



## A newer installation as local development way

Session 2: Operation of ropeways: Technical and economic aspects (Ropeways as an instrument to promote regional economic development)

Sérgio Oliveira, Civil Engineer, Site Manager

Email address: [s.oliveira@etermar.pt](mailto:s.oliveira@etermar.pt), Phone +351 265 700 800, Fax +351 265 232 399

### ABSTRACT

The Fajã dos Padres new cable car is a bi-cable reversible aerial tramway installation to transport both people and cargo, for agricultural and touristic purposes.

On site, there was an elevator for people and a “ropeway conveyor” for cargo.

The sustainability of the agricultural production depends on how quickly its products are placed in the market. Fajã dos Padres had reached a point where the available means of transport and local conditions were undermining production sustainability.

This paper is intended to give a sense of the benefits achieved with the new installation and the challenges involved in building it.

## Introduction

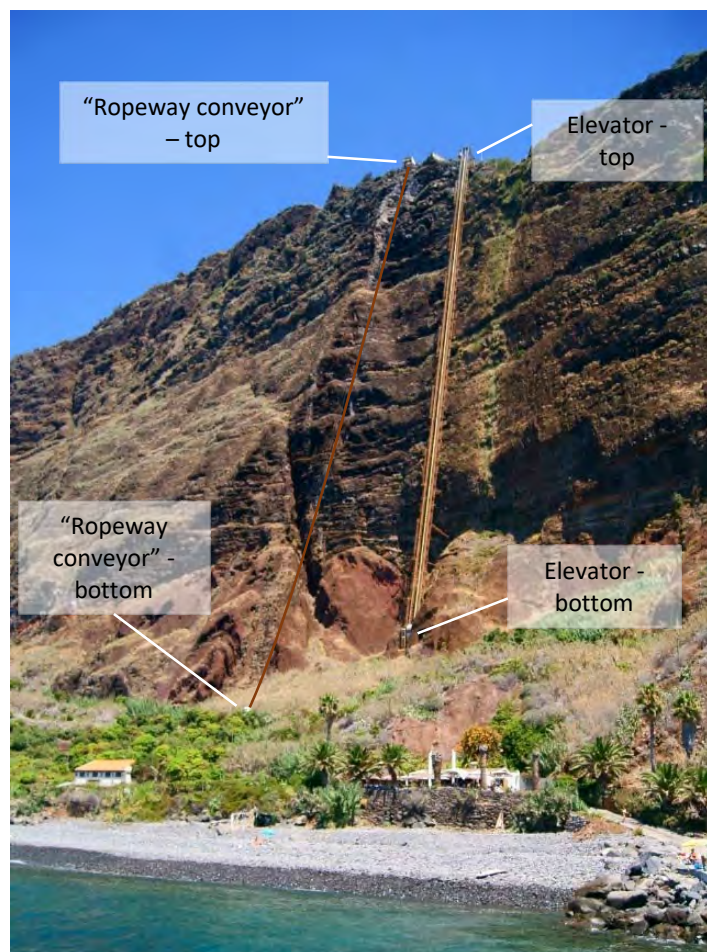
Fajã dos Padres is a picturesque site in the south of Madeira Island, located about 15km west from Funchal, near Câmara de Lobos – Quinta Grande.

The property's main activities are biologic agriculture, local and traditional gastronomy from Madeira, rural holiday houses and sea activities, available to visitors and tourists.

## Existing means to access Fajã dos Padres

Accessing Fajã dos Padres sea shore was possible by:

- Elevator / lift for people;
- "Ropeway conveyor" for goods;
- Boat for both people and goods.



The “Ropeway conveyor”



The lift that runs about 250m high and takes 5 minutes. The top and bottom “lift-stations” are located, respectively, about 30m below the road and 50m from sea level by walking several steep flights of stairs and ramps.

Stairs to access the lift / elevator from above ...





... and the stairs to access the lift / elevator from below.

Getting to Fajã dos Padres by boat has its risks related with sea conditions besides the fact the nearest port is Câmara de Lobos and it takes about 30minutes reach site.

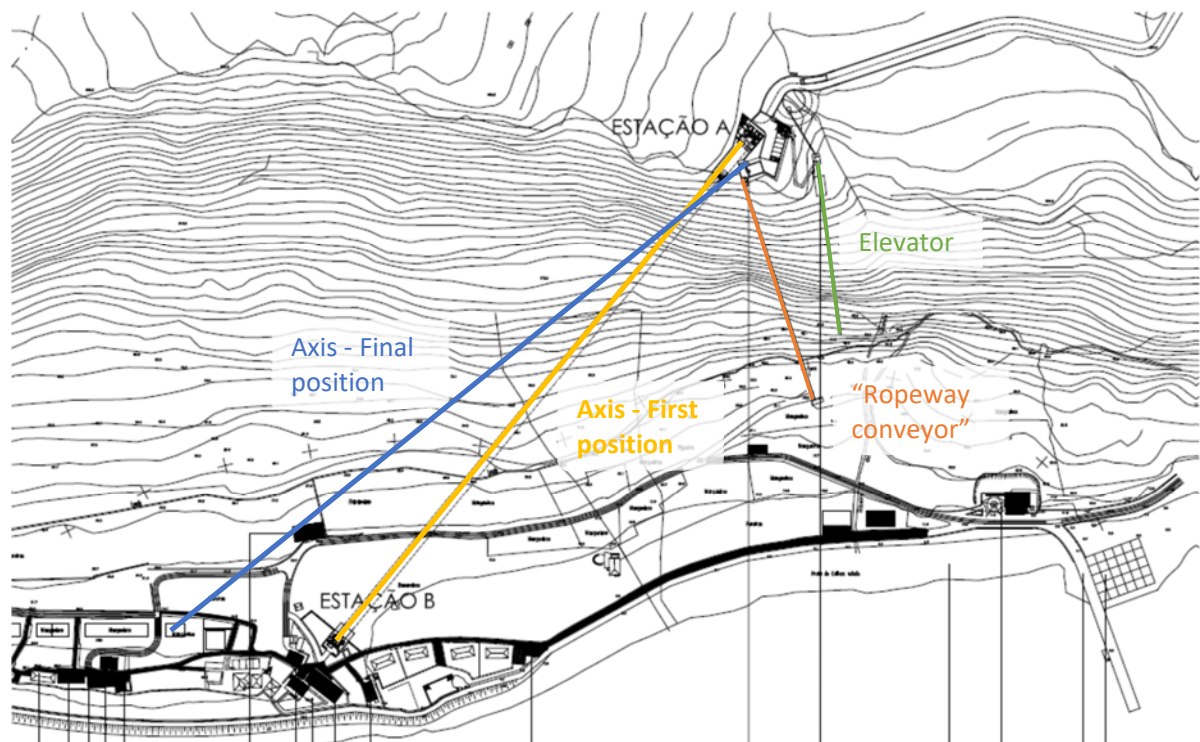
The existing limitations led to the need of a newer mean of transport / installation. The new installation had to comply with some requirements such as:

- Top station with direct access from the road;
- Bottom station at sea level;
- Ability to transport both people and goods;
- Increase of transport capacity both of goods and people.

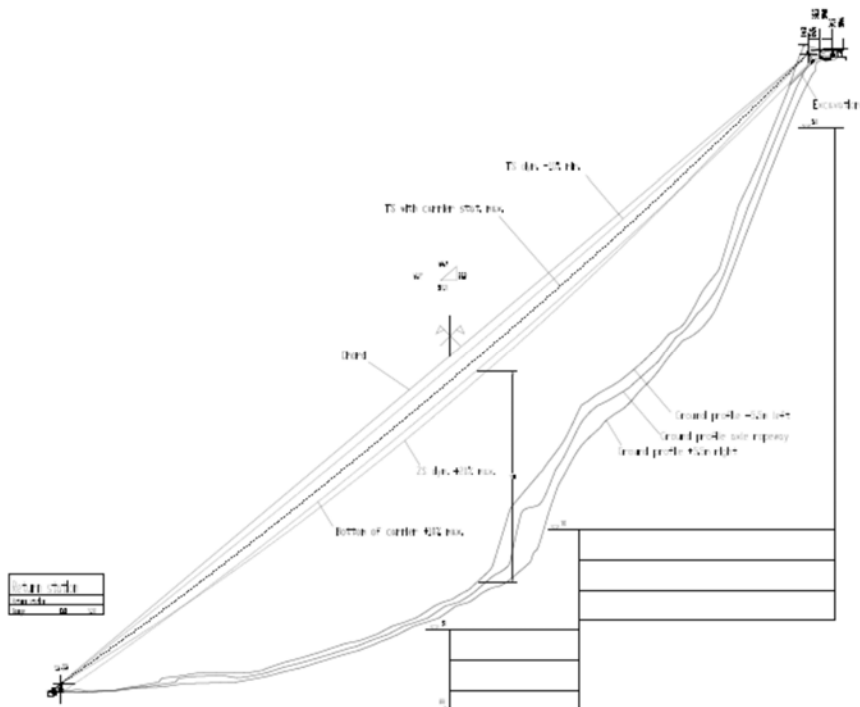
### Challenges and solutions

The first approach to the project was to maintain the Elevator and “Ropeway conveyor” in operation and to build a newer ropeway.

The factors taken into account to the choice of the final solution were transportation needs (people and cargo), space restriction for the top station construction, dominant wind direction and the terrain's orography.



This final position had a better behavior to the dominant wind direction, a less steep slope and a smaller intervention at the top station level, although had a shorter space between the top station and the nearest tower of about 7m to stop point and this was a technical challenge.



Bozen/Bolzano 6 - 9 June 2017

The materials and equipment needed at the bottom station level have had to be transported by sea.



Bozen/Bolzano 6 - 9 June 2017

## Installation – Technical main data and photos

### Technical main data

Anchoring of track rope	Fixed – top station
Drive station	Top station
Vertical rise	316 m
Horizontal length	384 m
Inclined length	500 m
Mean inclination	82 %
Operating speed max.	6 m/s
Capacity	180 pph
Travel time (max. speed)	2,1 min



Bozen/Bolzano 6 - 9 June 2017





Bozen/Bolzano 6 - 9 June 2017

## Conclusions

This paper aims to show the restrictions to the technical solution in the design phase and the implemented solution. How the new gondola ropeway installation is of crucial importance as a promoter of local development for Fajã dos Padres.

Replacing the existing equipment with a new one brought real gains not only in terms of transport capacity of both agricultural products and people but also in terms of higher standards of safety, though, massification of tourism may risk its picturesque look.