SUMITOMO ELECTRIC LIGHTWAVE

FutureFLEX® Application Profile

AIR-BLOWN FIBER®

McCarran International Airport – Las Vegas... Getting High Returns with its Air-blown Fiber LAN Infrastructure.

"A bundled air-blown fiber infrastructure is the solution for current airport capacity and budget control issues. It enables us to plan expansions, changes, and additions to our networks at the exact pace of emerging technology without the cost or guess work of installing dark fiber. Without any disruption to the airport or ever having to lay new conduit, any type of fiber can be installed immediately when and where needed to increase bandwidth or quickly meet new FAA and TSA requirements. FutureFLEX is an amazing technology that by far surpasses conventional cabling methods by offering fiber on demand with significant time and labor cost savings... helping the airport industry to better serve its tenants, customers, and the community."

Gerard Hughes, Senior Network Analyst, McCarran International Airport

FutureFLEX™ CABLING SYSTEMS

For more information, please call: **1-877-356-FLEX** (3539) or visit our website at: **www.futureflex.com**

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"Because McCarran's IT department had the foresight to implement Sumitomo's air-blown fiber backbone, the airport is one of the best poised facilities both from a technical and business perspective. Technically, McCarran will never get 'stuck' with a lack of capacity to upgrade or expand its network as others experience with conventional cabling infrastructures. And the overwhelming time and labor cost savings the airport reaps with air-blown fiber just makes good business sense."

Matt Engle, Director, NetVersant – Nevada, Inc.
(Chief installers for McCarran)

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Beating the odds...

With its FutureFLEX air-blown fiber backbone, Las Vegas' McCarran International Airport has overcome the high stakes of having to accurately forecast its network's future technology requirements. Had it adopted a conventional fiber optic infrastructure, McCarran would have laid the money for dark fiber on the table, with the risk of having installed too much, too little, or soon-to-be-obsolete fiber. It would have been a roll of the dice… with the odds running low that McCarran could actually win at precisely predicting future changes in airline traffic, security measures, and FAA or TSA mandates that would consequently require resultant moves, additions, and changes necessary for its network to keep pace with capacity and emerging technology.

Instead, by having adopted a bundled air-blown fiber infrastructure, McCarran can install at speeds of 150 feet per minute the exact fiber counts required to respond immediately to traffic growth, new FAA and TSA regulations, or any unplanned upgrades. First installed in 1995, the infrastructure is terminal-wide and supports all airport operations including flight displays, airline ticket counters, baggage, administrative departments, gates, and security systems within McCarran's local area network.

Throughout the airport, there lies a point-to-point highway of compact tube cables through which any type of fiber can be quickly and easily blown without the need to hire large installation crews. The system also eliminates the necessity of pulling cable and inner-

duct or having to lay additional conduit, thereby creating no work site disturbance that would intrude upon daily airport operations.

Since the initial install, McCarran has increased its capacity, as needed – installing fiber only where and when the need arises. Enjoying a pay-as-you-go approach, McCarran has prevented potentially useless massive upgrades and overbuilds that would have translated into wasted budget dollars. It has prevented also any underestimation of its bandwidth needs or the installation of an out-dated fiber type that would have required airport executives to seek immediate funding for an immediate application. To ensure its future network expansion, McCarran utilizes only a portion of tube cells, freeing others for upcoming capacity changes, fiber upgrades, or FAA and TSA surprises… allowing McCarran to be in real-time control of its capacity and budget.

Cashing in on fast turnaround, scalability, conduit space savings, and reduced labor costs…

The 9/11 attack on the World Trade Center and Pentagon left many airports throughout the world scrambling in response to cries for increased security. With its air-blown fiber backbone, McCarran was able to respond quickly with minimal pre-planning. By simply connecting tubes in tube distribution boxes, fiber pathways were reconfigured and fiber bundles were blown to areas requiring additional security cameras and data switches. To accommodate the increased bandwidth needed to send video over the network, McCarran easily blew in its new higher capacity 12-strand singlemode fiber, then blew out its existing 6-strand. The project costs were $13,000 and took 7 days to complete with only 2 installers. Gerard Hughes, McCarran's senior network analyst, estimates that the work would have taken approximately 12 weeks to complete with at least double the installers at a project cost ranging between $150,000 to $200,000 had a conventional cabling infrastructure been in place.

In a more recent project involving the expansion of its gigabit ethernet LAN, 7,000 feet of 12-strand fiber was "blown" within 1.5 hours. The project from set-up to termination took 3 days, using 2 installers. According to Matt Engle of NetVersant – an independent company responsible for air-blown fiber installations at McCarran – the project would have typically taken at minimum 12 days, double the manpower, and at least 2.5 times the cost had conventional cabling methods been used. The figures assume that no additional conduit would have been laid.

Realistically, however, had McCarran adopted a conventional fiber optic infrastructure, it would have been doubtful that ample conduit space existed to carry out the gigabit LAN project – requiring that more conduit be placed. At an installed cost of $10.00 per foot of 2-inch conduit, another $70,000 would have been added to overall project costs, exceeding at least 5 times the cost of the air-blown fiber solution.

With the ease of fiber installation and ample conduit space, McCarran also finds leasing fiber strands to airport tenants both easy and profitable, offering them quick turnaround times and easy fiber upgrades for their needed services. Since two 19-tube air-blown fiber cables yield 38 pathways within the same conduit space in which conventional cables yield only 3, McCarran maximizes its network flexibility, exactly gauges its future expansion space, and saves significantly in time and labor costs.

Looking Ahead at McCarran

As one of the most visible and busiest airports in the world, McCarran will be adding additional legs and gates to its terminal over the next 4 years. Rather than forecasting what new technologies or fiber types may be available, what FAA and TSA regulations may emerge, or what its network requirements may be years from now, McCarran is implementing and paying for the expansions incrementally…knowing that future moves, additions, or changes to its network are as easy as "blowing" fiber on demand. And that's no gamble.

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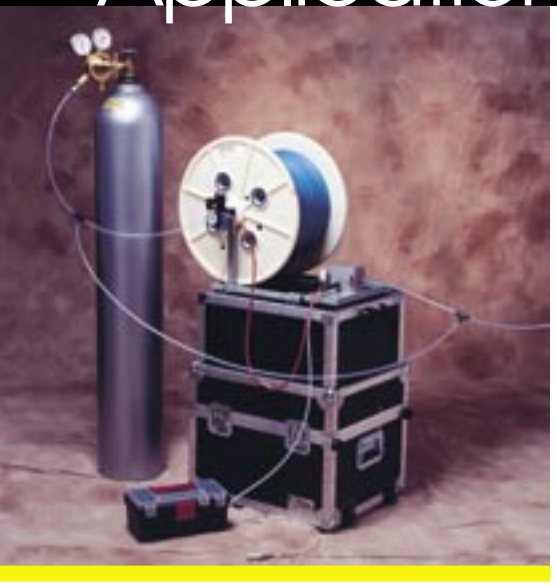

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More About Sumitomo's FutureFLEX® Air-Blown Fiber Cabling System

FutureFLEX has become the preferred cabling infrastructure among some of the world's foremost enterprise networks including, ESPN, Pentagon, Getty Center, Starbucks Coffee, Barnes & Noble, National Institutes of Health (NIH), USAA, Nissan, University of Utah, Atlanta Motor Speedway, and other organizations spanning numerous vertical industries. The overwhelming benefits of the FutureFLEX Air-blown Fiber system over conventional fiber optic infrastructures make FutureFLEX the most advanced solution available for LAN applications.

Instead of pulling standard cable, the FutureFLEX system uses a patented blowing technique, using either compressed air or nitrogen. At speeds of 150 feet per minute, any type of fiber can be blown when and where needed – offering immediate scalability and fiber upgrades with little manpower and no work-site disruption. The point-to-point, splice-free, installation further reduces time and labor costs while reducing attenuation for better transmission and signal integrity.

The system consists of a highway of tube cable that is installed in place of traditional innerduct. It can be installed easily into an existing conduit infrastructure, can be direct buried, or installed in aerial applications. By saving valuable conduit space and offering "fiber on demand," FutureFLEX overcomes the problem of congested conduit… giving you freedom and control over capacity, budget, and scalability.

With FutureFLEX, network moves, additions, and changes can be made with the utmost cost effectiveness and long term return on investment (ROI). The system utilizes broad options of various tube cables and fiber bundles in 2, 4, 6, 12, or 18 fiber arrangements per tube for a maximum capacity of 342 fibers, as well as distribution, termination, and installation equipment.

For more information about FutureFLEX, please visit **www.futureflex.com**. To learn more about Sumitomo Electric Lightwave, a leader in the manufacturing of fiber optic cable and related products, visit **www.sumitomoelectric.com**.

About McCarran International Airport

Located 1 mile from the Las Vegas strip and 5 miles from Downtown Las Vegas, McCarran International Airport serves over 60 air carriers and is ranked among the 10 busiest airports in the world based upon passenger traffic. As the only airport in North America to implement a high-security centralized network from which all airline and airport activities operate, McCarran has become a recognized leader in implementing advanced technology to facilitate excellence in airport management.

For more information, please visit **www.mccarran.com**.

About NetVersant

NetVersant is a national provider of phone, surveillance, and access control systems, and offers the cable that connects these systems – including voice, data, and fiber optics. To learn more about NetVersant, visit their web site at **www.netversant.com**, or call 702-777-6000.