

Electromagnetic Interference Shielding Effectiveness of a Corrugated Rectangular Waveguide for a Microwave Conveyor-Belt Drier

Authors : Sang-Hyeon Bae, Sung-Yeon Kim, Min-Gyo Jeong, Ji-Hong Kim, Wang-Sang Lee

Abstract : Traditional heating methods such as electric ovens or steam heating are slow and not very efficient. For continuously heating the objects, a microwave conveyor-belt drier is widely used in the industrial microwave heating systems. However, there is a problem in which electromagnetic wave leaks toward outside of the heating cavity through the insertion opening. To achieve the prevention of the leakage of microwaves and improved heating characteristics, the corrugated rectangular waveguide at the entrance and exit openings of a microwave conveyor-belt drier is proposed and its electromagnetic interference (EMI) shielding effectiveness is analyzed and verified. The corrugated waveguides in the proposed microwave heating system achieve at least 20 dB shielding effectiveness while ensuring a sufficient height of the openings.

Keywords : corrugated, electromagnetic wave, microwave conveyor-belt drier, rectangular waveguide, shielding effectiveness

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020