Microwave Sintering of SiC Ceramic Rollers for Roller Kiln

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The multiple mode resonator microwave sintering furnace provides more uniform microwave field for SiC ceramic roller, ensuring the uniform heating for large size SiC ceramic roller. Using the simplified thermal insulating structure design without any auxiliary heating body, thus effectively reducing the heat loss and improving energy utilization in the SiC ceramic roller sintering process. The direct microwave heating method was adopted to complete the SiC ceramic roller sintering and the temperature rising rate was regulated and controlled. Compared with normal pressure sintering, microwave sintering can be completed at only 980oC, the sintering temperature is reduced about 400oC. Meanwhile, the density and bending strength are increased and the thermal shock temperature is increased by about 50 degrees. This experiment adopts multimode resonant cavity microwave sintering for large size SiC ceramic roller preparation, effectively avoid the long sintering time, high energy consumption, environmental pollution and low yield in the normal pressure sintering, realizing the true sense of the green SiC ceramic roller sintering.

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