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6th International Conference and Exhibition on

Materials Science and Engineering

September 12-14, 2016 Atlanta, USA

Parametric investigations into manufacturing of magnetic abrasives by sintering process

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Magnetic abrasives play essential role in Magnetic assisted abrasive Finishing (MAF) processes. The magnetic abrasives are prepared by a variety of techniques. In many existing applications of MAF simple mixing of ferromagnetic and abrasive particles has been employed. In the present work, the parametric studies have been conducted to assess the impact of prominent parameters of sintering process on performance of magnetic abrasives. The sintering time, concentration of abrasive and ferromagnetic powder and compacting pressure were chosen as input parameters. Response Surface Methodology (RSM) has been used to conduct and analyze the experimental work. Percentage Improvement in Surface Finish (PISF) is taken as performance criteria. The optimal combination of input parameters was determined on the basis of experimental data. Sintering time of 24 min, compacting pressure 8.3 N/mm² and abrasive concentration 18 % aluminum oxide with 82 % iron powder came as optimal combination.

Biography

Dr. Balkar Singh has completed his PhD in 2010 from Punjab Technical University Jalandhar, Punjab, India. Presently he his working as Director of colleges of IKG-PTU. He did graduation and post graduation in Mechanical Engineering from Punjab University Chandigarh, India. The area of research work is mainly finite element method and non traditional manufacturing processes.

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