

This report demonstrates my understanding of the nature of ovens. My commentary about conventional ovens is on the left hand side and microwave ovens on the right hand side. Discussion of the two types or within one type goes across the page.

[1] Early conventional ovens were very much for functional purposes, that is, cooking and heating. The first cast iron and forged steel coal ranges also performed the function of heating water and incinerating rubbish. Heat was controlled by vents in the oven and flue. Inventors began making improvements to wood burning stoves primarily to contain the bothersome smoke that was being produced. As a heat source for cooking, gas began to challenge coal and wood in the closing years of the 19th century. A gas stove had some powerful selling points. It could be smaller than a coal or wood-burning stove; most of its surface remained cool; and the labour associated with fuel, ashes etc was eliminated. The development of an oven thermostat in 1915 added to its appeal, as did the increasing use of natural gas, which was cheaper and less toxic than the earlier type. During the 1910's, gas stoves appeared with enamel coatings that made the stoves easier to clean. In the 1960's glass windows became common and this made it easier to carry out more precise cooking, as the product could be seen during cooking without opening the door which results in heat loss and therefore diminishing quality of the baked product. Better insulation of the cavity made ovens cook better. Ovens became smaller so they didn't take up so much space and to allow for other appliances in the kitchen. Availability of electricity led to the more conventional ovens (1953) made with pressed steel. They had a splash back and thermostatic controls for oven and cook top. Design became more sophisticated as new materials such as plastics were available around 1960's. Glass windows became common. Strong colours were introduced in the 1970's to fit in with the house décor style of the times, making ovens more of a feature of a kitchen, rather than just a cooking device. By the 1980's we saw softer curves and new finishes to fit in with the fashion of those times. The 1980's saw the introduction of the fan to circulate heating and therefore cook food more evenly. Current ovens have powerful computer control systems that allow for excellent cooking results and include electronic timers, automatic cleaning systems and removable components for ease of cleaning. Another innovation has been the introduction of ceramic elements both as part of an oven or as a separate component –these have the advantage of having a smooth top with no cavities etc which make cleaning difficult. Now we also see ovens with printed fronts to fit with current trends and individual styles and a more 'commercial' look to appeal to the home entertainer.

The first microwaves developed were heavy, large and expensive, standing about 1.8 metres tall, weighing over 340 kg, costing about \$5000 (US) each and consuming a lot of energy (about 3Kw). Though the first microwave oven was stable, it did not meet some of the other elements of functional design such as efficiency (as the magnetron tube needed to be cooled by water) and reliability. They were definitely not ergonomically viable and were lacking hugely in style, colour and appearance.

Further improvements and refinements were made to render them more reliable, light weight and less expensive. In the 1960s Litton developed a new configuration of the microwave - the short, wide shape that is now common. Rapidly falling price of micro-processors also helped by adding electronic controls to make the ovens easier to use and cheaper for people to buy.

Now the microwave oven is quite energy efficient.

[2] Originally because of their size and price, they were not used in the domestic kitchen. A continuously expanding market has produced a microwave that is styled to suit every taste with a size, shape and colour to fit every kitchen so that now microwave ovens are almost always found among the home appliances in domestic kitchens. They very easily sit unobtrusively into a kitchen, and options and features such as the addition of convection heat, probe and sensor cooking meet the needs of virtually every cooking, heating or drying application.

The fast food and food service industry have continued to heavily rely on microwave ovens to meet the demands for quality food served fast. With the introduction of programming, some commercial microwave ovens have fully programmable control panels enabling chefs to pre-programme heating times and settings for items that appear regularly on their menu. Once programmed, only a single button needs to be pressed for heating up the item in question. Pre-programming also ensures consistent results every time.

People preferred using the traditional appliances like the stove and the traditional oven (rather than the microwave) to cook food that required browning, caramelising and other flavour enhancing techniques.

Commercial ovens have a flat ceramic base, which enables large dishes to be cooked in it.

Commercial microwaves are typically made with stainless steel, robust doors and sturdy components. This construction makes them easy to clean. Such ovens also incorporate other safety features, e.g. strengthened doors, glass lined inner doors etc. The apparent result is greater protection against microwave radiation.

There continues to be debate on the safety of microwaves in terms of leakage of unsafe levels of electromagnetic radiation. However, ovens are designed to limit exposure by incorporating gaskets within a secure door closure when operating and also two independent interlock systems that stop the production of microwaves the moment the latch is released and the door opened.

The microwave system cooks by the water in the food absorbing the energy from the waves and beginning to rotate rapidly - this rotation is thought to add heat to the food. There is ongoing discussion on what effect the system has on the nutritional quality of the food. The prevailing view is that microwaves do not alter foods in ways that are any more harmful than other types of cooking. In fact, some have argued that the faster cooking time may actually preserve more nutrients versus other methods.

Some microwave ovens are childproof with special safety locks to keep little hands away from danger.

Now we have multiple ovens that have introduced steam and grill to a microwave unit. These have been designed to create pure steam without the use of microwave energy, retaining vitamins and nutrients within the food.



[3] Because it is safe to operate, children can prepare food themselves with the microwave.

Recent innovations in ovens include 'Intelligent Ovens' that can be remote controlled away from the home. They can be control by internet and telephone, and come with built-in refrigeration to keep foods fresh before and after cooking.

Some ovens have a bottom oven which is able to be used for warming or cooking another whole meal. Gas hobs and electric ovens can be purchased separately. Convection ovens are good for even, quick cooking. Combination ovens combine convection ovens with a steamer. Conveyor ovens have a conveyor belt that moves food like pizza's through the oven. A pizza oven is a large oven that heats to high temperatures.



Gas ovens are not so good for things that need to be cooked in batches because the temperature can fluctuate by up to five gas marks (50 ° C) from the top to the bottom of the cavity.