Conference Poster

Standby Indication and Energy Management on Machine Tools

Author(s):
Gontarz, A.; Elbe, C.; Weiss, L.; Wegener, K.

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Objectives

A multichannel measuring system for effective power and compressed air flow measurements at the component level; enables detailed optimization potential analyses.

Methodology and Results

Seizing the above mentioned potential, this methodology should help to quantify and to reduce the power consumption in non value add machine tool modes and lead to micro optimization in machine tool monitoring at the component level (Area 1, Fig. 4).

Methodological approach

Fig. 5 indicates the relevant modes for the standby analysis.

An analysis of available methods in the context of the standby analysis was done, revealing that no current analysis method focuses on the non value add time within manufacturing by compromising machine tool reliability and process quality.

A representative measurement of the machine tool components and all operational modes must be made.

Results and Saving potential

These components are analyzed bases on the selected algorithm of Srivastava et al. to set and predict standby times and component control.

Fig. 7: EMod simulation

This algorithm will be further used online within a monitoring system as an adaptive control on the machine tool auxiliaries.

Example results from a case study on a 5-axis milling machine tool.

Futher information:

Adam Gontarz: gontarz@iwf.mavt.ethz.ch