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(54) Title: A DEVICE AND METHOD FOR RECOMMENDING DYNAMICALLY PREFERRED SPEEDS FOR MACHINING

(57) Abstract

A hand-held, portable device recommends dynamically preferred speeds for stabilizing or reducing undesirable vibration such as chatter in a machining process. The device may be applied to machining processes such as turning, boring, milling and drilling which exhibit a relative rotational motion between the cutting tool and workpiece. The device measures in a safe, non-contact manner via a microphone the dominant audio signal component of the sound pressure emanating from the machining processes. Without prior knowledge of the machining process parameters or the dynamic characteristics of the machine tool or workpiece, the audio signal is conditioned and processed to determine the frequency component levels. The rotational speeds which are more likely to lead to a stable machining process are calculated based on the number of teeth on the cutting tool and the identified dominant frequency of vibration. The dynamically preferred speeds are displayed as recommendations to the process operator or machinist.

