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Real-time Grinding State Discrimination Strategy by Use of Monitor-embedded Grinding Wheels

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Highlights

- A monitor-embedded grinding wheel was utilized, and the temperature at the grinding point was successfully monitored in real time.
- A strategy capable of determining the grinding condition using the temperature monitoring was proposed.
- The occurrence of clogging and glazing accompanied by large amounts of grinding heat can be effectively detected.

Abstract

Grinding is widely employed for its ability to process harder metals, maintain higher dimensional accuracy and provide finer surface finishes relative to cutting. However, the process is susceptible to altering the properties of the material being processed, as occurs with grinder burning. Thus, when grinding, it is important to promptly detect any irregularities resulting from heat (high temperatures) generated during the process. Here, we examine the application of monitor-embedded grinding wheels to measure the temperature during grinding and a strategy for utilizing such data to detect/discriminate irregularities. We find that we are thus able to detect the occurrence of temperature-induced irregularities.

Key words: grinding, temperature, monitoring, discrimination strategy, grinding state, thermocouple

1. Introduction

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