



## CASE STUDY

AirFixture Develops New Underfloor  
Air Distribution Technology For  
Wind Creek Wetumpka Casino



Casinos face unique challenges when it comes to managing air quality and providing a comfortable environment for its guests. When PCI Gaming required a unique HVAC option for their planned 85,000 square-foot Wind Creek Wetumpka Casino, they turned to AirFixture for a solution.







# COMPANY PROFILE

*For years, AirFixture has been leading the charge in the design, development, and manufacture of critical components for underfloor air distribution systems (UFAD).*

Since its inception in 2001, the Kansas-based company has earned a reputation for overcoming technological obstacles thanks to innovative, game-changing thinking and a collaborative customer focus.

AirFixture has extensive experience implementing and customizing UFAD solutions for a variety of facility types, having completed more than

1,000 successful projects in 25 countries. The company has provided its UFAD products to office buildings, schools, universities, government facilities, libraries, event spaces, and casinos.

With over 80 million square feet of experience behind them, they are unquestionably a key player in developing underfloor air distribution technology.

# THE CHALLENGE

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*Casinos are challenged with managing a large volume of air to give their guests a comfortable air quality.*

PCI Gaming, a business entity of the Poarch Wind Creek Indian Nation, operates two casinos in Atmore and Montgomery, Alabama. Wanting to improve the customer experience, they decided to install UFAD systems in areas of their existing casinos and turned to AirFixture to spearhead the initiative.

Casinos face unique obstacles other venues don't. In particular, they are challenged with managing a large volume of air to give their guests a comfortable air quality and temperature environment while frequently permitting smoking within the building. Since their business model depends on repeat customers who maximize their stay, casino operators pay a great deal of attention to environmental quality.

In recent years, a growing number of buildings have eschewed traditional overhead air delivery systems and have opted instead to install UFAD. Underfloor air distribution takes advantage of empty plenum space beneath raised flooring rather than overhead voids to provide both a pressurized air delivery system and a space for wiring, plumbing, and cabling.

## UFAD benefits

- ✓ Improves air quality and ventilation efficiency
- ✓ Boosts environmental comfort
- ✓ Reduces energy usage
- ✓ Reduces lifecycle costs
- ✓ Offers modular design and access

PCI Gaming was very pleased with the vast air quality improvement AirFixture's UFAD brought to their two facilities, particularly regarding cigarette smoke. "They loved the underfloor distribution product," says Ghassan Elkhatab, AirFixture's Business Development Manager for central and southern United States. "When you walk into an overhead casino, there's a haze and a fog. When you walk into an underfloor system, it smells much cleaner, it's so much clearer - visually you don't see that haze or fog. It led to more people playing more games."



*Poarch Wind Creek Indian Nation casino in Alabama.*

Moreover, the modular nature of a raised access floor offered increased flexibility for the casino operators who are tasked with frequently moving gaming machines around. “These casinos change the layout every few months to move the high-rolling area from one end to the other,” says Elkhatib.

“They are running 24 hours, they don’t want to have a shutdown to relocate the machines, they can just do it during the night, and within four or five hours they’re back online after changing the entire layout. So they loved the idea of the modular layout, they loved the idea of raised access floors.”

Because of the environmental improvements and modular flexibility at the Wind Creek Atmore and Wind Creek Montgomery casinos, PCI decided that implementing an underfloor system at their new, pre-construction casino was an easy decision for the \$246 million Wind Creek Wetumpka. Slated to open in December 2016, this new casino would employ over 1,000 staff members and offer a Las Vegas-style experience.

Working together with Tate Access Floors and Johnson Controls, AirFixture helped ensure that the planned 85,000 square foot gaming area at the Wind Creek Wetumpka offered the highest air quality possible.

However, ownership required that no air diffuser grilles be visible on the gaming floor. Experience had taught them that changes in floor elevation due to the diffuser grilles made cleaning the floor difficult, and patrons would sometimes spill or pour their drinks inside them.

*“When you walk into an underfloor system, it smells much cleaner, it’s so much clearer.”*



“They didn’t like the fact that when you’re standing on the gaming floor and you’re looking down and you see all of these grilles that kind of visually break the scenery.”

“Architecturally, they didn’t like the fact that when you’re standing on the gaming floor and you’re looking down and you see all of these grilles that kind of visually break the scenery.”

The requirement for non-visible diffusers posed a significant challenge, notably because PCI decided on a variable air volume (VAV), rather than a constant volume (CV), setup. VAV offers more control than CV, as it regulates the airflow based on pre-set conditions rather than continuously operating at 100% capacity. An innovative and costlier step for a casino to take, but one that added complications.

“So we said OK let’s go in that direction,” says Elkhatab. “The owner and engineer were interested in a variable air volume system which means you’re going to have a thermostatically controlled device, and that device is going to vary the opening of the damper based on maybe smoke level in the space, or you can control it based on a thermostatic system.”

It was ultimately decided that the floor grilles would be concealed beneath some of the 2,520 slot machines. However, this posed a problem: the specific CFM (cubic feet per minute) requirements of VAV would be impacted by their covered location. Without any available products that would accommodate these requirements, AirFixture had to design one from scratch.



Wind creek Wetumpka casino in Alabama.

# THE SOLUTION

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*We're starting with a blank sheet of paper and let's come up with a design.*

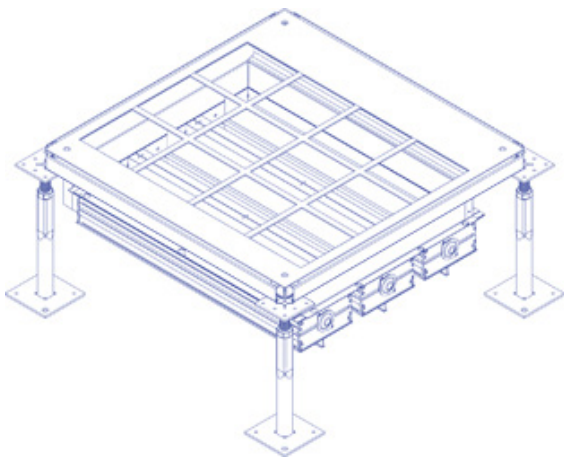
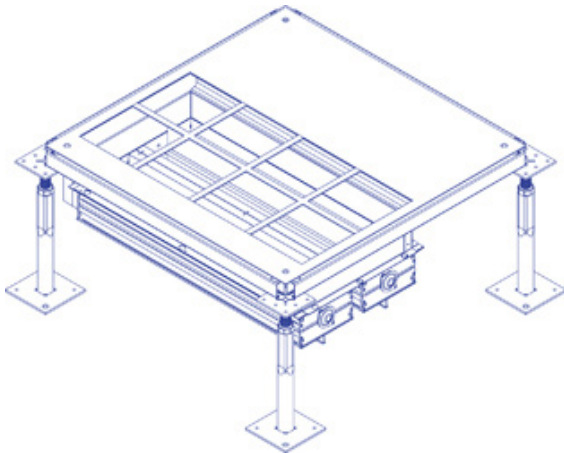
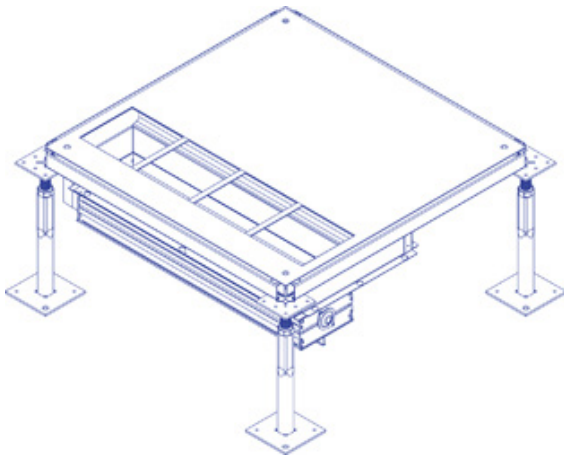
AirFixture assembled a team at their product laboratory to come up with a solution. Represented in the group were distributor Johnson Controls, Tate Access Floors, architects Hendak Bobo Group of Memphis TN, engineers Finnegan Erickson Associates of Las Vegas NV, and casino ownership.



The team brought two slot machines into the lab and went to work on coming up with a diffuser capable of handling the necessary variables. AirFixture knew that an innovative approach would eventually solve the problem.

"We're a factory, we pride ourselves on being innovative, we want the feedback from the best of the best," says Elkhatib. "We have the architect, the engineer, the facility people - and we have great customer service; we'll put together whatever you want to come up with. We're going to test it, we're going to have the lab here at your service, we're going to have our engineers at your service, we're starting with a blank sheet of paper, and let's come up with a design."

At first, the notion of simply removing the grilles was considered. "If we tucked these air terminals below the machines we really don't need a grille. You can have a wide open cutout in the raised access floor and just have the opening there. It's less pressure drop so that means you're going to get more airflow coming out of it."



However, after days of testing and simulations, a different strategy emerged. Instead of removing the grilles, a new diffuser the size of a full floor tile and consisting of a steel plate with smaller openings acting as high-capacity valves to support a VAV architecture was proposed.

In the meeting, they decided to “build a diffuser that’s going to take an entire 24 x 24-inch floor tile. Make it steel plate so that it’s load bearing and it’s rated as strong as the floor itself, for ease of installation. Integrate it with the Tate Access Floor system, make it VAV, make it compatible with plug and play cables, use existing pedestals, and make it a high volume output,” adds Elkhatib.

**AirFixture named the new technology  
Air Valve Tile Assembly or AV-TA.**



# THE RESULT

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*Using the AV-TA solution turns out to save money versus having traditionally exposed VAV units.*

The AV-TA system was successfully installed in Wind Creek Wetumpka's spacious gaming area to an overwhelmingly positive response. In addition to improved customer comfort, the new system makes operations much more efficient.

"The feedback we got from the facility is that when they shampoo the carpet, which happens pretty frequently in a casino like this, they don't have to worry about water and soap getting through the grilles. They don't have to worry about going around once a week to lift the grille inserts out and clean the inside of the terminal because people dump their Cokes in there," says Elkhatib.

While a VAV system is significantly more expensive than a CV system from a first-cost perspective, using the AV-TA solution turns out to save money versus having traditionally exposed VAV units. Since each unit is more efficient,

a facility can usually benefit from needing fewer of them.

"Dollar per square foot, an AV-TA solution is actually cheaper than a VAV that's exposed on the floor. The reason is that you can get seven times the amount of CFM through one of these AV-TA tiles versus just having a round or square diffuser. That means that if I have a space in which I need 800 floor diffusers, I can probably get away with just having maybe 100 or 120 of those AV-TAs," says Elkhatib.

"We sold a casino in Des Moines with this setup, we sold a casino in Canada in Saskatchewan, and I believe we did one in California. We got about four or five opportunities but I know we sold it on a couple of jobs outside of PCI Gaming."



*In fact, this new technology was so successful that other casinos soon began to adopt it.*

**“ AV-TA solution turns out  
to save money versus  
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