

The Working Of Microwave Oven

Microwave radiations are the basic tool applied by microwave ovens or microwaves to cook or heat the desired food stuff. The scientific formula used to achieve this process is simple. The microwave radiations usually are emitted by magnetrons. The polarized molecules such as oil, water, fat and etc., within the respective food stuff are excited to produce heat. The uniform excitation leads to the simultaneous and complete heating of the food stuff. Heating food quickly and efficiently has been epitomized by microwaves. The art of food preparation has been revolutionized by microwave ovens since their inception into the market in the 1970s. First introduced to the world by Percy Spencer, while in the midst of building magnetrons for radar sets, microwave ovens have since then taken the world by storm. The microwave oven cooked its first food as popcorn and later came the egg. Raytheon, the company for which Spencer had been working on with the radar sets and had discovered the microwave phenomenon, filed a patent on 8th October, 1945. They came out with the first official microwave oven, the Radarrange. It was huge, consuming almost 3000 watts and weighing almost 340 kg. Later on commercial models were introduced that consumed about 1600 watts and sold for around \$2000 to \$3000. The first popular and home model was produced by Raytheon again. The countertop Radarrange in 1967 was priced at \$495 and was the initiators of the popular microwave oven models in use today. By 1975, sales volumes for microwave ovens went up to 1 million, but were less than Japan. Here cheaper building methods led to extensive market penetration for the home models of microwave ovens. The rapid decline in the price of the microprocessors with the arrival of the technological revolution in the 1980s led to microwave ovens being a regular fixture in all US households as well as in the rest of the world. Today as 90% of the US households own a microwave oven, the Chinese firm Galanz is the biggest player in the microwave oven market, accounting for up to 40% of the global microwave oven market. The microwave actually consists of these constituents: high voltage transformer, the source path of energy to the magnetron; cavity magnetron; magnetron-control circuit along with a microcontroller; waveguide; cooking chamber for the food stuff to be placed in. Microwaves cook food from the outside itself, contrary to popular belief that food is cooked `inside out` here. Microwaves are absorbed by the food stuff as from any other conventional heat sources. The penetrative power of microwaves is the only differentiating factor here. They have several power levels to choose from that allow the depth and extent of heating that the food stuff is assumed to be supposed to undergo. Convection ovens have nowadays gained popularity. These are a mix of standard microwave and a convection oven, allowing food to be cooked yet be crispy and brown as in convection ovens. Microwave ovens are usually used for time efficiency and yet quality cooking in households as well as industrial applications. Even though microwave radiations are not considered injurious to health and are better than conventionally cooked food, there are still security issues with the conventional microwave oven. At times, liquids and improper heating or faults with the magnetron tube may cause bursts and resultant burns. Some also have issues with being exposed to microwave radiations. But apart from all these factors, microwaves are not only safer than normal cooking methods, the food cooked by them is considered healthier too. And hence, the popularity of the microwave oven has not dwindled but is only soaring upwards with the progression of time.

About the Author

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