



# DIGITAL ENERGY VALUE STREAM FOR LEAN AND GREEN PROCESS CHAINS IN PRODUCTION

*Manufacturing industry application*



## SUMMARY

By the help of a mobile application and standard smart metering technology, product-related energy demands of machines and entire process chains are visualized on a tablet. This approach uses the energy value stream method, which unites the energy efficiency perspective with the principles of lean production. On this basis, it is possible to define targeted measures for improvement and validate their effectiveness after the implementation phase.

## INITIAL SITUATION

Energy and resource efficiency is a topic of growing importance in the manufacturing industry. The transparency of product-related energy requirements of machines and process chains is a key prerequisite for a target-oriented energy management. However, the (manual) acquisition of this data is associated with significant cost and effort - and furthermore, there is typically a lack of reference to the typical time, cost and quality-related metrics in production.

## SOLUTION

Digitalization of energy data acquisition with reference to the typical target metrics of production with the help of sensor technologies and a mobile application. This enables companies to identify on an ad hoc basis which machines are responsible for high energy demand at any time – simultaneously considering other metrics such as capacity utilization and throughput times. On this basis, targeted measures can be defined and subsequently validated.

## INDUSTRIE 4.0 – FEATURES

Automated and digitalized acquisition and processing of machine data to support decision making.

## PARTNERS



## PROJECT DESCRIPTION

- Identification of requirements and development of an overall concept, including metering infrastructure and method integration.
- Development of cloud-based data processing.
- Iterative development of the software application.
- Piloting in the Learning Factory at TU Braunschweig.
- Development and implementation of method-related professional training programs.

## REFERENCES

Institute of Machine Tools and Production Technology (IWF) at TU Braunschweig - [www.tu-braunschweig.de/iwf/pul](http://www.tu-braunschweig.de/iwf/pul)

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## STANDARDIZATION APPROACHES

The following standards are used: WebSocket protocol, REST API. The automated integration of measuring sensors for energy optimization is not standardized.