Technology

The Inverted Microwave Oven

Cool water or freeze food within seconds!

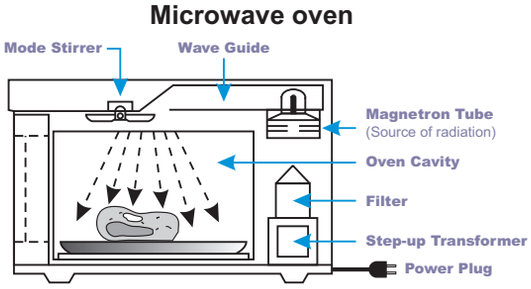
By Mr. Eibert Draisma, inventor

How do microwave ovens work?

Microwave ovens operate by agitating the water molecules in food or beverages, causing them to vibrate, which produces heat. The microwaves enter through openings in the top of the cooking cavity, where a stirrer scatters them evenly throughout the oven. They are unable to enter a metal container to heat food, but they can pass through nonmetal containers.

Microwaves are short, high-frequency radio waves lying roughly between very-high-frequency waves and conventional radio waves. Microwaves thus range in length from about 1 mm to 30 cm. They are generated in special electron tubes, such as the klystron and the magnetron, with built-in resonators to control the frequency or by special oscillators or solid-state devices. Microwaves have many applications: in radio and television, radar, meteorology, satellite communications, distance measuring, and research into the properties of matter.

Microwave oven



Inverted microwave oven

How does the inverted microwave oven work?

Water molecules are polarized*; just like a magnet, they have a positive and a negative side. An ordinary microwave oven, uses a strong electro-magnetic field (that is continuously changing from direction) to set the water molecules in motion. This causes every substance containing water to heat up.

The inverted microwave oven (developed by inventor Eibert Draisma in 2000) also uses the fact that water molecules have a dipole moment: a strong, directional (fixed) electromagnetic field, forces all water molecules into the same position. Thus, the motion of the water molecules is strongly reduced. This results in a process opposite to what happens in an ordinary microwave: food or beverages placed into the inverted microwave oven, are cooled in seconds!

*Water is the chemical substance with chemical formula H_2O: one molecule of water has two hydrogen atoms covalently bonded to a single oxygen atom. Oxygen attracts electrons much more strongly than hydrogen, resulting in a net positive charge on the hydrogen atoms, and a net negative charge on the oxygen atom. The presence of a charge on each of these atoms gives each water molecule a net dipole moment.

The future of cooking

When it comes to cooking, there are few tools that are more versatile in the kitchen than the microwave. The inverted microwave oven (marketed by LG Electronics) launches this week with technology that you might say can be the future of cooking. It uses sensors to calculate the precise combination of energy consumption and time needed to bring food or beverages to the correct temperature. Regardless whether it concerns heating, defrosting, cooling or even freezing it!

Inventor Eibert Draisma is happy to describe some actual benefits of the inverted microwave oven:

- Improper storing or freezing cooked food, is one of the most common causes of food poisoning in the home. Avoid this threat by microwave freezing leftovers immediately;
- You no longer need ice boxes or other machines to make ice cream, and instead of running down to the store for an ice cream fix, you can make it yourself in seconds!
- Cool any drink, be it water or white wine, in the blink of an eye!

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