

## First urban public ropeway in France – with Bartholet Ropeway System from Switzerland



### Crossing a river in Brest

The city of Brest, at the tip of Brittany, is one of France's two main naval ports. In the past few years, the city has regained a large area of buildings at the "plateau des Capucins", which previously belonged to the French navy, and has started to regenerate it in order to transform it into a multi-activity hub. As the area is separated from the main part of the town by a small coastal river called the Penfeld, there was a question around whether the area could be accessed using the existing transport structure.

Studies were therefore commissioned in order to highlight the best compromise between the service provided and the cost to the local authorities whilst recognising that, amongst the various constraints presented by the project, sufficient clearance (air draft) must be left above the Penfeld to allow the French Navy's ships to pass through. In considering options such as a "transporter bridge, roadway bridge or mobile walkway", the Urban Community of Brest, the contracting authority, agreed on the principle of a public transport cable car connected to a tramway station in the Siam quarter. This option was selected due to its much lower cost, its safety and its incomparable carbon impact.

During 2013 the contracting authority launched a public consultation, inviting "design-construction" tender proposals. In order to participate in this competition, Bartholet teamed up with Bouygues, one of the leaders in France's construction and public works sector.



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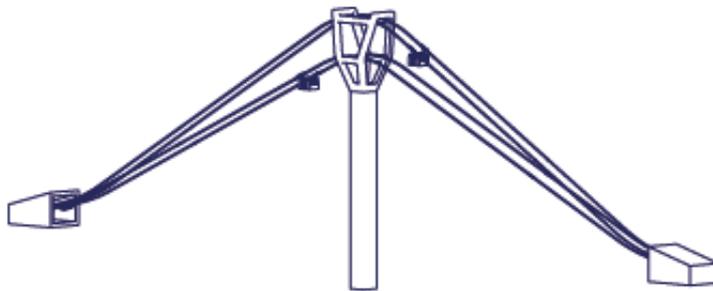
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In November the group around Bartholet has been nominated as the winner of the public tender due to its innovative, ecologic and economic solution. We are very proud of this nomination and say thank you to the City of Brest.

### PRIMARY TECHNICAL FEATURES

#### THE SDMC CONCEPT



The concept consists of two track ropes and two carrying ropes on each track. The two gondolas, going forth and back have different track dimensions (distance between the two track ropes). Its advantage is that both gondolas use the same platform on both sides so it can be designed as small as possible.

In the middle the two gondolas cross **ON TOP OF EACH OTHER** – What a feeling!!

### CONSTRUCTION FEATURES

#### CABINS

The cabins have a capacity of 60 people. They are connected to the suspension and traction cables by separate lower suspension lines, like on Funitel lifts.

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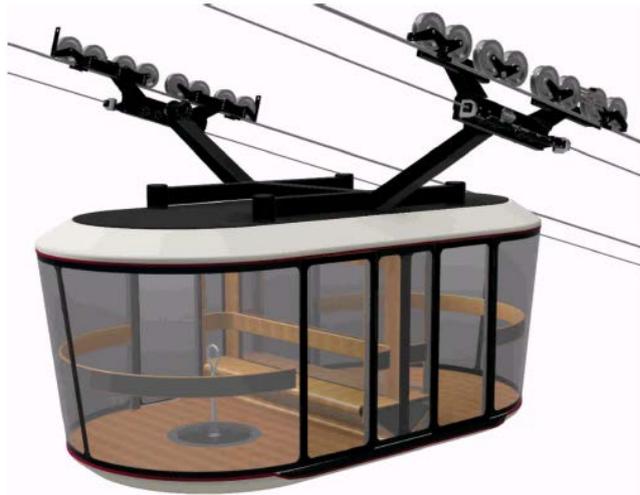
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Constructed by Gangloff (BMF Group), they are extremely spacious and bright. They have integrated lighting and sound systems.

#### LINE

The line has just one central pylon. Given the need to leave clearance free above the Penfeld, it reaches a height of 82 m above ground at the Siam side.

#### MAIN TRANSMISSION SYSTEM

The two traction cables, spliced into 2 separate loops, are each powered by an asynchronous electric motor with a frequency converter. Each loop is pulled along by 2 drive pulleys driven by 2 distinct motor + gearbox units. These are mechanically connected to their counterparts on the other loop via a connecting shaft, thus ensuring that the 2 loops are perfectly synchronised. Within one loop, the 2 motor units are mutually controlled by their respective pairs; thus, the cabins are constantly receiving the equal effort of 2 traction cables and cannot block each other's paths.

#### OPERATIONAL SAFETY

This urban transport facility requires an availability rate of close to 100%. In order to meet this objective, there are duplicates of the "vital" components:

- Each cable loop can be powered by just 1 of the 2 motors + the 2 motors of the second loop via the mechanical connection
- The motors of one loop are capable of driving the other loop in the event that the motors fail via the mechanical connections
- There are two emergency motor units with hydrostatic transmission
- In the event of a brake failure, the other brakes are designed to ensure that the facility stops
- There is a double hydraulic braking system
- The same can be said for all the automatic controls and the pulley rollers

Moreover, the principle of the Funitel-style suspension of the cabins ensures that the facility can operate in wind speeds of up to 30 m/s (108 km/h).

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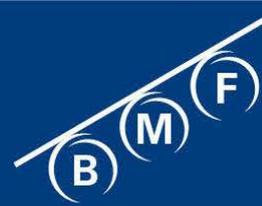
Flums, 12 December 2014

#### PRIMARY TECHNICAL FEATURES

Difference in elevation between stations: 7.5 m  
Horizontal length: 412 m  
Line speed: 7.5 m/s  
Installed capacity in the main motor: 4 x 100 kW  
Overall height of the pylon: 80 m

**TO BE CONTINUED!**

**BMF FLUMS – YOUR PARTNER FOR INNOVATIVE ROPEWAY SOLUTIONS!**



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+ Seilbahnen

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