

Therma-Fuser™ VAV Diffusers Deliver Nine Years of Individual Space Temperature Control to Robins AFB NCO Academy.

Simple Installation • Simple System • No Maintenance

WARNER ROBINS, Georgia – Robins Air Force Base (AFB) NCO Academy provides professional military education (PME) for military personnel. The Academy's students work in a comfortable learning environment with temperature controlled by Therma-Fuser™ VAV diffusers from Acutherm. According to Roger Knight, supervisor of systems maintenance for Robins Air Force Base, the Therma-Fuser units provide the individual space temperature control required by the military—and, they are maintenance-free. Since opening its doors in 1988, not a single unit has required service or been replaced.

Individual Space Temperature Control Essential

The Academy is a single-story building that includes four PME training

rooms, a large auditorium, two offices, a break room and restrooms. The main sources of temperature fluctuation, according to Knight, are lights and people.

When the Academy was built, comfort and budget were major concerns. Several studies by office building

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owners and others have indicated that productivity increases when ten-

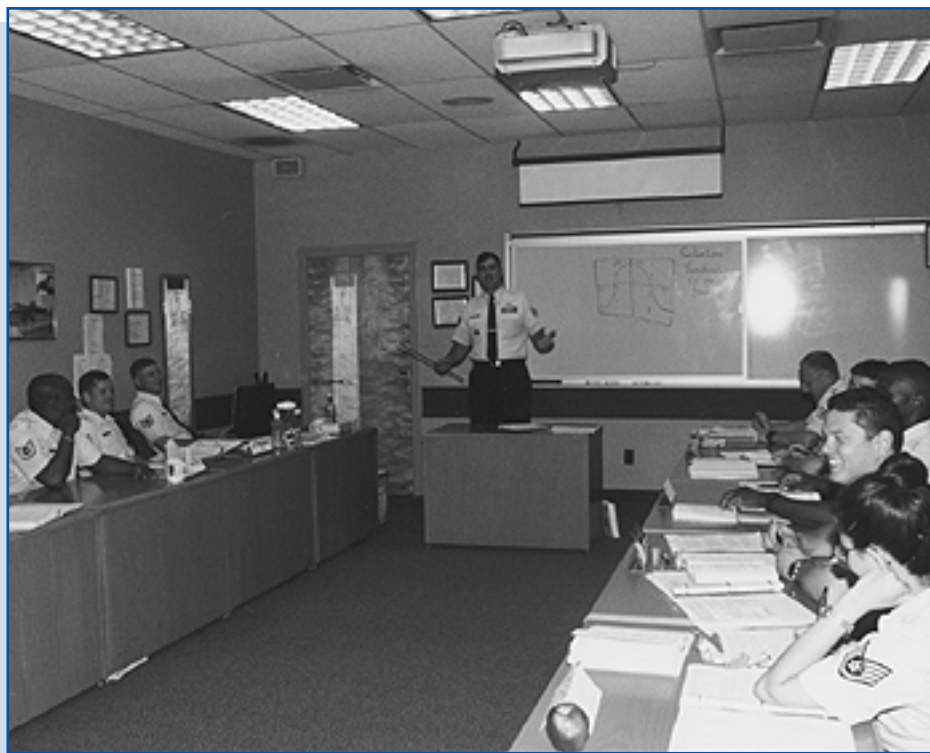
ants are comfortable, and that temperature plays a large role in comfort. Such studies were recently substantiated by a report in the *ASHRAE Journal* (January, 1997) indicating that upgrading from multi-room zone controls to individual room controls will pay for itself in 4.3 months, based on increased productivity of workers—or, in a classroom situation, students. The Academy recognized from the beginning that the "people" load in the spaces would vary throughout the day, and that individual space temperature control was essential.

However, the system as designed could not provide the level of space control that the military wanted. The Academy had installed a 20-ton (2-compressor) outdoor two-stage heat pump and an indoor air handling unit providing constant volume heating and cooling. They had also run low-pressure (under 0.5" wg static pressure) duct work. The problem was finding a cost-effective control system.

Modular VAV, Simple Controls

The Academy turned to Knight for expertise and help in completing the system within a tight budget, using the existing equipment, and still maintaining a temperature comfort level that would be conducive to learning. Knight's solution: Therma-Fuser modular VAV units and a control system of his own design.

Continued



FLIGHT ROOM —Note the partially open Therma-Fuser™ modules and smiling faces.



"I had used Therma-Fuser modular VAV diffusers in other buildings where the comfort level was a problem," says Knight. "In every instance, they worked extremely well. And, with a 10-year warranty, the Therma-Fuser units are a simple, effective and maintenance-free way to provide individual temperature control."

Knight could also have used traditional VAV boxes, with a thermostat in each room, but the option was

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expensive and required cutting into the ductwork to install the VAV boxes. The only other option was to replace the single-zone air handling unit with a multi-zone unit and run new ductwork, which was prohibitively expensive.

"The Therma-Fuser HC (heating/cooling) units were really the only reliable, effective and economical answer," says Knight. "Then, I built a really simple control system."

The control system that Knight built from various electronic parts is sim-



Roger Knight—Supervisor of Systems Maintenance, Robins AFB.

ple. He installed a sensor in the air handler return unit and linked it to electronic controls for two-stage heat pumps. The heat pumps are activated if the temperature drops below 73°F or rises above 76°F. A forward curved AHU fan runs continuously.

The Therma-Fuser HC units take over in the rooms. The controls are built in

and preset to maintain temperature to within two degrees of the set point. The units automatically vary the air flow when they sense a temperature change away from the set point.

"No wiring or pneumatic connections are required, which helped keep costs down and also maintain the system's simplicity," says Knight. "In addition, we didn't have to cut into ductwork—we just dropped the diffusers into the ceiling."

Maintaining Comfort Without Maintaining Equipment

During normal occupancy, The Therma Fuser HC units modulate between 50-75 percent open. A recent visitor to the Academy noted the following: "In one flight room, we observed about six people gathered in one spot, while the rest of the room was vacant. The Therma-Fuser module over that group was noticeably open, as contrasted to others in the room which were closed because cooling was not required."

This doesn't surprise Knight, who says the system works much as he expected it to.

"In nine years, I haven't been called in to adjust or repair a Therma-Fuser module, much less replace one," he says. "Therma-Fuser modular VAV systems provide a maintenance-free, cost-effective way to provide individual temperature control. I plan to keep on using them in situations where such control is important."



*ROBINS AIR FORCE BASE NON-COMMISSIONED OFFICER ACADEMY
Four flight rooms in front. Auditorium, rest rooms, office and breakroom in rear.*



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