



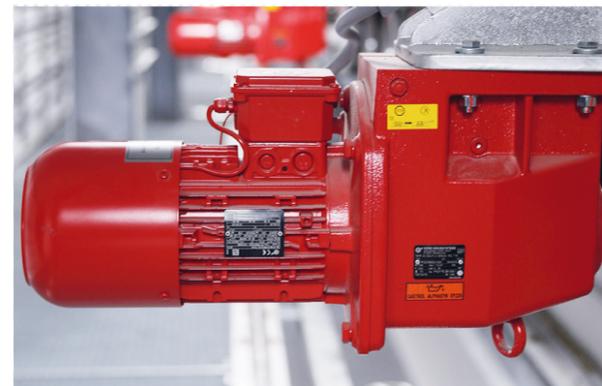
Further references and application cases:  
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Safe operation even at extreme temperatures



Tire conveyors and vertical lift conveyors



Robust geared motors

## Drive solutions for ropeway stations

Case study: Doppelmayr



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In ropeway stations, cable cars are detached from the haul rope and must then be safely moved along. Doppelmayr/Garaventa, the global market leader in ropeway engineering, relies on low-maintenance NORD geared motors for this task.



#### Transportation

Tire conveyors  
Vertical lift conveyors



#### Geared motors

### Project challenge

At the Grasjoch and Pardatschgrat mountain ranges in the Austrian Alps, ropeway manufacturer Doppelmayr has recently installed two new circulating ropeways. Going uphill or downhill on their haul ropes, the ropeway gondolas travel at speeds up to 7.5 m/s. However, this is much too fast for safe boarding and disembarkation within a station. The cabins are therefore detached and slowed to walking pace. Dedicated drives then gently move them along via tire conveyors. When the ropeways close for the day, the cabins are stored in multi-track garages in the valley stations. More conveyor drives are required to take them in. In addition, the Pardatschgrat ropeway garage relies on vertical lift drives.

**Robust and weatherproof.** In order to cover extreme weather conditions both in the winter and the summer, it is paramount that all drives in the

stations ensure reliable operation at temperatures from -30 °C to +50 °C. Since stations in the mountains are often poorly accessible, Doppelmayr also expects a sturdy design and long service life for all technical systems used there to minimize the risk of downtime and maintenance requirements. Notably, the ropeway engineers prefer plug-and-play connections: if a motor replacement is inevitable, this allows for swapping units without a trained electrician on location.

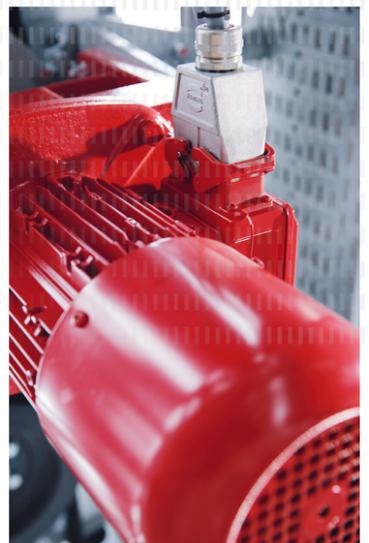
**Economically and ecologically viable.** Excellent energy efficiency is also mandatory for the drive solutions, since Doppelmayr has chosen to use only IE3 motors throughout all stations in the interest of sustainability. Though they are only operated for brief periods of time every day, this rule also applies to drives in the overnight facilities.

### Application solution

NORD DRIVESYSTEMS has manufactured and custom-engineered numerous geared motors for the transport applications in the stations. They were not only built to suit the load requirements and provide the necessary interfaces, but were also specially equipped for the harsh climate. For instance, a non-standard gearbox lubricant extends the already high default environmental temperature tolerance of the systems by an extra 5 degrees.

**Defying the mountain climate.** The geared motors for Doppelmayr were fitted with features such as anti-condensation heaters, corrosion-protected brakes, and wet insulation. The drives on the tire conveyors operate at slow speeds and are equipped with external fans that can be switched on and off as required, which contributes to greater overall energy-efficiency.

**Easy handling.** NORD supplied the drives ready to use with plug-in power and signal connectors. In addition to quick and comfortable commissioning, these enable easy maintenance later on. NORD also implemented air gap monitoring for the brakes. A micro-switch signals when the brake disks have worn down beyond a set limit. NORD IE3 motors feature extended thermal and overload capacity and are suitable for worldwide deployment in countries with either 50 Hz or 60 Hz supply. For more than ten years, Doppelmayr and NORD have closely worked together in numerous projects in many different countries. Due to the extensive NORD distribution and service network, quick spare parts supply and readily available support is ensured around the world.



#### User-friendly

Plug connectors allow for easy motor installation and replacement.



### Focus on the Customer

Doppelmayr Seilbahnen GmbH is part of the Doppelmayr/Garaventa group, the leading ropeway manufacturer with a track record of some 15,000 projects throughout the world. Founded in Austria in 1892, Doppelmayr merged with long-established Swiss ropeway specialist Garaventa in 2002. The group focuses on engineering and manufacturing passenger and supply lifts for tourism as well as for metropolitan mass transit systems.



### Focus on the Project

For two new Doppelmayr ropeways in the Austrian Alps, NORD has engineered and supplied reliable, low-maintenance geared motors for conveying cable cars. Some enable cabins to be taken into and out of garages in the ropeway stations. Other drive units ensure that passengers can safely board and disembark from gondolas of the

- ▶ Grasjoch ropeway (1,900 people per hour and direction) and the
- ▶ Pardatschgrat ropeway (2,800 people per hour and direction).