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SOCIAL ASSESSMENT OF INDUCTION STOVE – AN OVER VIEW

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ABSTRACT

Introduction – Cooktop- Stove- Technology- society- safety-workplace comfort- emissions and t - impact on worker health- limitations- conclusion

INTRODUCTION

Technology is improving at faster rate than over before as well as kitchen appliances certainly not have been left out. As technology grows day by day our society moderately change kitchen with induction cooktop or stove. Induction cooking technology is relatively new to the kitchen; revolutionizing stovetop cooking also much the same way coil electronic cooktops revolutionized a world of gas-burning stoves.

Now-a-days every human being can access to get induction cooktop or stove as its cost not threating than other cook ware, in selecting induction cooktop or stove become very tough, as every company is introducing their induction stove with more features and with a best performance which is more important for creating a good name in the induction stove market. This social breakdown will assess safety, workplace comfort, emissions and their impact on worker health, and limitations of the appliances in operation.

SAFETY

One of the most promising social benefits of using an induction stove over a gas stove is that the induction stove is much safer. The method of heat input, as described above, relies on basically using the pot as a traditional stove element - directly exciting the molecules via an electromagnetic field rather than using a flame. If one were to put a non-ferrous material in between the element and the pot, it would not be affected by the field that is heating the vessel above. The same action on a gas stove would be most unadvisable. There is also a fear with gas stoves that a leak of fuel, whether it is due to a pipe leak or negligence to spark the burner when it is in an "on" position, can lead to a major explosion. Of course, safeguards such as tagging gas with an unpleasant can help prevent a leak from becoming catastrophic. It is possible to keep a gas stovetop ignited while a pot is not on

the element, but many induction stoves have sensors that detect a ferrous pot above the cooking area (The Induction Site, 2010). If one does not exist, or it is insufficient in size to be a true cooking vessel, the element does notcreate a field. This feature is especially effective for an industrial cooking application, where burners are left on all day, because the ranges draw less power when they are not creating a field to heat the pot when it is not there.

WORKPLACE COMFORT

To address workplace comfort, the ambient temperature of the cooking area will be considered first. With a gas stove, approximately 60% of the gas energy is lost during cooking, compared to about 15% of heat loss with an induction stovetop (The Induction Site, 2010). This energy is mostly lost through heat transfer to the surrounding kitchen, making temperatures higher. Even if a temperature regulation system is in place, the issue changes into one of space heating rather than one addressing workplace comfort levels. With higher temperatures in the kitchen, workers are less comfortable and more prone to stress (Kuse et al, 2000). If more temperature regulation needs to be done, this will result in more heating costs. Another issue that can be traced to worker comfort is the unwanted cooking of non-organic materials and mishandled food in a burner. Resulting in odours, smoke, and possibly even a significant loss of material, the burning of these by-products can be avoided with an induction stove, as stated above in the safety discussion. These by-products, as well as the gas combustion products, result in vaporized material that is deposited on the surfaces around the cook-top in the form of stains and film (The Induction Site, 2010) (Kuse et al, 2000).

An induction stove may also produce noises if the cooking vessel contains materials referred to as “slugs”, which will cause vibrations (The Induction Site, 2010). Vibrations can also be caused by poorly designed lids and pot-bottoms, but most of these issues can be avoided by buying quality vessels. Listed below in section 5.3 are some ways the project will address some of these comfort issues.

HEALTH EFFECTS

A widely discussed issue relating to the competition between induction and gas is the harmful emissions from both technologies and their impact on worker health. The Scientific Committee on Toxicity, Ecotoxicity and the Environment (2001) and the Scientific Committee on Emerging and Newly Identified Health Risks (2006) discuss the health effects of “extremely low frequency electromagnetic fields”, referenced as “ELF magnetic fields”, that come from devices such as an induction stove. Both groups assess these fields and their possibility of being a

carcinogen, causing childhood leukemia, causing breast cancer, causing DNA damage, resulting in hypersensitivity to radiation, and leading to many other diseases, but these impacts are deemed as negative or inconclusive by both. There are a number of possible health impacts discussed by the Scientific Committee on Emerging and Newly Identified Health Risks (2006), such as enhanced development of tumours, impedance of DNA repair, cell damage, and inhibition of certain breast cancer treatments. These claims are all noted as either unlikely but requiring further research, biased by other proven factors due to the scientific method implemented, or a combination thereof.

He impact of gas stoves on health has many conflicting claims like its induction-based counterpart. Burning gas results in hydrocarbons like carbon monoxide and other by-products. Without proper ventilation, carbon monoxide can be a serious issue. According to information from various studies, it appears that gas emissions have negligible impact on adult health, but seem to have more impact on children (Eisner and Blanc, 2003)(Jarvis, Chinn, Steme, Luczynska, and Burney, 1998) (Melia, Florey, Altman, and Swan, 1977). According to Melia, Florey, Altman, and Swan (1977) gas may increase prevalence of bronchitis, day and night cough, morning cough, chest colds, wheeze, and asthma in children. This study does not address the adult population, but one would expect there to be possible correlations with some workers. Gas stove byproducts apparently have no impact on chronic cough or phlegm production within a sample group of adults already with asthma, and might be related to a greater risk of other respiratory symptoms. These possible symptoms are not excluded in a 95% confidence interval, so there is not enough evidence to support the validity of this claim (Eisner and Blanc, 2003). Researchers Jarvis, Chinn, Steme, Luczynska, and Burney (1998) state that gas cooking in selected countries is associated with respiratory symptoms in females. As well, this article suggests that exposure to gas should be minimized, appliances should be properly maintained, and proper kitchen ventilation is encouraged. Looking at the 75% schematic, the plans call for negative pressure for odour control; commercial exhaust ventilators above any cooking equipment to vent grease, odours, humidity, and other cooking byproducts; and the consideration of filters in the air systems (AMS, 2010). All of these address some of the gas by-product and grease particulate issues, as well as the residue and odour problems discussed in section 5.2. The schematic also says that “equipment selected shall enable the operator to maintain or enhance accepted health standards,” (AMS, 2010). Though gas ranges are clearly adequate given the operating conditions and aforesaid plans, it is interesting to consider how to “enhance” the accepted health standards. Many measures seem to be in place to ensure the best health practices, but it might be more beneficial to implement induction ranges.

LIMITATIONS

One attribute that is prevalent in the selection of gas ranges by cooks is the range's apparent unique ability to be finely adjusted to fit the cooking parameters. The induction range actually has the same ability to be finely adjusted (Kuse et al, 2000). Since interviews with chefs about the adjustability of different ranges were not possible, a cooking site called "Seasoned Advice" was used – where cooks share recipes and equipment advice. A general consensus with cooks that have made the switch from gas to induction is that the controls are just as finely adjustable, but other issues surface. Problems with getting accustomed to arbitrary range of heating values (instead of relying on flame size), possibly non-linear heating adjustments, and touch screen controls are voiced (Seasoned Advice, 2010). Many people claim that the induction stovetop is faster at heating food than a gas one, perhaps due to the efficient energy transfer. This would result in shorter cooking times, and a more efficient kitchen.

Regarding limitations on equipment to be used with the ranges, as stated before, only ferrous materials can be used with an induction range. While gas stoves may damage the bottom of a pot over time with the flame, all (non-flammable) cooking vessels can be used on them. These special cooking materials are slightly more difficult to find, but it must be assumed that will be able to find a reliable dealer for this problem, and many common vessels are applicable (The Induction Site, 2010) (Seasoned Advice, 2010).

CONCLUSION

Gas stoves, the current standard for commercial kitchens, have undergone several decades of optimization and implementation, so they are widely available and most people are familiar with their function. On the other hand, induction stovetops address the main drawbacks of gas stoves, in that induction stovetops have extremely high heating efficiency, as well as instant cooling and a cool cooking surface. The main drawbacks of induction stovetops are the lack of familiarity in commercial applications, and large initial upfront cost. Induction stovetops are superior to gas stoves from both an economic and social point of view. Socially, workplace safety is increased by the implementation of induction stoves due to cool cooking surface properties and reduction of the risk of gas leaks. Finally, environmental analysis suggested induction stoves are at least comparable to their gas counterparts from an energy efficiency point of view, or better if electricity to the new is supplied mostly by renewable energy resources such as hydroelectricity.

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