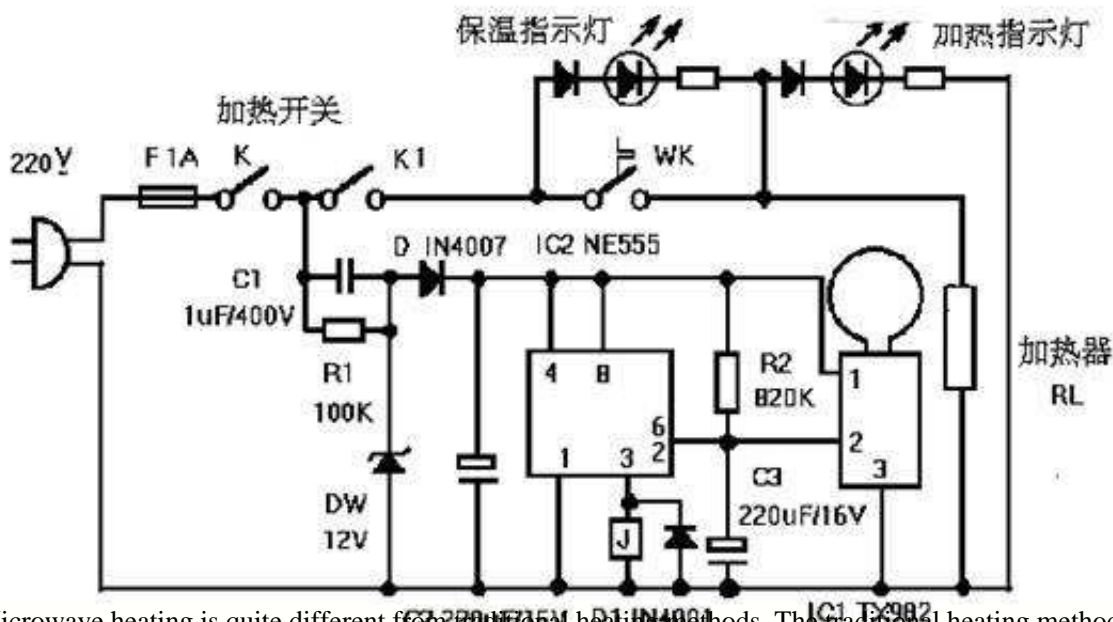


# Development and application of microwave heating in industrial production (1)

I. Microwave Thermal Effect and Microwave Heating After the end of the Second World War, microwave theory and technology were continuously improved, and the thermal effects of microwaves were discovered. Many objects can absorb microwave energy under microwave irradiation to convert it into heat energy, which becomes the material basis of "microwave heating".

## [Microwave drying machine](#)



Microwave heating is quite different from traditional heating methods. The traditional heating method relies on the heat source to radiate, conduct, convect, etc., first to heat the surface of the object, and then to conduct heat inside the object, so that the internal temperature gradually rises from the surface and the inside. The heat transfer in most objects is very slow, so it takes a long time to reach the overall heating. [Microwave heater](#)

Microwave heating, because microwaves can penetrate ordinary objects, the microwave energy is converted into heat energy in the process, so microwave heating is "volume heating", as long as the object is not very thick, the overall heating can be achieved quickly.

It can be seen that microwave heating has the following characteristics:

The first penetrating heating, the overall heating speed is fast;

The second selective heating only directly heats the material capable of absorbing microwaves;

The third material is heated to the material, the environmental heat loss is low, energy-saving, and pollution-free;

The fourth heating process is easy to operate and more suitable for automatic control.

It was later discovered that microwaves also have biological effects, which can kill certain harmful bacteria at lower temperatures, and microwaves also have chemical effects that can accelerate certain chemical reactions. Due to these characteristics, microwave heating has been widely used in industrial and agricultural production at home and abroad.

Second, microwave heating and drying using microwave heating to dehydrate the material, the economic benefits are obvious. Water is a material that strongly absorbs microwave energy. As long as the material contains moisture, it can raise the temperature of the water and even vaporize when it absorbs microwaves. In particular, when the temperature of the water inside the material rises, a certain pressure is generated, forcing the water to diffuse to the surface of the material.

As long as the surface of the material is well ventilated and dehydrated, the material can quickly reach the overall drying effect. Production efficiency is greatly improved. The microwave wood drying equipment we have developed has been used in handicrafts and mahogany furniture factories for many years. The quality of wood products is greatly improved and it is not easy to be deformed. It can also kill eggs in wood while drying and drying wood, effectively preventing insects. The microwave glass fiber dry-release equipment not only greatly shortens the drying time, but also significantly improves the color and quality of the product. Very popular with users. In addition, it has been widely used in the drying of dried fish, dried meat, instant noodles, vegetables, fruits, heating, rubber vulcanization and chemical products.

Third, microwave heating sterilization Microwave heating can make the temperature inside the water-containing food quickly reach 80 ° C -100 ° C, with rapid disinfection, sterilization effect. In particular, microwaves can penetrate plastic, glass, ceramics, etc., which are transparent to microwaves, so that food can be heated and disinfected in a packaged state to avoid secondary pollution. Due to the short time of microwave heat sterilization, the color, aroma and taste of food are less affected. The microwave disinfection and sterilization equipment we have developed has been widely used in the disinfection and sterilization production line of oral liquid, boxed rice, small packaged food, Chinese and Western medicine, and the effect is ideal.