



# Proposal for a tool to help to verify the safety level of existing monocabable aerial ropeways

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# French vs English ?

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- French is one of Canada's official languages
- Not so different
- Quebec joke to prove it:

Sais-tu que la ouate (coton) vient des phoques ?

(Did you know that cotton wool comes from seals?)



Ouate de phoque !

(wat də fɔk!)

*Sorry...*



# Introduction

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- Public passenger transport  
Must be efficient, safe, affordable, while drastically reducing the carbon footprint
- Ropeways have the potential to meet all these needs
- But it is a little-known means of transport, which can also impress, or even repel, a part of the population
- In this context, accidents on cableways clearly damage the reputation and development of this type of transport system

# Problematic

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- Throughout the world, exist technical rules reputed to ensure a high level of safety
- However, some installations do not comply with this rules and high level of safety
- There are also installations where fatigue and wear phenomena have not been properly measured

=> Which additional measures to improve their level of safety ?

# Action of OITAF

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OITAF decided to draw up a **recommendation**

- for owner and operators
- detailing an approach for carrying out an assessment of a cableway installation
- in order to check that it complies with a minimum safety standard
- or, where appropriate, to identify the measures to be taken to complete and to improve safety

# Assessment method

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Method comprises 4 main stages :

- History of the installation
- Evaluation of the state of the installation's safety-related components
- Assessment of the functionality of safety-related sub-assemblies and components
- Drawing up an action plan based on the diagnosis

## Stage 1: History of the installation

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Reconstructing the installation's identity card and history

- Year, manufacturer, functioning hours, frequentation statistics, ...
- File with existing documents: main drawings, calculation notes, operation and maintenance instructions
- Traceability elements relating to maintenance actions already carried out, modifications, events experienced by the system and its components
- Identification of safety information distributed by manufacturer(s)

=> Initial idea of the safety level of the installation

## Stage 2: Evaluation of the state of safety-related components

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Inspection to identify any defects or damage (wear, corrosion, deformation, cracks, breaks, etc.)

- Detailed visual inspection if the installation and its components are still relatively young.
- For installations over 15 years old, non-destructive testing of components, particularly those subject to fatigue stress, generally after dismantling

## Stage 3: Assessment of the functionality

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- Decomposition of the installation into sub-systems and, for each one, proposal of an analysis grid to identify safety objectives and operational measures to meet them.
- Measures defined in these grids based on the experience of the countries represented on OITAF's Commission I

## Stage 3: Assessment of the functionality

### Some examples

| Sub-system                           | Component           | Objective                                                                                      | Recommended measures                                                                                                                                                                                                                                                                                                 |
|--------------------------------------|---------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cable tensioning devices             | Hydraulic tension   | Are the permissible cable tension values monitored and guaranteed?                             | Provisions to be implemented for :<br>- Monitoring of the minimum tension threshold (pressure or tension monitoring), to guarantee adherence,<br>- monitoring of the high tension threshold (pressure or tension monitoring) or installation of a pressure limiter, to guarantee the safety coefficient of the rope. |
| Mechanical equipment in the stations | Cabin boarding area | Is the correct boarding of passengers in the cabins at the end of the boarding area monitored? | Gondola stations must be equipped with end-of-platform gates to detect a passenger trapped between the doors before the cabin leaves the station.                                                                                                                                                                    |

## Stage 4: Drawing up an action plan

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On the basis of :

- previous stages,
- proposals of the specialist,

The owner is able to define a program of measures to improve the level of safety.

**!!** Planned measures must not lead to the emergence of new risks (e.g. clearance limitation, unacceptable increase in stress, etc.)

## Some limitations to the method

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- Only for monocable aerial cableways
- Focus on functionality, no verification of the dimensioning of the installation / components
- Recommended measures formulated in general terms, without specifying the technical details of the design to be adopted
- Approach limited to risks incurred by passengers. Does not consider the risks for operating or maintenance staff.

## Conclusion

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- Safety = immediate and essential responsibility for the owners and operators
- OITAF involved in the development of a tool to help in meeting this responsibility
- Not a new approach but give practical and operational experience of several countries in maintaining the safety of large fleets of monocable aerial cableways.
- Publication in coming months...



**Thank you for  
your Attention!**