ENERGY MANAGEMENT WITH ARTIFICIAL INTELLIGENCE

Application for the manufacturing industry - digital energy services for the real-time analysis, smart monitoring and optimization of industrial energy systems

SUMMARY
ILFA and ATHION collaborated to create a digitalized energy management system that uses artificial intelligence to continuously monitor the energy system, identify potential for optimization, and draw up measures on the basis of its findings. The next step, together with the Institute of Energy Economics at the University of Cologne, will see the extension of the analysis and optimization of the energy system to include machine data.

CURRENT SITUATION
In 2013 an energy management system (EMS) was introduced at ILFA according to EN ISO 50001. At that time, the EMS was operated without a holistic measurement system on the basis of monthly Excel analyses. It was not possible to obtain any reliable findings regarding the energy system’s performance and potential. Nor could any significant improvement measures be drawn up on the basis of the results.

PROJECT DESCRIPTION
The aim of the project is to establish a digitalized energy management system that monitors and analyzes the entire energy system and its use by means of artificial intelligence.

REFERENCES
www.ewi.uni-koeln.de
www.athion.de
www.ilfa.de

INDUSTRIE 4.0 – FEATURES
The energy systems of key departments and process steps were digitalized – in some cases right down to machine level. Transparency and connectivity are provided by the ATHION customer portal, and potential for improvement is highlighted by means of artificial intelligence.

STANDARDIZATION APPROACHES
Highly scalable services transferable to other industrial energy systems in line with the demands of data economy. The system can be added to an existing EMS. The demands of EN ISO 50001 and 50006 are met. The data interfaces are e-mail or API import. The cost of the connection would be lower with an administration shell with semantic technologies.

PARTNERS
ILFA and ATHION are working on the digitalization of the entire energy management system. Against this background, the measurement system was realized by breaking it down into electric power, heat and cooling as well as ATHION INTELLIGENCE for visualization and automated monitoring and optimization. The continuous application of artificial intelligence for the data from the complete energy system enables the real-time identification of technical problems as well as of anomalous and uneconomical system conditions. Continuous prognoses concerning electric power, heat and cooling requirements are drawn up with the aid of artificial neural networks for the purpose of planning system operation. Industrial engineers can then respond promptly and keep the energy system running in an optimum condition. The second phase, together with the Institute of Energy Economics, will then be to use the neural network to evaluate machine data (Big Data) in order to raise process optimization to the next level.

CONTACT
Sascha Toben
ILFA GmbH
s.toben@ilfa.de

Sören Giesecke
ATHION GmbH
soeren.giesecke@athion.de