WHITE PAPER:

How Neglected Equipment Impacts Customers, the Environment, and Your Bottom Line

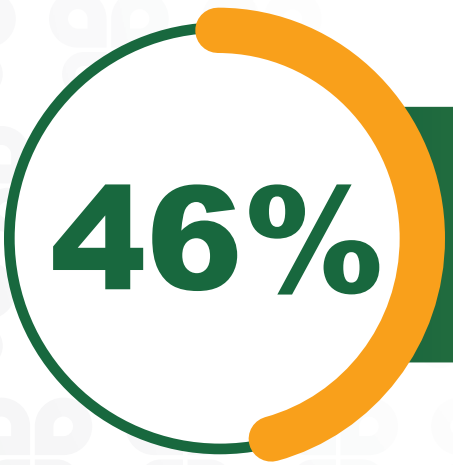
BUDDERFLY®

WHEN MAINTENANCE IS IGNORED, MONEY IS WASTED

Equipment plays a key part in running an establishment like a restaurant. It often presents some of the highest upfront costs to starting a business, and equipment like air conditioning units, refrigerators and freezers, grills and fryers, and of course lights are essential for day-to-day operations. Despite their high importance and costs, most businesses neglect equipment after it is purchased. This lack of proper maintenance is costing business owners and franchisees a lot of wasted money. Plus, poorly maintained equipment risks negative impacts on customers, employees, and the environment.

Franchisees are under increasing financial pressure. Between July 2021 and July 2022, revenues grew by 87%, yet small businesses' profits actually dropped by 4%. Many businesses are operating on razor thin margins and constantly looking for ways to cut operating costs to help their bottom line.

Often times, unless there is a code violation or similar driving factor, many business owners will wait for equipment to break before replacing or repairing it. Yet, by doing this to try and save money, they actually end up spending more in the long run and often impact business operations as well as customer and employee satisfaction. According to a 2022 survey, 46% of franchisees have had operational issues caused by equipment downtime to accommodate repairs. Avoiding upfront costs, instead of prioritizing savings over time, is a mistake.



46% of franchisees have had operational issues caused by equipment downtime to accommodate repairs.

Often times owners believe that since equipment is new, it does not require establishing a preventative maintenance program. Unfortunately, this could not be further from the truth. Proper maintenance is imperative from the onset to maintain efficiency ratings and operational parameters.

Frequently, equipment will provide warning signs of impending failures. Without regular maintenance, though, these warning signs are missed, resulting in more costly repairs and business interruption.

Even if it is not completely broken down, poorly maintained equipment can have a palpable impact on your business. Flickering or dim lights and improperly operating HVAC systems create an uncomfortable environment for customers and employees. Neglected HVAC can also affect the air quality of a restaurant.

Equipment that is not well-maintained can cause your energy usage to grow by as much as 30%. This not only decreases the effective useful service life of the equipment but also increases your monthly energy bills and your carbon emissions.

Equipment that is not well-maintained can cause your energy usage to increase by as much as 30%.

That is why having a proper preventative maintenance program needs to be a bigger priority for restaurant owners. Keeping equipment at optimal performance can make your business a desirable place to be, reduce your monthly energy bills and annual spending on repairs, lessen the risk of equipment failure, and lower your negative contributions to climate change. In this paper, we are sharing some of the most common equipment issues, their impact on your bottom line, and how to recognize problems before they become catastrophic for your business.

MOST COMMON EQUIPMENT ISSUES (AND HOW TO SPOT THEM)

If you have not been maintaining equipment, a good way to start is to look out for some of the most common issues restaurants encounter. If you can find and identify common issues, you can begin solving small problems before they become a costly crisis.

In general, the first sign that equipment needs repair is that it is not able to do what it is supposed to do within the first fifteen to thirty minutes of running. For example, a refrigerator will not be able to maintain proper temperatures, or an HVAC will not be able to provide adequate heating or cooling within that initial time frame. Of course, strange noises like hissing or rattling can also be signs of problems like leaks or imminent failure. If you encounter these signs, further inspection is recommended.

Here are some more specific examples of issues you might be able to spot with your HVAC system, your refrigerators and freezers, and your lights.

HVAC

With a typical lifespan of 15 years, HVAC is often a building's biggest consumer of energy, making up 25 to 30% of usage according to some estimates. Despite this, HVAC is typically the most neglected equipment, as it is often times out of site.

Although less obvious, the impact of poor HVAC maintenance on your bottom line can be large. When HVAC units are guzzling too much energy from overworking, or when they end up needing significant repair, or they shut down completely, the impact becomes impossible to ignore.

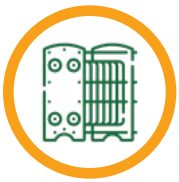
Common HVAC Issues:

Outdated units

No matter how much maintenance is provided, equipment will age and need to be replaced, generally at its effective useful service life of approximately 15 years. Business owners often ignore these expirations, knowing they should have replaced a unit many years ago. This is often because they simply don't have money, and they are waiting until a full breakdown forces their hand. Plus, the energy efficiency rating of HVAC units degrades over time, meaning even when older units are still running, they are working much less efficiently.

Leaks

HVAC refrigeration systems are sealed systems. Part of proper maintenance is checking for refrigerant leaks. When refrigerant leaks are present, an HVAC system cannot provide the designed level of cooling.



Compressor problems

The compressor is a major component of an HVAC system that helps the refrigerant remove heat from an area and help cool the air and remove humidity. Without a compressor, cooling would not be possible. A common issue is that the compressor is "dead". Luckily, there are signs you can notice to see if the HVAC compressor is failing, such as hot air blowing when the unit is in cooling mode or failure to achieve thermostat setpoints.

Heat exchangers and burners

These parts are typically made from aluminized metal that can corrode. If corrosion reaches the point of creating a hole in the heat exchanger, replacement of the heat exchanger (not repair) is required, as a significant safety issue has arisen. It is important to avoid this through proper inspection.

More Common HVAC Issues:

Loose or broken belt

HVAC belts are used to connect various parts within the machine, like the motor pulley and blower wheel pulley. If not properly maintained, belts can become too loose or crack, which can have a serious negative impact on a unit's performance. Belts should be checked quarterly to ensure elasticity is not lost and breakage does not occur, effectively bringing the HVAC unit's operation to a halt, since it is no longer able to move air.

Neglected exhaust hoods

Especially for QSRs, removing airborne grease, combustion products, fumes, smoke, heat, and steam from the air—and keeping cooking equipment at a proper temperature—are crucial for safety and comfort. This is why exhaust fans and hoods are vital. When not maintained, they can lead to serious issues like pressure imbalance, smoke build up, or fire hazards. In fact, 54% of restaurant fires start with the exhaust system. However, they are often overlooked because this ventilation does not immediately affect operations. They must be regularly cleaned and checked to ensure that all the parts are working.

Dead HVAC brings in dirty air

One restaurant had a dead HVAC, which meant it wasn't bringing in new air and the restaurant was getting too hot. The location staff then opened the roof hatch to ventilate and cool down the kitchen. The kitchen hood exhaust system was running, so it drew the outdoor air into the restaurant, as staff had hoped. However, the rooftop kitchen hood exhaust fans were positioned close to the roof hatch, so that the contaminated, grease-laden air from the cooking equipment quickly made it's way right back into the restaurant.

Tips For Proactive HVAC Maintenance:

A commercial HVAC unit is a complex piece of machinery, and regular maintenance by a professional is recommended. They can perform proper preventative maintenance tasks to keep it running well and to help identify issues before they become major problems.

Be strategic about how you use your HVAC

When your HVAC is over-exerted, it increases the likelihood of problems. Have a plan for how you want to use your units. Keep your system within a certain temperature range so it's not overly cooling or heating, and make sure it's programmed at the thermostat to reduce energy consumption when your location is not open.

Cleaning

Certain parts of the machine need to be properly cleaned from time to time. Experts recommend annual cleanings of an HVAC's evaporator coil, condenser coil, and the burners.

Part replacements

Replacing "consumable" parts of the HVAC system on a regular basis can keep performance high. This includes quarterly changing of air filters, to keep air flowing well throughout the unit, and annual replacement of belts, so they do not wear out or break.

Inspection

HVACs consist of a lot of components that should be inspected quarterly by an expert who can make sure they are all operating as designed.

REFRIGERATION

Refrigeration is key for health and food safety. When your refrigerators or freezers are not running properly, you risk loss of inventory. The primary issue to look out for with your refrigeration equipment is of course temperature.

Commercial freezers should be at or below zero degrees Fahrenheit. Refrigerators should be 36 to 38 degrees.

Part of your restaurant's food safety process should be to check these numbers regularly. Keep an eye out for the following common issues as well:

Leaks

Refrigeration leaks (of refrigerant) can prevent your refrigerators or freezers from being able to maintain operational temperatures. Typical signs of this include ice/frost buildup on or near the units' compressor or piping.

Doors not closing properly

If your refrigerator or freezer door is not closing and latching properly, cold air from within your unit is escaping. These issues generally point to problems with your door closer device or hinges. Employees should be mindful of how the door closes, especially if it does not have auto-closing features, and bring to attention any abnormalities or problems they encounter.

Ice buildup

If you notice water or frost in front of your freezer, or ice buildup inside, these can be signs of bigger issues at play. It may be the door is not properly closing, allowing heat and humidity to enter. It could also be that the heater used to regularly defrost is not working properly. Ice buildup in a freezer may seem like it is not a big deal, but it can be a symptom of moisture issues that can cause mold, or it can damage the unit itself and lead to costly repairs or replacements.

Broken refrigerator contaminates food supply

At one restaurant, the condensing unit was left open on the roof and had a leak, so there was ice on the coil and the condensate pipe was broken. Water from the roof dripped the restaurant's refrigerator and saturated all the frozen hamburger patties and other food items. The staff didn't realize this was happening and had still been serving the saturated food to customers.

Tips For Proactive Refrigeration Maintenance:

Like an HVAC unit, a refrigerator or freezer should receive regular expert maintenance, typically two to four times a year. But there are things a business owner can do as well to keep units running smoothly and to prevent major issues.

Keep it clean and closed

This is a straightforward assignment. Keeping the interior and exterior of your refrigerators and freezers clean can help prevent ice buildup and corrosion that, if not managed, can harm the machine's performance. You should also make sure to keep the interior dry, cleaning up spills and wiping down any condensation. Also, make sure your employees know to keep the door closed, as they often will leave it propped open for convenience without realizing it impacts a unit's ability to regulate temperature and maintain safe conditions without the ice or condensation buildup which can cause a slip or fall. Consider installing a smart monitoring system that can detect when a door is left open, or temperatures become irregular.

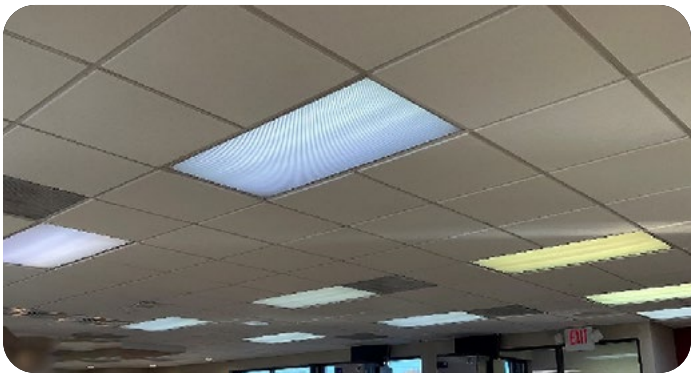
Keep your coils spotless

Regular cleaning of your refrigerator/freezer coils, including condenser and evaporator coils, will help ensure optimal performance. When these coils are neglected, they can collect dust, grease, and debris that cause your units to work overtime, harming your equipment and wasting energy.

Check the pressures on the refrigerant

If your refrigerant pressure is low, it is usually a sign of a leak. Low refrigerant levels can impede its cooling ability. Regular refrigerant pressure checks can help identify leaks that can be repaired.

LIGHTING



Lighting is an important aspect of a restaurant's atmosphere. It is also essential to have bright kitchens to ensure cleanliness and, in many locations, to ensure proper task-oriented light levels are provided for employees. Luckily, the impact of a light burning out tends to be small, and issues are easy to spot.

How to Recognize Common Lighting Issues

Light fixtures and bulbs at the end of their life

No fixture or light bulb lasts forever, and sometimes they need to be replaced.

- Fluorescent lights start to flicker when failing.
- LEDs will begin to dim in color and intensity. They too will flicker when there is an issue.

Bad wiring

If you notice that lights are dim and flickering often, this could also be symptomatic of a bigger issue like faulty electrical wiring. Other signs are if your lights buzz, or if they dim or flicker when other appliances are turned on.

Tips For Proactive Lighting Maintenance:

Pick the right bulbs

LED fixtures and bulbs are a restaurant's best option for lighting. LEDs on average last 3 times longer than old-fashioned fluorescent lights, meaning they need to be replaced less often. They also use up to 90% less energy than traditional bulbs, helping to cut overall cost, and are better for the environment. .

Do not overuse them

The less you use the lights in your restaurant, the longer they will last. Have a program in place to make sure they are not left on around the clock. This can be employee managed, or you can install smart lights or lighting controls that can be programmed to shut off at certain times or turned off and on by motion sensors.

Gross things found in poorly maintained equipment...

Inspectors have found dead rats in the duct work of restaurants and uncleaned HVAC units covered in bird excrement—meaning the restaurants' employees and customers were breathing contaminated air.

THE IMPACT + COST OF THESE ISSUES

These are just a few of the most common equipment issues restaurant owners face. There are countless other things that can occur. It may seem overwhelming to keep track of everything, but these details can have serious impacts on your business.

First of all, the performance of your equipment affects the health of your employees and your customers. In months of extreme weather, you need your HVAC system to make sure your location provides a comfortable and safe environment. If your air conditioning stops working in the middle of the summer, workers can run the risk of getting overheated. If your refrigerator is not working well, temperatures inside can get too high or low, leading to costly food spoilage. These issues can also cause an even more serious problem: getting shut down by health officials.

Beyond just safety, though, poorly functioning equipment can have effects that may not be as immediate but can be just as damaging to your business in the long run. Firstly, if the above issues cause your business to get a lower health rating, many consumers will avoid your location for one with a higher rating, as they are concerned about the sanitation and safety of the food they consume.

Neglected HVAC leads to flood damage

At one location, an HVAC panel was left open when a flash flood happened. All the dirt and water from the roof eventually came through the HVAC unit, and as a result the kitchen was flooded with dirty water. There was a supply duct that kept pouring water right onto the kitchen grill, onto the food. This caused damage and left a bad smell throughout the restaurant that has lingered even after the water was cleaned up.

Plus, having a hot, or poorly ventilated restaurant is no way to build loyalty. No one wants to eat in an uncomfortable environment. Lighting has a massive impact on customer comfort as well, and the perception of how clean your restaurant is can be influenced by how brightly lit the space is. If

your equipment is not creating a positive atmosphere, customers may be inclined to leave negative reviews of your business online, discouraging future business.

Customers are not the only ones impacted by the environment of your business. Employees will quit due to discomfort, and in today's competitive hiring market, that can be a big issue. It has been difficult in recent years to find loyal employees, and being understaffed can be incredibly costly. Even if they do not quit, workers operating in a too-hot room cannot perform at their best level. Comfort has a direct impact on sales.

These issues matter, but the biggest impact that poorly maintained equipment can have is on the cost of repairs and replacement. If not properly maintained, the life of equipment will be shortened, and you will require expensive replacements sooner than would have been necessary—and at unexpected times.

Average cost for repairs and replacements

HVAC belt	**$100**
Compressor	**$3,000–$6,000**
Heat exchangers replacement	**$3,000–$4,000**
Control board	**$500–$5000** (depending on the unit and manufacturer)
Fan motor	**$400–$4000**
Condenser motor	**$400–$1000**
Lighting 2x2 fixture	**$100**
Walk-in cooler leak repair	**$3,000–$4,000**
Air source heat pump	**$6,000–$8,000**
Geothermal heat pump	**$15,000–$35,000**
Evaporator coil	**$600–$13,000**

NEGLECTING MAINTENANCE HARMS EQUIPMENT EFFICIENCY (AND RAISES ENERGY BILLS)

Poor maintenance will also cause equipment to be less energy efficient—as will continuing to use older, outdated models. It may not be an obvious priority, but the energy efficiency of essential business equipment can have a tremendous impact on your bottom line. Fast food, casual dining and quick service restaurants typically use ten times more energy per square foot than other commercial buildings. HVACs, refrigeration, and lighting make up over 50% of their monthly utility bill. Having energy efficient equipment can mitigate this spending and improve a restaurant's profitability.

10x

Fast food, casual dining and quick service restaurants typically use ten times more energy per square foot than other commercial buildings.

HVAC systems typically have the highest impact, as they are often the highest consumers of energy, depending on the facility. Cooking equipment tends to be a close second, though the type of cooking equipment matters. For example, electric stoves use more energy than gas. Refrigeration and lighting have a substantial impact as well.

With rising energy bills, using less energy is a critical way for businesses to lower their operational costs. When equipment is not properly maintained, it may be technically running—but guzzling up a lot more energy to do so. For example, a faulty refrigerator door seal may leak out cool air and the machine will have to work harder to maintain its temperature. A clogged HVAC filter can reduce airflow, meaning the fan must work harder to blow air through–using more energy.

Energy usage is a massive environmental issue. Improving the energy efficiency of your restaurant is one of the most impactful and straightforward ways to reduce its carbon footprint. There is an increasing expectation for businesses to do their part in the fight against climate change and helping the environment. If you are part of a large franchise company, there may even be corporate mandates on contributing to company-wide efforts. Luckily, using less energy by improving equipment efficiency is a solution that is both good for the planet and good for business.

CONCLUSION: HOW PARTNERING WITH AN EEAAS PROVIDER MAKES MAINTENANCE EASY AND AFFORDABLE

Equipment maintenance is a critical part of running a business, especially for a restaurant where operations rely heavily on large and complicated machines. Yet, maintenance can be an intimidating project, with countless pieces to monitor, issues to consider, and upfront costs. Adding these on top of other, more pressing day-to-day tasks can seem impossible. That is why many business owners choose to outsource their equipment maintenance.

By working with an energy-efficiency-as-a-service (EEAAS) provider, business owners can get regular equipment maintenance without having to do any of the labor themselves. Plus, an EEAAS partner can provide energy efficient equipment upgrades with no upfront cost. This gives owners a lot of significant advantages.

Firstly, they save a ton of capital. A typical HVAC unit costs around $15,000, and many businesses need between two and four units to cool their entire building. An EEAAS company like Budderfly provides you with these units and covers the entire cost. Plus, working with an EEAAS that provides maintenance saves your business even more money in the long run, by preventing serious issues from occurring with your equipment.

Working with an EEAAS provider also saves business owners a lot of time. At Budderfly, we handle every aspect of equipment upgrades, including installation and partnering with the best vendors to cover the project from start to finish. After installation, we also manage the routine maintenance and repairs of the equipment. This gives business owners back time to spend on customer experience, employee satisfaction, and other priorities.

Budderfly has a unique business model where our profit comes through energy savings—which means we have a vested interest in ensuring businesses' equipment runs efficiently and without issues.

Part of how we do this is offering state-of-the-art technology to manage equipment energy usage. When we install equipment upgrades, we include advanced internet-of-things (IOT) technology to automate much of the monitoring for around-the-clock management and proactive alerting of potential issues. This can help business owners keep track of equipment functions even when they are not on location.

EEAAS technology detects equipment issues & saves restaurant thousands of dollars

A restaurant had shut down shop for the holidays, and no staff was around. Because they were a Budderfly partner, our monitoring system was able to detect that a cooler door had been left open, and it sent our client an alert. This saved them thousands of dollars, as the restaurant was going to be closed for a week and the food inventory would have been decimated if the door had been left that way. Plus, they avoided an elevated energy bill from the cooler working too hard, and potential damage to the unit.

With an EEAAS partner, business owners get countless benefits: new equipment at no upfront cost, ongoing maintenance, equipment monitoring, improved operations, and a significantly reduced carbon footprint. Budderfly is a one stop shop for all a business's energy needs, taking the time and complexity out of managing your most precious assets.

To learn more and speak with one of our energy equipment experts, contact us today.

ABOUT BUDDERFLY

Budderfly is the premier sustainability partner for businesses with repeatable footprints, such as restaurant chains, assisted living facilities, retail franchises, and more. Budderfly installs, monitors and manages a combination of patented technologies, equipment upgrades, and proprietary energy software for its customers at no out-of-pocket cost. Businesses benefit with lower energy bills, a reduced carbon footprint, more reliable operations, and an improved customer and employee experience. Budderfly ranked #2 in energy companies and #10 overall on the 2021 Inc. 5000 America's Fastest-Growing Private Companies list. For more information visit www.budderfly.com.

CONNECT WITH BUDDERFLY

PRESS CONTACT:

Antenna Group

budderfly@antenna.com

MARKETING CONTACT:

Jodi Susman, CMO

jodi.susman@budderfly.com

SALES CONTACT:

energy-team@budderfly.com

FOLLOW BUDDERFLY

SOURCES

6 Pro Tips For Commercial Refrigeration Maintenance

https://www.brinkincmt.com/service-guides/commercial-refrigeration-maintenance-tips

Change Your Furnace Filter Now. It Could Save You Money

https://www.cnet.com/home/energy-and-utilities/change-your-furnace-filter-now-it-could-save-you-money/

Effects of a Clogged HVAC Air Filter | Dirty Filters

https://highperformancehvac.com/effects-clogged-air-filter-hvac/

How much electricity is used for space cooling in the United States?

https://www.eia.gov/tools/faqs/faq.php?id=1174&t=1

IEER Explained: Integrated Energy Efficiency Ratio (vs EER, SEER)

https://learnmetrics.com/ieer-integrated-energy-efficiency-ratio/#SEER_Vs_IEER_Rating_Part_Load_Full_Load_At_Ideal_Conditions

Maintaining Your Air Conditioner

https://www.energy.gov/energysaver/maintaining-your-air-conditioner