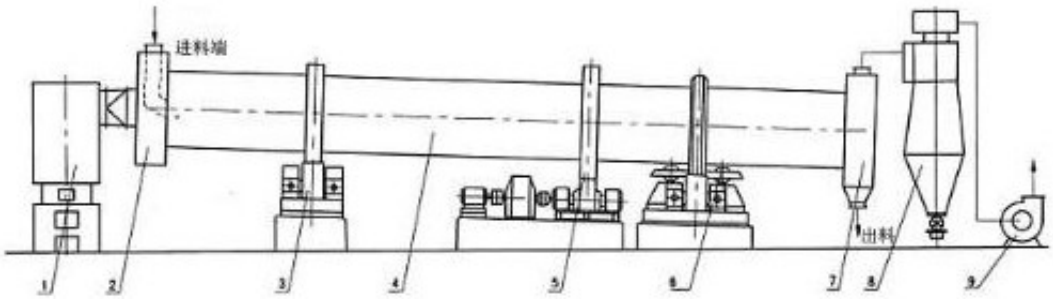
Microwave dryer

The main goal of the optimization of the drying process is to produce the dry product of the required quality with a low production cost and maximum production efficiency by optimizing the design and operating conditions. Drying is an energy-intensive operation because the volatile components such as moisture in the material absorb the sensible heat during heating and the latent heat during evaporation.



Microwave dryers are one of the most energy-intensive unit operations, accounting for 15% of the energy consumed in all industrial processes. In many industrial drying processes, most of the energy is wasted. The energy consumed by drying accounts for 70% of the total energy consumed in the processing of wood products, 50% of the total energy consumption of the textile manufacturing industry, and more than 60% of the total energy required for corn production.

Drying is a high-energy industry that consumes 9% to 25% of national energy in developed countries. Therefore, in order to reduce energy consumption, it is necessary to carefully explore different drying methods to improve the energy efficiency of drying equipment. Especially in the situation that energy is getting tighter and fuel prices are rising, how to improve the drying efficiency of materials, reduce drying costs and improve the drying quality of materials has become an important topic in material drying research.

Microwave drying machinery technology

Air source compression heat pump technology uses air as a low temperature heat source, which has the advantages of energy saving, high product quality and wide adjustable drying conditions.

The air source compression heat pump drying system consists of an evaporator, a compressor, a condenser, a throttling unit, a circulation fan and a drying chamber. Using the reverse Carnot cycle principle, a small amount of electric energy is consumed to drive the heat pump compressor, and the heat pump is used to flow the working medium. The gas-liquid two-phase thermal cycle process in the evaporator, compressor, condenser and throttling components collects low-temperature heat in the air, which is made into high-quality

heat to achieve material drying.

Under normal circumstances, the outside low-temperature air passes through the condenser of the heat pump system, absorbs heat into high-temperature and low-humidity air, enters the drying chamber to heat the dried material to reduce the moisture, and the air after absorbing the water is cooled and dehumidified by the evaporator of the heat pump system, and At the same time, the evaporator of the heat pump system absorbs the waste heat of the exhaust gas of the dryer, and the low temperature and low humidity air is heated by the condenser of the heat pump system to reduce the relative humidity of the air, and the air is circulated to achieve continuous drying of the material.

This type of drying device is called a closed heat pump drying device and is characterized in that the drying medium circulates in a completely closed circulation passage, in addition to a semi-open heat pump drying device and an open heat pump drying device. Open heat pump drying means that all the air entering the dryer comes from the environment. The semi-open heat pump drying device means that part of the air entering the dryer comes from the environment, and the other part comes from the exhaust gas discharged from the dryer.