Cost of Gas vs. Electric Commercial Kitchen Equipment Maintenance White Paper

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EXECUTIVE SUMMARY

A common perception has existed in which operators feel that gas commercial kitchen equipment costs more to maintain and repair than electric equipment. This is an outdated premise that is no longer valid due to a variety of technical changes in the manufacturing of equipment. Pricing of parts, technical labor, equipment engineering and a real world look at gas equipment maintenance requirements confirm this premise.

INTRODUCTION

This paper will discuss gas versus electric maintenance costs of commercial kitchen equipment. It will address the common misperception that gas equipment costs more than electric equipment to maintain. As President of the kitchen equipment industry's dealer trade association, I've presented countless speeches on this topic and have been a regular content contributor and interview subject for every major foodservice publication on a regular basis. Through all of these leadership activities, I've developed close relationships with a wide variety of individuals in different segments of the commercial foodservice industry. The findings being presented are derived from these expert sources including the industry's top trainers of technicians who service gas and electric equipment nationwide. My findings are also derived from my real world personal experience supplying equipment to over 100,000 customers in my restaurant equipment business throughout all 50 states and 110 countries internationally.

BACKGROUND

The reality is that electric equipment used to be far less expensive to maintain than gas equipment - and despite dramatic changes that brought both types on par with one another, the old perception still remains. If I had been asked to write this white paper 10 years ago, I simply could not have done it. Back then, a lot of the electrical ignition systems and other components that were being put into equipment simply did not work and failed frequently. The industry was in a period where appliances were going from the fully mechanical, old-line gas equipment to high tech equipment. Complete product line changes were also happening at a rapid pace without adequate engineering. It was a race to come out with the latest and greatest first versus doing things right. End users had to keep spare parts on hand for all of the failing components and the cost of maintenance was through the roof. The reason for this is simple. The commercial industry essentially took a shortcut and borrowed technology from the residential industry for appliances like gas ovens and ranges. They didn't recognize the need to make components more robust so they could stand up to the rigors of commercial use. Now-a-days, these components are so strong that unless you're running a massive operation there's no need to keep a lot of replacement parts on hand.

Aside from the ruggedness of the components themselves, there were engineering hiccups in the design process of equipment too. Engineers would copy their electric unit designs and simply change the heating components to gas. Same design, different heat source. This seems reasonable enough, until, after learning about a massive number of failures, you dig deeper. In electric units, the heat is supplied directly to whatever is being heated with the energy transfer being concentrated in one specific area. With gas however, there are air chambers and exhaust flues and other nooks and crannies which all get heated. Operators didn't care about energy efficiency like they do today so it was perfectly fine to have wasted energy flowing throughout the unit. So the problem was that the engineers didn't make accommodations for all the high temperatures. Components like igniters, electronic boards, ignition modules, and

transformers were being blasted with heat and, therefore, components were failing.

Gas equipment quickly earned a legitimate bad rap for high maintenance costs. It took a lot of years to get these problems resolved, but manufacturers learned how to better design products so that these critical components are now in separate, cooler areas, which dramatically increase their reliability. This has not only been good news for end users, but also for manufacturers themselves. Many of them have increased their warranty periods in recent years and they, too, want to reduce their exposure to maintenance and repair costs. Gas equipment represents the majority of what's sold in the industry, and reducing repair costs has a huge effect on their bottom line.

REAL WORLD ANALYSIS

COMPONENT COST COMPARISON - FRYERS

Let's look at some equipment repair costs for a very common item in a kitchen, a commercial restaurant fryer.

Fryers share several common components in both gas and electric units: controls, thermostats and high limit switches.

In electric units, unique items include the element kit ($596) and the contactor ($212). Total cost to replace both components is $808.

In gas units, unique items include: the gas valve ($132), thermopile ($34), pilot assembly ($78), ignition module ($110) and burners (3 @ $54 each). Total cost to replace all components is $516.

When we add these items up and total them out, even to replace every single component, gas wins. The story gets even better as we look at the numbers from a real world perspective. It’s almost unheard of to have every gas component go out and need replacing. The most common item is actually the thermopile, an inexpensive $34 part.

COMPONENT COST COMPARISON - FRYERS (Continued)

With electric units on the other hand, there are many cases where, when one piece goes out, there's the possibility that other components will fail as well in a cascading effect. The operator is faced with even larger differences in repair cost with gas versus electric. Additionally, there's a cost of 'loss of use of equipment' and/or disruption to an operation. Service agents are far more likely to have a $34 replacement thermopile on hand than a $596 element kit.

Lastly, the total cost figures on the gas equipment are drastically overstated - the reality is, it's virtually unheard of to have more than two gas components go out at the same time - the vast majority of cases there's only one item that fails so the number is much less than what I've presented as a worst-case replace-all-components scenario.

COMPONENT COST COMPARISON - FRYERS - CHART

Electric Components	
Element Kit	$596
Contactor	$212
TOTAL	**$808**

Gas Components	
Gas Valve	$132
Thermopile	$34
Pilot Assembly	$78
Ignition Module	$110
Burners (3)	$54 ea
TOTAL	**$516**

COMPONENT COST COMPARISON - OVENS

In this section, I'll do a similar component cost analysis for another common commercial kitchen equipment item, a gas and electric oven. These are once again current, real world numbers directly from reputable parts providers.

Ovens share several common components in both gas and electric units - temperature controllers, thermostats and blower motors.

In electric units, unique items include the element ($347) and the contactor ($182). Total cost to replace both components is $529.

In gas units, unique items include the gas valve ($140), pilot assembly ($116) and spark ignition ($262). Total cost to replace all components is $517.

Once again, the gas unit costs less for parts even if every single component were to fail, which is highly unlikely. With electric units, you often incur the full $529 bill due to a cascading failure. There's also a higher likelihood of having an electrical component fail since they simply have shorter shelf lives. When they do go, operators are in for a large expense since multiple components may need to be replaced. Even if only one component needs replacing, the odds are it will still cost more than its gas counterpart.

COMPONENT COST COMPARISON - OVENS - CHART

Electric Components	
Element	$347
Contactor	$182
TOTAL	**$529**

Gas Components	
Gas Valve	$140
Pilot	$115
Spark Ignition	$262
TOTAL	**$517**

COMPONENT COST COMPARISON – PIZZA OVENS

In this section, I'll do another similar component cost analysis for pizza ovens that are commonly used in convenience stores. This food offering has become extremely popular in recent years in the c-store environment so it's important to understand the parts costs.

Pizza ovens share several common components in both gas and electric units - the cooling fan, fan switch, thermostat, temperature control, conveyor motor, high limit switch, main motor fan, conveyor drive coupler, tach generator adapter, and conveyor control pot assembly.

In electric units, unique items include the element ($214), the contactor ($269) and the electric blower motor ($692). Total cost to replace all of these components is $1,175.

In gas units, unique items include the gas valve ($335), gas solenoid ($129) and the burner blower motor ($584). Total cost to replace all of these components is $1,048.

Yet again, the gas unit parts cost less than the electric unit. If every single part were to fail on both units, the gas unit parts would cost $127 less than the electric unit. With electric units, there's a much higher likelihood of a cascading failure which would cause the operator to incur the full $1,175 parts cost.

COMPONENT COST COMPARISON – PIZZA OVENS – CHART

Electric Components	
Element	$214
Contactor	$269
Blower Motor	$692
TOTAL	**$1175**

Gas Components	
Gas Valve	$335
Gas Solenoid	$129
Blower Motor	$584
TOTAL	**$1048**

ROUNTINE MAINTENANCE / CLEANING

Routine maintenance is a big expense for all operators, but can be dramatically reduced with gas equipment. Fryers in particular are intensive in terms of the amount of maintenance they need. The operation of a fryer involves oil, sediment, and high temperatures which all present challenges. The oil and sediment needs to be cleaned up or the operator will have a really bad food product. While a range can be a little hot or a little cool, the only minor effect may be a slightly under-or over-cooked product. If a fryer is not cleaned and maintained perfectly however, french fries and other fried products are going to be a complete disaster. With gas units, the heat source is either under the pot or in tubes running through the oil. In electric units, those elements are immersed in the oil. This means they are going to get covered in sediment and will have a build-up that needs to be cleaned thoroughly. Depending on the type of food that is being fried and the frequency of cleaning, such cleaning could add 20-30 minutes to the cleaning time. For the sake of this paper, we'll use an average of 25 minutes of cleaning time. That's 100 minutes per month. Even more impressively 1,300 minutes per calendar year. This equates to 21.6 hours per year of additional cleaning / maintenance time for the electric units. The expense to pay an employee an extra 21.6 hours per year per fryer is significant.

SPECIALIZED TECHNICIANS

There is a perception that gas equipment maintenance is dangerous and requires a specialized technician. This perception is completely false. The reality is that the same technicians who work on electric equipment also work on gas equipment. They go to the same training classes, often learning about both product variations in gas and electric on the same day. Granted, electricity is more straightforward, there's no doubt about it - it's either on or it's off. Gas is a bit more complicated, it requires an ignition source, and the right fuel and oxygen ratio for proper combustion. If one of those three is out of whack then things aren't going to work properly, so the technicians need to be well trained to know what they're doing.

SPECIALIZED TECHNICIANS (Continued)

Once the technician gets everything in sync, it typically keeps on working indefinitely. The key point of this section is the recognition that the technician is the same person compensated at the exact same hourly rate regardless of the equipment type. Thus, gas equipment technician labor costs no more or no less than electric equipment.

EQUIPMENT MANUFACTURERS

Another factor to look at when exploring maintenance costs is the equipment manufacturer. In the commercial kitchen equipment world, virtually all of the manufacturers make both gas and electric equipment. Simply looking at basic economies of scale, they try to use the same components in both electric and gas units whenever possible. You'll see the same blowers, thermostats, and controls. Everything is exactly the same except for the heat source. So in this regard, you essentially have equal repair and maintenance costs on all of these components.

Now, one side note that's not equal: The placement of the heat source varies from one product to another which changes the game. This paper already presented the challenges of a fryer element immersed in oil, yet there are more items such as steamers that also incur challenges. Steaming equipment has an element placed in water which leads to scaling and lime build-up, the cause of all kinds of additional maintenance for those electrical elements.

These elements are subject to failure due to repeated exposure to a wet environment. Manufacturers have done a great job maximizing life spans, yet electrical component life spans are not near as long as their gas counterparts.

PREVENTATIVE MAINTENANCE

Another aspect which is critical to ensuring a fair comparison between gas and electric equipment is proper preventative maintenance. Equipment is being abused all day everyday in harsh commercial kitchen environments. Operators allow for sediment and grime build up, neglecting to properly clean the equipment, and then it fails. When it does fail, they often attempt to have their own staff fix it first. It's not uncommon for the operator to try to have a friend or general repair agent fix it next. Finally, after trials and tribulations, operators call a trained service technician to fix it properly. At this point there's been a lot of time and energy spent on "fixing it" - hence the perception that this equipment took an extensive amount of maintenance to get it back up and running. In reality, had the operator simply taken the necessary time to keep their equipment clean, they likely wouldn't have had the failure on this piece of equipment - nor would they have had an expensive maintenance bill. Proper preventative maintenance is the key to reducing total cost of ownership for any piece of equipment in a commercial kitchen environment.

CONCLUSION

This white paper has provided documented examples of why commercial gas kitchen equipment is no more expensive to maintain than electric equipment. Examples have included parts price comparisons, real world failure characteristics, routine maintenance and cleaning costs as well as other operational factors. This paper has also outlined why the perception regarding gas maintenance costs legitimately existed, and why that perception is no longer the reality with modern day equipment. Gas kitchen equipment will cost less or the same amount of money to repair and/or maintain than its electric kitchen equipment counterpart.

ABOUT THE AUTHOR

Brad Pierce is President of Restaurant Equipment World, a globally recognized leader within the restaurant equipment and supplies industry. REW currently serves over 100,000 customers located in all 50 states and more than 110 countries internationally. His organization is based in Orlando, Florida - with additional international offices in Dubai, United Arab Emirates to serve customers around the globe. REW supplies commercial gas kitchen equipment including fryers and ovens to natural gas utility company partners for resale to their customers. They feature a wide array of Energy Star certified appliances which quality for end-user rebates.

Brad is also President of FEDA, the Foodservice Equipment Distributors Association. Brad has appeared in countless industry trade publications including Foodservice Equipment and Supplies Magazine and Foodservice Equipment Reports - as well as national publications such as Forbes and The Wall Street Journal. He's also personally testified before both the United States Congress and the United States Senate. He sits on boards at Valencia College and Stetson University and was recently appointed to a Fellowship position at Florida State University. Brad has received numerous industry awards including the Top Achiever Award, Young Lion Award, Dealer All Star Award and most recently was presented with an Honorary Doctorate of Foodservice degree from the North American Food Equipment Manufacturers Association.

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