

HD above the clouds

What do Singapore, Koblenz and Lenzerheide all have in common?

The answer is simple: all three use Doppelmayr cable car systems to ferry tourists and locals through the air to their destinations. And advanced multimedia technology from PKE helps guarantee top quality entertainment for passengers as they soar above the clouds.

Anyone who skis regularly in the Alps knows and loves Doppelmayr chairlifts and cable cars, which are now increasingly replacing the uncomfortable T-bars and ski-tows. Less well-known, however, is that Doppelmayr's success story now also extends into many metropolitan areas, as the company's quiet, emission-free cable cars establish themselves as the modern alternative to tram and underground systems in an increasing number of cities around the world.

Nĩ hǎo and Welcome to Sentosa Island ...

Since 2010, one of the brightest jewels in the crown of Doppelmayr's impressive list of references has been the cable car system serving the 5 million inhabitants

of Singapore, which soars high over the city connecting Mount Faber Jewel Box station with the island resort of Sentosa. With space for up to eight passengers in each, the fully-glazed cabins afford passengers spectacular views of the harbour as they complete the 12-minute crossing accompanied by an interactive on-board infotainment programme. "The installation was a first for us, as well," says Norbert Feuerstein, Doppelmayr's Head of Sales for the south-east Asia region. "Together with PKE, we have managed to fit our cabins with a high-tech multimedia system for passengers for the very first time." It's an idea that appears to have been extremely well received, with the cable car recently receiving a "Grand Winner" award as Asia's most popular attraction in 2011 from the International

Association of Amusement Parks and Attractions.

Norbert Feuerstein explains how the installation of the multimedia infotainment systems came about. "Our initial idea was to provide typical tourist information-type commentary based on the current position of the cable car; things like: 'On your left, you see the harbour, and beyond that on the horizon is the Singapore Flyer'. And because the passengers come from all over the world, we wanted to let them choose from six different languages." That idea turned out to be the genesis of the infotainment system, as Feuerstein reveals: "We already had half a computer in each cabin to meet those requirements. It didn't take a very big leap to develop the idea into a full-blown infotainment solution, with concealed mul-

This type of IP connection also has many maintenance-related benefits. For example, PKE and Doppelmayr technicians can connect to individual cabins at any time in order to rectify faults or change settings all from a control room located back in Austria. Last but not least, the extreme climatic conditions typical of Singapore make this type of remote maintenance infrastructure an attractive proposition.

“All too often they experience the entire spectrum of tropical weather conditions in a single day – from oppressive heat to tropical rainstorms and, of course, there is the incredible humidity too, often well above the 90 percent mark. It’s a cocktail of weather conditions that places extreme-

“In Lenzerheide we have ‘electric blankets’ for the touchscreens”

Thomas Geier, PKE project manager

ly high demands on the equipment we install. I can sleep easier at night knowing that, if worse comes to worst, we can set things right again via a remote data connection from halfway around the world,” says Thomas Geier. Significantly, though, he continues: “We haven’t needed to use it in practice so far. Though for test purposes, we did once light up all the cabins in Singapore from our offices in Dornbirn.”

From hot to cold

Immediately after completion of this successful pilot project in the south-east Asian city-state, Doppelmayr and PKE started their second joint cable car project in the Swiss ski resort of Lenzerheide. The task here was similar; although the conditions were completely different. “Whereas in Singapore the main chal-



lenges were presented by the heat and humidity, the big issue in Lenzerheide was the freezing temperatures,” says Thomas Geier. “At night the temperature in remote areas can fall well 20 degrees below zero. Normal PCs and monitors wouldn’t be able to cope with that.” In Lenzerheide, PKE installed temperature sensors in the cabin interiors and the monitors, designed to raise an alarm in the control centre if certain minimum temperature thresholds are exceeded. Additionally, the cabin touchscreens are covered with a heating foil, which automatically heats the screen to 0 degrees Celsius every morning, allowing the PCs and monitors to be switched on safely.

The multimedia system has been in operation in Lenzerheide since the 2010/11 winter season and informs skiers and snowboarders on their way up the mountain about current attractions and events and the offers available in the region. In the coming year, the information system will offer exciting content from the 2012 Ski World Cup.

Koblenz in full bloom

Doppelmayr and PKE cooperated on their third joint project at Germany’s National Garden Show 2011 in Koblenz. Doppelmayr agreed to install a cable car spanning the entire showground – and to equip it with a suitably high-performance multimedia system. “The equipment in Koblenz is essentially the same as that in Singapore and Lenzerheide, without the touchscreen infotainment element but with a camera in the glass floor of one of the cabins,” explains Thomas Geier. The camera films the entire site during the crossing and beams the spectacular

pictures to video screens positioned all over the showground. Some of the special security features in Koblenz include the 360° dome video surveillance cameras and robust monitor housings capable of withstanding even the most boisterous crowds. As in Singapore and Lenzerheide, PKE also implemented the intercom system used in Koblenz to make emergency calls and public announcements, as well as a central operator workstation in the control room, from where the entire system can be controlled via a graphical user interface.

London calling

And now Doppelmayr and PKE have taken their marks ahead of their fourth joint project. London is busy preparing for the Olympic Games in 2012, and those preparations include construction of an ultra-modern cable car link spanning the Thames River between Greenwich and the Royal Docks. Will multimedia soon form part of the standard equipment fitted in every new cable car system? It doesn’t require a crystal ball to predict a boom in upgrading cable car systems to include infotainment offerings, especially in the context of urban transport and event and location marketing. Norbert Feuerstein agrees: “Of course, it does increase the initial investment required from the client. However, infotainment systems provide operators with a highly attractive on-board advertising platform, which can then be used to generate additional income. With some clever marketing, the additional costs can soon be recouped, and there are also some less tangible benefits, such as improved public image.”



multimedia PCs and a large 12" touchscreen built in to each cabin as well." Passengers can now tap into a wealth of information, including the latest weather forecast, a hotel booking service, or the city's current concert programme – and, of course, lots of information on the attractions available on Sentosa Island, along with the gastronomic delights on offer in the Mount Faber Jewel Box.

Powered by Supercup

With flat screens now commonplace in every underground carriage and tram car, the availability of multimedia in cable cars might not sound like anything special to the uninitiated. However, there are many reasons why it has only become possible within the past few months to implement projects like this in cable car systems. "A cable car lacks all the technical prerequisites for the playback of recorded film content – and by that I don't mean PC hardware, but fundamental factors such as power supply and network connections," explains PKE project manager Thomas Geier. The easiest way to supply energy to a cable car is by battery. It provides power during the day and can then be recharged overnight using either

the power rails in the station or a separate battery charger. "Batteries are extremely reliable in cable cars, although they do have to be serviced regularly and replaced after a couple of hundred charging cycles," explains Thomas Geier. However, using conventional battery technology would have presented some problems: "It would have been much too heavy with all the technology we were installing as well; an additional load of approximately 120 kilogram per cabin. An unsustainable approach to the supply of electricity, in every sense," says Norbert Feuerstein. Swiss firm CWA, which manufactures the actual cabins, came up with a much more elegant solution. High performance supercondensers, called Supercups, installed on the roof of the cabin and charged via the power rail every time the cabin travels through a station. The best thing about Supercups is that they require no maintenance and last much longer than batteries. "We're talking about up to ten million charging cycles," reveals Norbert Feuerstein.

WLAN roaming – 120 metres up!

To continuously feed the touchscreens with new content, each cabin in Singa-

pore had to be connected to a central content server. PKE recommended a wireless LAN with multicast for all cabins to handle the transmission. The challenge was that the WLAN receivers in the cabins are constantly in motion, swaying with the weather and intermittently rattling over the support pylons. Added to that was the fact that multiple WLANs

"Power supply and network connection in a cable car cabin? That's not easy to do."

Norbert Feuerstein,
Doppelmayr Head of Sales for south-east Asian

were required to provide the required coverage for the 1.650 metre span, with the cabins constantly roaming back and forth between different networks. Thomas Geier explains further: "To maintain a stable network connection, we put two antennae in each cabin, one pointing in the direction of travel and the other in the opposite direction. Our aim was to maintain a stable six to eight megabit connection over the entire span, with the intention of being able to broadcast live HDTV pictures as well."