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OITAF 2024

Promoting sustainable development

In this issue of UP, we are jointly heading for new heights – in the truest sense of the term. We report on our projects around the globe, with spectacular photos from Singapore and Sweden, for example. Malaysia will also soon be flying high with the construction of the Penang Hill Cable Car due for completion in 2026.

Find out more about exciting topics that move the Doppelmayr Group: from high-bay warehouse solutions with wooden racking, the LTW City and international ambitions for urban transport to brand-new records.

The subject of sustainability also finds its place in this issue. Two particularly interesting features in this context are a study looking at the gondola lift at the German Federal Horticultural Show in Mannheim, and a report on how our customers are addressing the topic of energy.

Once again, we have a wide range of articles in store for our readers, covering tourism in the mountains, technology and news from the Doppelmayr Group. We provide insights into installations that have already been completed as well as an outlook on upcoming projects that we hope you'll find just as exciting as we do. We look forward to jointly tackling new challenges in the future and to arriving at the best solutions with proven technology and innovative ideas. With this in mind, we wish you an enjoyable read.



Gerhard Gassner

Michael Köl

Thomas Pichler

Arno Inauer

Executive Board
Doppelmayr Group Management

A whole new ride experience

To mark its 50-year anniversary, Singapore Cable Car unveiled a special attraction this year: the SkyOrb cabins. The world's first chrome-finished spherical cabins bring guests from Mount Faber on the Singapore mainland to the vacation island of Sentosa. The seven futuristic cabins manufactured by CWA in Switzerland offer unforgettable views thanks to large glass windows at the sides and glass-bottomed floors. Each of these pods provides room for six passengers and takes the gondola experience to a new level.



More info















Availability



Operational efficiency



Safety



Comfort

The benefits of a control system upgrade

Existing installations are effectively safeguarded thanks to full access to spare parts and support. That means less downtime and therefore continuous operations. The consequence is a positive impact on the availability and operational efficiency of the ropeway installation. The Connect control system also brings noticeable improvements in terms of handling and comfort. Ergonomically optimized control panels and well-conceived visualization in terms of colors and layout make life easier in day-to-day ropeway operations. In addition, the system uses cutting-edge technologies for monitoring and shutdown. That enhances the safety of the installation. Particularly in areas with multiple ropeways and frequently changing personnel, a standardized operating concept is also a great relief for employees.

Utilizing synergies

As part of any control system upgrade, Doppelmayr experts will analyze the ropeway installation as a whole and automatically test its fitness. Because modern technologies provide different possibilities for optimizing the installation above and beyond the control system upgrade itself. The goal of these measures is to utilize synergies whenever necessary and to proceed cost-effectively in the interests of the customer. One example is the drive technology. Converting the drive from DC to AC can improve efficiency and performance as well as reducing maintenance requirements. That increases the sustainability of the installation. The line equipment also offers potential for effective improvements. An example here is the RPD Nexo system for rope position monitoring. This allows any rope deviations to be identified at an early stage, preventing consequences that are costly and affect safety.

A step in the direction of autonomous mobility

In the case of chairlifts, converting to the Connect control system also lays the foundation for autonomous mobility. This changeover creates the basis for AURO (Automated Ropeway Operation) and makes retrofitting at a later date significantly more straightforward. Modern integrated technology enables AURO lift installations to run without operating crew in the top station. CCTV cameras and sensors guarantee smooth operations as they monitor the lift and passenger unloading in particular. Nonetheless, human assistance is not dispensed with entirely. One operative in the Ropeway Operation Center (ROC) has a full overview of ropeway operations at all times – the perfect synergy of human and machine.





AURO für chairlifts features Al-assisted image processing, which makes it possible to analyze and evaluate image and video data in real time, and trigger automatic responses.



Matthias Dengg Board Member Zillertaler Gletscherbahnen GmbH & Co. KG

»We chose Connect in order to safeguard the future availability of our ropeway. Thanks to the advice provided by Doppelmayr, we were also able to optimize our loading and unloading intervals. That was a small intervention with a huge impact in terms of passenger comfort.«

Project

4-CLD/B Nordhang, upgrade in summer 2022

Upgrades

Replacement of control system including power converter

Additional measure

Optimization of boarding and disembarkation speed as well as parking system

Result

Greater passenger comfort, fewer shutdowns and saving in personnel requirements for carrier launch and parking 3,517 employees worldwide

1,697 of which in Austria

11.81% growth in sales revenues

1,05

million euros annual sales revenues The Doppelmayr Group closed a very successful 2023/24 business year with sales revenues up by 11.81% and a 5.7% increase in headcount.





All information on the 2023/24 business year can be found online.

Visionary direction for New Zealand

In many parts of the world, urban ropeways are an important part of local transit networks. Doppelmayr shows how they could also make a decisive contribution to improving traffic flows, increasing sustainability and enhancing quality of life in New Zealand.

The starting point in New Zealand is clear. The country's major cities are experiencing constant growth and consequently increasing levels of traffic. The existing infrastructure is becoming more and more overloaded. This, in turn, leads to longer traveling times and greater

dissatisfaction. In order to address this situation, the road systems would have to be expanded. However, that is expensive, time-consuming and usually leads to further increases in traffic. In view of plans for continued growth in cities, there is a need for new, visionary transport solutions.





Ropeways can solve several of the major traffic problems confronting cities – including congestion, air and noise emissions. At the same time, they act as a link between places where we work, live and enjoy spending time.

»Unlike existing modes of transport, ropeways open up new possibilities by utilizing an independent level.«



Ropeways offer many benefits

The transport turnaround can only be achieved if the offer provides high service quality and is designed to be suitably attractive for users. Ropeways have the distinction of exceptional benefits, particularly as part of a multimodal mix - as already demonstrated by examples in Mexico City, Portland and soon in Paris also. They could resolve many of the challenges confronting public transport in New Zealand's cities. Unlike existing modes of transport, ropeways open up new possibilities by utilizing an independent level. They offer passengers a highly frequent service with safe, reliable travel and fast, direct routes, making them a comfortable and attractive alternative. They add to the existing transport network and close gaps. The additional benefits of ropeways include the comparatively lower costs - operating costs are 40 percent less than for buses -, the shorter construction time, the minimal carbon footprint over the entire lifetime of the system, and the high energy efficiency.

Analysis shows potentials

In collaboration with local partner Abley, who are consultants for transport design and engineering, Doppelmayr New Zealand analyzed the situation on the two main islands in the southwest Pacific. The result: "Ropeways can meet several of the major transport challenges facing New Zealand's cities, and the overall benefits of ropeways are considerable." The analysis identified twenty locations in six cities where this public transport solution makes sense. Doppelmayr targeted ten options for a more detailed assessment. The experts initially placed the focus on a ropeway route from Auckland Airport to Botany town center to relieve a major arterial road. Doppelmayr has presented its project ideas to the New Zealand government with a view to sustainably improving public transport in the future and raising greater awareness among decision-makers for the urban ropeway and the benefits it offers. Because the potential would be huge.

Ski tourism has a future

Günther Aigner is a researcher and management consultant in the field of alpine ski tourism. In his guest opinion, he reports on the global situation for skiing today and some of the key challenges up to the year 2050.

In the German-speaking region, ski tourism seems to be facing an image crisis. The reasons for this include climate change, growing ecological awareness and the idea that skiing is a luxury sport. In some cases, however, there is such a spectacularly wide gap between perceptions and empirically verified facts that it is worth taking a closer look.

Let's begin with the global number of skiers. In German-speaking countries, the general opinion seems to be that fewer and fewer people are skiing. And soon they will stop altogether. The facts, however, are diametrically opposed. According to the Swiss researcher Laurent Vanat, there are around 150 million skiers worldwide in 2024. This means that today there are more skiers than ever before in the history of humanity. The growth markets are in the USA and Asia. While Asia hardly comes as a surprise, the current skiing boom in the USA is remarkable as the biggest market in the world for ski tourism - the USA - is also the most expensive. Nevertheless, we are currently seeing dynamic growth. Premium and growth therefore appear to be perfectly compatible.

Snow reliability in 2050

These remarkable figures could certainly lead one to take an optimistic view about the future of skiing - if it were not for climate change. Because snow and cold temperatures will soon be a thing of the past, won't they? Or shouldn't we also start following the science when it comes to climate? The Austrian climate scenarios from 2015 (ÖKS15) present the current status of scientific knowledge. By 2050, winter temperatures are expected to increase by another 1.4 degrees Celsius. This corresponds to a roughly 200-meter rise in the snow line. According to the renowned Innsbruck scientist Robert Steiger, in a worst-case scenario - which is also what motivates the activists from the Last Generation (climate movement) - 80 percent of current Austrian ski resorts will still be snow-sure in 2050. This calculation is based on today's possibilities for technical snowmaking. In the event of improvements in snowmaking in the next three decades, that figure could actually rise.

Figures relating to technical snowmaking

This means that, in all likelihood, we shall still have snow in 2050. But there's another bigger problem: Skiing – and, above all, technical snowmaking – has far too large an ecological footprint. That's one of the most well-known and decisive prejudices against skiing.

However, the latest research results (preliminary findings from Günther Aigner's doctoral study at the University of Innsbruck) show the following figures for snowmaking in Austria:

- Total energy requirement: 273 GWh.
 This is the equivalent of 93,000
 Austrian households or 0.44 percent of Austria's total electricity requirement.
- Water requirement: 44 million cubic meters. This corresponds to 0.045 percent of Austria's annual precipitation. Once the snow melts, this water returns to the natural water cycle in its entirety and remains drinkable. The water required for snowmaking is therefore an example of a functioning circular economy.
- CO₂ emissions from snowmaking: 2,831 tons. If we include the ropeways and lifts in this calculation, we arrive at a footprint of 8,400 tons. This equates to one ten-thousandth of the annual CO₂ emissions in Austria.

Skier visits per season in the USA Skier visits 54.4 million skier visits (in millions) per season on average 70 60 50 40 30 20 10 0 994/95 2018/19 66/866 2002/03 2006/07 2010/11 2014/15

Günther Aigner taking snow measurements in Zürs am Arlberg, Austria's snowiest winter sports resort.



If one person spends a day skiing in Austria, the carbon footprint for snow-making is 54 grams, which corresponds to a 0.4-kilometer trip in a diesel automobile. This clearly shows that it's not snowmaking that is driving carbonization but traffic. As with every form of tourism, it is the travel to and from the resort that provides the drawback for emissions, but not the actual skiing itself. In my view, what we see here is a spectacular mismatch between perception and scientific facts.

Consequences for flora and fauna

Even the widely held prejudice regarding the negative impact of skiing on alpine flora and fauna rests on very shaky ground. The latest studies give us good reason to believe that snowmaking and snow grooming obviously have no significant negative impact on the flora and fauna of green slopes and meadows. Skiing is not as bad as sections of the public assume. We need to start doing a better job of informing public opinion. We must try to turn around the public debate about skiing. Ski tourism has to start tackling the difficult discussions instead of ducking away from them. It can leave the political discussions to the NGOs, which have worked well and done their job astutely over the past decades.

Günther Aigner

(* 1977 in Kitzbühel) founded his company ZUKUNFT SKISPORT in 2013 and is regarded as a link between the field of academic-scientific thinking and alpine tourism practitioners. Aigner returned to the University of Innsbruck in 2021, where he is a PhD candidate (doctorate in management), closing the circle to academic research. As a keynote speaker, he gives talks at home and abroad, and passes on his knowledge as guest lecturer at universities in Europe and Asia. He also takes part in public and media discussions in his role as expert.

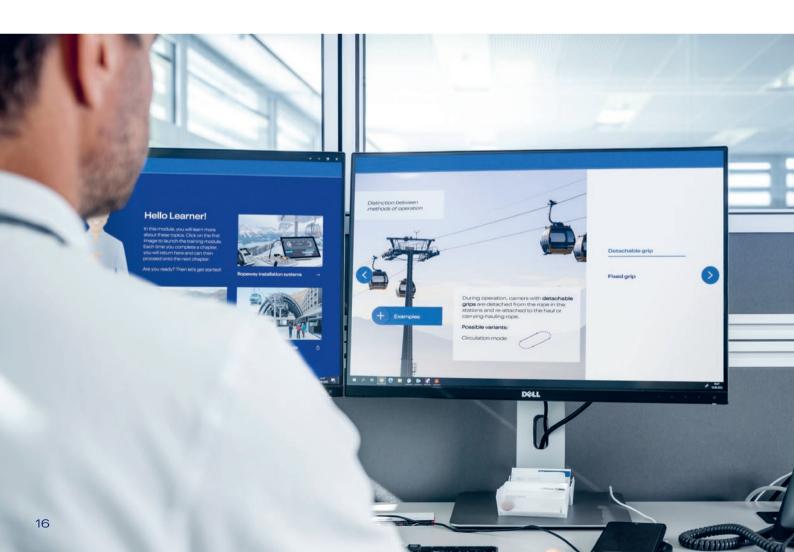


Günther Aigner on YouTube: ZUKUNFT SKIFAHREN



Doppelmayr digital training internationally in demand

Thanks to the digital training offer, ropeway engineering know-how is available any time, any place – and now internationally as well.



Customer Support

In April 2024, Doppelmayr launched its digital training offer for ropeway personnel in the German-speaking region. This enables operating companies to take their training processes to the next level. The web-based knowledge transfer combines high-quality ropeway engineering knowhow with modern learning concepts that users can accomplish on their own and at their own pace. On completion, participants receive a personal certificate that also provides proof of training for operating companies. This success model is now being made accessible to additional markets.

Go-ahead for North America and Italy

Two major topics on the agenda at this year's OITAF congress in Vancouver, Canada, in June were ropeway personnel and digitalization. It is becoming increasingly difficult to recruit and retain well-trained staff. For this reason, continuous education and training is hugely important and in some countries is also stipulated by the authorities. Above and beyond any statutory requirements, the topic of personnel qualifications is highly relevant in terms of passenger safety and system availability.

Industry-wide solutions, in contrast with individual approaches, offer great efficiency and optimization potentials. Doppelmayr has therefore extended its training portfolio to include digital courses and is opening this up for more markets. The offer is now available in North America with immediate effect, and operating companies in Italy can look forward to a version in their local language by the 2024/25 season. Additional markets are already in the pipeline.



FAQs

Does the training only apply to Doppelmayr D-Line installations?

The current digital training portfolio can be used irrespective of ropeway system, control system and manufacturer. The focus is on the acquisition of generally applicable ropeway engineering know-how and helps operating personnel to ensure safe passenger operations.

Can I complete a purchased training module in different languages?

In the German-speaking market, you can choose between German and English. The selection can be changed at any time during the learning process.

Do participants have to pass a test for the certificate?

Customers can decide this themselves. If required, the certificate can be issued without a test and confirms successful participation in the digital training course Try it out online now





Unprecedented in the company's 130-year history: No less than 48 apprentices have begun their training at Doppelmayr in Wolfurt and are now part of the team at the Group's biggest production plant. "Further development is very much a key topic for us," says Doppelmayr managing director Gerhard Gassner. "That applies not only to our products but also to us as a company. That's why we continuously invest in our apprentice training to make sure our apprentices are given the best possible conditions for their development. We're very proud of the fact that this engagement pays off and that so many youngsters have decided on Doppelmayr."

To help the apprentices and their instructors get to know each other better, they took part in a varied induction program on the Hochjoch and Golm – mountain breakfast, gravity cart rides and forest slide park were all included. The apprentices' parents joined them on the first day and also gained valuable impressions of their children's apprenticeships at Doppelmayr.

Top-trained specialists for demanding tasks

But Wolfurt was not alone: The Garaventa sites in Goldau and Uetendorf also welcomed a total of 13 new apprentice-ship recruits. "The ropeway industry is developing rapidly and therefore offers exciting opportunities for young talents," says Garaventa CEO Arno Inauen. The company relies on top-trained specialists

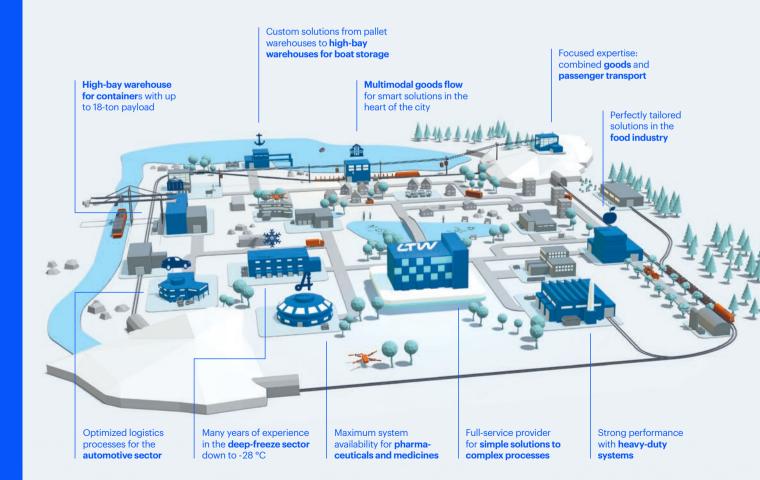
when it comes to implementing its challenging projects and continues to invest heavily in the development of tomorrow's experts. There have also been two new faces at Gassner Stahlbau since the beginning of September, and one new apprentice started at Carvatech. Eight youngsters are currently undergoing their training at Frey Stans; two of them joined in 2024. The CWA team is now training a system and apparatus builder, a logistics administrator and, this year for the first time, an IT specialist. There is also good news from Italy and the USA: Since October, Doppelmayr Italy has nine new apprentices - more than ever before. And in the USA, apprentices have been taken on for the first time. Check out the next issue of UP Magazine for a report on this development.

LTW/ City

We are all used to having the things we need every day at our fingertips. Whether it's an apple from the supermarket, a T-shirt from an online store, or medicine from the pharmacy. This is all made possible by sophisticated processes running in the background, which largely remained hidden for the end consumer.

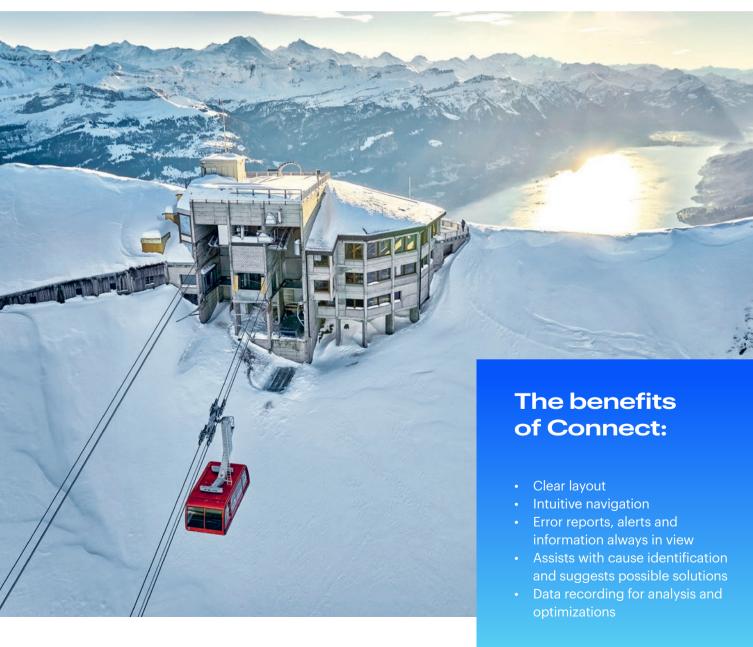
As a full-service provider for intralogistics, LTW is an essential building block in a functioning supply chain. The experts for intralogistics solutions with highly automated goods flows move all kinds of products on a daily basis. LTW City illustrates the complex relationships between logistics systems and highlights the fact that efficient material flows play a major role in and positively impact everyone's lives. Because the smart ways in which we move people and goods play a decisive role, both today and in a connected future.





First aerial tramway with Connect control system

The reversible aerial tramway Sörenberg-Brienzer Rothorn in Switzerland is the first ropeway of its kind worldwide to be equipped with Connect, the cuttingedge control system from the Doppelmayr Group.



Project



Lower terminal of the aerial tramway Sörenberg-Brienzer Rothorn

Until now, the innovative control system Connect with intuitive navigation was only available for Doppelmayr's continuous-movement ropeways. Frey Stans, the competence center for aerial tramway and funicular control systems within the Doppelmayr Group and based in central Switzerland, has now developed Connect for these types of ropeways. The latest generation of this control system is being used for the first time on the aerial tramway Sörenberg-Brienzer Rothorn near Lucerne. A key feature of Connect is a standardized operating concept across all the various ropeway types. Connect enables central control and monitoring of the ropeway installation from an operating point of choice (station or vehicle). The system is equipped with CCTV cameras in the platform area and in the vehicle as well as intercoms to allow unmanned operation.

New tram climbs tallest mountain in canton of Lucerne

But this was by no means the only new feature on the aerial tramway Sörenberg-Brienzer Rothorn. As part of the modernization, Garaventa also ensured a faster and more efficient ride experience. An 80-passenger tramway has linked Sörenberg with the canton of Lucerne's popular tallest mountain, the Brienzer Rothorn, since 1971. After more than 50 years' service, the time had come to replace the tramway. In addition to the control system, the drive, towers, ropes

and cabins were replaced. The alignment and tower positions remain unchanged. The station infrastructure has been given an architectural facelift and rebuilt to meet today's requirements in terms of operations and passenger flows. In line with the retrofit concept, some assemblies from the original installation, such as the roller chains, counterweights and cabin guides, were retained and integrated into the new ropeway equipment. The new cabins supplied by CWA enable efficient operations thanks to the double sliding doors on both sides and significantly shorten boarding and disembarkation times.

- Standardized operating concept across all ropeway types, both in the control room and on-board the vehicle
- Mobile application with tablet for maintenance work
- Emergency drive operation visualized with Connect
- Deactivation concept with up to 180 deactivatable points
- Harmonized terminology, mimic diagrams and documentation

- Same spare parts for Connect across all ropeway systems
- High material availability within the Doppelmayr Group, safeguarding optimal spare parts availability for short delivery times

Further information on the Connect control system can be found on page 6 ff.



Skyline Luge delights Kuala Lumpur

A quad chairlift from Doppelmayr takes visitors to an action-packed cart experience.

The Skyline Luge Park recently became the number one adventure attraction in and around Kuala Lumpur, the Malaysian capital. Because this high-speed luge experience can be found nowhere else in the country. Skyline Luge started out in New Zealand in 1985 and is now present in another four countries: Canada. Singapore, South Korea and now Malaysia too. The Park promises action with a specially designed luge cart that is part go-kart, part toboggan. Every driver has full control of their speed. Visitors have a comfortable Doppelmayr chairlift to take them to the start of the track. The almost 140-meter-long lift climbs nearly 40 vertical meters and provides a fantastic view of the race tracks and surrounding area during the trip.

Relaxing uphill trip, fast ride down

As in the case of toboggan runs, guests whiz down the track in three-wheeled carts along extended straight sections and around tight bends. Kuala Lumpur's Skyline Luge boasts a 160-meter tunnel system that includes the world's longest luge tunnel at an impressive 52 meters. There are four distinct luge tracks totaling 1.6 kilometers of downhill fun and offering everything from a leisurely ride to an adrenaline rush. Once drivers arrive at their destination, there's no need to worry about finding their way up again. They can sit back and relax as the chairlift takes them and their luge carts back up to the top for the next adventure. Night trips are a special highlight, when the Park is immersed in all sorts of colored light moods.

138 m Inclined length

38 m Vertical rise

1,787 PPH
Capacity

1.1 m/s Speed







Greater comfort on the uphill ride

The new 6-seater chairlift in Lindvallen increases capacity and makes for greater sustainability.

1,490 m

293 m Vertical rise

2,400 PPH
Capacity

6.0 m/s

As of this year, the Söderåsen Express at the Swedish resort of Lindvallen offers greater comfort for passengers. It replaces a quad chairlift built in 1988. Equipped with seat heating and bubbles, the new 6-seater chairlift belonging to the D-Line ropeway generation brings passengers up the mountain with greater comfort and speed. Another bonus for guests is the new alignment. The bottom station is now easier to reach for arriving winter sports enthusiasts, and the top station has been placed in a wind-sheltered position. This considerably reduced the distance to be covered on foot in order to reach the slopes. The increased transport capacity of 2,400 passengers an hour facilitates a faster start to a day's skiing as well as cutting waiting times.

Important contribution to sustainability

With the new chairlift, Scandinavia's biggest ski resort operator SkiStar AB has met its own goal of boosting guest satisfaction, as mountain vacations in Lindvallen are very popular. At the same time, there is a growing emphasis on the question of sustainability. SkiStar opted for the energy-efficient and gearless Doppelmayr Direct Drive (DDD) with two rings. "Helping our guests to make a more sustainable journey to our ski resorts is an important part of our sustainability strategy," says SkiStar's Chief Sustainability Officer Fanny Sjödin. "With the DDD drive concept, this installation provides the perfect fit with our goal of halving our impacts on the climate by 2030."

»The industry is looking for sustainable solutions«

Manuel Lutz became executive director of the Vitalpin Association in May 2024. In an interview, he reports on the goals of the association and his perspective on the relationship between tourism and sustainability.



What is Vitalpin exactly and what goals does the association pursue?

As opinions about tourism have turned negative in some cases, Vitalpin was founded to act as a bridge builder between tourism, NGOs and the population. The association is non-profit, non-political, internationally active and sees itself as an editorial service and communications consultant. Vitalpin brings together one million people and businesses in the Alps, who live from and alongside tourism, and who depend on a functioning tourism sector. We want to reach out to the population with factual contributions using social media, our podcast series "Be/r\gegnungen" (mountain encounters) and traditional media. For the latter, we also act as a service, providing information across countries and sectors.



Manuel Lutz has a degree in international business and economics from the University of Innsbruck and specialized in international marketing and management at the University of Siena. Following an internship in Milan, Lutz took up the post of editor at the "Tiroler Tageszeitung" in 2019. Since May 2024, the 33-year-old has been the executive director of the Vitalpin Association.

In your view, how has tourism changed in the alpine region over the past 20 years?

As in many other sectors, climate change has strongly impacted and changed tourism in the Alpine region in recent decades. In low-lying areas in particular, there are frequently concerns about whether ski resorts can continue to exist in the future. Up to now, the industry has mastered all these challenges extremely well and is constantly looking for new, sustainable solutions and concepts. It's remarkable how everyone in the Alpine region is pulling together. Especially if we look at the ropeway sector, the fact that they've been able to save 20 percent in energy in the past ten years is very exemplary. And also, the fact that cutting-edge snowmaking equipment on 80 percent of Austria's entire ski trail surface area has guaranteed perfect skiing operations through to the end of the season is tremendously important and provides assurance.

Better, faster, greater comfort – guests expect tourist infrastructure to meet ever higher standards. How can that be married with the aspiration of more sustainability?

Efficiency is not only important for guests, but also in our daily lives. And that applies worldwide. Acting efficiently is also frequently much more sustainable at the same time. A new ropeway can be optimally designed to suit given requirements and therefore bring more guests to the summit in less time. An additional PV installation integrated on the roof, for instance, produces renewable energy and can cover a large proportion of the energy required by the ropeway – a win-win situation. This allows further development and sustainability to be readily combined.

To what extent do you consider the guests and to what extent the businesses and providers to be under an obligation to make sustainable tourism work?

Guests from neighboring countries who choose a vacation in the Alps over a long-haul trip to the Maldives, for example, have already taken their first step in the direction of sustainable tourism. In terms of those working in tourist regions, offering local products with short transport routes and relying on renewable energies are the right measures. What is clear is that sustainable tourism can only work if it's the goal of all the parties involved.

What do you yourself see as the biggest challenges facing alpine tourism in the coming years?

A lot must and will change in the area of mobility. Public transport options need to improve when it comes to traveling to tourist destinations. The biggest problem is usually the last mile. More and more regions are therefore relying on transfer services to make this more attractive and quarantee a comfortable arrival. At the resort, there's a well-developed local transit network thanks to tourism. To take a case in point, it's worth taking a look across the border in South Tyrol. When guests check in, they get the new South Tyrol Guest Pass on their smart phone and can then use all forms of public transport throughout South Tyrol for the duration of their stay. Schemes like these provide the right incentive and are the be-all and end-all of sustainable tourism. Furthermore, environmentally friendly activities should take priority at the vacation destination. The focus must be placed on taking the ropeway up the mountain in the summer for a magnificent circular hike or for climbing a rock face, and carving on the marked ski trails in the winter. That way, you'll be contributing to soft tourism in the Alps.



Read the full interview online to discover the challenges that lie ahead for tourism in Manuel Lutz's view and the benefits of the knowledge platform "VitalpInsights".



655 PPH
Capacity

8 Towers 2,747 m Inclined length 909 m Vertical rise 5m/s Speed

Solar-powered ropeway to the Zwölferhorn

An energy-autonomous ropeway climbs the local mountain in St. Gilgen am Wolfgangsee.

Sustainability

"We have achieved a world first with this project: It's the first time that an energyautonomous ropeway climbs a mountain," says Zwölferhorn managing director Arthur Moser with pride. The 8-passenger D-Line gondola lift brings guests up to the Zwölferhorn in St. Gilgen, high above Lake Wolfgang (Wolfgangsee). Since 2020, the lift has shone in a new splendor and, since summer 2024, it has been powered by green energy - solar power, to be exact. In addition to installations on the roof of the bottom station, this has been made possible by installing a photovoltaic system on the south-facing slope of the top station as well as a battery storage system. The impressive 879 kWp output of the PV installation means that more than 90 percent of the lift's annual power requirement can be covered by solar power. From April through September, the lift can be powered entirely autonomously - also thanks to the installed battery storage

system with capacity for roughly one third of the energy generated. Surplus energy is stored in the battery and benefits the municipality of St. Gilgen. The installation started up in test operation on June 21, 2024. The operating company was delighted with the initial data, which exceeded expectations.

Reference for sustainable tourism

"Demonstrating that a sustainable development in the tourism sector can work is something that is very close to my heart, and we have certainly succeeded in doing that on the Zwölferhorn," says managing partner Dkfm. Mario Stedile-Foradori with great satisfaction. With the conversion to renewable energies, the PV installation on the Zwölferhorn will save 190 tons of CO₂ annually, the equivalent of planting 3,500 new trees every year.



Dkfm. Mario Stedile-Foradori, managing partner, and Arthur Moser, Zwölferhorn managing director, at the project presentation in St. Gilgen.



PV installation overview

879 kWp Rated output

766 kW Bottleneck output

2,044 Modules

211 tCO₂ emissions saved

New pathways to Spain's highest volcano

Solar power makes the trip up to the Pico del Teide an eco-friendly experience.



~ 330 PPH Capacity

3,555 mTop station elevation

2,500 m

Inclined length

1,200 m

4

Towers

8 m/s

Sustainability







The Pico del Teide aerial tramway generates carbon-neutral energy with PV installations on all building roofs. The ESFOR system is used to store the energy.

At 3,715 meters, the Pico del Teide volcano on the Canary Island of Tenerife is Spain's tallest mountain. For over 50 years, a reversible aerial tramway from Garaventa has provided access to the summit. Diesel engines originally supplied the energy required to climb the 1,200 vertical meters between the lower and upper terminals. Back then, it was not possible to run a medium- or high-voltage line through the national park which, due to its high alpine and isolated location, can be referred to as an island within an island. This was not an optimal situation for the nature reserve that was named as a UNESCO World Heritage Site in 2007 thanks to its diverse vegetation and fauna as well as its special geological and landscape features. A milestone has now been achieved with the tramway modernization.

PV installation replaces diesel engine

525 photovoltaic modules on the roofs of the tramway buildings have been providing the energy required for operations since summer 2024. But the road to achieving this was paved with numerous challenges. The tramway's energy consumption is subject to strong fluctuations - depending on cabin location - between top values exceeding 300 kW and virtually zero. In addition to the high mountain elevation, these fluctuations posed the greatest challenge. As connecting the installation to the island's power grid was not an option, the experts developed a smart microgrid that is able to cover requirements effectively and reliably.

ESFOR is a game changer

The ESFOR (Energy Storage System For Ropeways) system developed by Frey Stans plays a key role in the smart microgrid. This technology uses lithium titanate (LTO) batteries, which are able to withstand fast charging and discharging without impacting their service life. ESFOR manages energy consumption and ensures that the rest of the microgrid does not have to absorb disruptions caused by the tramway. A diesel engine is now only kept to provide the power supply during maintenance work and in an emergency. This conversion to the use of solar energy in an isolated system has made the Teide tramway a pioneer in the area of energy management. In addition, the project shows how modern technologies can help to preserve the environment and provide a source of inspiration for future projects.



Sustainability



Darmstadt University of Applied Sciences carried out a sustainability assessment focusing on three different aspects that are particularly important in transport design and the mobility experience: social, economic and ecological.

Darmstadt University of Applied Sciences investigated the sustainability of the gondola lift at the Federal Horticultural Show in Mannheim.

The results of the study are clear: When compared with hypothetical diesel and electric bus alternatives for carrying visitors at the 2023 Federal Horticultural Show (BUGA) in Mannheim, the ropeway was shown to be the most sustainable solution. This emerged from a study conducted by Darmstadt University of Applied Sciences. It means that as well as proving to be a visitor magnet at BUGA, Doppelmayr's ropeway serves as an example of how this mode of transport can contribute toward sustainable urban mobility. The green-electricity-powered ropeway connected the Spinelli and Luisenpark exhibition sites in Mannheim, which lie two kilometers apart. Over a period of 178 days, three million passengers were carried by the detachable gondola belonging to the D-Line generation with 64 barrier-free OMEGA V cabins, each providing room for 10 passengers.

Social, economic, ecological

The link using an independent and unhindered transport level made it possible to cross the Neckar and other obstacles effortlessly. In their sustainability assessment, the researchers at Darmstadt University of Applied Sciences focused on three different aspects: social, economic and ecological. The ropeway scored in all three categories. Bottom line: The ropeway in Mannheim has proved itself to be a socially attractive, rapidly installed, cost-effective and environmentally friendly mode of transport.





Fascinating new tramway in Schnalstal

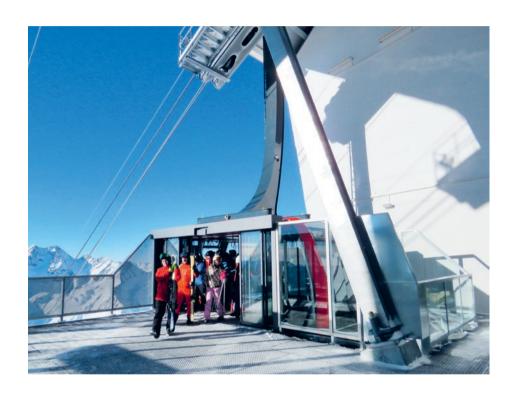
The aerial tramway up to the glacier boasts several special features.

2,141 m Inclined length

1,181 m Vertical rise

10 m/s Speed

800 PPH
Capacity



With its striking red cabins, the reversible aerial tramway from Kurzras (Maso Corto) in South Tyrol's Schnalstal (Val Senales) up to the glacier at over 3,200 meters now shines in a new splendor. This feature is reminiscent of its predecessor, which was erected as part of a pioneering project headed by Leo Gurschler in 1975. "After almost 50 years of service, the tram was due for a statutory general overhaul," explains Stefan Hütter, head of marketing and PR at Alpin Arena Schnals. "Among other things, the track rope and all rotating parts would have needed replacing. The overhaul alone would have cost over four million euros, and, at the end of the day,

it still would have been an old installation. For that we reason, we decided to build an entirely new tramway."

Fully glazed cabins with floor heating

With an overall length of 2,150 meters, the tram climbs 1,180 vertical meters in roughly six minutes. "One of the biggest challenges was fitting the new tramway into the existing structure," says Hannes Pircher, ropeway technology project manager at Doppelmayr Italia GmbH. The new Carvatech cabins are an eye-catcher. As well as being fully glazed, they have floor heating to prevent icing.

The 30 percent increase in available space for the passengers ensures greater comfort while maintaining the same capacity of 800 passengers an hour. The magnificent views during the trip up to an elevation of 3,212 meters make the new aerial tramway one of the most fascinating ropeways in the Alps. Environmental protection was a major focus during the planning stage. Measures include various solutions for minimizing noise and vibration on the line and in the stations as well as energy recuperation during the downhill trip.



A sense of freedom with a touch of adrenaline: With the new "Alpine Top" cabin, the Grimentz-Zinal operating company collaborated with Garaventa and CWA to turn the existing aerial tramway into a new summer attraction. The glass cabin is unique worldwide and features a transparent floor as well as two glazed panorama balconies, which give passengers an exceptional sense of lightness during the trip to the Espace Weisshorn.

The 360° view enables visitors to immerse themselves in the Alpine nature of the Val d'Anniviers at an elevation of over 2,500 meters. The visible space beneath your feet ensures a touch of adrenaline on this spectacular adventure. Traveling at a speed of 7 m/s, the precision-manufactured panorama cabin can carry up to 800 passengers between Grimentz (1,600 m) and the Espace Weisshorn (2,700 m) on a daily basis.







Check out

The new glass cabin from CWA provides an unforgettable 360° view of the landscape in the Weisshorn region.

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60-FUL Lugano-San Salvatore Lugano-Paradiso (CHE) Funicolare Monte San Salvatore SA, Lugano-Paradiso

New splendor for iconic funicular

Garaventa modernized the funicular railway on the famous Monte San Salvatore in Lugano. 1,629 m Inclined length

601 m Vertical rise

3.5 m/s Speed

240 PPH
Capacity

Switzerland's "Sugarloaf Mountain", Monte San Salvatore in Lugano, has a new eye-catcher. Since March 2024, new cars have been climbing the 600 vertical meters to the summit. The single-track funicular has a long tradition. It first went into service in March 1890 and has always been hugely popular. Every year, around 220,000 visitors use the railway to access the mountain.

Unique alignment

The technical features of this funicular are quite unusual. The line is split into sections of equal length, with just one car running on each. The drive, which propels the cars in opposite directions, is installed in the intermediate station in Pazzallo. While the lower section from Paradiso to the mountain is straight, the upper section follows a slightly s-shaped alignment and has a significantly steeper grade of up to 61 percent. Both of the new funicular vehicles built in Switzerland by CWA are specially designed to address the differences in grade between the

sections and offer breathtaking panoramic vistas. In addition to the complete replacement of the two cars, the extensive modernization encompassed the control technology along with new motor and brake hydraulics. The haul rope was also replaced at the same time. Visitors can therefore look forward to a unique funicular experience for many decades to come.











Tramway service on demand just like an elevator

The new Graseck tram replaces a 70-year-old predecessor and includes a showstopping feature.

Modernity meets nostalgia: The Graseckbahn in Garmisch- Partenkirchen had already passed its 70th birthday and the time was ripe. Spare parts were becoming scarce and maintenance costs excessive. One of the world's oldest small-cabin tramways therefore made its last trip last New Year's Eve. Doppelmayr and Inauen-Schätti performed a complete replacement, opening up a new chapter for the Graseckbahn on January 1, 2024. But one detail had to be retained: Hotel, clinic and hiking guests should continue to benefit from a special means of accessing the hotel Das Graseck.

The only tramway of its kind

The showstopper: Just like using an elevator, passengers can press a button to travel to their destination at an elevation of 885 meters at the foot of the Dreitorspitze in the Wetterstein mountain range. This is the only ropeway of its kind in the whole of Germany that offers a fully automatic public service. The tramway climbs 113 vertical meters during the trip and has only one tower. The completely new alignment was built in just six months. Operation is constantly monitored via screens at the hotel reception. This modern installation featuring OMEGA IV cabins from CWA now ensures problem-free transport for wheelchairs, strollers and freight.

467 m Inclined length

885 m Top station elevation

113 mVertical rise

 $5.0 \, \mathrm{m/s}$ Speed

150 PPH Capacity

Tower



LTW built the first storage facility with wooden racking in 2006; in the meantime, another three have been implemented.

Wooden racking: The sustainable storage solution

LTW has been building high-bay wooden racking for almost 20 years. Nonetheless, this solution is still seen as an exception in the sector. The growing importance of sustainability might well change all that.

Despite the many benefits, to date there are only 16 wooden racking installations in silo construction worldwide. LTW was involved in four of these projects. This sustainable storage method is used at the customers Salinen Austria (salt production), Offsetdruckerei Schwarzach (packaging manufacturers), Josera Petfood and Binderholz (wood products) – for a variety of reasons. Sometimes steel was out of the question because of the corrosive atmosphere, other times wood was chosen because of the faster installation, or the sustainability aspect was decisive. While a wooden shelf can be a very attractive alternative, particularly in terms of sustainability, it is not suitable for every application.





Rapid installation thanks to modular design significantly shortens the construction phase.

Up to 30-meter-high racks

Once positioned in rows and bays, the racks provide an impressive picture. Heights of up to 30 meters are possible. Taller options are not ideal in terms of their cost-benefit ratio. They are nonetheless possible. As wood is a living construction material, the racks react to temperature and humidity. Their huge benefit: Rapid installation thanks to modular design significantly shortens the construction phase. The question of where and when a high-bay storage facility with wooden racking makes sense is something the intralogistics specialist can optimally assess and advise on by drawing on a wealth of acquired knowhow.

Almost 20 years of wooden racking

The first LTW high-bay storage facility with wooden racking was created almost 20 years ago. Salinen Austria, the country's biggest salt producer, expanded production capacity at its Ebensee site from 750,000 tons of salt per year to more than a million tons. The challenge: The storage of salt demands elaborate corrosion protection measures - at least, this is the case for steel, which is traditionally used in the construction of highbay warehouses. Working in collaboration with Kaufmann Bausysteme GmbH, LTW developed a surprising alternative: wood. Even without any special treatment, it is largely resistant to the environmental influences prevailing in salt warehouses. The 25 m high and 110 m long, double-deep pallet racking was constructed entirely from glulam and as a silo structure that is roof- and wall-bearing.

Improvement in carbon footprint

The inquiry from Offsetdruckerei in Schwarzach followed in 2009. The customer wanted to increase storage capacity, while environmental compatibility was to be the number one priority. In order to achieve this goal, the material chosen was again wood. As a result, the company improved its carbon footprint by cutting emissions by 880 tons. Local spruce wood was used as an ideal renewable resource that does not have to travel far. The added ecological value of wood ultimately outweighed the marginal additional cost.

The science

Wooden shelves have been very well studied scientifically. TU Graz collaborated on the construction in Ebensee, and TU Munich set up their own research project on the topic in 2016, in which LTW was involved as industrial partner. Bottom line: The necessary know-how, capabilities and tools are available for the construction of high-bay wooden racking storage facilities. The sector is nonetheless used to steel, so wood remains an exotic option. However, the growing importance of sustainability might well lead to a change.





The ski resort Gudauri continues to grow and is attracting international tourists.

A magnificent view of the snow-covered Greater Caucasus, plus the sun in your face and over 70 kilometers of ski trails: Gudauri has developed to become Georgia's number one ski resort and earned itself an international reputation. The journey began in the mid-1980s when Doppelmayr built the first ropeways there. The resort now has 15 lift installations – the majority of them supplied by Doppelmayr. Most recently, the company built two new chairlifts in preparation for the FIS Snowboard World Cup in February 2024.



Built in just five months

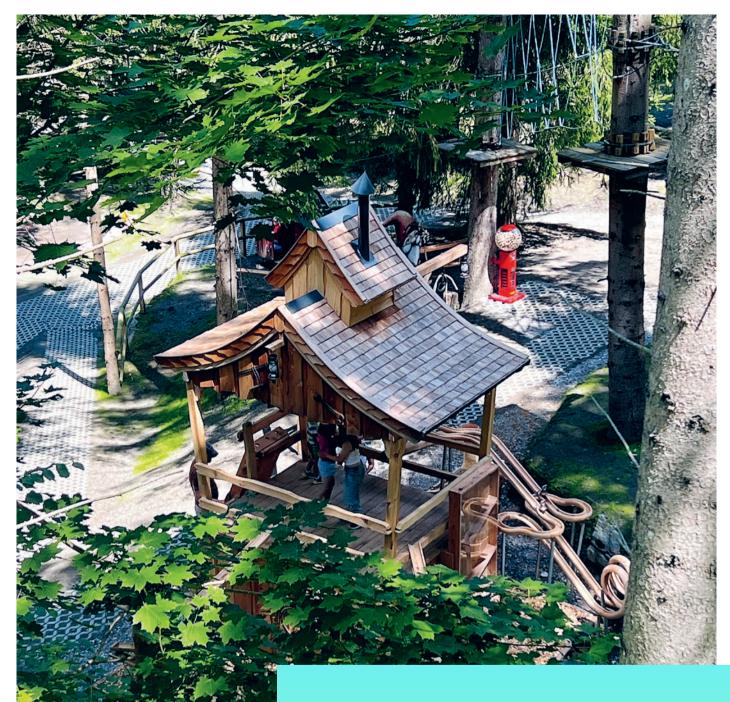
Special feature: Both 6-seater bubble chairlifts, the New Gudaura and the Kikilo, were supplied on a turnkey basis, i.e. inclusive of all the necessary construction and installation work as well as the power supply. The work was completed in only five months. Gudauri continues to grow and is increasingly becoming a popular destination for tourists from around the globe. Skiers of all levels of proficiency are catered for. Thanks to its high elevation ranging from 1,990 to 3,307 meters, the resort offers excellent conditions for winter sports from December through to April.

Top location and infrastructure

Situated in the Mtskheta-Mtianeti region, only 120 kilometers north of Tbilisi, this area is blessed with copious amounts of natural snow. With the expansion of its infrastructure and the construction of additional lifts, Gudauri is strengthening its position as Georgia's biggest and most modern ski resort with a diverse offering of leisure activities.







»The expansion of the forest gnome trail and the first construction phase of the forest gnome village at Wichtelpark Sillian have considerably boosted the attractiveness of our park. I would like to highlight the outstanding collaboration with Input, who played a major part in this success with their innovative concept and precise planning.«



Otto Trauner Head of Infrastructure TVB Osttirol





Check out further information on the other adventures had by the little gnomes and how to get to the park here.



Wichtelpark Sillian continues to grow

The mythical creatures in East Tyrol's Upper Puster Valley are expanding their realm.

Wichtelpark Sillian is a popular day-trip destination for families because this is where little ones are really big. Since the opening of the forest gnome path last summer, the park has seen further expansion.

A train station, construction yard and fire station have been added to the extended forest gnome village since July 2024.

Playful fun for young and old

The new attractions have been designed to delight children of all ages. They offer a diverse range of possibilities for play and interaction. The forest gnome train station, for example, enables children to slip into the role of station master and experience different adventures. At the construction yard, children and parents have a total of seven exciting

wooden ball runs to choose from. The forest gnome fire brigade offers plenty of space for play and discovery on two levels, including a fire truck where the young visitors can sit inside. And to make sure they are up to scratch for the next firefighting call, the children can practice their aim with water guns next to the fire station.

To be continued next year

The projects are being implemented by Input Projektentwicklungs GmbH – a member of the Doppelmayr Group specializing in a wide range of experiential concepts in the tourism sector. Their role in this project encompassed everything from the creative concept, detailed planning and looking for suitable manufacturers to obtaining quotations and coordinating the implementation. The hard-working forest gnome architects already have ideas up their sleeves for next year: a forest gnome school, town hall, chapel and farm are planned.



In the future, a Doppelmayr gondola lift will climb Penang Hill in Malaysia.



The famous tourist destination Penang Hill in Malaysia will soon benefit from a new attraction. The groundbreaking ceremony for Penang Hill Cable Car was celebrated in June 2024. The 8-passenger D-Line gondola lift is scheduled for completion by 2026 and will bring visitors in 50 modern cabins from the botanic garden, across the transition area of the biosphere reserve and up to the top station at an elevation of 720 m. This sustainable and comfortable means of transport meets the destination's socio-economic requirements as well as its mobility needs.

A particular honor for Doppelmayr

"Penang Hill is not only a natural treasure, but also a vital green lung for our state," said Penang's Chief Minister Chow Kon Yeow. "This cable car project is a transformative project that exemplifies our commitment to responsible tourism that balances infrastructure modernization with respect for the environment." Thomas Pichler, a member of the Doppelmayr Group's executive board, commented: "It is an honor to once again provide an eco-friendly mobility solution to Penang Hill and contribute to enhancing the infrastructure and experience for the visitors and residents in this area."

Coming soon



New ropeways in a legendary ski area

Grands Montets Chamonix (FRA) Compagnie du Mont-Blanc S.A.

Doppelmayr France is responsible for two new lift installations in Chamonix.

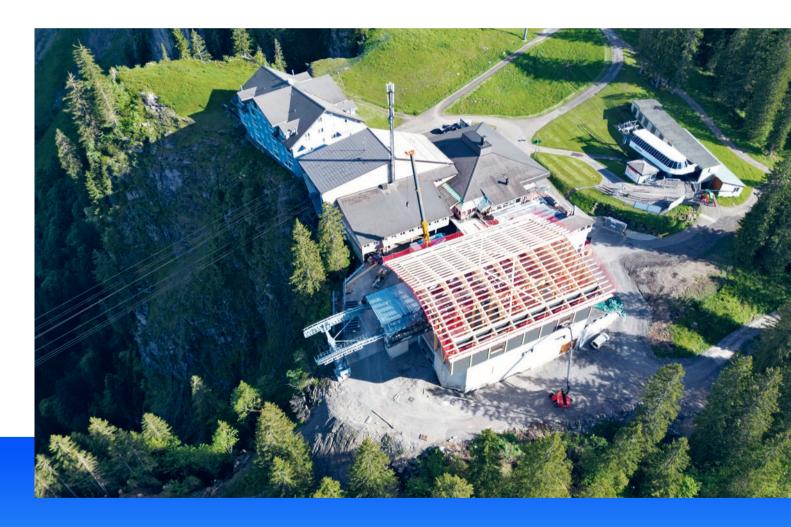
> Chamonix on Mont Blanc is an illustrious name; the adjacent ski area ranks among the most well-known in Europe. Since 2018, however, it had lacked a ropeway to the summit as the last one had been destroyed by a fire. Following years of discussions, consultations and public inquiries, the way ahead is now clear: Doppelmayr France is jointly responsible for constructing the new Grands Montet ropeway in collaboration with other partners. The contract split into seven lots with a total value of 107.6 million euros was awarded to the consortium formed by Doppelmayr France. The overall project for Grands Montets is worth 155 million euros.

Masterpiece at the summit

For the architectural design that is mindful of the protected area of Mont Blanc, the Compagnie du Mont-Blanc commissioned the renowned architects RPBW. The fascination for the terrain of Aiguille des Grands Montets, the technology and the art of engineering led to the creation of a project design encompassing four stations along two sections. The first section will be equipped with a D-Line gondola lift with 10-passenger cabins, while the second section will feature a tricable gondola. The design of the ropeway stations incorporates a lot of glass and takes its inspiration from nature, crystals and in particular pyrite also known as "fool's gold". Their structures are made of high-tech, modular steel elements. The top station towers as a masterpiece at an elevation of almost 3.300 meters.

A once-in-a-generation project for Hoch-Ybrig

A milestone project in Hoch-Ybrig is beginning to take shape. An international team has been working on the world's first TRI-Line lift installation since the spring.



Milestones

April 2025
Completion of

July 2025 Installation Summer 2025

Rope installation

Fall 2025 Start-up November 2025
Opening

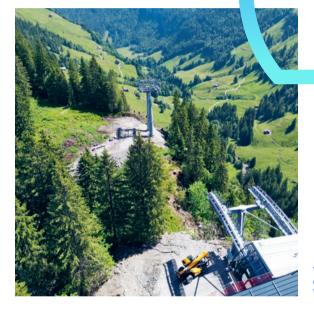


2 Stations

1,600 PPH
Capacity

1,723 m Inclined length

424 m Vertical rise



View across top station of the first TRI-Line Weglosen-Seebli

The ropeway engineering work on the TRI-Line Weglosen-Seebli in Hoch-Ybrig, Switzerland, has been in full swing since spring 2024. An international team comprised of fitters from Doppelmayr, Garaventa and Inauen-Schätti are working hand in hand to complete the first TRI-Line – the innovative tricable system from Doppelmayr.

While the ropeway industry has been eagerly awaiting developments in Central Switzerland ever since the announcement two years ago, Urs Keller, CEO and member of the board of directors of Hoch-Ybrig AG, is especially delighted about

achieving this milestone: "For us, this project is hugely important. A feeder lift is the first thing a guest sees in the morning and the last thing in the evening. It's a generation ago that the Hoch-Ybrig resort was formed. Now we once again have the opportunity to create something new."

The installation of the top station was successfully completed in July, work on the bottom station began in September and, following a break during the upcoming winter season, will resume at full steam in spring 2025. With our construction site journal, we are accompanying this revolutionary ropeway project through to its completion in several episodes. It's well worth taking a look!



Check out the construction site journal.



First Lift Day in Lana and Meran 2000 In March 2024, Doppelmayr Italy staged the first Lift Day in collaboration with the Meran 2000 ski resort, a long-standing partner. The technical directors of various ropeway customers were invited to the event. After interesting presentations, a visit to the Doppelmayr Italy plant in Lana

and time for networking, all the participants had the opportunity to visit different lift installations in the Meran 2000 ski area – including the new 10-passenger Naifjoch gondola lift. The conclusion is clear: The Lift Day was a great success and provides an ideal model for future events.

Ropeways as factor for innovation and sustainability

The topic of urban mobility was the focus of a panel discussion in Milan.



A conference held at the Park Hyatt Hotel in the Italian city of Milan was focused on finding solutions to the challenges of future mobility. Innovation and sustainability were therefore also the topics for a panel discussion. In addition to leading politicians and industry representatives, such as the infrastructure minister, participants included Doppelmayr Italy CEO Georg Gufler. "Urban mobility by means of the ropeway today represents a

concrete development possibility for public transport systems and offers great benefits in terms of flexibility and sustainability, both with regard to reduced emissions and to lower consumption, costs and time. Urban ropeways are not some proposal for the future but an option that can be implemented and integrated into the existing infrastructure without any problem right now," said Georg Gufler.

Ropeway industry meets in Vancouver

170 experts from 20 countries took part in the 12th OITAF Congress in Canada.



Every six years, the OITAF Congress brings together international experts from the ropeway world. The twelfth edition of the congress was held in Vancouver, Canada, in June of this year. The Doppelmayr Group was prominently represented, providing four of the 30 international speakers at the event. Michael Mathis (head of technical division, Doppelmayr

Seilbahnen GmbH), Philip Oberdorfer (digital services customer support, Doppelmayr Seilbahnen GmbH), Franziska Junginger (operations services manager, Doppelmayr Cable Car GmbH) and Stefan Gassmann (head of sales, Frey AG Stans) shared their know-how with some 170 participants. Founded in Milan, Italy, in 1959, the Organizzazione internazionale trasporti a fune (OITAF) gathers the sector

together at different levels. This year, the key topics were the development of ropeways in the urban and tourist sector, the operation of ropeways, ropeway technology and new developments, and dimensions of sustainability.

Focus on urban ropeways

Cable Car World attracted over 600 attendees to Essen.

Urban ropeway projects were the dominant theme at the congress and trade fair Cable Car World, which took place in Essen, Germany, on June 4 and 5, 2024. Over 600 attendees from 21 countries gathered at the event – including delegations from Germany, Austria and Switzerland as well as Brazil and Sierra Leone, to name but a few.

The event was aimed at exploring ideas, processes and developments as well as finding out more about technologies, products and services from the 51 exhibitors and 17 partners. One of the highlights was the Doppelmayr stand showcasing one of the cabins envisaged for the project in the Paris metropolitan area, which will extend the local transit network in the capital by a 4.5-kilometer route in 2025.

During their experts' talk, Christophe Surowiec from Île-de-France Mobilités (project manager of the Câble C1 project in France) and Christoph Rittersberger from Transdev (responsible for operating the Câble C1 line) presented the project to the trade fair public.



