Ropetaxi®

INNOVATION

BARTHOLET

An Innovation in Cable Car Technology

Bartholet is setting new standards with the innovative Ropetaxi operating system — a development that allows new flexibility, greater autonomy, efficiency, sustainability and comfort.

The Ropetaxi operating system is a special version of a detachable monocable gondola. It is based on our tried-and-tested cable car technology and opens up a wealth of new possibilities. This innovative new development maintains our high safety standards.

The dedicated eMotion drive on the clamp allows the cars to move autonomously inside the stations. Switch points can be used to make combinations of routes. Selecting a destination at the touch of a button allows passengers to travel straight to that destination without changing cars. The various displays on the platform direct passengers to the stationary car that will take them to their desired destination.

The platforms are physically separated from the station through-route. Boarding and alighting always take place when the car is stationary. This full accessibility is not only practical for passengers with prams, sports equipment and luggage — it also gives older people stress-free access. For the first time, a continuous ropeway cable car really is suitable for those with limited mobility or visual impairments.

Up to 50% of empty trips can be avoided with the Ropetaxi, as the vehicle only travels when passengers actually board. The Ropetaxi can carry up to 1,500 people per hour. Both 8-person and 10-person cars can be fitted with the new drive technology. Many alternative and new applications can be added to this operating system.

Content

Ropetaxi® Highlights

The Ropetaxi offers particular advantages over conventional cable cars.

Sustainable

- Fewer empty trips considerably reduces maintenance costs.
- Thanks to the demand-based operation, the Ropetaxi consumes less energy and generates less noise than a conventional cable car system.
- The flexibility of the Ropetaxi means that the gondola can travel on rails, enabling the "last mile" to be reached. Once the gondola is in the station, any disembarkation destinations are possible, whatever the distance.

Autonomous

- "On-demand" travel allows flexible and individual mobility.
- Staff are no longer required at all stations. Instead, the largely automated system is monitored and supervised via a so-called control centre.
- Surveillance systems mean that the equipment and systems can be controlled and monitored, thus enabling remote operation.

Efficient

- Smart utilisation of the system results in a 20% higher fill level.
- The stations serve as garages, resulting in less wear and tear.
- A garage hall is not required, as the gondolas are parked locally in the stations.

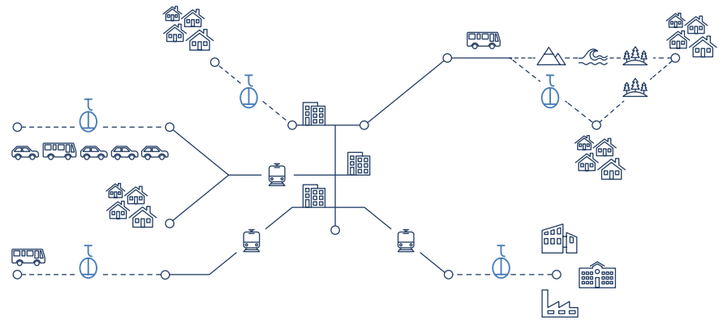
Flexible

- Flexible operating times – the Ropetaxi garaging concept eliminates the need for parking and moving the gondolas out before and after operation, meaning that the vehicles are ready to go right around the clock.
- Separate entrances for VIPs, women and families can be easily put in place.
- Cable car networks are easy and flexible to design.

Comfortable

- Safe and barrier-free access to stationary gondolas.
- No need to open the door or change gondolas before reaching the destination or within a network.

Ropetaxi® Applications



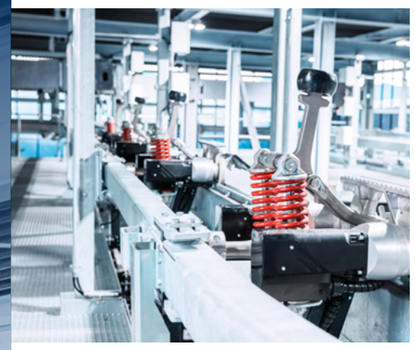
Cable cars are versatile and can be used to fulfill various transport functions. That is why different cable car systems are even playing their part in urban areas.

Urban cable cars are part of the public transport network and boast long operating hours and high availability. They can be operated in several successive sections, and a Ropetaxi represents an effective form of transport, particularly as part of a network, enabling an intermodal and multimodal transport system.

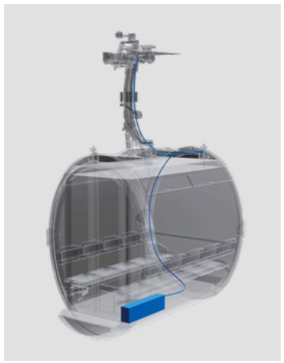
Thanks to the shifting of traffic, new infrastructure provision and their impact on mobility behaviour, these cable cars help improve the carbon footprint of the system as a whole.

Graphic: © Urban Cable Cars in Local Transport – Guidelines, Federal Ministry for Digital and Transport, Berlin, October 2022

Ropetaxi® Vehicle



The basic idea of the Ropetaxi is that the cars move along autonomously in the station thanks to a new drive system directly on the rope clamp.



eMotion Clamp Drive

Our reliable clamp is equipped with two additional electrical drive units which act on the wheels via gears.

Power Supply

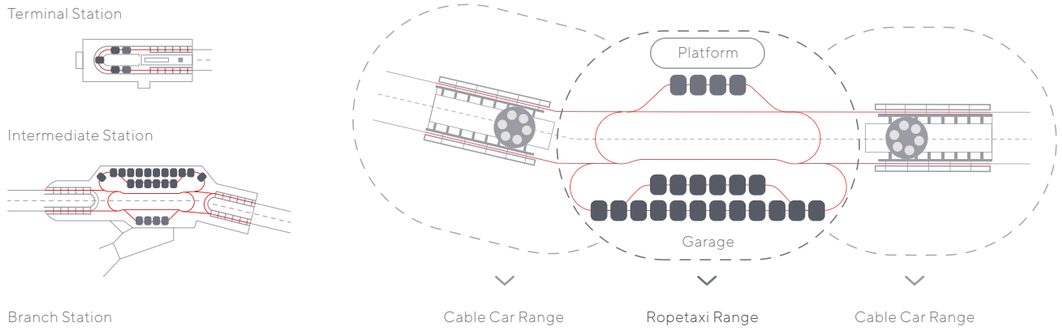
The battery stored in the car floor delivers the power necessary for autonomous travel and other technical functions. Where possible, cars can be fitted with technical features such as an intercom, light, CCTV and multimedia systems.

- Autonomous journeys of up to one hour are possible with this vehicle.
- A fast-charging station is integrated into the cabins for charging mobiles
- The integrated smart battery management system (BMS) controls and monitors power and voltage to ensure optimal battery charging.
- Thanks to a quick-change system, the battery can be swapped and charged as and when required.
- No fire hazard – the batteries are not combustible.

Automated Seats

The seats can be automatically and easily folded up at the touch of a button thanks to a spring system. This opens up new possibilities for the vehicle layout. Most importantly, this function means that wheelchairs can easily enter and turn in the car. Bikes can also be conveniently transported.

Ropetaxi® Station



The stations in the Ropetaxi system are usually part of a network comprising several sections. The more sections, the more route combinations are possible.

There is a distinction between terminal stations and intermediate stations. Intermediate stations, where more than two axes meet, are called branch stations.

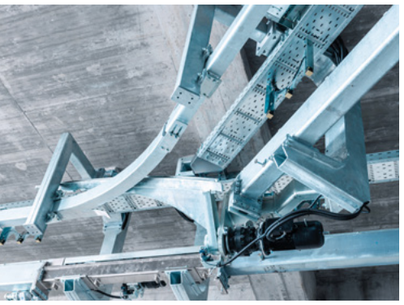
In all Ropetaxi stations, a distinction is generally made between the conventional cable car range and the self-drive range – the actual Ropetaxi range. At intermediate stations, there is access to several cable car ranges. Precise vehicle identification in the stations enables efficient and reliable traffic handling.

Ropetaxi Range

- Platforms
- Garage
- General travel ranges
- Intersections such as turning loops or through-route zones

Cable Car Range

- Station design
- Electromechanical components such as tyre conveyors, coupling point, drive and braking systems, jig and pulleys
- Acceleration and deceleration ranges



Travel Area

The entire travel area of the cars is physically closed off; the only way of boarding is through the sliding doors on the platform.

- In order to meet the safety requirements, the maximum travel speed on straight sections has been limited to 1.0 m/s.
- The travel speed on bends or in the points area is max. 0.6 m/s

Points

Each vehicle has its own individual destination. The vehicle is identified as it enters the station, and the points are correctly set accordingly – either passage through, back to the waiting positions or to a platform at the doors.

Doors

The sliding doors on the platform are sourced from reputable suppliers as a complete standard model including door drive. The lock on the sliding platform doors is certified according to the safety requirements of the EU cable car regulation. Sensor systems monitor the area between the platform doors and gondola doors.

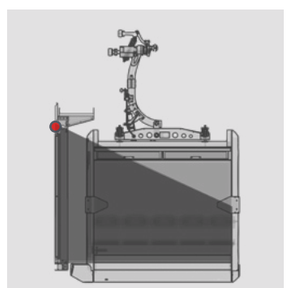
A 3D processing camera counts the number of people. This system counts how many people are in the car. The system can also decipher whether the person is sitting or standing. If there are too many people in the car, the doors remain open and the car will not move off. The control centre can announce over the intercom that the maximum number of passengers has been exceeded.

Platforms and Selection Posts

Boarding and alighting take place through additional sliding doors at a platform when the vehicle is stationary.

Access is controlled in front of the platform and in front of the sliding doors by automatic access barriers. These control and regulate the number of people in the waiting area.

The sliding doors at the edge of the platform feature an integrated person counter. This is combined with a central display above the sliding doors. The waiting area has one or more selection posts. Passengers can select their desired destination here.



3D processing camera

3D processing camera picture

Ropetaxi®
Smart Control

Process Control System

Besides the conventional cable car control, the Ropetaxi requires a higher-level control system which ensures the safe and interconnected flow of all movements.

The process control system ("PLS") is the centrepiece of the Ropetaxi. It controls and monitors all movements of the cars within the station.

Other elements such as points, door mechanisms, and different information and display systems are also controlled by the PLS. Likewise, the system evaluates the information received such as vehicle identification, destination information and battery charge.

Control Centre

Each station has a plant room, which unlike conventional systems does not need to be permanently staffed. The Ropetaxi system is monitored from a central control centre, which serves as the higher-level workstation for monitoring the system as a whole.

It offers access to all surveillance photos, as well as all technical cable car signals across the entire system. Certain processes and faults can be modified and fixed here. Unlike the plant rooms, the control centre needs to be permanently staffed.

Passengers can contact the control centre at any time using the various intercoms around the platforms.

Ropetaxi®
Operating Concept

Ropetaxi operating concepts are extremely flexible and customisable; however, they must always be developed in partnership with the operator.

1
Select your destination before the journey.

2
The gondola will taxi to a platform.

3
Board the stationary gondola as soon as the doors open.

4
The gondola automatically travels to your destination.

Full Operation

- In full operation, cars travel on defined routes at regular intervals
- Operation is similar to conventional continuous ropeway cable cars, regardless of car occupancy
- Variable capacities are possible at individual stations in full operation
- Capacity is allocated on the basis of expected congestion
- Operator can select predefined route combinations

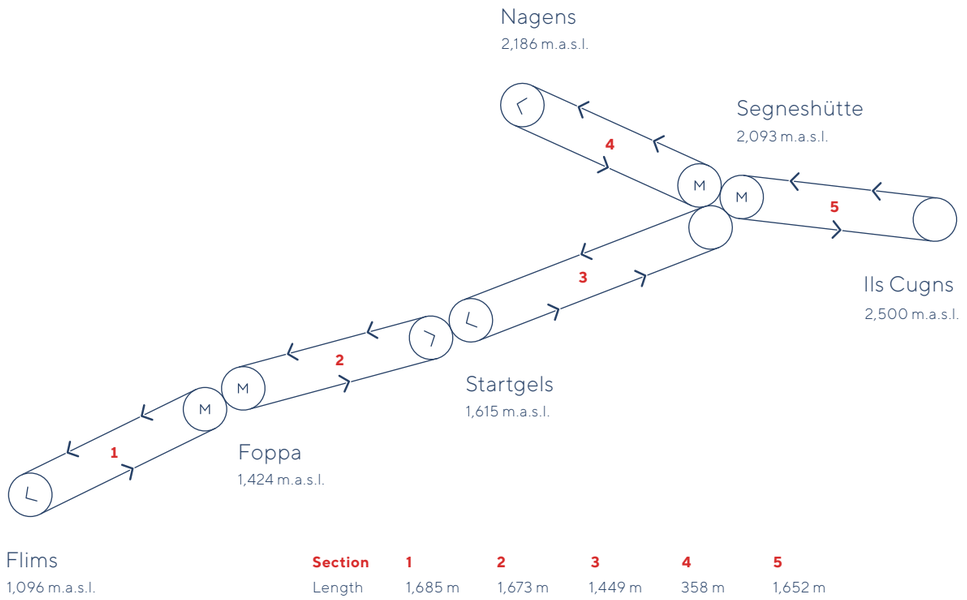
Individual Operation

- Cars travel only as required
- There is no set schedule or prioritisation
- After the journey, the cars remain at the platform or travel back to the closest garage.

Symmetry is required on the route at all times, i.e. for every car that travels up the mountain, a car must travel down the mountain at the same time.

Deviations of up to +/- 3 vehicles are permitted along the route. The process control system monitors compliance with this specification.

Pilot Project FlemXpress



Section	1	2	3	4	5
Length	1,685 m	1,673 m	1,449 m	358 m	1,652 m

1500 P/h*

120

6 m/s

*** Section 5**
Segneshütte – Ils Cugns
1000 p/h

The world's first Ropetaxi system is under construction in Flims (CH) in partnership with the Weisse Arena Gruppe.

The planned 10-person cable car travels through a total of five sections from the valley station in Flims via Foppa, Startgels, to the branch station of Segneshütte and on to the two mountain stations of Nagens and Cassons. The system thus provides access to the famous Swiss Tectonic Arena Sardona, which became a UNESCO World Natural Heritage site in 2008. The first two sections opened in December 2023, while the other sections are set to open in the next two years.

More information about FlemXpress can be found at www.flemxpress.ch