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Doppelmayr®

Magazine for
Customers and Employees

Ferrari! Madonna! Doppelmayr-Express!

For Doppelmayr/ Garaventa, the region around the world-famous resort of Madonna di Campiglio is a real home market.

Madonna lies 73 km to the north-east of Trient at 1552m above sea level between the peaks of Adamello, Presanella and the Brenta Dolomites. All the lifts built over the last 20 years in Madonna, Folgarida and Marilleva come from Doppelmayr/Garaventa. Needless to say, so does one of the latest, the 6CLD-B "Seggiovia Express Grostè" in the region of Grostè, directly below the Brenta group.

The area's outstanding reputation, brought to the attention of the world through the Ski World Cup, has long since come to the ears of the sports elite of all persuasions. So it will come as no surprise to discover that the Ferrari team regularly arrive for a welcome break and swap their Formula 1 racing cars for a far more comfortable uphill number from the Doppelmayr team.

This was exactly what happened at the end of January when the entire Ferrari crew of Formula 1 world champion Michael Schumacher spent several days in Madonna and, of course, used the new Grostè lift.

Specifications 6CLD Seggovia Express Grostè:	
Vertical rise	259m
Inclined length	1335m
Travel speed	5 m/sec
Transport capacity	3000 PPH

Formula 1 world champion *and Ferrari driver Michael Schumacher (left) obviously enjoyed the ride on the new 6-seater chair lift.*

The comfortable new 6CLD-B "Rifugio Graffer - Passo Grostè" *at Madonna di Campiglio replaces two fixed-grip 2-seater chair lifts which both dated from 1982 and were arranged in parallel. Their respective transport capacities of 1200 PPH were no longer sufficient. The response of the entire public - not just the speed-loving Ferraristi - is one of total delight: for the lift, the mountains and the skiing experience.*

2004 was a satisfactory year

After fiscal 2004/2005, we can once again be very pleased with our achievements. This result is attributable to various factors, both in-company and external.

On the one hand, we were able to take advantage of special effects at national level such as e.g. the Austrian government's investment growth tax credit or the construction boom associated with the Winter Olympics in Turin. In addition, we have prepared ourselves in good time for the new CEN directives.

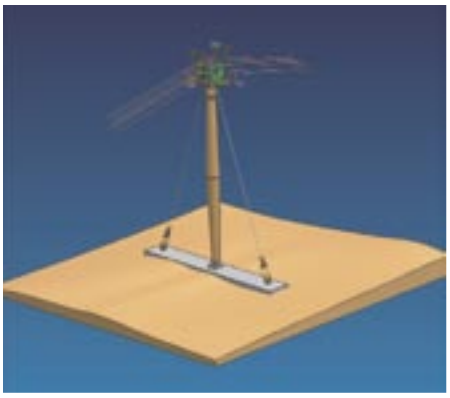
In total we installed 158 aerial ropeways, including 11 detachable 8-seater gondola lifts, 31 detachable 6-seaters, 29 detachable quads and 43 fixed-grip chair lifts. A particularly spectacular highlight which made the headlines was our 3S system in Kitzbühel. There were also a series of technical innovations, of which the seat heating system was not only acclaimed as a world first in the industry but also met with great praise from ropeway users.

Together with our customers, we pursue a common goal: to promote the successful development of the regions for our mutual benefit by identifying market trends at an early stage and through future-oriented planning. For the current fiscal we are once again on the right track in this respect.

Michael Doppelmayr

The garbage is delivered by ropeway

Doppelmayr has been involved with the project to create a bulk material handling ropeway for the waste tip at Tüfentobel, near the eastern Swiss city of St. Gallen, since the late 1990s. Construction finally began in March 2005. The installation in question is a RopeCon system.



Two of the four towers will stand on the actual waste site. They are designed to compensate for ground subsidence.

The installation will already be going into operation in the fall of this year – and will nevertheless not yet have reached its ultimate length. It will have to grow as the waste tip is filled. In 25 years' time it is to be removed.

Environmentally friendly and cost-effective

When it came to considering how best to erect and run such an installation in a way which would be both environmentally friendly and cost-effective, someone hit on the resourceful idea of using a ropeway.

Local residents also see RopeCon as the ideal transport system

Originally, a ropeway with large, 30-tonne containers or buckets was considered. The drawback of a reversible system with large containers is the huge power requirement for the drive and the large dimensioning of the ropes and line structures. Moreover, this would also mean that a great amount of material is deposited in one go, causing noise and dust to the detriment of the local area. Bucket-type containers such as those used by Doppelmayr on coalmine ropeways in Australia, would have the advantage of continuous loading and unloading. The transport containers can deposit their contents as required in the section of the tip currently being filled.
The RopeCon system is even better suited to this application. The local government decision-makers from St. Gallen were able to view a RopeCon installation located just an hour's drive away in Strengen. It was here that Doppelmayr had erected a temporary RopeCon across the federal road, the Rosanna River and the Arlberg railroad. The system was used in the construction of the twin sections of the six-kilometer-long Strengen tunnel for the S16 expressway: 1.5 million m^3 of excavation material was discharged on the opposite side of the valley. (This RopeCon served its purpose and has since been dismantled after almost five years in service). The arguments convinced St. Gallen's voters. They gave the go-ahead for the construction of a RopeCon in Tüfentobel.
The RopeCon solution is as follows: in its final expansion stage, the ropeway will be 1250m long with four towers on the line. Initially, it will go into operation with three towers, the fourth tower being added at a later stage when needed. As two of the towers will stand on the excavation material, a special construction will be required to compensate for any subsidence or tilt. The principle is comparable to that of glacier towers and Doppelmayr has plenty of experience in this area.

Up to 60 truckloads an hour – for 25 years

The system will have an hourly throughput of between 40 and 60 truckloads of bulk material with a lump size of up to one meter. This bulk material will be processed in the loading station – which, like the entire installation from the design concept and component manufacture through to installation, will be coming from Doppelmayr Wolfurt – and then fed onto the conveyor belt (with a corrugated side wall height of 20cm). Over the course of the 25-year period, a total of 6 million tonnes of waste material will be dumped at the site, most of which will be transported by the RopeCon system.

Wide range of applications

RopeCon combines the advantages of a ropeway and a conveyor belt. To date, Doppelmayr has built RopeCon installations for road construction (Strengen/Tyrol), a stone-crushing plant (Zöchling/Lower Austria) and a cellulose fiber plant (Lenzing/Upper Austria).

Seat heating for chair lifts

Doppelmayr has caused a sensation with the newly developed seat heating system for chair lifts. The first five lifts with over 300 heated seats (423 chairs with 2480 seats and heating mats) were in operation in the winter season 2004/05.

The seat heater was an absolute hit at Interalpin in Innsbruck – and is heading for a big success on the market. For 2005 we expect to see roughly a dozen chair lifts fitted with our chair heaters.

The first seat heating systems went into operation at Christmas 2004 on five detachable bubble chairs in the Arlberg region. These were retrofits at the resort of Lech (8CLD/B "Steinmähder", built in 2003, 6CLD/B "Kriegerhorn", 2002, 4CLD/B "Schlegelkopf"/1990 and in the Schröcken ski area (6CLD/B "Saloberjet" and "Sonnenjet" both from 2003).

Doppelmayr developed this world first in just 18 months in close collaboration with the Lech and Schröcken ski lifts.

The seat heater is integrated into the lift chair, as in the case of automobile seat heating. The chair pads are fitted with a heating mat which is protected by a tough, water-proof cover. As the chair passes through the bottom station the seat heating is activated by means of a power rail and collectors. 520 W are required for each seat. The heating mats are supplied with a voltage of 48 V. The passengers are protected against fire, overheating and electric shock. The heating phase ends when the chair leaves the station and the absorbed energy is sufficient to provide enhanced ride comfort all the way to the top station. If the outside temperature rises above 10 °C the heater is deactivated.

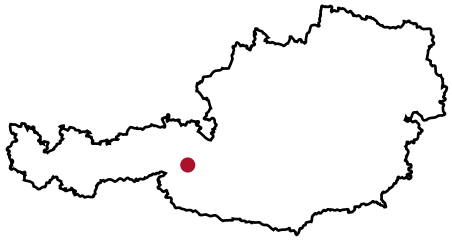
The system is certified by TÜV in accordance with Directive 2000/9/EU.

Retrofits possible on many older Doppelmayr lifts

All Uni-G installations as well as a large number of older Doppelmayr and Garaventa lifts can be retrofitted.

Collectors (black, bare contacts), power rail (yellow). The current flows from the power rail via the collectors on the grip to the terminal box under the seat. From there it activates the heating mats in the seat pads.

Hollersbach panorama lift - a vision becomes reality



The idea was born in 1999. In December 2005 it will become reality: the "panorama lift", an 8-seater gondola lift, which links the Salzachtal from Hollersbach with the ski safari Pass Thurn - Zweitausender - Jochberg - Kitzbühel - Kirchberg.

Hollersbach in Salzburg's Pinzgau, a few minute's car ride upstream from Mittersill, was once a tranquil little village best known for its alpine flora. In the winter, it had above all plenty of peace and quiet but little action to offer, even if the ski lift, a natural toboggan run, an ice-skating rink, the curling pitch and cross-country ski runs allowed a certain amount of physical activity. As from December 2005, winter tourism is set to receive a huge boost: this is when the new gondola lift of "Panoramabahn Kitzbühler Alpen GmbH" will be going into service under the direction of Kitzbühler Bergbahn AG[1].

It was to take five years before the idea of building a gondola lift up to the Resterkogel - which is where the top station is located - became a reality.

The finished result is something to be proud of: the bottom station Hollersbach/Grubing and the mid stations have an excellent infrastructure including ski hire, ample parking facilities, shop (at the bottom station), etc. Snow-making equipment ensures that the descent from the top to the mid station is always skiable, thus providing a secure link to the Kitzbühel ski region. And, what is particularly important for the local population, the section of the valley from Mittersill to Hollersbach and beyond will profit enormously from the additional ski area and the new job opportunities.

Specifications of the Panorama Lift		
	Section I	Section II
Bottom station altitude[2]	803m	1231m
Top station altitude	1231m	1892m
Inclined length	2116m	2144m
Trip time	6 mins	6 mins
Transport capacity	2000 PPH	2000 PPH

[1] Kitzbühler Bergbahn AG is one of the biggest employers in the region with 200 permanent employees and another 300 seasonal employees in the winter.

[2] The bottom station lies within the HQ30 and HQ100 flood zones. In accordance with the Regional Planning Act, building is not totally excluded in areas within the drainage zone of the 30-year flood level (HQ30). With approvals under the Water Rights Act and suitable protection measures it is possible to have building land redesignated. Similar requirements apply - in a more moderate form - for HQ100 zones.

Bottom station in April, mid station at the beginning of May, top station at the start of construction in mid May

Milestones for the Panorama Lift	
Decision to erect a lift	end of 1999
Negotiations with land owners and authorities such as e.g. Environmental Ombudsman for the province [2]	up to November 2003
Hearing under the Railways Act	April 27, 2004
Start of preparations for the construction work	April 28, 2004
License issued by the Ministry of Transport	July 8, 2004
Tower foundations and station buildings	from September 2004
Construction of the ski slope	from October 2004
Delivery of the ropeway equipment	November 2004
Installation of the ropeway system	February 2005

Mid station

Bottom station

Rostock lift at BUGA in Munich

The gondola lift from the International Gardening & Horticulture Exhibition (IGA) 2003 in Rostock is proving highly successful at Munich's National Garden Festival (BUGA) 2005. More than a million passengers are expected to have used the lift by the end of the show.

To remind ourselves: Doppelmayr designed an 8-seater gondola lift for the International Gardening & Horticulture Exhibition 2003 in Rostock which was then to be dismantled and reinstalled, without any major modifications, for a triangular route above the showground at BUGA 2005 in Munich. This concept has now become reality and the lift is very popular with visitors to the show.
The installation is operated by Skyglide Event Deutschland GmbH, a fully owned subsidiary of the Doppelmayr/Garaventa Group. We shall be reporting on this event after the end of the exhibition.

Top-flight opening: Munich's Lord Mayor Christian Ude, Bavarian Governor Edmund Stoiber and his wife Karin; in the background Michael Doppelmayr

Collaboration between Doppelmayr and the Vorarlberg Tourist Board

BUGA opened on April 28 and will run until October 9. For the "wonderful, summer-long garden festival" at the site of the old Munich-Riem airport, Doppelmayr and the Vorarlberg Tourist Board agreed to collaborate: some of our panorama gondolas feature Vorarlberg advertising posters. Vorarlberg is presented as a holiday destination on the lift tickets as well as on transparent banners in the queuing and waiting areas in the lift stations. Each ticket entitles the holder to take part in a prize draw in which two vouchers are to be won every month for a holiday in Vorarlberg.
The idea is to promote Vorarlberg as an efficient business location and a wonderful holiday region.

Visitors to BUGA 2005 in Munich enjoy a bird's eye view from back-to-back panorama cabins from CWA – the same gondola lift was used at the IGA 2003 in Rostock.

By 8-seater gondola to the white cloud mountain

Doppelmayr built a detachable 8-seater monocable gondola lift with level access in Guangzhou's Baiyun Park (Canton, PR China). This replaces a lower capacity 6-seater gondola installation of Chinese design dating from 1985.

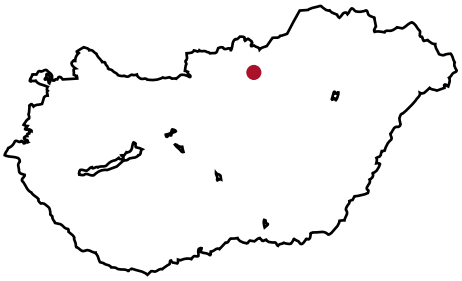
The ropeway provides access to the most well-known of the "eight sights" of Guangzhou: Baiyun Mountain, the white cloud mountain. Situated to the north of the city, the mountain is covered with copious forest and has many crystal-clear streams. And it is often enveloped in cloud – hence the name.

Baiyun Mountain is a popular local recreation spot. There is always something going on, but on Chinese Senior Citizens' Day, which according to the moon calendar falls on the 9th day of the 9th month, the place really starts to buzz. In Guangzhou the celebrations continue non-stop for three whole days. Thousands of people head for the top of the hill because legend has it that they will then become rich and enjoy a long life. The ropeway, which already runs for up to 14 hours on other days, stays open around the clock during this period.

The new gondola lift uses the adapted buildings and tower foundations of the old lift. It crosses a road and passes below the elevated highway to Hong Kong. The towers were supplied by a local company; parts of the support framework such as guideway, cross beams, platforms, handrails, etc. came from the Xingang shipyard in Tianjin, a proven subcontractor. The grip opening and closing lines, tire conveyors, the complete drive system and the return machinery are from Wolfurt. Doppelmayr-Sanhé took care of local project management, with assistance from Wolfurt provided by Alfons Mathis. The installation was headed by Bob Russell (from Australia), Frank Moses and Eddie Younger (electrical engineering, both from New Zealand). The work – including the dismantling of the old lift – was completed in two and a half months.

The high-capacity 8MGD with 39 CWA cabins of type OMEGA III-8-LWI in Guangzhou's much frequented Baiyun Park (Canton, PR China) replaces a Chinese 6MGD built in 1985

Doppelmayr builds Hungary's first modern ski lift



The sport of skiing may still be in its infancy in Hungary. Nonetheless, Doppelmayr/Garaventa has made a successful inroad into this market with the installation of the first modern surface lift in the ski resort of Matraszentisvan, one and a half hour's drive to the north-east of Budapest in the Matra mountains.

This contract is particularly significant as the Hungarian customer Digitroll KFT praised the way in which the project was handled as exemplary. Matraszentisvan lies at an altitude of over 800m and is a popular ski destination for day-trippers. The resort also has an old J-bar lift and a ski tow. The Doppelmayr surface lift has enhanced the attractiveness of the region for visitors from the capital to such an extent that the volume of skiers has increased dramatically, especially as the resort can offer trails ranging from "blue" to "black" in levels of difficulty:

The installation is 300m long; on peak days the queue stretches half way down the slope, the car parks are filled to the brim. – No wonder then that in view of this sensational success there is already serious thought being given to the possibility of follow-on projects. The new surface lift is a self-service installation with long platters. The hydraulic tensioning system and AC drive with frequency converter (37kW) are located in the bottom terminal, the fixed return terminal – which is 8m high because of the nature of the terrain – is at the top. The lift features an inclined length of 300m, a vertical rise of 61m and a transport capacity of 1400 PPH. Three towers were erected as well as a bridge which takes the track across the trail. The contract was awarded in summer 2003. The project was completed in December 2004. Installation was taken care of in just three weeks. The official approval was obtained without a hitch and cooperation with the customer was excellent.

The ski resort of Matraszentisvan attracts a flood of visitors. Further investments are expected in the near future.

The husband and wife team of Imre und Erika Körösi manage the ski resort as a family business. Their commitment and vision have been instrumental in its huge economic success. From left to right: Gernot Fischer (Doppelmayr Korneuburg), Imre Körösi, Robert Apschner (planner und freelance fitter), Erika Körösi, Laszlo Bellencsik (lift manager)

Kranjska Gora now even more attractive

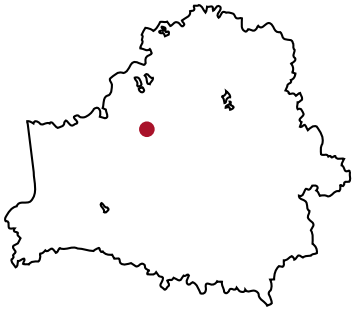
World Cup performers appreciate the new "Podkoren" fixed-grip quad chair lift from Doppelmayr, especially as it has enabled the competition run to be extended.

The little Slovenian town of Kranjska Gora with its 5000 inhabitants and 4000 hotel beds on the southern flank of the Karawanken is widely known as a ski resort; visitors are mainly from Austria, Germany and Italy. The ski region, which offers five chair lifts and 14 surface lifts, has now been enhanced by the addition of a 4CLF in the nearby village of Podkoren. The majority of these installations come from Doppelmayr/Garaventa.

The new 4CLF with loading carpet is not only used by ski tourists but also for competitions, including the World Cup giant slalom and slalom. The new ropeway has meant that the starting line for the giant slalom could be moved 80m uphill, thus taking advantage of the maximum vertical rise stipulated by the FIS to within five meters.

The ropeway has a transport capacity of 1200 PPH and a speed of 2.6 m/sec. The contract was handled by Doppelmayr Korneuburg, production and installation by Doppelmayr Wolfurt. The submission for the building permit had to include the complete foundation drawings; that was done in 2003. The order was placed in mid May 2004 and the lift was completed at the end of October following a two-month installation period. Doppelmayr supplied the mechanical ropeway equipment; the customer, RTC Kranjska Gora, took care of the electrical equipment.

The new 4CLF in Podkoren, Slovenia, is designed exclusively for uphill trips during the winter season.



CIS[1]: Skiing boom gains momentum

In the states of the former Soviet Union skiing is becoming increasing popular. Recently, Doppelmayr installed another two ropeways, this time near cities in Belarus and Tartarstan. These lifts are fixed-grip quad chairs.

Both ropeway installations were handled by the Doppelmayr company Skado in Samara with support from Wolfurt. It was in the industrial city of Samara, formerly closed to foreigners, that the famous Soyuz space rockets were produced.
Skado manufactures the steelwork and is responsible for customer contact, commissioning and service

Silichi – the state-built ski resort for everyone to enjoy

The lift in Belarus is the very heart of the "Republican Ski Center" of Silichi in the Logoisk district, not far from the capital Minsk. This ski resort was developed from scratch: as reported by the news agency BelTA, it took just six months to build five pistes, the chair lift, a 60-bed hotel, six small wooden chalets, a café, VIP lounge, car park, ski hire center as well as the power and water supply plus the snow-making installations. A snow-making capability is an absolute must

Belarus President Lukashenko during a visit to the "Republican Ski Center" of Silichi.

in the wide expanse of the western Russian ridge as the wind constantly blows

The expanse of low-lying hills in Belarus:
The top station in Silichi lies at 231m above sea level.

The ski resort of Almetjevsk belongs to the oil corporation Tatneft. The photograph shows CEO Shafagat Fakhrazovich Takhautdinov.

away the snow which is unable to settle because of the extreme cold. The President's decision to set up a state-run ski resort came in the wake of the great success of private ski areas and the fact that skiing has become enormously popular but was simply too costly for many Belarusians: the idea was that people on low incomes and large families should also be able to afford to ski.

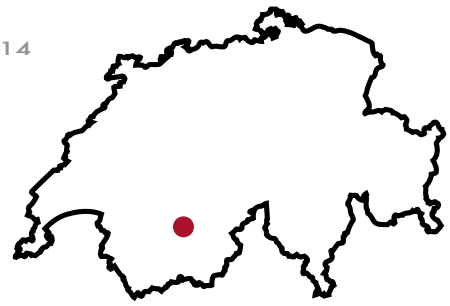
Almetjevsk - the ski resort owned by an oil corporation

In Almetjevsk, a large city in the Russian state of Tartarstan on the western flank of the Central Urals – in other words, in the European part of Russia – the private oil company Tatneft erected a ski resort. With a workforce of 31,000 people, Tatneft is one of the biggest oil corporations in the world, pumping 23 million tonnes of crude oil a year, and is majority shareholder in the large refinery in Nizhnekamsk.
The fact that alpine skiing should be so popular in both Silichi and Almetjevsk comes as something of a surprise as the region has only low-lying chains of sprawling hills. – But that in no way diminishes the enthusiasm. The sport of alpine skiing is growing in popularity and the ski centers within easy reach of cities are boosting this trend. That's why Valery Yashin, the Wolfurt-based salesman responsible for this area of the world, expects to see ski regions in Russia and the CIS expand sooner or later – and that includes both the large existing resorts and those which are now under construction. This view is borne out by current gondola and chair lift projects in the Caucasus, the Urals, in Siberia and in the Carpathian mountains.

[1] CIS = Commonwealth of Independent States: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan

Night skiing is particularly important in the vicinity of cities. (Pictured here: Almetjevsk)

Top station in Almetjevsk (right) at 180m. – Doppelmayr supplied the complete ski resort installations.



Crans Montana: new quad bubble for the "belle étage"

It is said that Crans Montana, which lies on an idyllic plateau high above the Rhône Valley looking out onto Mont Blanc, the Matterhorn and other Alpine giants, is one of the most beautiful sun terraces in the Alps. This is where Garaventa has installed a new detachable quad chair lift equipped with bubbles.

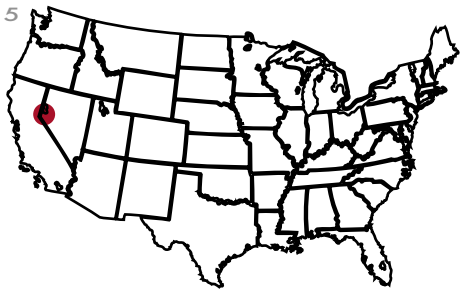
Crans Montana boasts 160 km of ski slopes and 39 modern lift installations. December saw the opening of the new Toula lift, a detachable quad bubble. It replaces a fixed-grip chair lift and a surface lift. Although the new ropeway does not have a garaging facility, the top station features a covered parking rail for approximately 14 chairs. Sometimes it is necessary to close down the lift in the event of very strong wind and drifting snow. The station enclosure is then sealed off by front shutters (comparable to a roller garage door) and the hanger guide rail is tightly closed from above by additional covers - all at the push of a button. This prevents the ingress of fine snow particles and consequently icing. As there is a risk of powder snow avalanches in the area of the bottom station, the surface area exposed to the wind had to be reduced to a minimum. A special control system ensures that a sufficient number of chairs can be removed from the rope so that a chair "gap" is produced around the bottom station. The chairs are positioned on the parking rail next to the top station so that there is no damage from air pressure if a powder snow avalanche occurs. Secondly, the tunnel station enclosure is reduced to an absolute minimum.

Specifications of the Toula lift	
Bottom station (return)	1985m
Top station (drive)	2548m
Vertical rise	563m
Inclined length	1467m
Travel speed	m/sec
Transport capacity	2400 PPH
No. of towers	15
ø Haul rope	44mm

Top station with parking rail for chairs. The chairs are attached to the haul rope by means of the CEN-compliant coil spring grips A-104-C.

Bottom station. The old Toula lift was replaced by a modern chair lift and extended by several hundred meters. This provided an attractive new trail and opportunities for freeriding.

6-seater chair lift at the flagship ski resort Heavenly



For the well-known US ski resort of Heavenly, which spans California and Nevada, expanding its infrastructure of comfortable, modern ropeways to include the new detachable 6-seater chair lift "Powderbowl Express" with UNI-G station has paid off, with the region attracting accolades from all sides.

With 91 trails, 30 lift installations[1] and extensive après-ski facilities, Heavenly ranks among North America's 20 top ski regions according to a rating by "SKI Mag" while "Men's Journal" considers it to be the "number one ski resort in the US". "The Good Ski Guide of Great Britain" sings its praises as the ski region with the highest number of infrastructure improvements.

The resort's fame and popularity mean that investments in Heavenly have a positive knock-on effect throughout the entire southern Tahoe region.

The Powderbowl Express on the Californian side of Lake Tahoe replaces two fixed-grip 3-seater chair lifts and acts as the main feeder in Heavenly's most popular ski area.

Installation got off to a relatively late start on August 1 but was completed on schedule on November 30. The work was performed by the Heavenly team headed by Garry Burch, Maintenance & Construction Director. The project manager at the Doppelmayr CTEC end was Russ Roselius. Approval by the Californian authorities was obtained swiftly thanks to the careful planning by Heavenly's planner Andrew Strain. For 2005, Heavenly has ordered another Doppelmayr CTEC UNI-G quad chair for the Nevada side of the ski resort.

Specifications of the Powderbowl Express	
Bottom return/tension station	
Top fixed drive station	
Vertical rise	242m
Inclined length	709m
Travel speed	5.08m/sec
Transport capacity	3400 PPH
No. of towers	11
ø Haul rope	43mm

[1] Almost all of them are from Doppelmayr CTEC

The customer Heavenly Resort, part of the Vail Resorts Group, is particularly impressed with the UNI-G concept.

Rapid assistance

Damage to the rope on the 75-passenger Schilthorn reversible tram in the Berner Oberland brought service to a halt on December 29, 2004. Although there was no immediate danger to the passengers, the repair took two months. – Thanks to the great dedication of Garaventa and rope manufacturer Fatzer, it was possible to curtail the envisaged downtime by two weeks.

That also significantly reduced the damage caused to operations because it was not just the Schilthorn tram, which acts as a feeder from Mürren via the intermediate station Birg to the Schilthorn, that was affected. Shutting down the third section also led to the partial closure of two mountain restaurants, two chair lifts and a surface lift as well as several descents – and all this in the peak season!

Rope outer layer damaged – but no safety risk

So what happened exactly?
The machine operator suddenly heard a loud bang and immediately stopped the tram. Looking out at the line, he discovered that several wires were protruding from a track rope below the station. A rescue operation was launched at once. Within two hours all 53 of the passengers had been evacuated from the cabin by helicopter. Soon afterwards it was found that the outer layer of the wire rope had been completely torn open. The rope in question had only been inspected in the April and had been approved for another three years. The new investigation came to the following conclusion: the surface of the track rope had already sustained physical damage in 1979 when it was relocated for the first time by approximately 25 meters after 14 years' service. In conjunction with moisture, this damage led to what is known as hydrogen-induced stress corrosion cracking. Eventually, the outer layer of the 40mm-thick rope frayed while the core remained intact.

Fitters positioning a pulley block.

"Garaventa is a reliable and competent partner you can depend on in any situation!" Satisfaction all round among the Schilthorn tramway management: Ruedi Lauri, Technical Manager, President Max Kopp, Peter Feuz, delegate to the board.

An incident of this kind had never happened before

The ropeway manufacturer was not at fault. As the Accident Investigation Office stated: "The damage which occurred during the relocation could not have been detected with the usual electromagnetic testing." And nothing like this had ever happened before. Nonetheless, the Swiss Federal Office of Transport has recommended that the country's 55 ropeway systems of this kind should be subjected to a visual inspection in the sections of track rope where similar damage might occur.

A truly breathtaking place to work!

Tremendous effort – you can rely on Garaventa

The fact that the tram was able to start up again on February 26 – two weeks earlier than originally scheduled – was not least thanks to the tremendous effort on the part of Garaventa. The repair work had already got underway within a few hours of the incident. A total of 160 tonnes of tools and equipment were flown in by helicopter. The ropes, wound on 2.7m-diameter reels, were transported to the base station in Stechelberg on low-loaders. A 40-tonne linear pulling machine was used for the first rope and for the second a hydraulic linear rope puller. In Mürren the ropes were rewound and then pulled up to Birg with two 25-tonne rope winches. In an interview with the Bern "Bund", one of the country's major daily newspapers, President Max Kopp had special praise for Garaventa's people: "The speed of the rope change was an absolute top achievement," he said.

EU Ropeway Directive – new approach

The single market is one of the great achievements of our time. This economic area, which allows the free circulation of goods, services, capital and labor, forms the basis for stability in the European Union.

The European Union developed solutions to remove the barriers preventing the free flow of goods, which included the concept for regulating products and assessing their conformity. Since 1987, over 20 directives on products based on the "new approach" have successively come into force.
One of these directives is 2000/9/EC relating to "cableway installations designed to carry persons" which is to be applied by all 25 member states with effect from May 3, 2004.

Basic idea is the free circulation of goods

According to the definition, a cableway installation consists of subsystems[1] and infrastructure[2]. The free circulation of goods is secured for subsystems and their safety components by assessing their conformity. "Notified bodies"[3] examine whether the components meet the basic requirements of the directive. They then issue a certificate of conformity and regularly check whether the product is actually manufactured in compliance with the directive. The manufacturer issues a "declaration of conformity" which tells the ropeway operator that the equipment supplied satisfies the requirements of the directive.

A "passport" for subsystems

The examination of the safety component "chair" is explained here as an example of an assessment of conformity. The chair consists of approx. 250 individual parts, each of which must be analyzed. This is done by means of a risk analysis. The result is the definition and implementation of measures and processes which exclude or at least reduce to an acceptable level all conceivable risks across the entire value chain – i.e. design, production, installation, operation and maintenance.
As a result of this assessment, we issue an EU declaration of conformity, a kind of passport for subsystems and safety components within the single market.

300 working hours for the documentation to be submitted for the DT-108 grip ...

Michael Mathis, who is responsible for implementing the CEN standards and integrating them into the quality management system at Doppelmayr, illustrated the enormous effort involved as follows: in the case of the DT-108 grip, for example, preparing the submission documentation for the assessment of conformity took 300 hours, despite the fact that comprehensive documents already exist.

... and 18,000 hours for the new sheave assembly

For the new sheave assembly it actually took us over 18,000 hours (in one and a half years) until production was authorized.

No free circulation for the infrastructure

For the infrastructure and the interfaces between infrastructure und subsystems, the member states are to define procedures to ensure that the basic requirements of the directive are met. This means there is no free circulation of goods for these elements.
Here again, safety analyses have to be performed[4], in which not only ropeway engineering considerations but also the areas of electrical engineering, safety technology, fire protection, geology, wind, avalanches and work safety have to be taken into account.
These analyses including the respective building design documentation are not examined by the notified body but by the author of the safety report[5]. In Austria, this safety report plus the relevant docu-

Michael Mathis, CEN coordinator in Quality Management at Doppelmayr: in 2004 Doppelmayr produced more than 1700 pages of risk analyses for safety components and subsystems, and attached three and a half thousand CE marks to safety components.

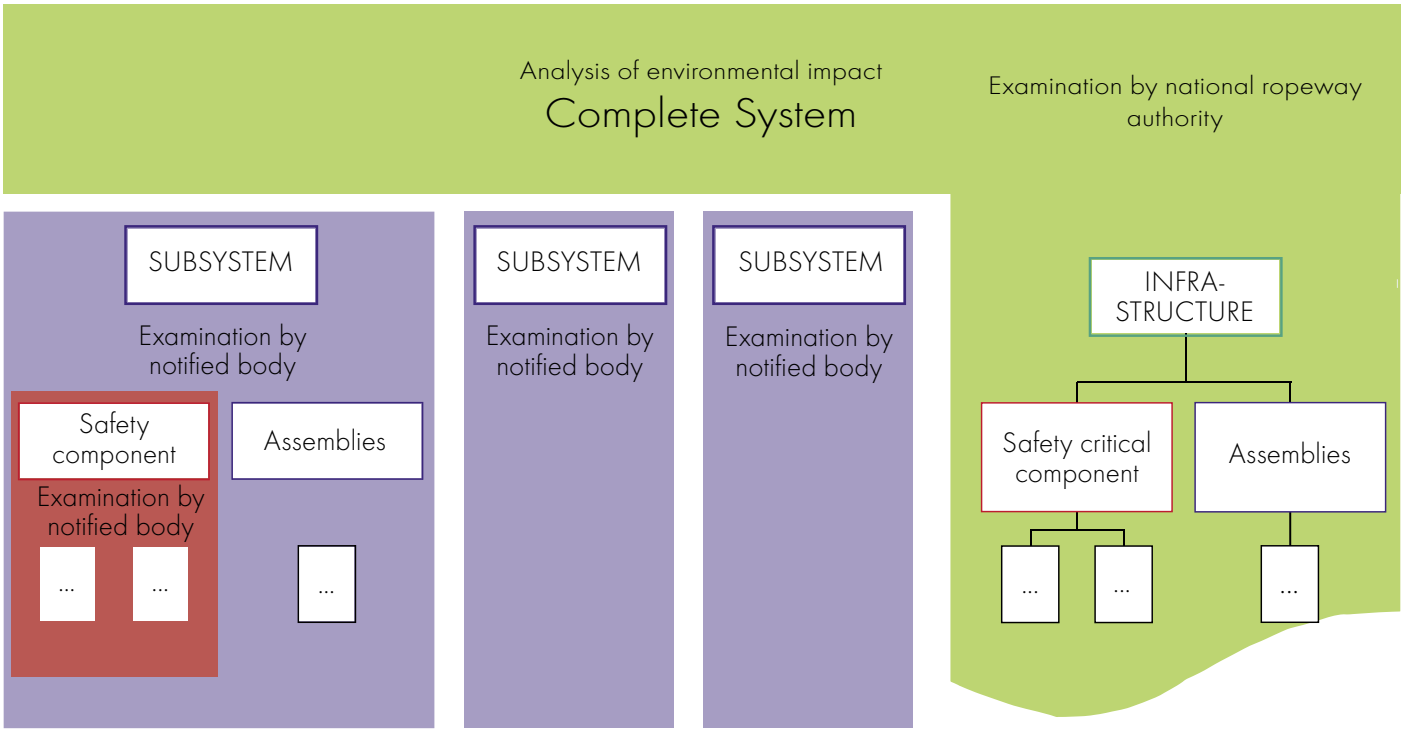
mentation is checked for plausibility by the supervisory authority. The relevant series of standards[6] forms the basis for the examination of both subsystems and infrastructure. If these standards are not met, the manufacturer must prove that the same level of safety is achieved by substitute measures.

And what happens with spare parts? Assessments of conformity also have to be performed when safety parts are involved. "Spare safety parts" which are manufactured exclusively for existing ropeways and cannot be used in installations complying with the directive are excluded.

[1] Cables and cable connections, drives and brakes, mechanical equipment, vehicles, electrotechnical devices, rescue equipment
[2] System data, liftline and the station and line structures required for the construction and operation of the installation
[3] These are independent institutions appointed by the member states. There are currently five in Austria.
[4] The directive states: "At the request of the main contractor … all planned installations shall be subject to a safety analysis."
[5] In Austria a ministry-appointed office was created to examine safety analyses and to issue the safety report. This office may not be the author of both the safety analysis and the safety report.
[6] For the ropeway directive there are 13 standards. Difference between directive and standard:
Directive – must be incorporated into national law;
Standard – technical tool to aid compliance with the law. The adherence to a standard is voluntary.

Division of Responsibilities

Safety Analysis



Interalpin: Great success

Interalpin in Innsbruck (April 6 – 8) lived up to its reputation as the world's biggest exhibition for alpine technologies. It attracted 15,000 visitors from 50 nations who came to see the presentations of 280 exhibitors from 20 different countries. The Doppelmayr/Garaventa stand received an enthusiastic response from customers and prospects.

In brief

Tremendous media attention for the 3S in Kitz. The 3S ropeway in Kitzbühel attracted tremendous attention from the media: TV, trade and travel journals as well as newspapers from around the globe – including well-known newspapers and magazines from Germany, the UK and all the other large countries – provided extensive reports.

WIR – the industry's top circulation magazine. Did you know that Doppelmayr/Garaventa's "WIR" has a circulation of 7,500 which makes it the ropeway magazine with by far the highest circulation in the world? It is currently printed in German, English, Italian and Russian, and is also available online (www.doppelmayr.com – then go to "News" and "Customer Magazine").

Contemporary internet presence. The results so far are impressive and have met with a positive response from all our customers: our internet presence is seen as modern, clearly laid out, informative and well-suited to our organization.

Proprietor, editor and publisher: Doppelmayr Seilbahnen GmbH A 6961 Wolfurt • Editing, graphics and layout: WIR Public Relations Wolfgang M. Wagenleitner • www.wirpr.at