

COVERAGE SYSTEMS

The Venetian® Macao-Resort-Hotel

Powerwave Partners with Ericsson™ to Deliver Wireless Infrastructure to Asia's Largest Building – The Venetian Macao-Resort-Hotel

Macau, a small territory on the southern coast of China, is the oldest European colony in the country, dating back to the 16th century. Under Portuguese reign up until 1999, today the region is part of the People's Republic of China. When a 40-year gambling monopoly came to an end in 2002, the territory was quickly transformed into the entertainment capital of Asia. Macau, along with neighboring islands Taipa and Coloane, is referred to as the "Cotai Strip" in deference to its older sibling the "Las Vegas Strip" – which the Asian district recently unseated at the top gambling marketplace in the world.

In the heart of Macau stands the crown jewel of Asia's Las Vegas – the 3,000-suite Venetian Macao-Resort-Hotel. The resort features the largest building in Asia and the second-largest on the planet – big enough to hold 90 Boeing 747 jumbo jets! The Asian masterpiece was unveiled in August 2007 and trumps its counterpart half a world away – the Venetian Las Vegas – not only in size, but in traffic as well; it's estimated the Venetian Macao-Resort-Hotel welcomes 60,000 visitors per day.

Old World Charm Meets New World Technology

While the Venetian Macao-Resort-Hotel boasts a Renaissance Venice theme, the massive property's technology systems are anything but Old World. Throughout the \$2.4 billion dollar complex – which features stunning replicas of Venice's key landmarks such as St. Mark's Square, the Doge's Palace, Campanile Tower, and three indoor canals with gondolas and singing gondoliers – guests, visitors and employees all stay connected thanks in part to innovative wireless infrastructure from Powerwave Technologies.

Working with Ericsson, a supplier of GSM and 3G networks to CTM – the leading operator in Macau, Powerwave was tapped in 2007 and 2008 to provide critical wireless infrastructure components for the enormous in-building wireless project, which aimed to expand technical offerings, improve network quality and enhance wireless services throughout the resort.

A proven winner, Powerwave had already demonstrated its expertise further down the strip by delivering a high-quality in-building wireless solution for the Sands Macao Hotel, as well as a myriad other hotels and casinos around the world.



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Seamless Wireless Communications for Asia's Largest Building

"Base station co-siting is a growing trend around the globe – however in the Venetian Macao we had the added challenge of working around government parameters which restrict the use of multi-band infrastructure, so each system within the server room had to be contained in its own box," said Dave Quinn, vice president Global Wireless Solutions, Powerwave Technologies. "In addition, there was a tremendous amount of collaboration involved as the Venetian runs 10 different wireless systems spread across five different operators, so this was certainly a group effort that required a lot of teamwork."

Premier Wireless Components for a Premier Resort Destination

Working in partnership with Ericsson, Powerwave's best-in-class fiber optic technology repeaters were installed to support W-CDMA, enabling wireless carriers to provide visitors, guests and employees with seamless wireless voice services throughout the entire property. Powerwave's repeater products provide cost-effective coverage solutions for airports, railway stations, tunnels, convention centers, and other environments around the world where structures or natural obstructions interfere with signals. In addition, nine optical conversion modules were installed to leverage the inherent attributes of fiber optic technology, such as low attenuation and noise, and to provide extensive reach throughout the Venetian Macao to deliver superior signal quality while reducing infrastructure and site development costs.

To enhance network performance, 14 Powerwave single multi-carrier power amplifier (MCPA) booster systems were also installed around the premises. Helping to shorten design time and deliver systems with industry-leading density and efficiency that drive significant manufacturing, space and cost savings, Powerwave offers one of the industry's largest and most diverse lines of power amplifier systems for Cellular, PCS and 3G wireless networks – with more than 350,000 Powerwave MCPAs and SCPAs deployed worldwide.

Making Public Safety the Highest Priority

Aside from providing guests with the convenience of personal wireless communications, the Venetian Macao also sought to assist emergency responders, including the Venetian's own security detail and the Macao Fire Services Department, by supporting critical communications and activities within the resort.

Powerwave was able to bring its extensive experience to bear in designing wireless coverage systems to support and enhance public safety, having designed and installed public safety coverage systems for sites such as the Hard Rock™ Hotel and Casino Biloxi, in Biloxi, Miss., and the Port Authority of New York and New Jersey, the agency that owns the 16-acre World Trade Center site.

To support wireless coverage access to 800 and 900MHz public safety frequencies at the Venetian Macao, Powerwave supplied a series of iDEN repeaters to ensure critical voice communications and activities within the resort. Ideal for areas where barriers cause poor RF performance, such as tunnels, buildings, trains and ferries, Powerwave's iDEN/SMR 800 repeaters provide a highly reliable yet cost-effective coverage solution for large venues such as the Venetian Macao.

Wireless and Hospitality – Delighting the Customer

For hotels, resorts and casinos, wireless has the potential to enhance the customer experience and guest loyalty by making it mobile, meaningful and transparent. As tourism in Macau continues to flourish, the need to keep pace with today's tech-savvy tourists is critical. As new hotels and casinos continue to break ground in Macau or as existing properties expand and upgrade their wireless networks, Powerwave's team of experts await the opportunity to leverage their experience to help deliver flexible, scalable, robust wireless coverage solutions to ensure a seamless mobile experience for resort staff and visitors alike.



Powerwave Wideband Coverage System (WCS) product line is a flexible platform for wireless enhancement of a base station signal remotely. This line of products can be connected via coax or fiber cable to provide capacity to underserved areas of the network. Applications for this versatile product are indoor distributed antenna systems (DAS) and outdoor coverage challenges. Future expansion and upgrading is made easy using a modular design. Same reliable, field proven technology as Powerwave's Repeater products, as well as the same O&M software for complete NetWay™ Vision and OM-Online compatibility.

Key Benefits

- Ultimate flexibility
- Proven technology
- Fiber or Coaxial feed
- Ease of installation
- Output Power options
- Standard O&M platform

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About Powerwave Technologies

A global leader in end-to-end wireless coverage and capacity solutions, Powerwave Technologies, Inc. offers cutting edge wireless infrastructure to address the demands of enterprise and commercial customers. Powerwave offers a comprehensive suite of solutions, including Antennas, Base Station Solutions and Coverage Solutions. Powerwave's product line supports all wireless network protocols and frequencies including Next Generation Networks in 4G technology such as WiMAX™ and LTE®. Powerwave solutions, products and services also help wireless operators and OEMs reduce capital and operating expenses, speed rollout of services, improve coverage and capacity, and reduce environmental impact. For more information, visit us at www.powerwave.com.



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