

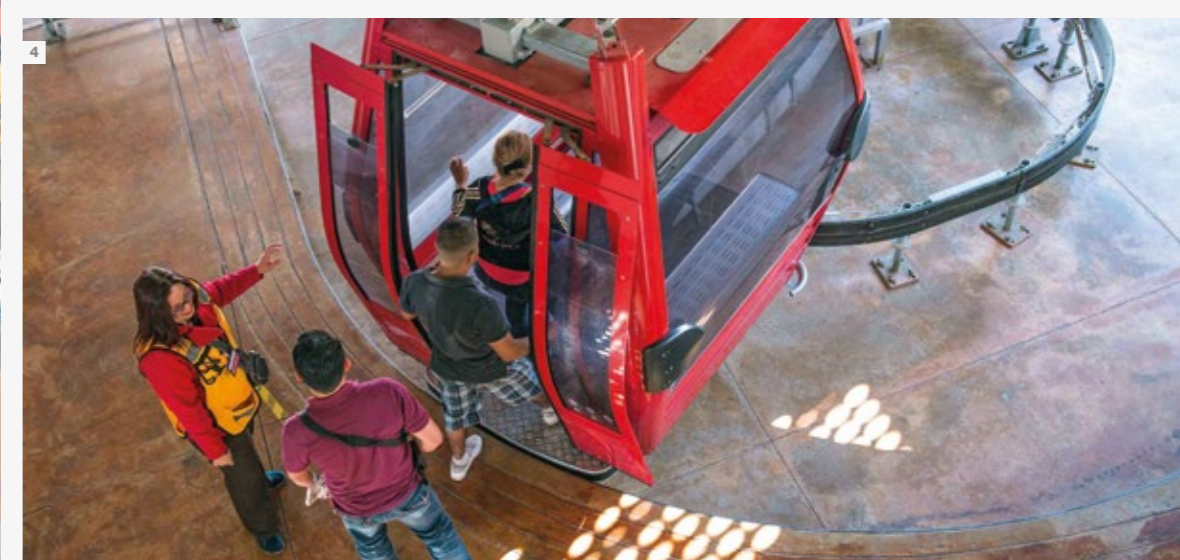
Passengers enjoy an unrivalled view in the third dimension during their journey and this is a feature which always gives a ropeway a tourist component and helps create an additional source of income.



EXCLUSIVE TRACK

There can be no collision with other road users, because the "track" is exclusively used by the ropeway.





- 1 TD35 RITTEN | BOLZANO (IT)
- 2 BD17 NGONG PING 360° | HONGKONG (HK)
- 3 GD10 MIO CABLE | SANTIAGO DE CALI (CO)
- 4 GD8 TORREÓN | TORREÓN (MX)



- 1 MM100 PISAMOVER | PISA (IT)
- 2 GD8 TELEFÈRIC DE MONTJUÏC | BARCELONA (ES)
- 3 GD8 EXPO ALT | SARAGOSSA (ES)
- 4 MM50 MINIMETRÒ PERUGIA | PERUGIA (IT)

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