Kitchen Equipment Care: Maintenance Helps Increase Your Sustainability and Improves Your Bottom Line

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How to make the most of your kitchen environment

Want to make your business sustainable?
One of the most lucrative opportunities to cut energy costs and promote operational efficiency is PREVENTATIVE MAINTENANCE.
Cut savings by 10% per year!

How to make the most of your kitchen environment

Cut Energy Consumption
Extend Equipment Life
Food Safety

Reduce Energy Costs
Increase Operational Efficiency
Ensure Food Safety
Cut Energy Consumption

Restaurants Can Make a Difference

- Restaurants are Big Users of Energy
  - Restaurants use 5 times more energy per square foot than other commercial buildings
  - Energy costs rising at a rate of 6-8% per year
  - Focus your energy-savings efforts in the kitchen

Source: Food Service Technology Center

Reducing Rising Energy Costs

- Energy costs continue to rise at rates higher than nominal restaurant growth
  - 10% in the past few years
- Preserve your profits by making your operation more sustainable

Utility Costs Represent 3-4% of Sales for an Average Restaurant
Diligent Maintenance Pays Off

Preventative Maintenance adds up to total savings
- Basic maintenance can reduce your carbon footprint
- Saving up to $500 or more a year in energy costs
- Helping to avoid costly equipment downtime

Reduce Frequency of Repairs

Frequency of Repairs with PM Program
- Less visits = Less carbon emissions
- Less visits = Increased ROI

What to Consider in a Proactive Care Plan
- Age and use of the equipment
  - Even Energy Star certified equipment needs to be calibrated to run at peak performance
- Recent repairs performed
- How often complete cleanings are performed
- Pay Off
- Less energy used, adds money to your bottom line
- Less energy used means fewer carbon emissions
  - Good for you and the environment

Key Insight
The EPA estimates that by cutting energy costs by 20%, profits would increase by 30% or more
Proactive Cooler Maintenance

- A poorly maintained cooler increases the stress on the cooling system – requiring more energy to operate – shortening the life of the equipment.
- Equivalent to the amount of carbon sequestered annually by 1 acre of pine or fir forests.

Refrigerator/Freezer Opportunities

- Defrosting is an intensive but necessary process.
- Optimizing cycle times and calibrate to defrost as needed.
- Repair or replace worn door seals and hinges – ensuring a tight door seal.
- Clean evaporator and condenser coils and ensure proper airflow.
- Install strip curtains on walk-in boxes as insurance against propped-open doors.
- Check and properly set thermostats and time clocks on all refrigeration equipment.

Inefficiencies like these can lead to increased energy usage, breakdown or even failure.

Broiler Savings Opportunity

- It is estimated that up to 80% of the $10 Billion spent on energy on U.S. restaurants is wasted.
- Reducing broiler “ON” time by 1 hour each day translates to greenhouse gas emissions avoided.

- Equivalent to recycling 65 tons of waste.
**Warewashing Savings Opportunities**

- Install a low-flow pre-rinse spray valve at the dish station.
- Technologically advanced rinse-spray nozzles are available that can save restaurants more than 50% in rinse water and energy costs.
- Conduct a regular thermostat check on warewashers and reset them to the correct operating temperature when necessary.
- Check rise pressure to ensure it uses only the pressure recommended.

**Cooking Savings Opportunities**

- Properly adjust standing pilot lights on appliances like range tops.
- Control appliance "on" time with a start-up and shut-down schedule and use timed controls vs. manual settings.
- Maintain appliances, including ensuring ovens are cooking at the proper temperature and that control panels on ovens and steamers are operating correctly.

**Preventative Maintenance**

Proactive Care helps you achieve:

- A lower carbon footprint
- Energy savings
Proactive Maintenance Extends Equipment Life

Life Extension = Cost Savings & Sustainability

- Industry recognizes that proactive maintenance programs increase equipment life by 6-12 months
- NAFEM life cycle analyzes equipment life expectancies and total cost of ownership
- Longer equipment properly, calibrated, equipment saves energy and replacement/disposal costs

Ice Machine Operating Problems

- Mold in ice bin causing possible cross contamination and poor taste quality
- Water trough clogged with mold and scale causing inefficient operation of ice machine
- Ice thickness probe scaled up with lime causing frozen evaporators and machine to not to operate correctly
- Dirty condenser coils cause inefficient operations and long term damage to the equipment
Highlights of prescheduled Performance Check services
- Check compressor discharge line to ensure operating temperature is within specification
- Clean coils and sanitize ice bins
- Define ice machine thoroughly
- Change water filters regularly
- On-site kitchen staff training on regular equipment cleaning procedures

Ensure supply of clean, safe ice
Extend lifespan of ice machine
Improve operating efficiency

Highlights of prescheduled Performance Check services
- Check all common failure points such as electric element voltage, contactor voltage, thermocouple integrity, and the voltage of other areas where power may be failing
- Thorough check and clean of oil filtration system to fully realize its benefits
- On-site kitchen staff training on regular equipment cleaning procedures

Make quality and safe fried food
Save energy and cooking oil
Extend fryer lifespan
Increase uptime

Fryer Operating Problems
- Thermocouple and thermopile damages that lead to inaccurate frying temperatures, which results in inconsistent food quality and/or short cooking oil life
- Moisture and grease built up within electronic controls which cause premature fryer failures
- Inefficient oil filtration system leading to accelerated oil breakdown and waste
Combi Oven / Steamer Operating Problems

- Scale buildup in steam generator results in operating inefficiency, longer cook/recovery times and long term damage to the steamer
- Temperature probes are covered in scale and do not allow the unit to heat properly
- Moisture penetration that causes electrical failures on fans, lights, or timers

Performance Check

- Highlights of prescheduled Performance Check services
- Descaling of boiler and clean probes
- Timer calibration or replacement
- Check on electric element to avoid power failures
- Change out water filters regularly
- On-site kitchen staff training on regular equipment cleaning procedures

Refrigerator Operating Problems

- Clogged or blocked condensers cause increased energy consumption and trouble in maintaining temperature
- Debris caught in the condenser or evaporator fan causes serious damage to the unit
- Poor gasket sealing result in loss of cooling, increasing energy consumption and food safety risks
Performance Check

- Highlights of prescheduled Performance Check services
  - Clean and check all condenser and evaporator coils
  - Check door gaskets and all door hinges for proper seal and operating
  - Check temperature of compressor discharge line to ensure operating temperature is within specification
  - Check amperage and voltage to name plate specifications

Preventative Maintenance
Your Ticket to Operational Efficiency

Proactive Care helps you achieve:
- Operational efficiency
- Extended equipment life

FOOD SAFETY
Where Was Contaminated Food Consumed?

Restaurant or deli: 23%

Make-shift cafeteria: 4%

Rural family banquet: 10%

School cafeteria: 17%

Company cafeteria: 15%

Private home: 24%

Street vendor: 2%

Fast food service: 2%

Rural family banquet: 10%

Adapted from: Xue and Zhang 2013 Food Control 30:311-317

Contributing Factors to Restaurant Outbreaks

Handling by infected person: 28%

Bare hand contact: 15%

X-contamination from raw ingredient: 14%

Food at room temp. for several hours: 7%

Raw product or ingr of animal origin: 5%

Preparing food >12hr in advance: 5%

Gloved-hand contact: 3%

Inadequate cleaning of equipment: 2%

Percent of Outbreaks: Hedberg et al. 2006 JFP 69:2697

CDC Risk Factors for Foodborne Illness

Unsafe Source, 10%

Poor Personal Hygiene, 25%

Contaminated equipment/environment, 28%

Improper Holding, 31%

Other, 4%

Inadequate Cooking, 9%

Adapted from: CDC 2013 MMWR 62(SS02):1-34
Top 10 Factors Contributing to US Foodborne Illness 1998-2002

Contamination dominated!

1. Food at room temp for several hours—29%
2. Bare-handed contact by food handler—25%
3. Inadequate cleaning of equipment—22%
4. Handling by infected person or carrier—20%
5. Inadequate cold holding temperature—19%
6. Cross contamination from raw animal products—12%
7. Insufficient cooking—12%
8. Raw ingredients contaminated by animal or environment—11%
9. Slow cooling—11%
10. Inadequate hot holding time/temperature—10%

Solutions for Foodborne Illness Contributing Factors

- Contamination prevention
  - Hand care programs
  - Cleaning & sanitation products and services
  - Supply chain antimicrobial treatments for meat, poultry, and produce
  - Color coded equipment
  - Pest abatement
  - [Hand care compliance]

- Growth prevention
  - Thermometers
  - Date labels
  - [Remote temperature monitoring]

- Survival prevention
  - Thermometers

- Overall
  - Food safety audits
  - Food safety training
  - Equipment maintenance

How to prevent foodborne illness?

Clean and monitor the performance of your equipment

- Clean and sanitize all food contact surfaces and equipment especially after changing from poultry to red meat
- Watch for buildup beneath cutting table tops, surfaces, and other equipment
- Monitor holding, time and temperature of freezer units
- Check refrigeration on a frequent basis to ensure that it is working properly and holding food at 41° F or below
Safety tip: Is your warewasher hot enough?

- Health regulations require that water temperatures in dish machines reach the appropriate temp in order to properly sanitize ware.
- Ensuring that the temp reaches the appropriate level also requires a properly operating warewashing system.

Safety tip: Calibrate cooking and holding equipment temps

- Be sure to properly calibrate equipment such as ovens and hot-food holding cabinets to verify they are cooking and holding at the desired temperatures.
- Monitor equipment to make certain that proper temps are maintained at all times and that food is never in the temperature Danger Zone.

Safety Tip: Clean Equipment Surfaces

- Thoroughly clean food-preparation stations and equipment to avoid cross-contamination.
- Cleaning equipment surfaces that come into contact with food is one of the first lines of defense against food-borne illnesses.
- Use food-prep equipment, such as choppers/grinders, slicers and cutter mixers, which are easy to disassemble for cleaning.
What is most important to you?

Keep them safe...

Your customers = your success

Preventative Maintenance
Your Ticket to Food Safety

Proactive Care helps you achieve:
- Safe food
- Good food quality
- A solid customer base

WHAT TO REMEMBER
Let’s talk numbers

A couple examples of how PM can save you money...

<table>
<thead>
<tr>
<th>System</th>
<th>Service</th>
<th>Savings on operating costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC</td>
<td>Cleaning dirty refrigeration coils</td>
<td>35%‐40%</td>
</tr>
<tr>
<td>Refrigeration</td>
<td>Cleaning dirty refrigeration coils and maintaining refrigeration levels</td>
<td>25%‐60%</td>
</tr>
<tr>
<td>Coolers</td>
<td>Replacing worn door gaskets</td>
<td>$100 annually</td>
</tr>
</tbody>
</table>

Tips for effective preventative maintenance

1. Clean all restaurant equipment daily
2. Reference the owner’s manual
3. Fill out and return the warranty card
4. Educate employees on the proper use of the equipment
5. Perform thorough cleaning on a regular basis
6. Regularly inspect your restaurant equipment
7. Replace broken or worn out parts
8. Be careful with do-it-yourself fixes
9. Follow chemical instructions
10. Properly care for stainless steel

A key to improve Sustainability and your bottom line is to . . .

Focus on Kitchen Equipment
- Lower energy consumption
- Maximize operational efficiency
- Ensure the safety of your customers