

1 *Determining the energy efficiency of production machines*

ENERPRO ENERGY EFFICIENCY MEASURES FOR PRODUCTION MACHINES

CONTACT

**Fraunhofer Institute for
Production Systems
and Design Technology IPK**

Director

Prof. Dr. h. c. Dr.-Ing. Eckart Uhlmann
Pascalstraße 8-9
10587 Berlin

Contact

Eckhard Hohwieler
Phone: +49 30 39006-121
Fax: +49 30 39110-37
eckhard.hohwieler@ipk.fraunhofer.de

<http://www.ipk.fraunhofer.de>

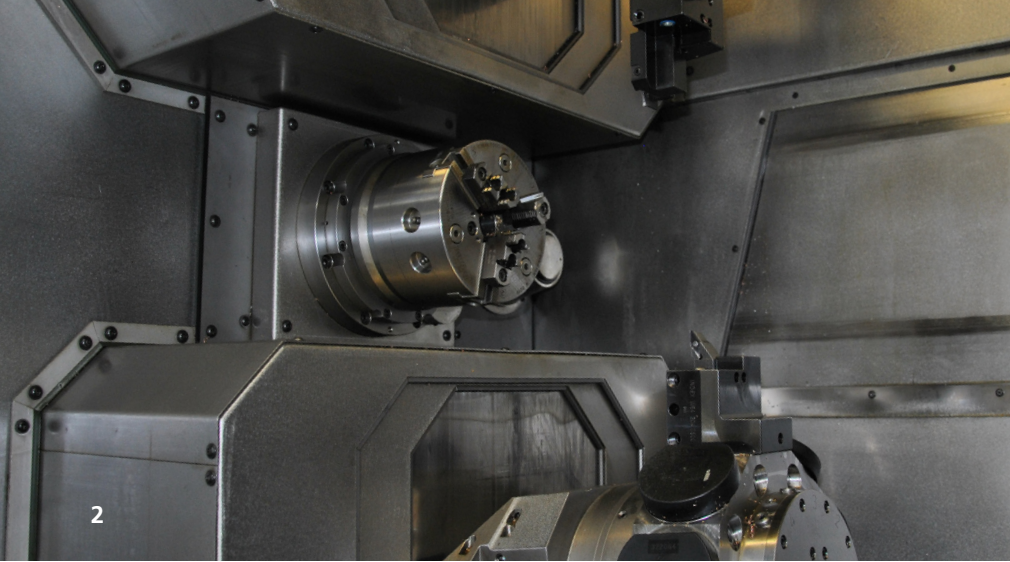
Problem

Manufacturing companies become incrementally responsible to develop sustainable products and services. Increasing energy costs and price volatilities as well as unpredictable impacts of a nationwide change in energy supply towards sustainable energy sources lead to an increasing demand in energy efficient production machines. Same reasons increase pressure on operators of production systems to lower energy consumption in order to decrease costs and risks. Simultaneously, in the frame of the Ecodesign Directive of the European Commission, regulation regarding guidelines, measures, and documentation to improve energy efficiency can be anticipated in the future. The implementation of energy efficiency measures and energy management systems according to DIN EN 16001 (replaced by ISO 50001) requires individual

solution approaches and is not sufficiently supported.

Offer

The Fraunhofer IPK identifies energy and resource improvement potentials and develops a tailored concept on how to tap these potentials. During the development and construction process manufacturers of production machines will be continuously supported in integrating energy efficiency aspects. To the operators of production systems, measures will be demonstrated, that include technical and organizational changes to reduce the energy consumption. A fundamental working basis is founded on a close cooperation between Fraunhofer consultants and the clients' experts. Measures will be assessed against economic and environmental standards. The target



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is to significantly improve single aspects of machines in regard to its energy consumption and its environmentally friendly use of process media. Simultaneously, measures should pay back in mid-term and should contribute to a cost reduction in the long term.

Approach

1. State of the Art Analysis

- | determination of relevant data for state of the art analysis,
- | generation and collection of machinery and usage relevant data; supported by own measurement equipment,
- | identification of energy efficiency requirements of customers during the development of new machines,
- | completion of energy and media flow plans,
- | analysis of load profiles.

2. Data Evaluation and Potential Analysis

- | determination of current energy usage profiles,
- | identification and description of significant levers to increase efficiency.

3. Selection and Evaluation of appropriate Measures and Instruments

- | determination of specific implementing measures to increase energy efficiency,
- | total cost of ownership calculation for single measures,

- | prioritization of single measures and development of change concepts.

4. Advise and Support during the Implementation Process of Energy Efficiency Measures

- | advise and support during the introduction of technical and organizational changes,
- | professional and content related moderation of technical meetings.

Benefit for the Client

For operators of production systems:

- | reduced costs achieved through energy efficiency improvements,
- | reduced energy supply risks,
- | improved competitiveness achieved through cost reductions and improved productivity,
- | sensitized the staff in regard to energy efficiency,
- | active commitment to a sustainable economy.

For manufacturers of production machines:

- | increased knowledge regarding own products through energy consumption transparency,
- | improved market position and competitiveness,
- | foresight commitment in regard to potential regulation.

Measurement Equipment

Measurement of electric power up to 40 kW (upgradeable) with mobile measurement kit:

- | electric current measurement up to 60 A~ with 6 x 3 wires (resolution = 0,1 A),
- | voltage measurement simultaneously,
- | power determination (apparent power, reactive power, and active power),
- | cos-Phi measurement,
- | measurement of the harmonic content in percentages.