

## Reversible Aerial Tramways

 ... to the unique.

 From the attractive ...





## The king of aerial ropeways

---



As a Doppelmayr/Garaventa customer, you benefit from leading-edge ropeway technology. We set the benchmark for transport systems geared to the future.

Technology, innovation and performance have enabled us to win customer trust and made us the number one supplier in the world market. With our first aerial tramway installation in 1908 (Wetterhornaufzug, Grindelwald/Switzerland), Doppelmayr/Garaventa has over a century of experience.

They are the ideal means of transport: Aerial tramways cross valleys, ravines, rivers and glaciers as well as any other rough terrain with ease; they also provide an impressive solution for urban transport. Rope spans can be as long as 3 km. While aerial tramways have long been a familiar sight in winter tourist resorts, they have also become an integral part of the public transport systems in cities and agglomerations, and represent an important marketing tool for ropeway operators.

 Aerial tramway experts  
for over 100 years

## The system in brief

---

On a classic aerial tramway, one or two carriers, consisting of carriage, hanger and cabin, travel back and forth between the stations. They are propelled along one or two track ropes by means of a haul rope. The track ropes have fixed anchoring in one station, are guided on the line by means of saddles supported by towers, and in the opposite station are either fixed or tensioned by means of counterweights. The carriers, which travel along the track ropes, are connected to one another by means of the upper and lower haul rope. In one of the stations the haul rope is propelled by the drive system; in the other station it is loaded by means of a counterweight to achieve the necessary tension.

In addition to the most frequently used configurations, Doppelmayr/Garaventa builds aerial tramways in special constructions. Specific customer requirements such as a single path of travel or winch drive as well as other design details can be accommodated without any problem. The transport capacity of an aerial tramway is between 500 and 2,000 passengers per hour, depending on the cabin size (from six to 200 passengers), travel speed (up to 12 m/s) and system length.

 Efficient and reliable



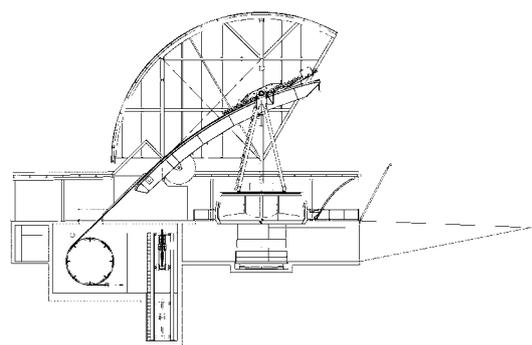




## The stations – well engineered through to every last corner

---

Drive and return sheaves, gearbox, service and emergency brakes, couplings, primary, auxiliary and emergency drive, deflection sheaves, track and haul rope counterweights, track rope bollards – these are essential components housed in the two stations. Loading platforms that shift from side to side can also be incorporated to save space. This is precisely where the many years of experience and the know-how of Doppelmayr/Garaventa come into play. The optimal concept – including unconventional solutions – is developed and implemented in close collaboration with the customer and with in-depth knowledge of the applicable codes and standards (GEN, ANSI, EU Directive 2000/9/EC on cableway installations etc.).



### Highlights

- **2004** 78-ATW "Scenic Skyway", Katoomba, Australia – transparent glass floor
- **2006** 78-ATW "Marquam Hill", Portland, Oregon, USA
- **2006** 160-ATW "Ahornbahn", Mayrhofen, Austria – Austria's biggest aerial tramway with two 160-passenger cabins
- **2008** 100-ATW "Jackson Hole Tram", Wyoming, USA – with integrated recovery concept (no need for rescue tram)
- **2010** 25-ATW "Halidzor - Tatev", Yerevan, Armenia – world's longest tramway in one section
- **2012** "Cabrio® Kähti – Stanserhorn", first Cabrio® tramway in Stans

➤ Stations to fulfill every aspiration – individual and remarkable

## Unmistakable and purpose-built

---

The visual image of the aerial tramway is defined by the carriers – as a rule two, or in exceptional cases, just one. The cabins are available in a wide variety of designs and sizes to suit the exact needs of the customer.

Welded steel plate hangers connect the cabins to the carriages. These carriages travel along the track ropes by means of their wheels (between six and 32 per carriage depending on the carrier size) and are fitted with track brakes where specified by the tram design.

In the event of overspeed or a slack haul rope, the brakes are automatically engaged against the track ropes and bring the carriers to a safe stop. A major benefit of the reversible aerial tramway is its ability to transport cargo – whether in the cabins themselves or suspended underneath them.

### The cabin as showpiece





## Safety all along the line

---



Ropeways, including aerial trams, rank amongst the safest means of transport in existence. This is due to extensive experience and the many safety devices used. Hydrostatic auxiliary or emergency drives ensure that the carriers can be safely brought back to the stations in the event of a failure, such as a power outage. If the tram is blocked, the passengers have to be evacuated from the cabins. This can be done using rope-down devices incorporated in the cabins.

In good weather conditions it is also possible to bring the passengers to safety using a helicopter and rescue basket. In situations where the height above ground does not permit a rope-down evacuation, an independent rescue tram is deployed. The innovative recovery concept incorporating additional measures such as 'redundant' drives and readily available repair tools ensures that the carriers can return to the stations in the event of equipment malfunction.



### Key features at a glance

- transport capacity up to 2,000 PPH
- rope spans of up to 3 km possible
- suitable for use in difficult terrain
- high operational efficiency through combined transport of passengers and freight
- attractive visual appearance with modern design and top-quality materials makes aerial trams an outstanding marketing tool
- ropeway system with enormous potential for the future



361/eng/dgama/bi/032013/1000

**Doppelmayr Seilbahnen GmbH**  
Rickenbacherstraße 8–10, Postfach 20  
6922 Wolfurt / Austria  
T +43 5574 604, F +43 5574 75590  
dm@doppelmayr.com, www.doppelmayr.com

**Garaventa AG**  
Tennmattstrasse 15  
6410 Goldau / Switzerland  
T +41 41 859 1111, F +41 41 859 1100  
contact@garaventa.com, www.garaventa.com