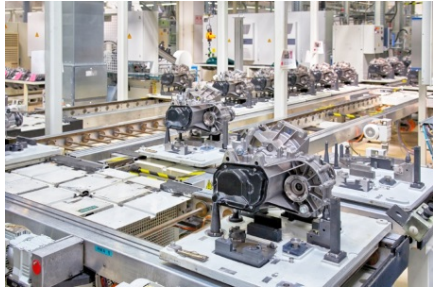
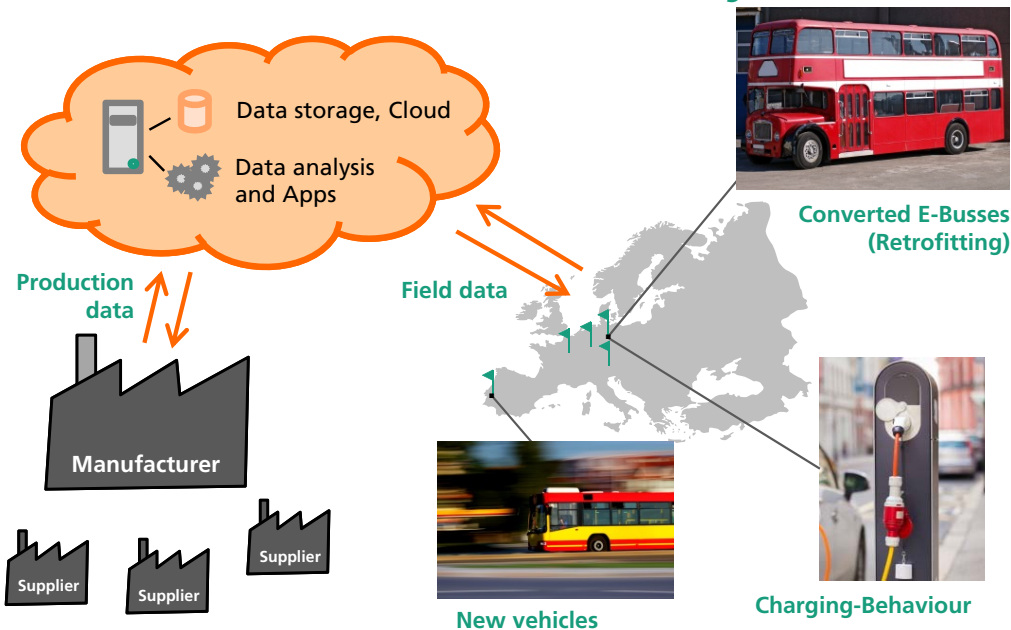


Product lifecycle management (PLM) for electro busses



Production and field data analysis



Our approach

- Identification of relevant PLM-data for E-Busses (Specifications, drawings, parts lists, manufacturing parameters, field data, route profiles, battery status, location etc.)
- Conception and implementation of cloud concepts for data collection, request and analysis
- Deduction of appropriate roles and access rights for manufacturers, bus operators, service centers etc.
- Development of algorithms for the combined analysis of production and field data

Results

- Product related data transparency along the entire life cycle of electro busses
- Fully synchronized production network
- Analysis, failure detection and cause analysis
- Deduction of optimized charging strategies, routes, acceleration profiles etc.



Research project eMES

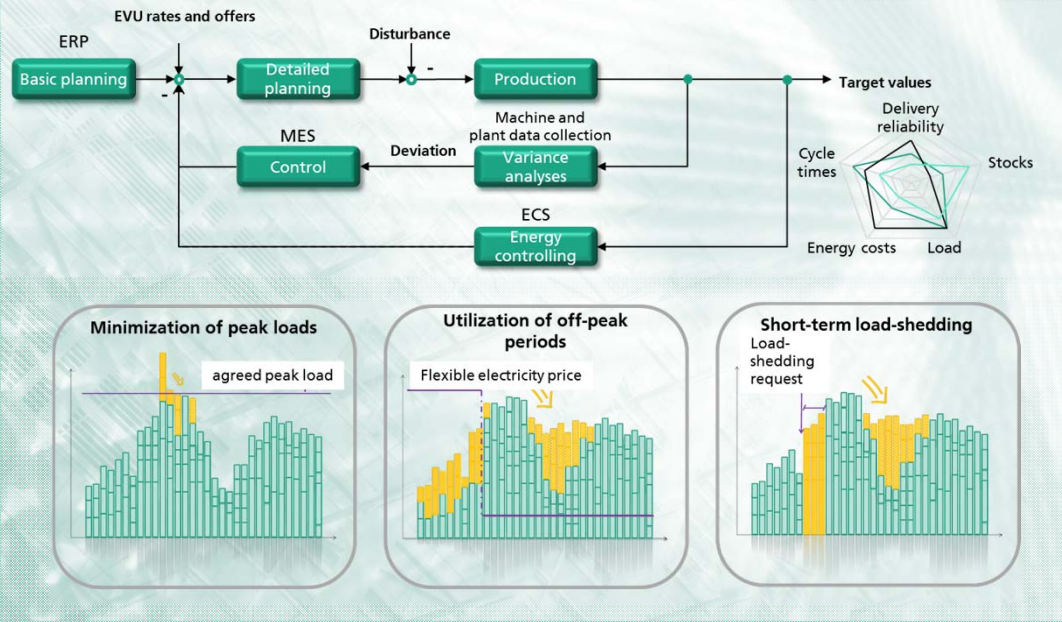


Image sources: Fraunhofer IPT, funding code 01IS14025B

Our approach

- Energy based production planning and control based on a MES-system
- Planning alternatives that can be adapted to company specific requirements including the opportunity of mult target optimization
- Dynamic production intervention based on intervention rules and escalation levels
- Development of a cross-linked data concept and interface development

Results

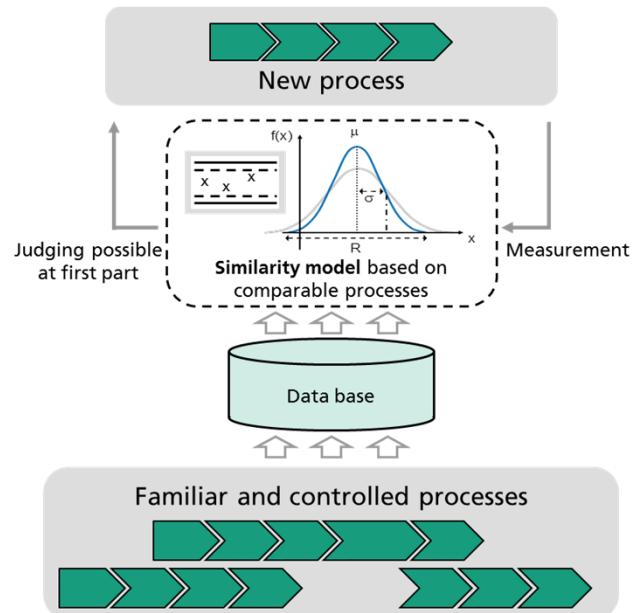
- Transparency concerning the product and process related energy consumption in real time
- Reduction of operative energy costs through a decrease of peak loads and usage of flexible electricity rates
- Optimized production planning in terms of classical target figures as time, costs and quality – under consideration of energy costs

Selected research project KleiSta

Securing small series in steel processing



Research project KleiSta



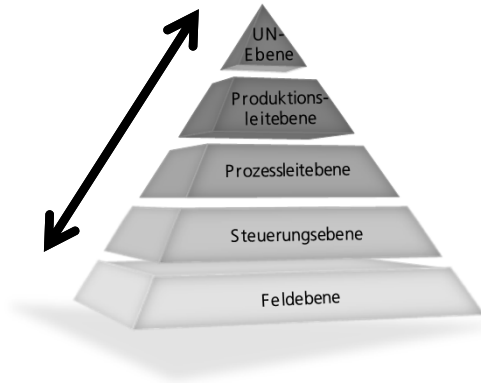
Our approach

- Design of a statistical similarity model for the prediction of process behaviour based on comparable products and processes
- Implementation of a knowledge database as base for the uniform storage and the opportunity to compare machine, process and testing data
- Modelling of a risk model for the determination of the estimation quality
- Concept-validation through industrial application

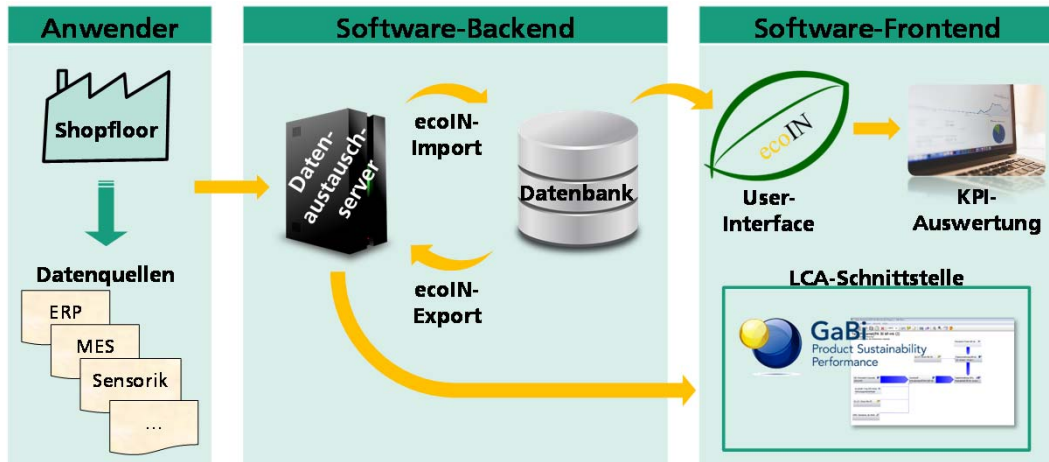
Results

- Software tool for the statistical coverage of quality features starting at the very first part (SPC for small series)
- Assessment of estimation faults
- Integrated process and product knowledge of accompanying experts of 13 steel processing companies manufacturing small series

Vertical data integration along the automation pyramid



Research project EBOEL



- Consistent software architecture from production system to the operator
- Intuitive application in the browser

Our approach

- Automated linkage of production data along all levels of the automation pyramid
- Implementation independent of production system
- Product and process specific allocation of resource consumptions

Gefördert durch:



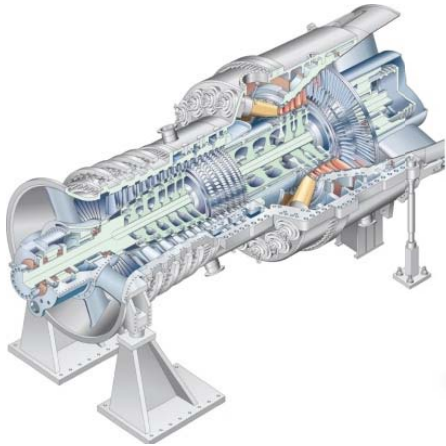
aufgrund eines Beschlusses des Deutschen Bundestages

Results

- Individual editable KPI calculation
- Transparency according to resource consumptions for an optimized monitoring
- Automated data collection and analysis
- Simplified and more detailed reporting
- Identification of optimization potentials (e.g. trends, peaks, irregularities)

Image sources: Fraunhofer IPT

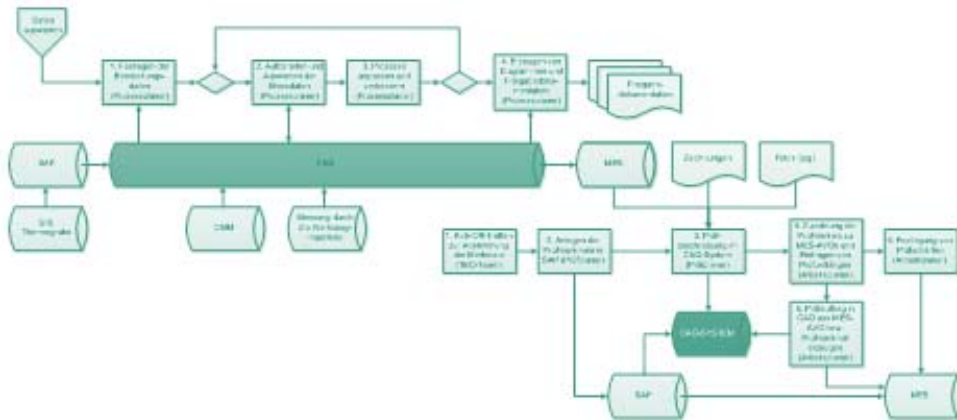
Implementation of a MES/CAQ-system in turbo machinery



Our approach

- Analysis of production and quality assurance processes at the entire production site
- Consideration of supplier management, qualification of processes etc.
- Analysis of interfaces concerning processes, persons, machines and systems
- Integrated profitability analyses concerning costs, benefits, risks and chances

Optimized IT-systems for high efficiency



Results

- General identification of optimization potentials and process losses
- Complete specification sheets for the description of processes, functionalities and interfaces
- Supplier pre-selection for a fast project realization
- Management-suited basis of decision making through a business-case and risk analysis

Bildquellen: Fraunhofer IPT, Siemens Energy