



microwave applications in the petrochemical and metallurgical industry

Microwave extraction can be applied to highly viscous crude oil and heavy oil, and under the action of microwaves, these oils a large molecular weight compounds by thermal cracking, so that the average molecular weight decreases, viscosity decreases, thereby improving oil recovery, and easy to transport. Microwave make oil shale along bedding and rupture cracks, increase permeability, which can be applied to the development of low permeability oil and gas fields. Microwave and other parties in the oil and gas fields of application have microwave demulsification, microwave desulfurization, microwave dewaxing, microwave plugging, microwave anti-natural gas hydrate formation.

Ores used for smelting is generally from carbonates, oxides, sulfides, chlorides and other components. Microwave heating can generate heat directly within the ore, which can effectively accelerate the rate of decomposition of the compound and reduce energy consumption.

Using microwave heating, pyrolusite decomposition at a lower temperature, thus reducing energy consumption. Microwave heating of basic nickel carbonate decomposition difficult industrialization possible. Microwave for carbothermic reduction of metal oxides, the carbon absorbed microwave rapid warming, improve the reducing ability to accelerate the reduction process, this method has been used for iron ore, Chin iron ore, manganese ore carbon reduction .

Nature of most metal sulfide minerals form, using pyrometallurgical process sulfide ore processing will inevitably produce sulfur dioxide, causing environmental pollution. Hydrometallurgical process to solve this problem, not only microwave leaching rate, the reaction time is shortened, and energy conservation, is a promising new hydrometallurgical technology, which has been used for sulfide copper concentrate, flash zinc, manganese ore leaching. Because microwave selectively heated mineral, thus allowing some of the mineral ore or a chemical reaction phase transformation, without directly affecting other minerals, this method can be used for pretreatment of ore, such as coal in yellow after microwave irradiation ore will be transformed into pyrrhotite, with magnetic separation methods can be selected from coal carve. Microwave irradiation on refractory gold concentrate pretreatment can put gold, arsenic and sulfur is separated from the ore matrix, which can more easily extract the gold.