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Autore	Thiede Sebastian
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Theoretical Background -- Derivation of requirements and methodological approach -- State of research -- Concept development -- Application of concept -- Summary and Outlook.
Sommario/riassunto	Energy consumption is of great interest to manufacturing companies. Beyond considering individual processes and machines, the perspective on process chains and factories as a whole holds major potentials for energy efficiency improvements. To exploit these potentials, dynamic interactions of different processes as well as auxiliary equipment (e.g.

compressed air generation) need to be taken into account. In addition, planning and controlling manufacturing systems require balancing technical, economic and environmental objectives. Therefore, an innovative and comprehensive methodology – with a generic energy flow-oriented manufacturing simulation environment as a core element – is developed and embedded into a step-by-step application cycle. The concept is applied in its entirety to a wide range of case studies such as aluminium die casting, weaving mills, and printed circuit board assembly in order to demonstrate the broad applicability and the benefits that can be achieved.