Different types of ropeways and their usability in urban areas

Definition:
A ropeway is a tram carrying passengers or goods moved by a rope. Some types are moving continuously while others shuttle between the stations.

- **Monocable detachable gondola (MDG):**
  The Monocable detachable gondola runs with only one cable. The cars are fixed to this cable. The cable is responsible for the movement and the stability of the cars. At the stations the cars are decoupled from the cable and slowed down to a constant low speed for a comfortable embarkment and disembarkment.
  
  **General technical data:**
  - Speed: up to 6 m/s
  - Capacity: up to 4000 persons per hour & direction
  - Amount of space: up to 10 persons/car
  - Post distance: up to 1000 m
  - Resistance against wind: 60 km/h

- **Tricable detachable gondola (TGD):**
  The cars are fixed to the central cable which is responsible for the movement. The other two cables ensure the stability of the car. This system belongs to the continuous conveyors. The cars are circulating and running constantly. At the stations the cars are decoupled from the central cable and slowed down to a constant low speed for a comfortable embarkment and disembarkment.
  
  **General technical data:**
  - Speed: up to 5.5 m/s
  - Capacity: up to 5000 persons per hour & direction
  - Amount of space: up to 35 persons/car
  - Post distance: up to 3000 m
  - Resistance against wind: 80 km/h

- **Aerial Tramway (ATW):**
  The aerial tramway has 2 cars shuttling between the stations. This system is not a continuous conveyor. It is comparable with a conventional public transport system with its cars offering space for up to 200 passengers. The cars are moved by a rope and fixed to one or two other ropes. At the stations the entire system is stopped for a comfortable embarkment and disembarkment.
  
  **General technical data:**
  - Speed: up to 12 m/s
  - Capacity: Depends on length and speed
  - Amount of space: up to 200 persons/car
  - Post distance: up to 3000 m
  - Resistance against wind: 60 km/h

- **Funicular Railway (FUN):**
  This system has a very low capacity and results in long waiting times. However this system is suitable at difficult geographic conditions.
  - High speed
  - High resistance against intense wind
  - Energy efficient
  - Easy to construct
  - Simple technology
  - Can operate with big altitude differences
  - In car-personal necessary
  - Low capacity
  - Waiting time at stations
  - Stopover stations are difficult to realize

Conclusion:
A monocable gondola (MDG) is the best solution for the most cases. This typology is characterized by a simple technical construction. The technology is proven for a long time and the system provides a high capacity. When the demand is low or when there are extreme geographic conditions other typologies provide better options.

Ropeways are suitable where classic public transport faces barriers like big altitude differences, rivers, arterial roads, etc. Depending on the typology, ropeways can provide a high capacity and can keep up with trams and busses. They do not reach the capacity of tubes or light rail systems.

Due to the fact that their cars are circulating constantly, ropeways do not need to follow a timetable. If the ropeway is a continuous conveyor the user will always find cars at the stations.

Ropeways are cheaper than other means of transport and can be operated with low personnel costs. As they are operating at different levels there are no conflicts between ropeways and other traffic users.

For the most locations this system is the best fit. It combines high capacity, decent speed and has an easy and proven technology.

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