Energy efficiency project in the Norwegian timber industry

Another success story resonates from the Norwegian sawmill sector, corresponding to sixteen sawmills within Norway who set themselves an ambitious energy saving target of 20 GWh per year. The total production from the participating staff was at the time of implementation approximately 800 000 m3 of sawn wood products annually.

The main focus of the project was to implement custom made energy saving strategies and approaches, consisting of low-cost implementation such as reducing heat losses in the combustion plant and wood drying kilns. To achieve the measures, it was crucial to implement EMS and conduct meeting and seminars to provide knowledge to the sawmill operators. The project was divided in three phases:

1. Carry out a descriptive study of the present conditions at the participating sawmills, and the feasibility of saving energy through various means.
2. Implement different measures to accommodate the requirements of each separate sawmill.
3. Verify the magnitude of the different energy saving actions.

BENEFITS OF EMS: The introduction of custom-made EMS’s allowed for additional consideration towards the cost of energy which in turn resulted in an increased driving force motivating staff and plant operators to optimise production.

IMPLEMENTATION OF ENERGY EFFICIENCY MEASURES: Survey, service and maintenance of the combustion plant and wood kilns have been improved, drying process have been optimized, insulation of wood drying kilns and the heat supply piping have been improved, installation of frequency drives onto the main heat supply piping, utilization of the frequency drives on the wood drying kilns. To implement approximately 800 000 m3 of sawn wood products annually.

SAVINGS ACHIEVED: The total energy use was decreased by 8.5 % from 2005 to 2007 with an annual thermal saving of 20 GWh and electrical decreased by 6.5 % from 2005 to 2007 with an annual thermal saving of 20 GWh and electrical.

The increased implementation of the sawmills has led the company into establishing its first energy objective: to reduce electricity consumption by 6,000€. Hence, enabling to company to move from having an active role in knowledge transfer and steering motivation and change towards more efficient energy consumption. In addition, since European sawmilling industry is quite diverse in terms of plant size, production equipment and level of sawn-wood added-value, the benchmarking method will be taken down to sub-process levels.

The on-line benchmarking tool is expected to be one of the principle ECOINFLOW outputs. The tool will enable companies to compare their energy management practice with sawmills across other European countries. It will be based on relevant comparative criteria coming out of industry participation and will be centred around the benchmarking framework developed in the project.

The initial development includes both progress on benchmarking methodology and development of the relevant benchmarking criteria. The benchmarking methodology will be developed in close cooperation with the industry partners and the participating institutes to ensure consistency and avoid any in dispute. The methodology will serve to understand and document energy behaviours in the industry, hence raising awareness and steering motivation and change towards more efficient energy consumption. In addition, since European sawmilling industry is quite diverse in terms of plant size, production equipment and level of sawn-wood added-value, the benchmarking method will be taken down to sub-process levels.

The smilling industry (SMI) is recognised as having significant potential for energy savings. However some barriers such as lack of infrastructure, profitability of selling surplus energy products (such as bark or chips), low awareness about the reduction potential and lack of knowledge about optimal utilization of the energy, impedes the SMI sector in achieving better energy efficiency.

ECOINFLOW is offering a solution to improve energy efficiency by facilitating implementation of energy efficient technology and processes, a benchmarking tool. The close relationship with the smilling industry in the respective countries will be necessary in order to ensure the future project progress. Many project activities will be taken in direction to strength the bondings with key industry stakeholders.

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ECOINFLOW Benchmarking tool

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Why we need EMS

The efficient use of energy helps organizations to save money as well as helping to conserve resources and mitigate the problems of global warming.

The Energy Management Systems (EMS) based on ISO 50001 and other ISO related standards, offer an action plan for continually improving a company’s energy performance. They provide a framework for understanding significant energy uses and how to sustain the energy performance improvements over time and change of personnel.

The EMS helps the organisation to systemise the energy management work by utilising a Plan-Do-Check-Act (PDCA) method for continuous improvement. In addition, described procedures and methods for procurement and project planning can help the organisation to include energy efficiency in the everyday work.

Most industrial enterprises that have implemented an EMS have achieved average annual energy intensity reductions of 2-3% to be compared with a reduction of 1% for “business as usual”. By implementing the EMS, companies could achieve cost reduction (reduce the cost of energy, maintenance, downtime, etc.), enhanced competitiveness, improved corporate image (performing a role of an environmentally and socially responsible entity), be able to apply to ISO 50001 and other ISO related standards, boost development of the energy efficiency service sector (including job creation) and accelerate technology upgrade and innovation.

An Energy Management System is simply a structured way of handling a company’s possibilities to reduce its energy use.

Jerry Larsson, Energy Coordinator at SCA Timber

Additionally, an EMS can assist companies to actively manage energy use, continually improve energy performance, assure better use of company personnel and resources (including capital stock), and in general improve the enterprises’ bottom line. Besides the industry sector, the implementation of an EMS also has benefits and challenges for the policy makers involved in energy efficiency.

EMS and energy efficiency standards could provide pillars for national energy efficiency programmes, boost development of the energy efficiency service sector (including job creation) and accelerate technology upgrade and innovation.

EMS in Sawmill industry sector: Current situation – Existing experiences

Stakeholder’s involvement: the Pilot sawmills

Over the first 12 months of the project, the ECONFLOW consortium has been focused on identification of pilot sawmills across Europe and their engagement into the project. An extensive technical survey on sawmills is conducted and thermoelectrical energy consumption necessary for production has been carried on. This data collection survey from pilot sawmills is going to be essential to find key figures to follow up different processes, locate strategic points for electrical and thermal energy measurements and link up the energy acquisition system to the production or economic data. The outcomes of the survey will be used as one of the starting points in compiling the future EMSs guidelines. So far 47 sawmills from across Europe have made their commitments to ECONFLOW and current effort from the consortium is focused on increasing the number of collaborators.

Stakeholder’s workshops

In order to raise the interest for the project and engage a larger number of sector stakeholders, the project consortium have organized several workshops on national level. The workshops provided an opportunity to communicate and liaise with sawmills managers and operators regarding the potential of energy cost savings, best industry practice, energy saving measurements and case studies of cost/benefit analyses of EMS.

Reports and guidelines

Over the course of the first 12 months of the project, the consortium has produced several publicly available technical reports. The reports have the more general character and will serve as starting points for the future activities. Additionally, both a voluntary agreement and a two-step questionnaire were designed and a dissemination plan was produced and agreed upon.

Best practice

A Swedish EMS example: SCA Timber

SCA Timber is a manufacturer of wood-based products with seven sawmills. Its main customers are within the wood industry and building materials trade.

SCA’s EMS implementation process began with the completion of a comprehensive energy audit. It was based upon the fact that the company’s seven sawmills set their own energy efficiency goals and action plans. One person at each mill was appointed energy coordinator who was responsible for moving the energy efficiency work forward. Another important part of the EMS work was training and raising the awareness of energy efficiency throughout the organisation.

Energy savings.

The total energy use was reduced, increased use of variable speed drive motors, the lighting efficiency was improved etc.

Compressed air systems that were previously separate systems have been merged, standby time of machines were reduced, increased use of variable speed drive motors, the lighting efficiency was improved etc.

Savings achieved: The total energy use was decreased by 52.1% from 2005 to 2009 with an annual saving of 4,165 MWh which in cost reduction term represent a saving of 2.3 M€ per year.

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