



Co-funded by the Intelligent Energy Europe
Programme of the European Union

Contract N°: IEE/11/946/SI2.615945

ECOINFLOW

Energy Control by Information Flow

Instrument: Intelligent Energy – Europe (IEE)

Deliverable D.2.3

Worksheet presenting energy data collected from sawmills

Due date of deliverable: 2013-07-01

Actual submission date: 2013-06-27

Start date of project: 2012-05-01

Duration: 36 months

Organisation name of lead contractor for this deliverable: SP

Type: Final

Project co-funded by the European Commission within Intelligent Energy – Europe (IEE)		
Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	x

List of participating companies:

<i>Participant name</i>	<i>Short name</i>	<i>Country code</i>
Norsk Treteknisk Institutt	Treteknisk	NO
SP Technical Research Institute of Sweden	SP	SE
Thünen Institute	TI	DE
L'Institut Technologique Forêt Cellulose Bois-construction Ameublement	FCBA	FR
The Norwegian Sawmill Industries Association	Treindustrien	NO
InnovaWood	IW	BE
Bundesverband der Säge- und Holzindustrie Deutschland	BSHD	DE
Fédération Nationale du Bois	FNB	FR
BSW Timber	BSW	UK
Mühlböck	Muehlboeck	AT
Bergkvist-Insjön AB	Bergkvist	SE
Amber Wood LTD	AmberWood	LV

List of authors:

Anders Lycken, SP

Daniel Nilsson, SP

Marcus Olsson, SP

Preface

The main objective of *Ecoinflow* is to reduce the annual energy use in the European sawmilling industry (SMI) by 1 TWh through international engagement, collaboration and knowledge transfer. The project will use the international standard ISO 50001 as a basis for implementing tailor-made Energy Management Systems (EMSs) in the SMI sector. The purpose of this Technical Report is to describe what an EMS is and to evaluate existing EMSs in sawmills.

There is a high potential to achieve energy savings in the European SMI, for example by implementing state-of-the-art EMSs. Some of the main barriers for energy savings in the SMI are lack of infrastructure and profitability of selling surplus energy products, such as bark and chips. Other barriers are lack of knowledge on optimal utilization of the energy input, and low awareness about the energy saving potential. Implementation of an EMS enables a higher awareness of the current energy use, and better understanding of the potential of future energy savings.

The title of the project – *Energy Control by Information Flow* – implicates that it is necessary on the technical side to better control the energy consumption and utilization in the SMI. This can be done by installing meters for systematic measurements. Measurements, however, are of no use if the personnel do not know how to handle the information. The information flow through communication and knowledge transfer are important factors to be successful in implementing an EMS.

Generally, there are only a few measurements of energy consumption on a regular basis for companies in the sawmilling industry sector, which can be an obstacle for the implementation of an EMS. The project participants will propose actions to find the most efficient way to install power and heat meters for monitoring of energy flows in the industry. Based on the monitoring of the energy utilization, the energy performance of the participating companies will be benchmarked to identify the best practice.

Implementation of EMSs will enable more accurate analysis of energy saving measures. The motivations for the companies to participate in the project are both better control of processes and resources, but also the economic benefits of the achieved energy savings.

The project will generate important inputs for the participating countries to be implemented in the national action plans to meet the targets of the 2020 European renewable energy policy. Energy savings in the sawmilling industry sector will lead to surplus of biomass, as the sawmills are also large producers of biomass. Parts of this biomass can be utilized to replace fossil energy sources in Europe.

1 Introduction

This deliverable, *D2.3 Worksheet presenting energy data collected from sawmills*, is intended to be used as a basis for benchmarking in Work Package (WP) 3. Since worksheets have already been developed in WP 1 and WP 3, it was decided that no separate worksheet was needed in WP 2. Hence, this deliverable gives a brief description of the existing worksheets and the data collection process.

2 Description of the worksheets

Figure 1 and Figure 2 shows the *Introductory questionnaire* (D1.4), which is used as a first data collection from the participating sawmills. Here, energy data is entered on an overall, aggregated level. In cases where more detailed data is available, the *Coordinated questionnaire* (also D1.4) is used. This worksheet facilitates data entry for each zone of the sawmills, thus giving more detailed information about energy use for different zones and uses. Figure 3 shows an example of data entry for one zone (the Measuring station).

Compilation of the collected data is carried out in WP 3, using a separate database. This will form the basis for the benchmarking analyses in the project.



 		
ECOINFLOW - Introductory questions for the sawmills		
Company data	Answer	Comments
Year of data	2011	
Country		
Sawmill name		
Contact person		
Contact job title		
Contact phone number		
Contact email adress		
Annual turnover [k€]		
Volume of timber received at the sawmill per year [m3]		
Volume of timber received at the sawmill per year at full capacity [m3]		
Volume of sawn wood received at the sawmill per year [m3]		
Volume fraction of sawn wood that is dried per year [%]		
Timber species handled (softwood/hardwood) [%]		
Number of employees (full-time equivavlents)		
Number of working hours per year in total [h]		
Indicate which sub-processes are included at the sawmill [yes/no]:	Answer	Comments
- Measuring station		
- Saw line		
- Kiln driers		
- Preservation treatment		
- Final sorting		
- Planer		
- Impregnation		
- Coating		
- Finger jointing		

Figure 1. Introductory questionnaire, part 1.

Deliverable D.2.3

- Local boiler		
- Warehouse		
- Biofuels production		
- Combined heat and power production (CHP)		
Primary products [yes/no]	Answer	Comments
- Structural timber		
- Interior panel		
- Cladding		
- Decking		
- Sawn wood for pallets		
- Flooring		
- Other (please specify)		
Volume of primary products produced per year [m3]		
Secondary products [yes/no]:	Answer	Comments
- Pallets and cases		
- Pellets		
- Briquettes		
- Wood chips		
- District heating		
- Other (please specify)		
Volume of secondary products produced per year [m3]		
Energy data [MWh]	Answer	Comments
Year of data		
Yearly consumption of electrical energy [MWh]		
Yearly production of electrical energy [MWh]		
Yearly consumption of thermal energy [MWh]		
Yearly production of thermal energy [MWh]		
Yearly amount of thermal energy that is sold [MWh]		
Average fuel price [€/MWh]	Answer	Comments
- Electricity		
- Fuel oil		
- Natural gas		
- Diesel		
- Bark (< 35 % moisture)		
- Saw dust		
- Wood chips (< 35 % moisture)		
- Wood chips (> 35 % moisture)		

Figure 2. Introductory questionnaire, part 2.

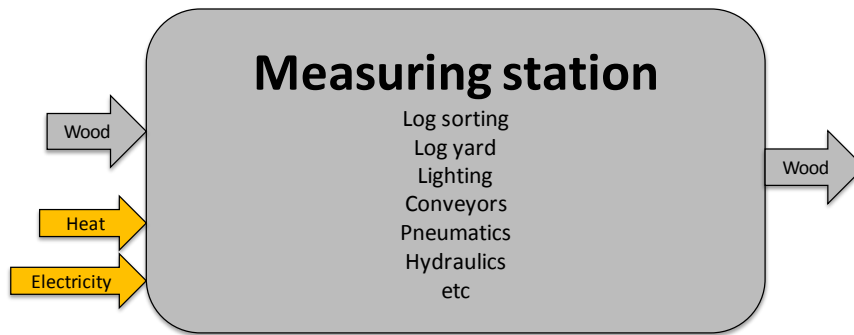


ECOINFLOW - Questionnaire for expert visits to the pilot sawmills

Measuring Station

1. Company data (2011)	Answer	Comments
Country	0	
Company name	0	
Company contact person	0	
Company contact email adress	0	

2. Processes included in Measuring Station



3. Process data for Measuring Station	Answer	Comments
Input		
Volume of wood input (timber received) at the measuring station per year [m3]		
Heat consumed at the measuring station per year [kWh]		Separately measured or estimated*
Electricity consumed at the measuring station per year [kWh]		Separately measured or estimated*
Output		
Volume of wood output (timber processed) from the measuring station per year [m3]		
*Any estimate must be specified e.g. average heat consumption pr m2 and year multiplied by area or normal load on engines multiplied by operating hours		

Figure 3. Example of input form for one sawmill zone (the Measuring station) in the Coordinated questionnaire.