The Cost of Doing Nothing

How Heat Quietly Erodes Your Workforce and Your Bottom Line

Real-World Results from a Chesterfield, Missouri Manufacturing Facility Using the **ApexAir™ by Cambridge Air Solutions.**

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Introduction

Ignoring thermal comfort in your facility isn't just an oversight...**it's a liability.**

Every day your employees spend in uncomfortable conditions, you're bleeding productivity, safety, and talent. Good, smart workers don't just get tired, they leave. And when they walk out the door, they take years of skill and experience with them. What replaces them? Recruiting expenses, training costs, lost output, and your reputation as an employer.

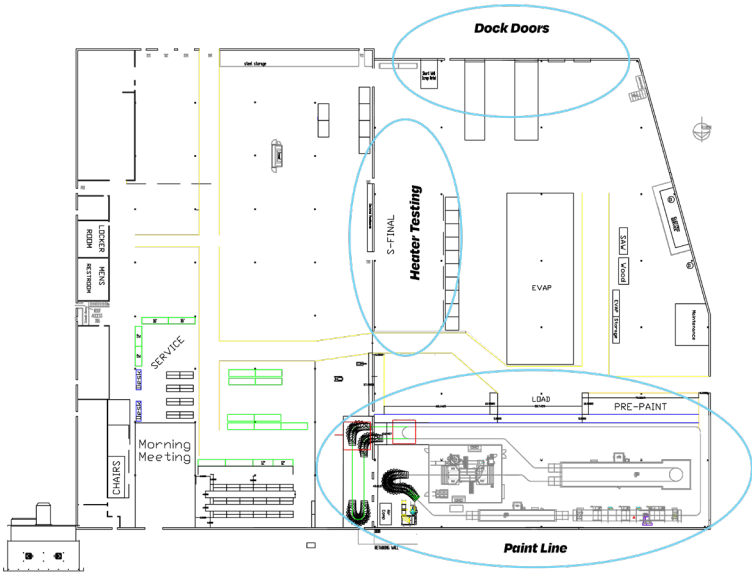
The question isn't "Can we afford to invest in HVAC?," it's "How much longer can we afford the hidden costs of not investing?"

The reality is that neglecting employee comfort leaves money on the table every single day. Disengaged employees make more mistakes. Heat-related fatigue slows production. Absenteeism rises. Turnover spreads. What starts as lost people quickly becomes lost profits, and, ultimately, the erosion of your business itself; be it the family legacy you've built or the bottom line your shareholders demand.

This paper uncovers those costs and shows why putting off investment in your facility's environment is far more expensive than acting now. Using our own manufacturing plant as proof, we tested the new ApexAir by Cambridge Air Solutions, an Air Turnover System (ATO), and measured the impact on both performance and morale. What we found was a stark truth: failing to prioritize comfort drains capital, while investing in it protects workforces, safeguards profitability, and secures the long-term return that businesses depend on.

The Challenge: Overheating in Manufacturing Environments

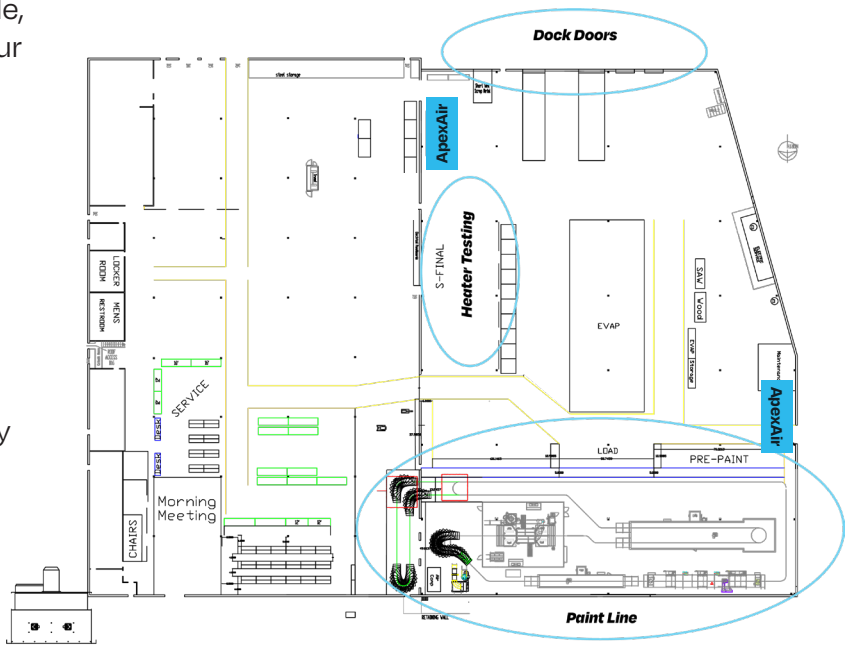
Manufacturing facilities naturally produce a lot of heat, whether from equipment, lighting, or the people themselves. On warm days, that heat combines with outdoor temperatures to create tough working conditions.



In our Chesterfield, MO facility, the biggest contributors were clear: the four-stage automated paint line, constant dock door traffic, and live unit testing at the end of the line. Together, these factors drove indoor temperatures to uncomfortable levels that directly threatened our operation.

The Solution: The ApexAir by Cambridge Air Solutions

In August 2023, we installed two ApexAir units as the second phase of our cooling strategy. These units were placed near the dock doors and the high-heat paint line, areas that create the greatest strain on comfort. The goal was simple: keep temperatures below ambient levels and deliver a more stable, productive environment for our hardworking people.



With design support from our Applications Engineering team, the system created a powerful, conditioned air stream that contained heat from the paint line and prevented it from spreading across the facility. The velocity and distribution of the technology were critical to achieving consistent comfort where it mattered most.

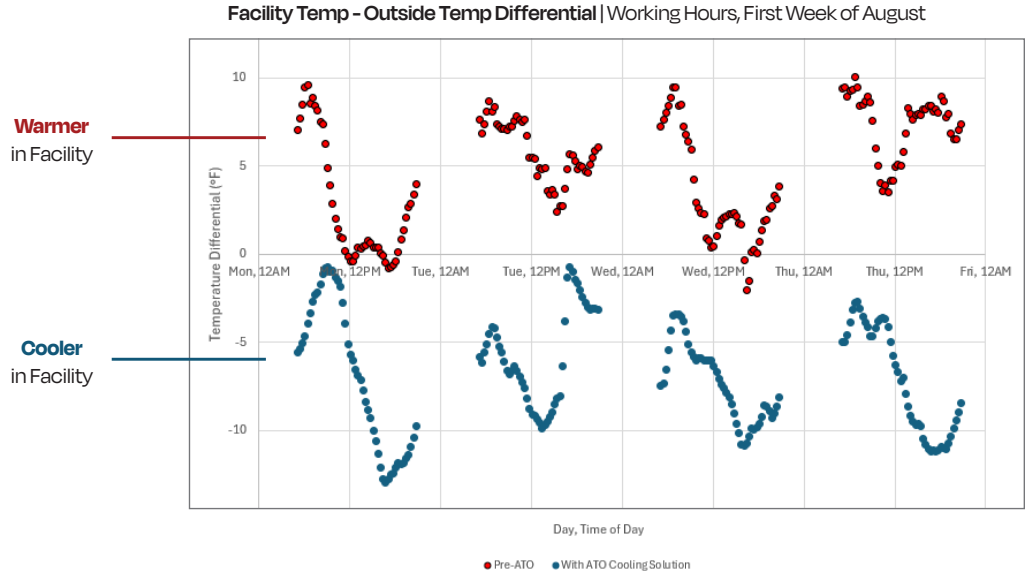
The Impact: Employee Comfort and Operational Efficiency

Upon installation of the ApexAir in our facility, employees immediately reported noticeable improvements in comfort and air quality.

To measure the impact, our engineering team collected performance data on temperature stability, indoor air quality, and the risk of overheating. A key focus was the temperature difference between indoor and outdoor conditions during the first week of August, some of the hottest days of the year here in Missouri.

Before the ApexAir, indoor temperatures often climbed higher than the already high outdoor temperatures. This was largely driven by internal heat sources such as the paint line and unit testing. With the ApexAir in place, we were able to better manage those heat loads and maintain indoor conditions that were cooler than the outside air.

The graph here shows that improvement by tracking the difference between indoor and outdoor temperatures during working hours (6 a.m. to 9 p.m.). Each data point represents how much cooler, or hotter, the facility was compared to the outdoor temperature at that time. Prior to the ApexAir, the differential was often positive, meaning the inside was hotter than outside.



After installing the ApexAir, we saw a clear shift toward consistently negative differentials, showing that the system kept indoor conditions cooler even as outdoor temperatures peaked. Measuring the inside-outside differential allowed us to cut through daily weather swings and get a reliable view of real-world performance.

The results are undeniable. The ApexAir has greatly improved our ability to control internal heat gain and maintain a comfortable environment throughout the workday. The difference in how our facility operates, and how it feels to the people inside, is significant.

The Cost of Doing Nothing Analysis

Can you afford not to cool? We couldn't.

Many building owners and business leaders underestimate the financial toll of poor temperature control in the workplace.

While the upfront investment in a cooling solution may seem substantial, the costs of doing nothing—productivity loss, absenteeism, and high turnover—add up quickly.

Warning: Exposure to the real cost of doing nothing may cause acute discomfort, including the recognition that your facility isn't helping your people, your customers, or your reputation.

The High Price of Turnover

Employee turnover due to poor working conditions is more than just a disruption, it's a costly problem. Consider the financial burden of:

- **Recruitment & Hiring:** Finding, interviewing, and onboarding new employees can cost thousands per hire.
- **Training & Lost Productivity:** New hires take time to ramp up, reducing overall operational efficiency. Valuable knowledge also gets lost with a revolving door.
- **Workplace Morale & Reputation:** High turnover creates instability and can make it harder to attract and retain skilled workers.

The Cost of Doing Nothing

The following section provides a **Cost of Doing Nothing Analysis** to estimate the value of adding cooling to our manufacturing facility in Chesterfield, Missouri. Here we will provide an analysis of our situation, breaking down initial costs, operating expenses, projected productivity gains, and improvements in employee retention and product quality.

Installing & Operating the ApexAir

100 tons of cooling were provided by two 50-ton ApexAir units paired with two 50-ton outdoor condensing units using R-410A refrigerant at an installed equipment cost of $440,683.

Installed Equipment Cost = $440,683
Installation Cost - $200,000.00

The operating cost for each system was determined to be $6.26/hour at a local electricity rate of $0.12/kWh when running at full capacity. This equates to an annual operating cost of $21,284 based on full capacity cooling for 20 weeks a year, 5 days a week, 17 hours a day.

Annual Operating Cost = $21,284

Annual Maintenance Cost = $3,000

Effects of Hot Temperatures on Productivity

Research shows productivity drops 1–2% per degree above 77°F, with steep cognitive declines above 90°F [1].

To assess thermal exposure in our facility, hourly outdoor temperatures from a nearby weather station were analyzed, and indoor conditions estimated using historical internal heat gain data. The study focused on two weekday work shifts (5 a.m.–3 p.m. and 3 p.m.–1 a.m.), identifying monthly hours when indoor temperatures exceeded 77°F and calculating the average temperature during those periods. Using a 1% productivity loss per degree above 77°F, the total estimated annual productivity loss is $121,467.

Effects of Hot Temperatures on Employee Turnover

Our company's historical employee turnover rate prior to addressing hot workplace temperatures was approximately 20%. Since the ApexAir units were installed, the turnover rate has remained below 15%. This avoids approximately five employee turnovers per year.

Our cost to replace an employee equals three months' burdened salary, accounting for recruitment, training, and lost productivity on the floor. The ApexAir saves $74,329 per year from reduced turnovers and ensures a more stable and experienced workforce.

Cost of Productivity	
Productivity loss per degree (above 77°F)	1%
Additional Direct Labor Costs due to lower productivity	$121,467

Cost of Employee Turnover	
Employee turnover before ApexAir	20%
Employee turnover with ApexAir installed	15%

Annual Productivity Improvement Cost Avoidance with ApexAir = $121,467

Annual Gross Profit From Reduction in Turnover = $74,329

[1] *Seppänen, O., Fisk, W. J., & Faulkner, D. (n.d.). Cost-Benefit Analysis of the Night-Time Ventilative Cooling in Office Building.*

Effect of Hot, Uncontrolled Temperatures on Product Quality

Excessive heat and poor air circulation don't just affect people. They also put your products at risk. Fluctuating temperatures can cause material warping, spoilage, and inconsistent output, all of which drive up costs through rework, scrap, and warranty claims. These aren't just operational headaches; they're direct hits to profitability and customer trust.

After installing the ApexAir, we saw an 8% improvement in quality thanks to a stable, controlled environment, translating into $26,800 in annual cost savings.

And the value extends beyond the balance sheet. By reducing defects and delivering more consistent results, we also strengthen brand reputation and customer confidence, returns that compound far beyond the immediate savings.

Employee Health and Safety

Let's not forget about employee health and wellness. A stable indoor climate doesn't just improve comfort, it reduces heat-related safety risks and supports a healthier workforce.

Research shows the stakes are real. A meta-analysis[2] of heat exposure found that every 1.8°F increase in workplace temperature was tied to a 2.1% rise in cardiovascular-related mortality. For building owners and manufacturing leaders, protecting people from heat isn't optional, it's a responsibility that directly impacts safety and performance.

[2] *Liu, J., Varghese, B. M., Hansen, A., Zhang, Y., Driscoll, T., Morgan, G., Dear, K., Gourley, M., Capon, A., & Bi, P. (2022). Heat exposure and cardiovascular health outcomes: a systematic review and meta-analysis. The Lancet. Planetary health, 6(6), e484–e495.*

Results

The ApexAir by Cambridge Air Solutions investment resulted in a 25% reduction in employee turnover.

Cost Reduction (Yearly): **$222,597**

Payback Period of: **2.22 Years**

5-year gain: $429,460

10-year Gain: $1,299,603

The Hidden Cost of Doing Nothing

Our experience proves what many leaders overlook: uncomfortable working conditions don't just drive good talent into the arms of competitors, they drain productivity, increase quality issues, and quietly erode profitability. The numbers are clear, ignoring thermal comfort is costing you money every single day.

The ApexAir by Cambridge Air Solutions has reshaped our facility, protecting our workforce and strengthening performance. We're expanding this technology to additional sites because the payback is too significant to ignore, and the risk of inaction is too high.

The question now is: how much longer can you afford to accept hidden losses in your facility? Let us help you uncover the true cost of doing nothing. Contact us today for a complimentary Cost of Doing Analysis, and see for yourself how much value and stability the ApexAir can bring to your business before another season slips away.

Discover the real ROI of comfort.
Scan the QR code to connect with your local Cambridge Representative and start your Cost of Doing Nothing analysis.

CAMBRIDGE AIR SOLUTIONS
Enriching Lives

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For over 60 years, Cambridge has enriched the lives of its people, customers and suppliers through the design, manufacture and application of HTHV (high temperature heating and ventilation) space heating, ventilation and evaporative cooling products for commercial, industrial and manufacturing facilities.

Cambridge team members and their network of 550+ sales representatives help leaders in manufacturing and warehousing create healthy work environments by creating thermal comfort and improved indoor air quality so that workers can thrive. With more than 55,000 system installations and 3 billion square feet of buildings served, Cambridge is deeply rooted in a continuous improvement (lean) culture. Cambridge is able to create superior products based on quality, effectiveness and the overall customer experience. This mindset is shared openly and freely with like-minded leaders looking to find ways to engage their employees.

Cambridge is headquartered in Chesterfield, Missouri with its expansion facility located in Wentzville, Missouri.
www.cambridgeair.com