

Case Study

Trinity's Oosting Gymnasium Energy Savings from "Above the Rim"

The Assessment

Engineers from Tradesmen of New England (TNE) were commissioned to do a complete review of the mechanical system of Oosting Gymnasium at Trinity College, for energy savings and revitalization, make recommendations, secure incentives from the utilities and make it happen.

In a building with a 30-foot ceiling there is approximately a 15°F temperature difference between the floor and the ceiling. With higher ceilings it is even more. That means to generate the heat necessary to maintain a comfortable 68°F temperature at the floor level, where people work, the ceiling will be a toasty 83°F or higher.

The Resolution

De-stratification fans were installed through the ceiling of the gym to drive the heat trapped near the ceiling back to the floor, virtually eliminating hot and cold spots as well as reducing the "on cycle" time for the heating units.

Information from the fan's manufacturer, Airius LLC (www.airius.us) reveals the following:

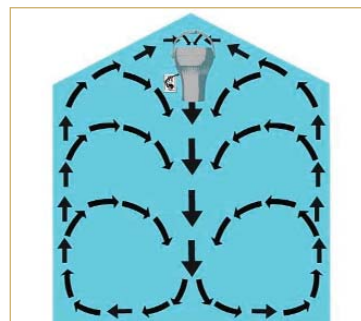
A low wattage, energy-efficient motor drives a near-silent fan that aerodynamically and quietly forces a column of hotter air from the ceiling directly to the cooler floor below. As this column of warm air nears the floor, it draws in the surrounding colder air and begins to rise again, creating a torus.

While doing so, it warms the cooler air it mixes with near the floor, increasing the temperature of the air and floor where people live and work.

As this happens, it will require less and less energy to comfortably heat the floor area, allowing thermostats to be lowered and energy savings to be realized. Once begun, the entire process of "thermal equalization" will take, on average, less than 24 hours.



TNE utilized its own in-house licensed electrician to install an electric outlet for each fan for ease of maintenance and repair rather than hard wiring.



Airius fan creates a Torus to de-stratify air

Highlights

Criteria

- Install 9 De-stratification Fans
- Protect the gym floor
- Safety is job one

Results

- Natural gas savings of 6710 CCF
- Cost savings (projected) of \$8,401
- Professional installation
- Building air handler now cycles on and off rather than running continuously
- Unified temperature at all levels
- Fans virtually un-detectable in ceiling

SERVICES PROVIDED

- ✓ Engineering
- ✓ Installation
- Service
- Automation
- ✓ Project Management

Project Challenges & Resolutions

All projects have their unique challenges, and this project was no different. At TNE we take pride in our ability to affect a speedy resolution.

Challenge Number 1 – Installing De-stratification Fans 38 feet in the air

Safety working at this level was paramount.

Resolution Number 1

TNE conducted an in-depth analysis prior to the commencement of work and developed a comprehensive safety plan.

Challenge Number 2 – Protection of Gym Floor Finish
Care had to be exercised to protect the gym floor finish below from fall hazards of all kinds.

Resolution Number 2

TNE ensured the floor was covered completely to prevent damage. No damage occurred.

Challenge Number 3 – Gym Floor Cushioning Protection

The gym floor is designed with a cushioning system that cannot take a lot of weight.

Resolution Number 3

TNE researched and rented the proper size and weight lift to reach the fan installation points. No damage occurred to the gym floor's cushioning system.

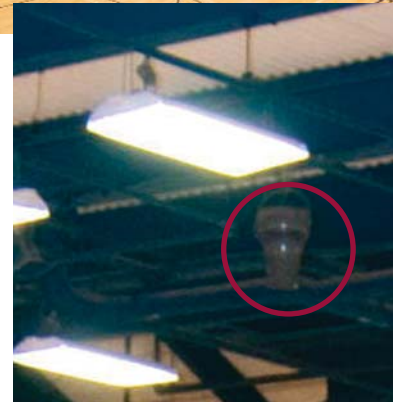
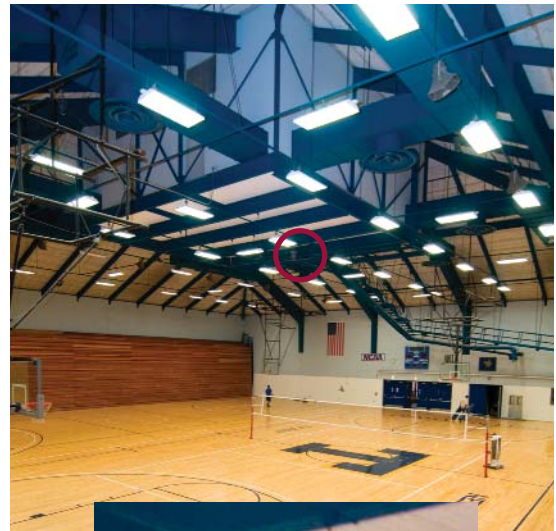
Challenge Number 4 – Tracking Results

Oosting Gym is on a central plant for steam and electricity making it impossible to see meter based proof of success.

Resolution Number 4

The measure implemented passed the scrutiny of the Connecticut Light and Power Co. to qualify for incentives. Data is still being collected and analyzed, however thermal scans have indicated that the temperatures throughout the gym are relatively equal with no significant build up of heat in the ceiling during the winter.

Can you see the fan?



The Client Trinity College, Hartford, CT

Athletic Department Mission

Athletics contributes to the overall educational experience at Trinity College by providing comprehensive and varied athletic programs to all students. . . Trinity College embraces intercollegiate athletics as an educational experience that is an integral component of the academic mission of the College.

Feedback from Trinity College

Plant Engineer Ezra Brown felt that this project was very well executed. This project was completed in conjunction with a revitalization of the entire mechanical system. He relayed that this was a true “turn key” project that was done well and had little impact on his staff.