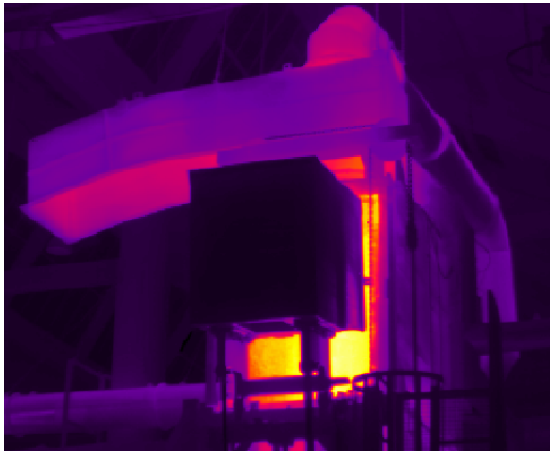


KIEFF – Competence Center for Energy Efficiency in Industry



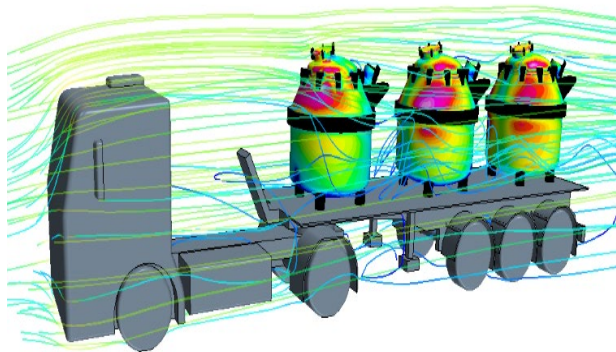
Due to the energy transition and the massive increase in gas prices, there is a great need for action in the energy-intensive foundry industry to reduce energy consumption. The energetic efficiency of production processes and systems is becoming increasingly important.

The aim of the Competence Center for Industrial Energy Efficiency (KIEff) at Ansbach University of Applied Sciences is to support companies in identifying potential for increasing energy efficiency in production. The focus is on intelligent process management through increased

digitalization. In the ZIM network for digitalization in the foundry industry (DigiGuss) of the ENERGIEregion Nuremberg, solutions for a sustainable foundry industry are developed in cooperation projects with medium-sized foundries.

Simulative analysis of energy efficiency measures

The complete material and energy flow in an aluminum die-casting company was successfully mapped in a simulation model at KIEff. The simulation determines the energy consumption of the gas-powered smelting operation as well as the most important KPIs and can be transferred to different operational structures. By analyzing various scenarios, the effectiveness of energy efficiency measures can be determined in advance and thus provide important decision support for investment decisions. A demonstrator app shows the possibilities of simulation for real existing companies of various sizes.



Work is currently underway to transfer the simulation to an electrified melting operation to estimate the energetic and intralogistical consequences of switching from a gas-powered to an electrically operated melting operation. This allows to examine the economic and ecological consequences of such a profound change in production in detail in various scenarios.

Demonstrator E | Melt

Das Demonstratorsystem "E|Melt" dient der Darstellung und Analyse der Auswirkungen verschiedener intralogistischer Maßnahmen auf die Energieeffizienz, Produktivität und Produktionssicherheit von Betrieben der Nichteisen-Schmelz- und Druckgussindustrie. Hierzu können unterschiedlich dimensionierte Betriebe ausgewählt und mit verschiedenen Maßnahmen kombiniert werden.

Wie funktioniert's?

Konfigurieren Sie Ihre Simulation:

Betriebsgröße:

- Großer Betrieb: 70.000 t Al/a
- Mittelgroßer Betrieb: 14.500 t Al/a
- Kleiner Betrieb: 8.400 t Al/a

Maßnahmenauswahl:

- Optimierte Beschickung
- Materialvorwärmung
- Verbesserte DGM-Belieferung

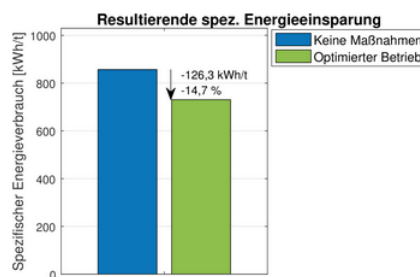
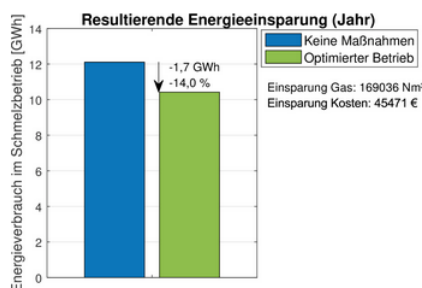
Visualisierung:

- Energieeinsparung
- OEE / Anlageneffizienz
- Produktionsbilanz

Simulation starten



Ihre Ergebnisse:



Die Kombination aus verbesserten Beschickungsintervallen und Materialvorwärmung bewirkt eine Reduktion des spezifischen Energieverbrauchs um ca. 15 %. Beide Maßnahmen ergänzen sich demnach hinsichtlich der erzielbaren Einsparung. Innerhalb eines Jahres führt dies zu einer Energieeinsparung von 1,7 GWh, was einer Gaskosten-Ersparnis von ca. 45000 € entspricht.

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