International Journal of Automation Technology (IJAT)

Special Issue on

Advanced Abrasive Process Technologies

Guest Editors:

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The demand for high-precision machining of difficult-to-machine materials such as hardened steel, ceramics, Ti alloys, and carbon fiber reinforced plastic have increased across various industries such as in the automotive, aircraft, optical, and communication industries, as well as in life and medical sciences. Some difficult-to-machine materials can be reliably machined using deterministic precision cutting processes. On the contrary, hard and brittle materials such as ceramics, carbides, hardened steel molds, glassy materials, or semiconductor materials have to be machined using precision abrasive technologies with super abrasives of diamond or cBN. However, the machining of high-precision components and their molds/dies using abrasive processes is much more difficult owing to their complex and non-deterministic nature and textured surface. In this sense, precision grinding and polishing are primarily used to generate high-quality and functional components that are usually made of difficult-to-machine materials. The surface quality achievable through precision grinding and polishing becomes more important for reducing machining time and cost.

his special issue covers the advanced abrasive technology of grinding, lapping, polishing, jet polishing, magnetic machining technologies, vibration assisted technologies, and energyassisted abrasive technologies.

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