



# SolidStandards



Enhancing the implementation of quality and sustainability standards and certification schemes for solid biofuels (EIE/11/218)



Report on the final seminar

05 March 2014

Brussels, Belgium



## The SolidStandards project

The SolidStandards project addresses ongoing and recent developments related to solid biofuel quality and sustainability issues, in particular the development of related standards and certification systems. In the SolidStandards project, solid biofuel industry players will be informed and trained in the field of standards and certification and their feedback will be collected and provided to the related standardisation committees and policy makers.

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## About this document

This document corresponds to **Deliverable 7.5** of the SolidStandards project. It is the report on the final project workshop organised on 05 March 2014 in Brussels, Belgium. This document was prepared in **March 2014** by:

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## 1. Workshop Agenda

The final workshop of the SolidStandards project was organised by AEBIOM, the European Biomass Association. The workshop was held on 05 March 2014 in the Renewable Energy House in Brussels, Belgium. The workshop Agenda included the following:

9:00	<b>Registration</b>	<i>Chair:</i> GILLES GAUTHIER, AEBIOM, BELGIUM
9:30	<b>Opening and Welcome</b> GILLES GAUTHIER, AEBIOM, BELGIUM	
9:40	<b>EC policy perspective on Solid biomass quality and sustainability</b> GIULIO VOLPI, DG ENER, BELGIUM	
10:00	<b>SolidStandards project – an overview</b> COSETTE KHAWAJA, WIP – RENEWABLE ENERGIES, GERMANY	
10:30	<i>Coffee break</i>	
11:00	<b>Planning and testing of a common training concept</b> MONIKA STEINER, HFA, AUSTRIA	<i>Chair:</i> COSETTE KHAWAJA, WIP – RENEWABLE ENERGIES, GERMANY
11:20	<b>Training enhances the implementation of solid biomass quality and sustainability standards</b> EIJALAKANGAS, VTT, FINLAND	
11:40	<b>Feedback and input to standardisation processes</b> INDRA TE RONDE, NEN, THE NETHERLANDS	
12:00	<i>Lunch</i>	
13:00	<b>Implementation of European quality standards</b> MARTIN HOEFT, DBFZ, GERMANY	<i>Chair:</i> GILLES GAUTHIER, AEBIOM, BELGIUM
13:20	<b>Sustainability certification</b> MARTIN JUNGINGER, UU, THE NETHERLANDS	
13:40	<b>Practical experience on standards implementation for wood chips production and use</b> KARI KUUSNIEMI, FOREST MANAGEMENT ASSOCIATION MHY PÄIJÄNNE, FINLAND	
14:00	<b>Practical experience on woody pellets standards implementation</b> RAOUL CVEČIĆ BOLE, ENERGYPELLETS, CROATIA	
14:20	<i>Coffee break</i>	
14:40	<b>Round Table: Difficulties encountered for the implementation of quality standards and policy recommendations for their improvement.</b> <i>Panelists:</i> - LEONA ŠIMKOVÁ, CZBIOM, CZECH REPUBLIC - ALEXAS JAKSTAS, LITBIOMA, LITHUANIA - NIKOLAY VANGELOV, ERATO, BULGARIA - LUDMILA WACH, BAPE, POLAND - VELIMIR SEGON, REGEA, CROATIA - MORTEN TONY HANSEN, FORCE, DENMARK	<i>Chair:</i> Ortwin Costenoble, NEN, THE NETHERLANDS
16:00	<b>Summary and conclusions</b> GILLES GAUTHIER, AEBIOM, BELGIUM	

Due to sudden last minute implications, Giulio Volpi was not able to attend the workshop. Therefore his presentation was skipped.

## 2. List of participants

Eija	Alakangas	VTT
Laurent	Anzalone	ValBiom
Dermot	Buttle	EBB
Ortwin	Costenoble	NEN
Marcel	Cremers	DNV GL
Raoul	Cvečić Bole	Energy Pellets Ltd.
Gilles	Gauthier	AEBIOM
Meric	Gursoy	ECOS
Morten Tony	Hansen	Force
Bozhidarka	Haralampieva	Bulgarian Institute for Standardisation (BDS)
Nathalie	Hemeleers	AEBIOM
Martin	Hoelt	Deutsches Biomasseforschungszentrum GmbH
Jaap	Hooijmans	ECN, the Netherlands
Aleksas	Jakstas	LITBIOMA
Jean-Marc	Jossart	AEBIOM
Martin	Junginger	UU
Jan	Khalsa	DBFZ
Cosette	Khawaja	WIP-Renewable Energies
Kari	Kuusniemi	MHY Päijänne
Fanny	LANGUE	AEBIOM
Silvia	Nanni	IEEP
Velimir	Segon	REGEA
Leona	Simkova	CZBIOM
Jo	Sluijsmans	Torr Coal Technology
Monika	Steiner	Holzforschung Austria
Indra	te Ronde	NEN
Vinicius	Valente	EUREC
Nikolay	Vangelov	ERATO Holding Plc
Silvia	Vivarelli	European Commission EASME
Ludmila	Wach	BAPE
Sebastian	Wach	SYNERGIA/CPM EUROPE B.V.
Paweł	Włodarczyk	Libero sp. z o.o.



### 3. Background and aim of the workshop

The aim of this workshop is to serve as the final platform for the dissemination and discussion of project results. The target group for this event includes European policy makers, standardisation organisations and industry representatives. It was used to deliver policy recommendations and industry positions on European standards to an international audience. Besides presenting project activities and results, the main topics addressed are recommendations to policy makers and standardisation organisations regarding the regulation of quality and sustainability of solid biofuels, using project results, as well as the feedbacks collected from industry representatives.

The individual presentations of the workshop are available publicly on the SolidStandards website [www.solidstandards.eu](http://www.solidstandards.eu)

#### 3.1. Opening and Welcome, Gilles Gauthier, AEBIOM, Belgium

Gilles Gauthier from AEBIOM opened the workshop and welcomed the audience. Then he gave an overview about the programme throughout the day. He informed the participants that Giulio Volpi will not be able to attend and present the EC policy perspective on solid biomass quality and sustainability and that the programme will be shifted.

#### 3.2. SolidStandards project – an overview, Cosette Khawaja, WIP – Renewable Energies, Germany

Cosette Khawaja, the coordinator of the project from WIP – Renewable Energies, gave an overview about the project stating the objectives, the consortium strength, the different activities and the achievements during the project duration from April 2011 to March 2014.

The general objective of the SolidStandards project was to improve the quality and sustainability of the different types of solid biofuels present in the market (Firewood, wood chips, wood pellets, wood briquettes and non-woody pellets). More specifically, the project's aim was to facilitate the uptake of related standards and certification schemes within the solid biofuel industry and to contribute to the development of supportive and practical regulatory frameworks such as standards and policies.



Ms Khawaja pointed out that in order to fulfil the objectives of the project there was a need for a strong consortium including partners which have direct and indirect influence on the topic. The Solidstandards consortium is composed of the following organisations:

- Standardisation institute (NEN) which develops and implements quality standards for solid biofuels
- Representatives of international standardisation committees (VTT, DBFZ, HFA) which contribute scientifically to standards development
- Solid biomass, standardisation and sustainability experts (WIP, HFA, VTT, DBFZ, NEN, UU AEBIOM, FORCE, BAPE, ERATO, REGEA) which developed the training material and supported biofuel producing companies in implementing the standards
- National biomass reference centers (HFA, VTT, DBFZ, FORCE, BAPE, ERATO, REGEA) and European and national biomass associations (AEBIOM, CZ-BIOM, LITBIOMA) which implemented the training events and are directly involved with the industry from which feedback was collected
- Project management expert (WIP) for efficient project coordination, communication expert

An overview of the main project activities and results were then presented and those are: the development of a training concept, training implementation, active implementation of quality standards, sustainability criteria for solid biofuels and feedback collection from the solid biofuel industry. Ms Khawaja mentioned that the responsible of each activity will speak in his turn in details about the tasks and results of their respective activities.

### 3.3. Planning and testing of a common training concept, Monika Steiner, HFA, Austria

Monika Steiner, a consortium member from Holzforschung Austria, started her presentation by giving an overview on the main activities of her institute. Holzforschung Austria is a practically orientated research institute, involved in testing, inspection and certification schemes (ENplus, DINplus) and is a partner for knowledge and technological transfer.



Ms Steiner mentioned again the aims of the project and proceeded in explaining how the training concept in the project was developed and what the objectives of these trainings were. The objectives were mainly to inform on the standardisation process in general and the topic of sustainability, to explain how to specify certain solid biofuels and how to guarantee a specific quality for certain solid biofuels and last to collect feedback.

The concept of the training focused on elaborating training materials, which were eventually composed of a set of modules. There were 2 general modules, one about general standardisation and feedback, which included the process of European standardisation, the possibilities to get involved as a stakeholder, the description of solid biofuels standards and the list of national standardisation institutes. The second module was about general sustainability issues and it included a general introduction on the aspects of sustainability, an overview on ongoing legislation in EU countries and an overview of currently existing sustainability certification system.

Beside from the general modules, 7 specific modules about quality assurance along the supply chain of specific solid biofuels (Wood pellets, Wood briquettes, Wood chips and hog fuel, Firewood, Non-woody pellets and Straw) were developed. Each module was composed of a handbook and a respective ppt presentation in addition to other material for some solid biofuel types. The handbook included a description and more simplified instructions on EN 14961 and EN 15234 standards as well as sampling and testing methods and safety issues.

Ms Steiner raised the problem encountered in making the training material public because of the copyright issue since the standards are listed inside. The solution suggested was to make a summary about each module, to include in the beginning that for the application of the system the acquisition of mentioned standards is indispensable, to remove all standards tables from the guidebook and to quote text passages, which are directly taken from the standards, in a footnote.

Then some examples from the handbooks were illustrated and the additional material that was developed was also shown (like the sampling method for wood chips and the energy content calculation for firewood developed by VTT and the booklets with wood chips and hog fuel samples developed by HFA).

### 3.4. Training enhances the implementation of solid biomass quality and sustainability standards, Eija Alakangas, VTT, Finland



Eija Alakangas, a consortium member from VTT, spoke about the implementation of the training events during the project period. She stated what type of solid biofuel was addressed in each of the 11 participating countries. Then she showed the target groups of the trainings as they were set in the beginning of the project. The target was achieved for traders (144), end-users (121) and standardisation organisations (58), but was not totally achieved for producers (331 instead of 350). All the trainings were very good evaluated by the audience.

Ms Alakangas showed then the main highlights of the events. In Finland wood chips event led to Finnish guidelines for wood fuel. Participants proposed to have wood fuel quality guidelines in Finnish, which is based on standards and SolidStandards material. The guidelines were published in December 2013 and about 90% of the wood chips market of industrial wood residues will follow it.



In Austria a suggestion for the improvement of wood chips has been given. HFA made a new and better proposal for wood chip particle size distribution for ISO 17225-1 and 4.

During the Firewood training events in Finland and Bulgaria, practical parts like how to measure moisture content by a rapid meter and compared to oven-dry method has been implemented. The latest information on firewood research was presented and a site visit to firewood production site was done.

In some countries like Denmark and Poland the training events were combined with other existing events. This had a positive influence on the trainings since more stakeholders were capable of attending.

Some trainings were implemented in cooperation with other organisations like the training in Italy which was co-organised with TIS Innovation Park.

Laboratory work on fuel quality analysis was a part of some trainings. For example in Germany, analysis of pellets quality took place during the training. Sampling or analysis of bulk density, moisture content and particle size distribution were conducted in Finland, Austria, Bulgaria and Croatia.

Furthermore introducing ENplus certification for wood pellets training event has been highlighted. HFA organised in cooperation with AIEL ENplus certification and CO<sub>2</sub> calculator.

Sustainability topic was usually part of many events.

After giving an overview about the evaluation of the training events which were rated as successful, Ms Alakangas stated some recommendations gathered from the experience of the trainings in the 11 countries. The recommendations included the following:

- The training concept is well-working and practical exercise or visit to analysis laboratory, plants or training sampling and analysis methods in practice were much appreciated.
- A full day event, if it includes only lectures is too long. In the latest events it was more useful to have only ½ lecturers and ½ practical work e.g. fuel sampling at a plant or other quality control measure.
- Training concept should include also presentations from industry, which is using already standards.
- Training material need to be updated, when EN ISO 17225 series is published in the beginning of 2014. EN ISO 17225 standards for fuel specification will replace existing EN 14961 standards. Also sampling should be included.

### **3.5. Feedback and input to standardisation processes, Indra te Ronde, NEN, The Netherlands**

Indra te Ronde, a consortium member from NEN, talked about feedback activities and the input to standardisation processes. He started by stating the outline of his presentation which included: the goals of feedback and input to standardisation processes, how was data collected/input given, results/outcomes and conclusions and recommendations.

The main goals of this activity was to collect feedback – both on standards and certification and to provide input to standardisation processes in order to improve the standards, update existing standards/techniques, bring new ideas for standardisation related to solid biofuels and to promote standards by increasing the awareness and usage.

The data was collected mainly via a feedback questionnaire that was developed during the project and filled by the participants who attended the training events and also via an online tool. In total there were more than 450 respondents. The questionnaire contained questions to get insight on the composition of the (national) industry, to know if and which standards are used now and which ones will be used in the future, to know what are the specific issues in standards with a need for improvement/alteration and to know the demand for certification.



The results of this feedback collection have been processed in 10 national industry position papers. Not only the feedback questionnaire provided input to the position papers but also discussions during the training event, discussions with national mirror committees and experts in addition to a desk based research.

The national industry position papers included: a description of national biofuel markets based on available data, a description of standardisation activities, a description of certification activities, an overview of standardisation and certification needs, results of discussion with national mirror committee/experts and a summary of national industry needs. The national position papers are publically available on the SolidStandards website.

The findings of the national position papers were compiled and a European industry position paper was developed which gave a European overview of the market. The main conclusions of this paper were the following:

- Most of the countries have an active national mirror committee for the standardisation of solid biofuels.
- Standards are used a lot some countries and hardly used in others. The type of standards, and intensity of use, differs from a country to the other as well.
- Some countries mentioned the need for standardisation of health/safety aspects related to storage, transport / also the need for standardisation of torrefaction.
- The certification is used in some countries, while in others not at all. Those using certification are mainly focused on product quality, and in just a few countries on sustainability-related issues

Another result in this activity was the report on quality, safety, security and health aspects of solid biofuel storage and transport. This report has been elaborated based on a desk research in addition to interviews with SolidStandards Partners, respected expert in the field and companies from outside the project. Furthermore input from trainings, other partners,

papers, etc has been also taken into consideration. The findings of this report were the following:

- Growth expectation in Europe, possibly a very strong growth in East Asia.
- Canada/USA expected to remain main suppliers of industrial wood pellets for Europe. For example British Columbia being one of the largest sources of wood pellets.
- Eastern Europe and Russian wood pellet market is rather turbulent.
- Future growth depends on large private investment in large pellet plants.
- EU market is largely influenced by national policies.
- Sustainability soon will be given primary consideration in wood pellet trade in the European market.

From technology development side:

- Improvement of wood pellets quality and energy density to reduce GHG emission during transport and logistical problems.
- Torrefaction.
- ISO has included assessment of pre-treated biomass according to their characteristics.
- Production of liquid biofuels from ligno-cellulosic biomass is a crucial component in the renewable energy targets of US and the EU (large scale after 2020).

Mr te Ronde gave then some conclusions and recommendations on the overall work under this activity. He mentioned that this activity permitted the gathering of feedback and input to the standardisation processes and about the European solid biofuels industry and its future through the development of several papers/reports, huge amount of data, ongoing (and future) standard development, interaction and discussions with mirror committees and experts and insight in 10 European countries. An overall overview of new topics and future developments was permitted. Furthermore, the work is expected to contribute to higher and harmonised quality of solid biofuels, increase the awareness of ways to contribute to sustainability and get a better idea about the role and possibilities of certification.

Mr te Ronde ended his presentation by stating in details the results and outcomes of the 10 national position papers.

### **3.6. Implementation of European quality standards, Martin Höft, DBFZ, Germany**

Martin Höft, a consortium member from DBFZ, gave a detailed overview on the work that has been done under the activity: implementation of European standards in the SolidStandards project. He explained that as part of the project, 7 companies were selected from 7 countries and were supported by the partners to implement the standards. He showed in a table the names of the companies, the type of biomass used and the pilot case in each company.

Mr Höft explained that standards are needed because solid biofuels are international tradable goods and therefore market actors need to rely on fuel-properties and that a consistent quality of properties is a requisite for use. The benefits of implementing a standard increases consumer confidence, helps to avoid interference of the plants, ensures predictability of the energy content and avoids excessive emission.

Mr Höft showed the list of quality standards of the different solid biomass types mentioning the product standard name and quality assurance standard name for each one and he mentioned that the certification schemes that are present now are the ENplus pellet certification and that there is plan to introduce the ENplus certification for briquettes. Then he listed the quality aspects for solid biofuels as defined in EN 14961. Those include:

- Physical and chemical properties of biofuel material
- System for classification of raw materials on the origin and source

- Definition of 16 commercial forms of solid biofuels - including properties classes for all relevant criteria
- Typical properties for 11 types of biofuels
- Standards combine different property classes to quality classes

Mr Höft then gave an example on fuel classification according to EN 14961-1 origin and source and an overview on quality requirements for wood pellets, wood chips and non-woody pellets.



As for the quality assurance according to EN 15234, Mr Höft mentioned that verification of products and processes is needed in order to generate confidence that continuously a certain quality can be achieved which meets customer requirements. The verification of products and processes is part of the quality assurance. The steps include:

Step 1 - Define fuel requirements for the final product

Step 2 - Document the steps in the production and distribution process

Step 3 - Identify quality influencing factors including company performance

Step 4 - Define critical control points for compliance with the fuel specific specifications

Step 5 - Select appropriate measures to assure the quality of the product

Step 6 - Establish routines of separate handling of nonconforming raw materials and solid biofuels

An internal quality control is also needed such as the regular visual inspection which is recommended for experienced staff, a regular sampling and analysis (in-house or external laboratories), automatic controls and clear responsibility. The frequency of examinations should be adapted to the process and production volume. All checks must be performed and documented according to a detailed control plan.

In the end Mr Höft showed a table including the results of the implementation of the product standard and quality assurance standard by the 7 companies and he mentioned the challenges encountered especially with the raw material. For wood pellets which already established a certification scheme, raw material is homogeneous and is 90% sawmill residues, but the sector has an industrial background. For forest wood chips, the material is inhomogeneous which is problematic for sampling (for quality measures) and size distribution/classes are not suitable in practice. For non-woody pellets, clean declaration is necessary and there is a need for reliable national laws.

### 3.7. Sustainability certification, Martin Junginger, UU, The Netherlands



Dr Martin Junginger, a consortium member from UU, began his presentation by stating the aim of the sustainability certification activity within the SolidStandards project which is to monitor and evaluate the development of voluntary (and possibly in the future mandatory) sustainability criteria and standards for solid biomass. Dr Junginger explained in details the main tasks undergone within this activity.

#### 1. Overview and analysis of sustainability certification initiatives

Factsheets of sustainability certification initiatives for solid biomass and solid biofuels for 7 selected systems in a standard format has been developed. A comparative analysis of sustainability certification initiatives for solid biomass and solid biofuels has been conducted including a comparison of key characteristics of FSC, PEFC and 3 industrial schemes for energy use of solid biomass and an overall comparison of results from two benchmark studies conducted by SMK (for NL Agency) and ECOFYS (for Ofgem). A contextual review of sustainability criteria recommended by the EC for solid biomass was also elaborated. This paper define the criteria and important terms in the criteria, describe the actual condition in

Europe related to the criterion, e.g. distribution of primary forests or grasslands in Europe and provides easily accessible overviews of which criteria may be relevant for individual member states

## 2. Workshop “Voluntary vs. mandatory sustainability criteria for solid biomass”

The workshop was organized by Utrecht University and NEN at the 19th European Biomass conference and Exhibition, Berlin, Germany. The speakers were from policy (DG ENER) , industry (pellet producers and consumers) and NGO's. The main stakeholders that were invited included representatives of biomass suppliers (farmer and forestry associations), solid biofuels producers, traders, medium and large scale end-users, and representatives from CEN, ISO and national policy makers from various member states.

The main highlights of the workshop were the lively debate on proposed RED criteria and EU-wide harmonized mandatory vs. voluntary and preliminary results of the ongoing benchmarking of existing legislation regulating the sustainable production and use of biomass in the EU which were presented.

## 3. Investigation of 4 case studies of sustainably certified solid biomass supply chains

Four existing different solid biomass supply chains using mandatory or voluntary sustainability standards were investigated in detail, including all steps: sourcing the raw material (e.g. wood chips from forest biomass or industrial by-products or residues like sawdust), all pre-processing steps (e.g. pelletisation) and the end-user (medium-to large scale consumers).

**Green Gold Label (GGL):** covers production, processing, transport and final energy transformation. It provides standards for specific parts of the supply chain, as well as standards for tracking & tracing the origin of the biomass. It was established in 2002 by Dutch energy company Essent (now RWE) and Skal International (now Control Union Certifications), fully implemented since 2003 / 2004. GGL is currently registered and owned by the independent GGL Foundation. The member base is multi-stakeholder. Standard setters, primary producers, traders, end-users and NGO's are all welcome to join the initiative.

**Ekoenergia:** an ecolabel for renewable electricity and heat managed by the Finnish Association for Nature Conservation (FANC). At first Ekoenergia was established for the Finnish electricity market. The new (international) EKOenergy criteria for electricity have been approved in February 2013. Electricity and heat producers, users and companies providing energy saving services can apply for this label. In Finland, 12 companies are selling Ekoenergia labelled electricity (of which 6 companies use biomass), total electricity amounted to 600 GWh in 2011 and maximum sold amount was 3 TWh in 2008.

**TÜV Carbon Footprint:** a label developed by the German company TÜV Rheinland. It offers the preparation of carbon footprints for various sectors based on the international standards ISO 14040 and ISO 14044 as well as on the British standard PAS 2050. It is used to proof the sustainability of high-quality pellets for the heat sector. The aim of the scheme is to enable a company to display the sustainability of its products to the customers.

**Nordic Ecolabel – Swan Label:** a voluntary eco-labelling scheme that evaluates a product's impact on the environment throughout the whole life cycle. It was established in 2007 and includes requirements on manufacturing methods, transportation and storage. It is aimed at manufacturers, importers and resellers that can apply for a license. The aim is to identify the top-grade quality from an environmental perspective, primarily for private use in small to medium-scale burners. The Nordic Ecolabel scheme is managed by secretariats in each of the Nordic countries.

## 4. Exploring the impacts of implementing sustainability standards and the 4 main tasks undergone within this activity.

A synthesis report has been developed evaluating the applicability, barriers, costs, time efforts, etc. associated with the actual implementation of sustainability certification of solid

biomass. It is based mainly on the results of the individual case studies and supplemented with literature review and interviews with industry actors. Sustainability initiatives are categorised to two major types:

Type I - for international (long distance) supply chains which tend to have more general criteria to ensure supporting policies for bioenergy that can be justified with sustainability of large volume import from the other parts of the world.

Type II - for local or regional supply chains which are usually developed by local producers, and largely focus on specific supply chains and local conditions.

These schemes, developed by various market actors with different motivations, have shown different trends. The divergence is primarily demonstrated in four aspects: governance structure, environmental criteria, technical and operational barriers and economic feasibility.

Dr. Junginger gave more details about these four aspects and outlined the future challenges as follows:

- Socio-economic criteria have so far not or only marginally been considered in the debate.
- New topics such as competition with other uses/indirect wood use change and forest carbon accounting have to be considered.
- Countries with predominant domestic supply seem less concerned regarding the sustainability of the woody feedstock – reliance on existing national and EU legislation (e.g. EUTR) and SFM certification. Also, added value/ profitability of voluntary certification is insufficient, but trade is increasing also for residential markets (e.g. pellets from Russia to Sweden or from the US to Austria).
- Countries with expected large imports from outside the EU for industrial use are the UK, Denmark, Belgium and the Netherlands and are currently, mainly unilaterally, developing their own sustainability criteria, mandatory to receive subsidies.
- Given the shortage of SFM certified material in sourcing areas outside the EU (e.g. SE US), risk-based approaches are now under discussion or going to be implemented in the UK.
- There is a future challenge for market actors to cope with a possible multitude of different criteria. Currently it is unclear whether one system with an overarching set of criteria (e.g. developed by SBP) may be able to cover all legislations

Dr. Junginger finished his presentation by listing the publications that were elaborated as a result of the sustainability certification activity.

### **3.8. Practical experience on standards implementation for wood chips production and use, Kari Kuusniemi, Forest Management Association Mhy Päijänne, Finland**

The SolidStandards project has supported the implementation of quality standards of solid biomass in 7 companies. One of the companies is the Päijänne Forest Management Association (MHY). Mr Kari Kuusniemi, the representative of the company presented his experience on standards implementation for wood chips. Eija Alakangas, a consortium member from VTT, supported Mr Kuusniemi with the translation.

Mr Kuusniemi started his presentation by giving some information about the Päijänne Forest Management Association (MHY). It includes private forests of 270 000 ha with 7,571 forest and an average size of stand of 35 ha. The annual growth is 1,700,000 solid m<sup>3</sup> with annual cuttings of 1.5 million solid m<sup>3</sup>. MHY is operating in Hankasalmi, Jyväskylä, Jämsä, Laukaa, Joutsa (Leivonmäki), Luhanka, Muurame and Toivakka.



Staff members are 35. There are 35 to 80 loggers which are employed depending on the time of the year and 30 to 35 forest contractors. The annual sale of wood is €55 million and €15 million from their own harvest. The council of the Päijänteen MHY has 39 representatives of forest owners with an annual cutting of 200,000 to 250,000 m<sup>3</sup>.

The Päijänteen MHY has established a heating plant through the cooperative Vakkalämpö Oy. The aim of the cooperative is to purchase wood chips, sell heat and also maintain and operate wood chips heating plants in the municipality of Toivakka based on heating contracts. The cooperative Vakkalämpö and Toivakan heating plant fuelled by wood chips were established in autumn 2002. The heating plant and district heating network is owned by the municipality of Toivakka. The cooperative delivers wood chips to plant and is also responsible for daily maintenance. The plant is supplying heat for Toivakka school, a school residence, an elderly people home, a health centre, a parish centre, a library, two row houses and a municipal house. In 2013, the heat sales to the municipality were 2,479 MWh (8,921 GJ).

Wood chips are purchased from members of the cooperative or other forest owners in the region. The most important quality assurance measure is the selection of the stand. It should be big enough in terms of volumes of wood (> 20 solid m<sup>3</sup>), it should have delimbed stem wood, good quality of the storage place, covers the storage of stems and has appropriate seasoning time to dry stems.

Mr Kuusniemi stated that the cooperative Vakkalämpö joined SolidStandards project because for a small plant it is important to unify fuel quality measures and to guarantee plant operation in fuel procurement, delivery and use. VTT analysed critical control points (CCP) in fuel production and use and made a product testing and developed quality guidelines. The cooperation with VTT was done through the following phases:



- A feasibility study was conducted in November 2012
- A training of MHY and Vakkalämpö staff and wood chip quality testing was given by VTT in November 2012
- The results of testing to MHY and Vakkalämpö were presented in January 2013
- The results by MHY and VTT were presented in wood chip training event in Saarijärvi in April 2013
- The implementation report was finalised by VTT in June 2013
- The results of implementation was presented in Heating entrepreneurship seminar organised by Motiva in October 2013
- Quality guidelines were drafted (handbook in Finnish) in January 2014

Ms Alakangas from VTT gave then some general recommendations. She said that sampling should be done from falling stream during unloading and that 10 samples (3 litres) per load should be taken. The bulk density of each load should be measured. The sample should be divided by coning and quartering method for moisture analysis (minimum 300 g). Moisture content should be analysed for each load. The energy content calculation by net calorific value (dry), bulk density and moisture should be done for each load. The load volume should be estimated. VTT provided an Excel sheet for calculations. Ms Alakangas showed some pictures and explained how the correct sampling and bulk density measurement should be done.

Mr Kuusniemi again with the support of Ms Alakangas showed the results of product testing. The average moisture content was 34.3 w-% with a bulk density of 233 kg/m<sup>3</sup> and an ash content between 0.6 and 0.7 w-% dry matter. The results of particle size analysis were also illustrated. A product declaration based on EN ISO 17225-1 was successfully made and presented.

Mr Kuusniemi stated that quality guidelines will be produced for the whole supply chain, that these quality guidelines will be used by MHY staff upon purchase of wood chips and that the standards will be used in fuel control at Vakkalämpö Oy.

Mr Kuusniemi finished his presentation by stating the benefits of implementing the standards. He mentioned that when the supply chain is working efficiently and with good quality, this brings added value for wood chip sellers and heat buyers. Standardised methods in raw material purchase and in different phases of supply chain will increase security of the supply, discard malfunctions at the plant, and improve the profitability of the cooperative. Also fuel sellers will have better legal protection, when the moisture measurement is accurate.

### **3.9. Practical experience on woody pellets standards implementation, Raoul Cvečić Bole, Energy Pellets Ltd., Croatia**

Mr Raoul Cvečić Bole, from Energy Pellets Ltd., Croatia, spoke about his experience in implementing the standards for wood pellets. Energy Pellets was another company that was supported by the consortium member REGEA of the SolidStandards project for implementing the standards.

Mr Bole started by giving an overview of wood pellet production in Croatia. He showed a table listing the 9 pellet producing companies in Croatia, their location, the year of establishment and their production capacity. It is clear that in Croatia wood pellet production is a new business since the first company was established in 2007.

About Energy Pellets Mr Bole mentioned that it was founded in 2007 with a main activity to produce wood pellet, but they also produce briquettes and wood construction material. The installed capacity for pellet production is 30.000 t/y (2011: 21.320 t; 2012: 20.227 t; 2013: 22.050 t). Most of the pellets produced are exported. Not long ago, a small domestic market has been created (22%) and the rest is exported mainly to Italy, Austria, Slovenia (78%).



The main supplier of feedstock for Energy pellets is Hrvatske šume Ltd. (Croatian forests Ltd.) which is a state owned company administering 75% of forest in Croatia. It is FSC certified. The raw material code according to EN 14961-1 is 1.1.3 stem wood, mix of hardwood and coniferous. Another smaller feedstock supplier is private sawmills and wood-processing companies in the vicinity. The feedstock input was 48.088 m<sup>3</sup> in 2011, 51.639 m<sup>3</sup> in 2012 and 50.820 m<sup>3</sup> in 2013.

Mr Bole listed the different steps involved in the process of pellet production and these are:

1. Inspection and visual control of incoming feedstock
2. Chipping, storing in warehouse by wood species, visual control for separation of species and impurities
3. Sieving, elimination of too large particles, magnet drum for separation of (eventual) metal particles
4. Milling, removing of unwanted material
5. Drying to 12% moisture
6. 2<sup>nd</sup> sieving, transport to secondary milling
7. Pelletizing
8. Control/visual inspection, packaging, transport

Then he mentioned the quality assurance measures that are taken in the company. The staff is well trained with defined responsibilities. The operating instructions are given in place. Regarding the facilities and equipment, they are regularly checked for prevention of contamination of raw materials and avoidance of moisture. As for the product quality, there is periodic visual controls, periodic analysis of samples and automatic controls. Concerning the documentation, operating instructions are given for incoming/outgoing goods, responsibilities, customer complaints, training and service of testing equipment.

Mr Bole continued his presentation by listing the steps of quality assurance implementation. In the beginning a feasibility study was performed by REGEA within the SolidStandards project. The critical control points were defined and recommendations and measures for quality assurance were made. Those included purchasing and installation of equipment for testing and preparation of operating procedures and training. All recommendations were implemented by the Energy Pellets Company.

Two inspections have been conducted by HFA. The first one took place in April 2013, but the company failed to comply with ENPlus requirements because the ash content was too high, and the testing equipment were lacking. In November 2013, a second inspection has been made and this time it was successful. As a result Energy Pellets was able to have the ENPlus A2 certification.

Energy Pellets company implemented its own quality control and quality assurance procedures even before the SolidStandards project. The formal implementation went rather smoothly, but in order to satisfy the requirements of EN 15234 minor corrections had to be made such as updating of operating procedures and instructions and upgrading of testing equipment. The costs of implementation were relatively minor.

In Mr Bole's opinion, the benefits of implementing the quality assurance standards were mainly the formal recognition of ENPlus A2 which leads to a better price and market position. A formal compliance with EN 15234 is important since standards provide good and clear guidance for quality assurance. The standards were implemented in November 2013. Therefore it is too early to quantify the benefits.

### 3.10. Round Table: Difficulties encountered for the implementation of quality standards and policy recommendations for their improvement.



The round table was chaired by Mr Ortwin Costenoble from NEN. The panellists were Leona Šimková from CZBIOM, Czech Republic, Aleksas Jakstas from LITBIOMA, Lithuania, Nikolay Vangelov from ERATO, Bulgaria, Ludmila Wach from BAPE, Poland, Velimir Segon from REGEA, Croatia and Morten Tony Hansen from FORCE, Denmark. The panellists are consortium members of the SolidStandards project who implemented training events in their

respective countries. They were invited to address the difficulties encountered for the implementation of quality standards and policy recommendations for their improvement.

The key statements of the round table were the following:

- In Czech Republic, the standards are not translated. This has created difficulties for the implementation.
- In Bulgaria, there are more than 60 solid biofuel producers. Most of them want to use the standards but due to the financial and political crisis, they are not able to do it. Also the standards are not translated and this hinders the process.
- In Lithuania, even though the standards are translated, the implementation is rather low. Wood chips are mostly produced but since the quality depends on the boiler, standards are not taken into consideration. The wood pellet market is low. People are still using firewood because it is too expensive to shift to pellets. Most of the pellets produced are exported. It is important to focus more on increasing the share of renewable energies in policy in all Europe and then standard implementation will follow at a certain point.
- In Poland, last year the market of biomass collapsed. At a certain moment there was oversupply of green certificates and their price dropped significantly. Energy plants stopped co-firing. Therefore the production of biomass fuels was withheld and some producers even went bankrupt. The renewable energy directive is still not in place but anyway it is not expected to support small energy producers. There are approximately 60 woody/non-woody pellet producers in Poland, but only 8 are certified (5 DIN, 3 ENplus). Unless the pellets produced are not exported, improvement of quality is not expected to advance. The law should change in favour of renewables in order for the market to boost again. May be subsidies is a good way to start.
- In Croatia, 50% of the land is forest from which 70% are state owned. There are 10 pellet producers from which 3 are ENplus certified and the others are planning to be certified. The main household consumption is firewood (40%). In this sector it is not realistic that local small producers are going to use the standards. Most of the wood chips produced are exported (90%). The number of wood chips producers are hard to estimate (30-40), but they are not interested in standards implementation because of lack of demand and incentives. It is important for the government to continue the education and promotion of standards and to devote a budget to translate them. Sustainability criteria are also important.
- In Denmark, plants have been operating on biomass since 25-30 years, but the experience on standard implementation is less. The market is local/regional and based on close relation buyer/consumer and trust instead of standards (tradition not to implement standards). Large producers are not so much interested in implementing standards. Furthermore standards are not reflected in politics or law and legislation. Sustainability standards are recommended since they might be a driver for quality standards.

### 3.11. Summary and conclusions

Gilles Gauthier from AEBIOM closed the workshop by revealing 2 questions and answering them.

1. Why do we need standards? He answered by saying that yes we need them because they provide an added value and they increase transparency and most importantly increase the efficiency.
2. How should we do it? The answer on that question was that first, it is important to train producers. Trainings were pretty successful in the SolidStandards project. Producers and consumers should be aware of the advantages of implementing standards. On the other hand they give feedback and help in improving the system. The demand is an important drive. If the end customer is not asking for certification, then nothing will happen.

Mr Gauthier finished his speech by inviting the audience to the second International Workshop on Pellet Safety held on 5-7 May in Fügen, Austria and AEBIOM Biomass Conference held on 12-14 May in Brussels, Belgium.

