

Find out how to access preview-only content

Look inside the book
Glocalized Solutions for Sustainability in Manufacturing
2011, pp 317-322

Synergies from Process and Energy Oriented Process Chain Simulation – A Case Study from the Aluminium Die Casting Industry

Citations

Abstract

Due to the significant ecological relevance and constantly rising prices, energy consumption more and more gets into the focus of manufacturing companies which strive to consciously consider energy consumption when planning and managing production facilities. Thereby it is important to take into account the interdependencies on different hierarchical levels in a production system (between single processes and the whole process chain). Against this background this paper presents an approach for a combined application of an energy oriented process chain simulation and a detailed process simulation. This approach enables an integrated evaluation of the interactions of parameter variations on both levels.



Related Content



References (13)

1. VAR – Verband der Aluminiumrecycling-Industrie e.V., KeyFigures – Production of Aluminium in Germany; <http://www.aluminiumrecycling.com/en/recycling/eckdaten.php>
2. [2] Institute of Joining and Welding, TU Braunschweig
3. [3] German Federal Ministry of Economics and Technology(2007): Energy Statistics, <http://www.bmwi.de/BMWi/Navigation/Energie/enenergiestatistik.html>
4. [4] Schultz, A. (2002): Methode zur integrierten ökologischen undökonomischen Bewertung von Produktionsprozessen und -technologien, Dissertation, Magdeburg, Germany
5. [5] Herrmann, C., Thiede, S., Heinemann, T. (2010):Ganzheitliche Ansätze zur Erhöhung der Energie- undRessourceneffizienz in der Produktion, in: 10. KarlsruherArbeitsgespräche Produktionsforschung 2010, Karlsruhe,Germany, 2010
6. [6] Optimierung der Energiebilanz beim Aluminium-Druckgießprozess, final report, Deutsche BundesstiftungUmwelt, support code AZ 22197, 2007
7. [7] Soldering, P., Petku, D., Mardan, N. (2009): Using simulationfor more sustainable production systems - methodologies andcase studies, in: International Journal of SustainableEngineering, Volume 2, No. 2
8. [8] Bayrisches Landesamt für Umweltschutz (2005): EffizienteEnergieverwendung in der Industrie – subproject„Metallschmelzbetriebe“, Augsburg
9. [9] Anders, U., Pries, H. Dilger, K. (2003): Ökologisch undökonomisch optimierter Trennstoffeinsatz beim Aluminium-Druckguss, BMBF, 01RW0055, Braunschweig, 2001-2003
10. [10] Magma Gießereitechnologie GmbH, presentation at 10.Karlsruher Arbeitsgespräche Produktionsforschung 2010,Karlsruhe, Germany, 2010
11. [11] Herrmann, C.; Thiede, S. (2009): Process chain simulation tofoster energy efficiency in manufacturing, in: CIRP Journal ofManufacturing Science and Technology, Elsevier, ISSN 1755-5817
12. [12] Thiede, S., Herrmann, C. (2010): Simulation-based EnergyFlow Evaluation for Sustainable Manufacturing Systems, in:Proceedings of the 17th CIRP International Conference onLife Cycle Engineering (LCE2010), pp. 99-104, Hefei, China
13. [13] Herrmann, C., Thiede, S. (2009): Towards Energy andResource Efficient Process Chains, in: Proceedings of the16th CIRP International Conference on Life CycleEngineering (LCE2009), pp. 303-309, Cairo, Egypt.

About this Chapter

Title

Synergies from Process and Energy Oriented Process Chain Simulation – A Case Study from the Aluminium Die Casting Industry

Book Title

Glocalized Solutions for Sustainability in Manufacturing

Book Subtitle

Proceedings of the 18th CIRP International Conference on Life Cycle Engineering, Technische Universität Braunschweig, Braunschweig, Germany, May 2nd - 4th, 2011

Pages

pp 317-322

Copyright

2011

DOI

10.1007/978-3-642-19692-8_55

Print ISBN

978-3-642-19691-1

Online ISBN

978-3-642-19692-8

Publisher

Springer Berlin Heidelberg

Copyright Holder

Springer Berlin Heidelberg

Additional Links

- [About this Book](#)

Topics

- [Industrial and Production Engineering](#)

- Sustainable Development
- Energy Efficiency (incl. Buildings)
- Energy Economics
- Engineering Design

Keywords

- Energy Efficiency
- Simulation
- Aluminium Die Casting



Industry Sectors

- IT & Software
- Electronics
- Oil, Gas & Geosciences
- Engineering
- Aerospace
- Telecommunications
- Automotive
- Energy, Utilities & Environment

eBook Packages

- eBook Package english full Collection
- eBook Package english Engineering

Editors

- Jürgen Hesselbach  (ID1)
- Christoph Herrmann  (ID2)

Editor Affiliations

- ID1. , Institut für Werkzeugmaschinen, Technische Universität Braunschweig
- ID2. , Institut für Werkzeugmaschinen, Technische Universität Braunschweig

Authors

- Christoph Herrmann ⁽¹⁾
- Tim Heinemann ⁽¹⁾
- Sebastian Thiede ⁽¹⁾

Author Affiliations

- 1. Institute of Machine Tools and Production Technology, Technische Universität Braunschweig, Braunschweig, Germany

Continue reading...

To view the rest of this content please follow the download PDF link above.

