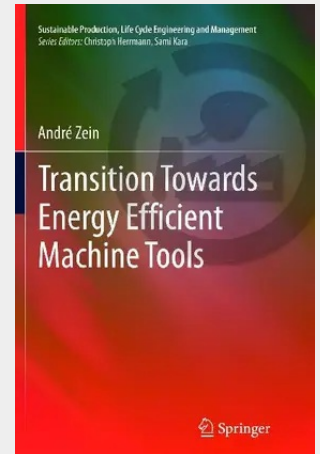


Transition Towards Energy Efficient Machine Tools

Energy efficiency represents a cost-effective and immediate strategy of a sustainable development. Due to substantial environmental and economic implications, a strong emphasis is put on the electrical energy requirements of machine tools for metalworking processes. The improvement of energy efficiency is however confronted with diverse barriers, which sustain an energy efficiency gap of unexploited potential. The deficiencies lie in the lack of information about the actual energy requirements of machine tools, a minimum energy reference to quantify improvement potential and the possible actions to improve the energy demand. Therefore, a comprehensive concept for energy performance management of machine tools is developed which guides the transition towards energy efficient machine tools. It is structured in four innovative concept modules, which are embedded into step-by-step workflow models. The capability of the performance management concept is demonstrated in an automotive manufacturing environment. The target audience primarily comprises researchers and practitioners challenged to enhance energy efficiency in manufacturing. The book may also be beneficial for graduate students who want to specialize in this field.

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