HYBRID SYSTEM BLOWS HOT AND COLD IN ATLANTA

// By MARY HELEN SPRECHER

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istening to Ed Mangan, field direc-
tor for the Atlanta Braves, discussing the new technology that keeps his field in SunTrust Park emerald green and healthy, you’re struck by one thought: why hasn’t anyone thought of this before?

It’s not like there haven’t been developments all along leading up to this moment. Clay tennis courts have had subsurface irrigation for decades now, and pop-up sprinklers are commonplace. Even athletic field heating isn’t new.

But the new home of the Braves has a unique hybrid of all these systems: irrigation from above, in addition to subsurface, plus a drainage system to handle excess water. It also has the advantage of a fan-forced air system that creates an improved environment in the rootzone and a vacuum system that helps pull air down through the field profile and accelerates drainage rates above what gravity is capable of.

The system, called AirPAT, was designed by The Motz Group and rooted in the Prescription Athletic Turf (PAT) system, which was invented at Purdue University by Dr. Bill Daniel in the 1970s (and acquired by The Motz Group in 1994). It was installed in more than 50 stadiums worldwide.

And it is such a striking development that the American Sports Builders Association named it the Outstanding Single Field Facility of the Year. And while the award was presented in December, the technology was several years in the making.

In 2015, Motz added rootzone aeration technology. “Although rootzone aeration was available in the market, we had seen that the uniformity of air distribution across the field could be suspect. Our goal was to understand

because the pipe system in an AirPAT system acts to convey both air and water, it was critical to optimize both functions.
and solve that issue,” says Mark Heinlein, director of technical projects and research for Motz. Enlisting the help of engineers from Advanced Drainage Systems and Ohio University’s Russ College of Engineering, they set about the research to meet that goal.

One of the things that Motz came to understand better was how the relationships between pipe configuration and placement, air pressure and flow volume, and aggregate characteristics affected the uniformity of air distribution, as well as drainage rates and patterns, throughout the field. Because the pipe system in an AirPAT system acts to convey both air and water, it was critical to optimize both functions.

Designing with ADS’s AdvanEdge panel drain proved the difference. Jim Goddard, chief engineer with ADS (ret.), said, “The use of AdvanEdge, custom perforated only on the bottom for the AirPAT system, provided two to five times more openings than a typical 4-inch round pipe. When laid directly on the watertight geomembrane, it allowed the total overall drainage gravel profile to be thinner. These added up to more air flowing through less gravel, which increased the efficiency of the system.”

As part of their research, the team investigated the use of geothermally modified air to increase or decrease the rootzone temperature. In Atlanta, the average annual ground temperature at 10 feet below the surface fluctuates between about 550 F and 650 F, while the average annual air temperature
ranges from a more widely varying 400°F to 850°F. By moving high volumes of air at low pressure through a 1,200-foot horizontal loop of pipe installed below the field, cold winter air is warmed and hot summer air is cooled. Once that energy transfer takes place, the air is pushed up through the profile to moderate the rootzone temperature.

Mangan says that Motz’s approach to sustainability means the field isn’t the only thing that’s green.

“This system gives us the absolute availability of being completely able to recycle all the water that falls on the field,” he notes. “Whether it’s rainwater or irrigation, we can capture it and pump it back onto the field. And the aeration system uses geothermal air to warm and cool the rootzone, something I don’t think as been done before in sports fields.

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we’re almost always using the air,” Mangan says. “It can be in the teens but once we put the winter covers on the field and push the air up through, we can easily keep the surface above 36 degrees, regardless of the air temperature.”

The Braves field is turfed with Paspalum Platinum TE, which ultimately does not start to thrive until temperatures are consistently in the fifties. “The air system definitely helps green it up a lot sooner,” says Mangan. “The more I can keep the soil temperatures up, the better my grass is coming out of winter.”

“The system monitors field conditions throughout the year with sensors in the rootzone that collect data every 5 minutes on moisture, oxygen, temperature and dielectric constant,” says Heinlein. “The AirPAT system provides grounds personnel with a set of customizable tools that they can use to make more informed management decisions. Better and more detailed information help them produce optimal agronomic conditions, which result in a superior playing surface.”

Mangan lauds all the advantages that the AirPAT system gives him: real-time data on growing conditions, water recycling, rootzone aeration, customizable controls, but at its most basic, for him it’s about drainage. He notes that Atlanta is famous for its sudden rainstorms, but even when they’re heavy enough to flood streets, they aren’t a problem for the field.

“We can pull up to 200,000 gallons an hour off the field,” he notes. “Once we uncover the skinned areas, we’re ready to play. Drainage is key, it’s absolutely key. It’s the engine that runs the rest of the complex. You need every advantage you can have to move water because if you’re not playing, nothing else you have is going to matter. Look at this venue; there are 200 events alone on this field. If we couldn’t host something because of field conditions, it could be a huge monetary loss. If you think about how much it costs to lose one event, you can see the system paying for itself. With proper design and management of a field, you have better quality and you can host more events. Field events are revenue and that’s what everyone is looking for.”

Free-lancer Mary Helen Sprecher wrote this article on behalf of the American Sports Builders Association (ASBA), a non-profit association helping designers, builders, owners, operators and users understand quality construction of many sports facilities, including sports fields. One of the Association’s resources is the book, Sports Fields: A Construction & Maintenance Manual. The ASBA sponsors informative meetings and publishes newsletters, other books and technical construction guidelines for athletic facilities including running tracks and sports fields. Info: 866-501-ASBA (2722) or www.sportsbuilders.org.