

Introduction to Panel 3

Energy management – in real life

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Introduction

It has long been pointed out in various sectors that there is an untapped potential for improving energy efficiency through implementing cost-effective measures. Parts of this potential can be understood by recognizing that organisations may lack resources for working effectively with energy efficiency. Improving energy efficiency in an organisation is an activity that, like most activities, needs to be well organised and managed. We define this activity as energy management.

This panel features contributions on how energy management is being done in real life: what companies that say they work with energy efficiency actually do. This work can be carried out within a certified energy management system (EnMS) such as ISO 50001, or in an evolutionary path of organising towards a formal EnMS. However, all forms of organised work with energy efficiency are of interest. We can roughly group the submissions into three categories.

Practical aspects of energy efficiency

The first group of submissions deal with the routine, practical aspects of improving energy efficiency in an organisation. Olsson (peer-reviewed paper 3-157-20) describes lessons learned from implementing a version of ISO 50001 adapted to sawmills in seven such facilities in Norway. While the interest in energy efficiency has been low in this sector for years, due to low electricity prices and no market for by-products, national regulation and support for implementing energy management systems have changed this. Olsson, who himself participated as an external expert in the implementation

of 7 of these systems, describes how the mills were able to achieve substantial savings over time due to structured and persistent efforts.

Lindsköld et al. (extended abstract 3-144-20) discuss the role of external coaching in aiding SMEs with establishing a systematic energy management system. The discussion is based on experiences from working within the EENet project funded by the Swedish Energy Agency. Here, 300 SMEs with an energy use over 1 GWh/year, organised in 35 local networks, worked together in collaboration with energy efficiency experts. So far, the results indicate savings of more than 5 %.

In this group, we also find interesting new applications of theoretical frameworks which have not seen much previous use in energy efficiency research. These offer ways of studying the more routine aspects of energy efficiency, which are not concerned with investment decisions. Smith & Hassall (peer-reviewed paper 3-048-20) applied human factors analysis to work with energy efficiency in an alumina refinery. They clearly show the benefits of carrying out research close to frontline workers. From detailed descriptions of routine work with heat exchangers, they can pinpoint where further interventions would be useful to improve energy efficiency in the facility. König et al. (peer-reviewed paper 3-070-20) build upon theories and concepts mostly from organisation studies to discuss data from energy management practices in German SMEs. Data was gathered through qualitative field work as well as through a larger questionnaire. In their paper, they give new perspectives on for example the different ways in which management may work to induce energy efficient behaviour.

Monitoring energy use and performance

A second group of submissions are concerned with issues related to monitoring energy use and performance in organisations. This is another key area, for as Earni & Therkelsen (peer-reviewed paper 3-009-20) put it: “The success of an energy management program relies on ensuring that energy savings can be verified with an adequate level of certainty.” In the paper, they go into detail on how to account for changes to static factors, referred to as non-routine events (NREs). In comparison, routine events are those that an organisation needs to consider and normalize regularly to assess energy use, such as production volume and weather. They review current practices and guidelines for monitoring and verification and can highlight key challenges for addressing NREs. Bergamini et al. (extended abstract 3-080-20) deal with another issue, namely, where to place measurement points in a facility. A new method, required data reduction analysis (RDRA), and its potential use in identifying optimal measurement points to monitor energy use is presented. This is done in the context of a case study of milk powder production.

Energy efficiency investments

A third group broadly concerns the process of making decisions on new investments, and the role of energy efficiency in these processes. Globisch & Dütschke (peer-reviewed paper 3-007-20) surveyed decisions taken for refurbishments in non-residential buildings in Germany. Based on data from 332 respondents they discuss factors that promote or hinder energy-

related refurbishments. They discover that work on buildings due to aesthetic reasons, damages or business changes take place almost as often as energy efficiency measures. Marton et al. (peer-reviewed paper 3-081-20) studied potential retrofit projects in an oil refinery. In such an energy intensive industry, many measures may be cost-effective even when considering only energy savings. However, for certain projects other benefits, such as increased production, may be of even greater importance from an economic perspective. They thus find that it is important for these kinds of companies to attempt to quantify such benefits early in the decision-making process, and not to rule them out based on energy efficiency considerations alone. Accordini et al. (peer-reviewed paper 3-079-20) explore work with energy efficiency measures based on interviews carried out in three Italian industrial companies: one small (25 employees), one medium (190) and one large (400). Noting that it is often said that smaller companies have scarce resources, and that systems for measuring KPIs are often adapted better to larger organisations, they interestingly find little difference between the companies. The paper includes in-depth description of how various measures had been implemented. They note the need for tools that highlight how a specific energy efficiency measure would contribute to measured KPIs of a company, which would be useful to companies with fewer resources. Finally, Svensson et al. (extended abstract 3-011-20) offers a novel perspective on how to integrate energy efficiency in investment and engineering processes. The study is based on their work at Scania CV AB on a green field foundry, which has ambitious targets for renewable energy and energy efficiency.