

# CASE STUDY

## NC STATE UNIVERSITY

### WAVE OF TECHNOLOGY

Universities around the country today have been faced with the challenge of upgrading and expanding their athletic facilities with state-of-the-art architecture and design to attract both student athletes and fans. With these upgrades and expansions comes the challenge of comfort conditioning the facilities according to their activity use.

Many VIP's including media personnel, coaches and alumni do not have to contend with the elements as they enjoy outdoor sporting events. Instead they view the games from the comfort of a press box, luxury suite, or club level seating.

In addition, game officials, coaches, and student athletes need comfortable locker room facilities in order to prepare for the game and unwind afterwards.

There are many factors that must be taken into consideration when designing an HVAC system for such specialized applications including temperature, humidity and ventilation control. All of which affect the occupant's comfort.

AAON understands the challenges of comfort cooling applications, humidity control and varying occupancy rates. That is why AAON is the leading HVAC solutions provider.

### SCOUTING REPORT

# COOLING THE PACK



CARTER-FINLEY STADIUM  
VAUGHN TOWERS



## HOME FIELD ADVANTAGE

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### VAUGHN TOWER STATS

Dominating the skyline around North Carolina State's Carter-Finley Stadium is the Vaughn Towers addition.

Completed and opened in time for the 2005 football season the four-story 117,000 square foot structure stretches from end zone to end zone and boasts 112 working press seats, booths for radio and television broadcasts, coaching booths, and operations areas. The facility also houses 955 club seats, 51 luxury suites and a chancellor's suite.

### THE OFFENSE

All good offenses need a clutch player to be successful. As part of the comfort conditioning for the Vaughn Towers, AAON was called on for their make-up air expertise. AAON provided 30 ton packaged DX RM Series (2-30 ton) rooftop air conditioners—all equipped with AAONAIRE® factory installed total energy recovery wheels and 100% outside air capabilities. Make-up air is a key element to any sports facility with high game day occupancy. Pre-conditioning the outside air is essential to keep the facility's temperature and humidity under control.

AAON units with AAONAIRE® factory installed energy recovery wheels are designed to recover energy that would normally be lost through the required exhaust ventilation. The benefits of energy recovery are significant in that 35-40% of the unit heating and cooling capacity can be achieved by the wheel collecting otherwise lost energy from the exhaust air and returning this energy to entering outside air.

### THE DEFENSE

A good defense to conserve energy, and thus offset rising energy costs, is using an air-to-air energy recovery device such as the AAONAIRE® factory installed energy recovery wheel.

This proven method reduces energy consumption especially in buildings with high ventilation requirements.

### SPECIAL TEAMS

The AAON 100% dedicated outside air units are capable of heating, cooling and dehumidifying the incoming outside air. The Carter-Finley Stadium units provide pre-conditioned ventilation outside air to other return-air-only air handlers that provide air distribution into the towers. The return-air-only air handlers cannot handle the temperature and humidity demands of large amounts of untreated outside air, however, the durable AAON design makes it a key player for make-up air applications.



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### GAME DAY

New Carter-Finley Stadium locker room facilities for the home and visiting teams, as well as, the game officials were completed and opened in time for the 2006 football season.

Make-up air units were also needed for this addition. Mr. Rob Wright, Project Manager for Newcomb & Company found that using AAON make-up air units on the locker room project brought value and experience at a reasonable first cost.

Tucked under the north end zone stadium seating, AAON provide the outside air pre-conditioning for the locker room facility. The units are mounted on the roof of the locker rooms, underneath the bleachers and concession buildings. All of the units have outside air ducted to them with an inline blower bringing fresh air from a remote point at the edge of the concrete structure.

The locker room facility utilizes 15 ton and 25 ton AAON RM Series rooftop units-all equipped with AAONAIRE<sup>®</sup> factory installed total energy recovery wheels and 100% outside air capabilities that are utilized during the unit's Game Day occupied mode.

The factory installed DDC controls for the locker room units include both a Game Day occupied mode and an unoccupied mode. During the Game Day mode the units operate the total energy recovery wheels with 100% outside air to supply pre-conditioned ventilation air to the locker room facilities.

During the unoccupied mode the controls are programmed to disable the operation of the energy recovery wheels and close the outside air dampers to allow only the preset minimum of outside air, while the units continue to control the temperature and humidity of the supply air. This control system flexibility allows the AAON units to provide energy savings for the facility during non Game Days, as well as, Game Day operations.

### NORTH ENDZONE LOCKER ROOMS



*"The units on the locker rooms had to function in two separate modes. This separate mode function was made very easy" explains Ed Adams, of Chet Adams Company, "with the controls and AAON having a feature to turn off the energy recovery wheel and exhaust fan as well as closing the outside damper."*

*"AAON offers many unique factory installed features and options for outside air and humidity control applications."*



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### THE PLAY BOOK

It is always a wise choice to have a play in the book that is going to work no matter the circumstances.

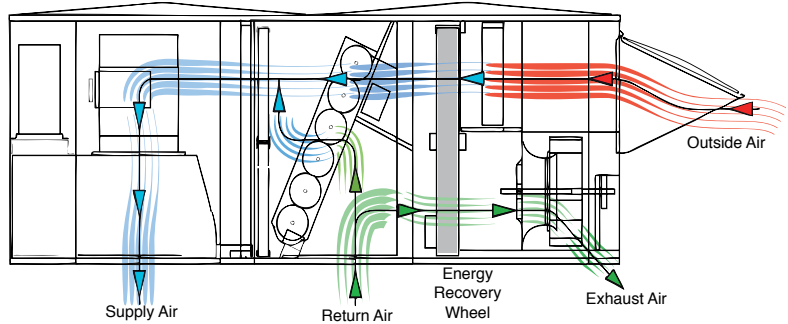
Using AAOON units with the AAONAIRE® factory installed energy recovery wheels results in a small package with a huge gain. In make-up air applications with energy recovery wheels this is especially true. This combination can increase the effective capacity of a 20-ton unit to the equivalent of a 30-ton unit. With the AAONAIRE® 20-ton unit having nearly double the EER of a 30-ton unit without an energy recovery wheel. Smaller units with energy recovery wheels can thus be expected to take on the work load of much larger units.

The results become the winning solution.



*A perfectly executed game plan makes winning teams. AAON has proven to be a key player by bringing experience and expertise to the game.*

**CONTACT YOUR LOCAL AAON REPRESENTATIVE TO FIND OUT HOW AAON CAN HELP YOU SAVE ENERGY DOLLARS AND SOLVE YOUR HEATING AND COOLING PROBLEMS.**



### A FEW AAON WINNING SOLUTIONS

- Compressors, controls and heating components are located in a single compartment isolated from the air stream
- Available with R-410A environmentally friendly refrigerant
- 6 Row evaporator coils for maximum dehumidification
- Modulating hot gas reheat
- AAONAIRE® Factory Installed Energy Recovery Wheels provide energy savings
- Extended life Stainless Steel heat exchangers
- Modulating gas-fired heat exchangers
- Stainless Steel condensate drain pans
- Double wall cabinet and door construction
- Access doors with full length stainless steel piano hinges
- Factory Installed DDC controls with color coded wiring diagrams
- 2500 hour salt spray tested paint

*Others have agreed that game day execution and team play is important. "AAON was competitive in price ..." speaking of the HVAC applications, "I am satisfied with the AAON equipment, the units are working as we expected."*

*Jim Griffin  
Project Engineer*

CHET ADAMS, Co.  
AAON Factory Representative  
Raleigh, NC

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