



SolidStandards



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











D3.2:
Summary report on training activities









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 standardization committees and policy makers.

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About this document

This document is part of **Deliverable 3.2** of the SolidStandards project. It is the summary report of 15 training events. This document was prepared in **September 2012** by:

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Intelligent Energy Europe

The SolidStandards project is co-funded by the European Union under the Intelligent Energy Europe Programme (Contract No. EIE/11/218).



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Implementation of training events

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1. Introduction

In the course of the project, 35 training events will be organised in 11 countries. This report is a summary of 15 events organised during 1 April 2011 to September 2012. Events are listed in Table 1. Each partner made a short report in English and in national language. Reports are listed in the end of this report. Also evaluation of different type of participants were made (see Table 1).

The main target groups of the trainings are producers and end-users of various solid biofuels. The demand side will be mainly represented in trainings by medium-scale biomass end-users (medium heat and CHP plants). Small-scale end-users (households) will be represented by consumers' associations. Large-scale end-users (utilities) have less demand for training. Other participants will be actors involved in trade and logistics and actors involved in standardisation and certification.

Table 1. Events organised by SolidStandard project.

				Participants								Company			
Nr	Date	Place	Topic	Prod	%	Trad	%	End- user	%	Train	Stand	Other	Total	represented	
1	21.3.2012	Jyväskylä, Finland	General	6	40	6	40	3	20	1	3	6	15	11	
2	22.3.2012	Jyväskylä, Finland	Firewood	5	13	4	10	11	28	1	9	22	40	26	
3	8.5.2012	Randers, Denmark	Wood pellets	4	15	14	52	3	11	3	2	4	27	18	
4	12.4.2012	Vienna, Austria	Wood chips	7	41	3	18	7	41		5	10	17	18	
5	30.05.2012	Bydgoszcz, Poland	Non-woody pellets	19	73	8	31	1	4	1	1	2	26	16	
6	31.05.2012	Bydgoszcz, Poland	Wood pellets	6	35	4	24	2	12	1	1	7	17	15	
7	17.09.2012	Poznań, Poland	Briquettes, wood chips and firewood	10	63	1	6	4	25	1	1	4	16	8	
8	31.05.2012	Most, Czech Republic	Wood chips	8	53	3	20	3	20	0	1	0	15	15	
9	17.7.2012	Prague, Czech Republic	Firewood	10	48	3	14	7	33	0	1	0	21	15	
10	20.6.2012	Zagreb, Croatia	Wood pellets	8	67	3	25	0	0	0	1	3	12	8	
11	19.9.2012	Prague, Czech Republic	Non-woody pellets	11	55	4	20	3	15	0	2	0	20	19	
12	7-8 Jun 2012	Utrecht, the Netherlands	General, sustain- ability, wood pellets	4	18	4	18	3	14		4	9	22	20	
13	18.05.2012	Haskovo, Bulgaria	Wood pellets	12	50	4	17	4	17	2	1	1	24	14	
14	12.05.2012	Leipzig, Germany	Wood pellets	3	16	9	47	0	0	0	2	5	19	15	
15	27.06.2012	Haskovo, Bulgaria	Wood chips	18	50	4	11	9	25	1	1	3	36	24	
	Total			131		74		60		11	35	76	327	242	
	%				40		23		18	3	11	23		16 as average	
	Target %				50		15		15	0	1	0	300	20 as average	

The participants' target was an average of 20 companies for each event and for 15 events total target were 300 participants. The average of companies represented in each event was 16. For the number of participants, the target was reached (327 realised). The target was to get at least 50% fuel producers (40% realised), 15% traders (23% realised) and 15% endusers (18% realised) and at least one person from standardisation organisation, which means 15 persons (35 persons realised). There were no targets for training organisations and 3 persons participated. They were from Finnish training organisations, which are planning to take standards as a part of their training and continue trainings after the project finalisation.

All participants are listed in separate training reports.

2. Evaluation of training events

Each partner collected feedback from participants during the training event (see App.1). Participants evaluated the following issues:

- · What did they learn during this training?
- Evaluate the items below at a scale of 1 to 5, of which the score of 5 is excellent and 1 inferior
 - Content of the training as a whole
 - o General
- Has this training met your expectations?
- How did you know about the training?

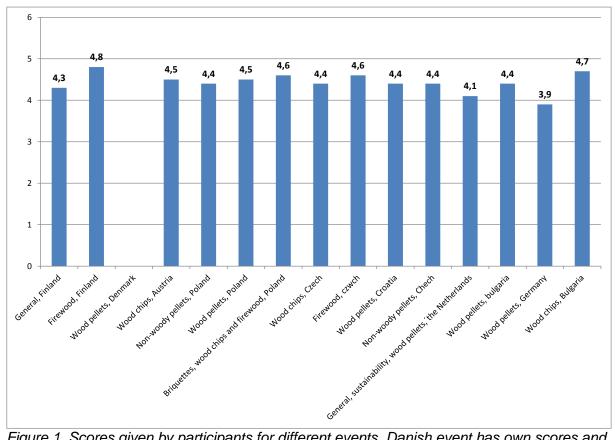


Figure 1. Scores given by participants for different events. Danish event has own scores and 44% were very satisfactory (score 5) and 56% good (score 3 - 4).

Figure 1 shows that participants have been very satisfied for the events, most of the events got scores 4.1 to 4.8. Only one event got less than 4 scores.

3. Results from different training events

3.1. Wood chips training

Training of wood chips standards were organised in Austria, Czech Republic, Poland and Bulgaria.

In Austria the training was successful and helped to bring an important part of the Austrian wood chip industry together for an update on European standardisation. The aim of this training was to get as much feedback as possible to our standard implementation concept for forest chips and to the proposal for an adapted particle size classification system for the ISO meeting in the beginning of May 2012. The practical part of the training was very much appreciated. Especially the samples of different forest chips invited to join the discussion. Most participants were not aware of how the particle size class was determined and why in many cases a classification was not possible. Problems, like how to detect the max. cross sectional area or length in a pile of forest chips, became evident. On the other hand people didn't have a lot to comment to the quality assurance system in theory. They were asked to suggest improvements for the examples of a checklist and a flowchart of a typical supply chain, but they didn't have any objections to the proposed version. At the end of the training all participants were rather exhausted, mainly due to the high amount of new information and the need to actively take part in the discussions and the training. It wouldn't make sense to plan a longer training duration. Hardly anybody was interested in one-to-one meetings, mainly because there still didn't exist a straight concept for the implementation of wood chips standards.

In Poland the duration of the training (from 9.30 until 15.00) including the visit in the testing laboratory seemed to be right. Conducting more detailed practical exercises would be too difficult for the participants and too time consuming.

In Czech Republic the training has received a positive feedback. For the future training it will be needed to receive more participants. This will be done by organizing the workshop in Prague where a larger group of participants can be expected.

3.2. Firewood

Training of firewood standards were organised in Finland, Poland and Czech Republic.

In Finland the questionnaire included also a possibility to give free comments on the event. Based on the given feedback, the training gave a good overview on the topic. However, the contents of different standards were not possible to be treated in detail during one day. Especially the moisture content analyses in practice were considered useful – things are easier to remember when you have had a possibility to hands-on training. The event was successful, and apparently there was a need for this kind of training. Only one third of the participants already used standards in their operations, but almost all were going to introduce them in the future. The participants were especially glad about the hands-on training at the VTT lab, so this kind of exercise can be recommended to be included in future training events whenever possible. Also presentation of firewood producer, who had tested the standard and also VTT's tool to calculate energy content of firewood, was found very useful. Training included also the newest results of VTT's firewood research especially how production methods etc. influenced on firewood quality. Some of the companies has already tested standards are providing product declaration based on EN 15234-4 standard.





In Finland, participants of firewood training coursed measured the moisture content by rapid moisture meter at VTT's laboratory. VTT made simultaneously moisture analysis by EN 14774-2 method. Results were distributed to partners next day.

In Czech Republic, the workshop organised on firewood has been successful. All the stakeholder groups have been represented. The training has been evaluated by the stakeholders and it was very positive. We have been able to disseminate information about more standards and about their contents than most of the stakeholders were aware of.

In Poland firewood standards were part of the events organised for briquettes and wood chips. This event was reported to be too long and practical work was not included.

3.3. Wood pellets

Training of wood pellets standards were organised in Denmark, Poland, Croatia, Bulgaria, the Netherlands and Germany.

In Denmark it seems to be a need for this type of courses. The participation was fine and we look forward to experience the next course. The idea of combining the course and the Danish Wood Pellet Conference, and including an excursion and networking options was approved by the participants. This is probably a good idea in a small market such as the Danish and the model is expected to be used also for the next course in 2013. In relation to the target group which had a large share of representatives from persons with practical experience, the training material seems to be quite heavy and academically based. We could consider reducing the amount prior to the event but there is room for further tailoring. There is room for improvement in terms of assignments, exercises, breaks etc. in order to promote digestion of the subjects.





Training event of wood pellets in Denmark

In Poland the duration of the training (from 9.30 – 16.00) was too long. Participants did not stay focused and asking them to fill in a long and too detailed feedback questionnaire resulted in poor quality answers. Participants who decided to fill in the questionnaire mostly ignored part 2 and 3.

It is very difficult to gather the required number of companies. Even though the training is for free and information about the trainings and invitations are sent by many channels. The Polish market is relatively young, struggling with many problems, mainly economic. The implementation of a quality assurance system may be associated with another requirement that small companies will not be able to meet (also due to "bureaucracy" connected with introduction of quality standards). However, taking into account that (in most cases) quality assurance systems are little known in Poland and few producers implement them, it is necessary to continue promoting measures for consistent improvement as in the near future it may occur that it is the quality that will be a crucial element for the survival of the company on the market.

Conducting more detailed practical exercises would be too difficult and time consuming. However visiting a laboratory site (in addition to exercises) seems to be interesting for the participants and therefore it will be taken into account during organisation of the next training.

The questionnaire takes a lot of time to fill in and attendants complain about it and are not willing to complete it at all or they complete it only partially. Even provision of issuing training certificates only when the feedback questionnaire is delivered did not motivate the participants.

In Croatia the following conclusions were drawn based on the organised training event:

- The training event in Croatia definitely was successful, and there is a necessity for this type of theoretical and practical trainings.
- Only two companies of the participants already use standards in their wood pellets production, but are not certified.
- The rest of the participants would like to introduce standards in their facilities in the future.
- The target number of participants was not reached because of low number of stakeholders in Croatia. In particular, the market for wood pellets is practically nonexistent and Croatian producers export approximately 99% of their production. It was therefore not possible to have a relevant representative of pellet users at the training;
- The participants were very glad about the possibilities to see demonstration of solid biofuels analysis in laboratory;

In the Netherlands training event of wood pellets was part of an event including topics of sustainability, general standards and wood pellets. See conclusions under chapter 3.5.

In Bulgaria the following conclusions were drawn:

- The training event definitely was successful, and there was a necessity for this type of theoretical and practical trainings.
- Only two companies of the participants already used standards in their wood pellets production.
- The rest of the participants would like to introduce standards in their facilities in the future.
- The participants were very glad about the possibilities to visit demonstration of wood pellets production and testing of bio fuels in laboratory;
- Face to face meetings are right formula for the implementation of individual positive approach and explanation of the specific issues to the stakeholders.

In Germany the lessons learned are:

- The participants of the workshop were highly interested in the safety and health aspects. Slides on this subject should be elaborated within the SolidStandards project.
- Most of the participants came from the near surrounding of Leipzig what shows that
 interested stakeholders are not willing to spend one day of travelling for the trainings.
 For that reason DBFZ's second workshop on wood pellets will take place in the southwest of Germany in order to reach additional participants.
- In order to avoid that the participants leave the training before the official end, training events should end earlier in the future.
- There should be more time right after the several parts of the training to enable extend discussion on the respective subjects in order to get more input from the participants.
- The quality assurance exercise should take place right after the respective part of the training to get more input for the further development of EN 15234.





Left photo: A DBFZ expert for solid biofuel assessment explains analysis methods to the participants. Right photo: equipment for analysis of solid biofuel properties

The audience *in Germany* seemed to be more interested in information about the current state of the standards than in participating in their further development. Their special interest was on the fuel requirements defined in EN 14961-2 as well as on the safety and health aspects.

The feedback of the participants was rather good. Most of the training contents seemed to match the expectations of the target group. With minor modifications according to the lessons learned and to the conditions in the respective countries the concept could be used by all project partners.

3.4. Non-woody pellets

Training of non-woody pellet standards were organised in Poland and Czech Republic.

In Poland most of the respondents think that there should be standards on health and security aspects for pellet storage at the end-users. There was low feedback on fuel specific questions (only 7 persons answered the questions) most probably due to the too detailed questionnaire in previous parts. Nevertheless, responders were almost unanimous in their answers in Part 4 what can be considered as valuable information from the Polish non-woody pellet market. It is difficult to assess how many participants from one company filled in the questionnaire. Therefore it is impossible to assess what is the actual number of companies willing to implement the standards. In order to be able to do this, questionnaires should have to be non-anonymous (and that would probably cause even less responders in practice). Regardless, 4 participants (out of 26) willing to introduce standards is a low number. This might be due to the fact that the certification in question is voluntary and the market is still characterised with low awareness. Moreover, some of the participants underlined that these standards, as materials for common use should be widely promoted and available free of charge to all interested market actors.

In the Czech Republic, as the non-woody pellets topic is not well developed, the scope of the training had to be enlarged. This had however a minor influence on the choice of subjects and order of subjects, which were in comparison to previous workshops evaluated less

positively. The workshop on non-woody pellets has been successful. All the stakeholder groups have been represented. The training has been evaluated by the stakeholders to be very positive. We have been able to disseminate information about more standards and about their contents than most of the stakeholders were aware of. The general and overall evaluation of the training has been as well very positive.

3.5. General and sustainability

Training of general standards were organised in Finland and the Netherlands. Also sustainability standards were trained in the Netherlands.

In Finland general training (fuel specification, quality assurance, sampling, physical and mechanical properties) was requested by stakeholder consultation. Also main chemical analysis was presented and visit to VTT's subsidiary, ENAS Oy, fuel laboratory was organised. In Finland the group of 40 participants was divided into two groups in the end of the programme. Half of the group visited laboratory and half of the group filled the questionnaire and could also ask specific question. In Finland all participants received training certificates after filling the questionnaire. This motivated the participants, but most of the respondents complained that questionnaire is too long. VTT made shorter version for the firewood training. VTT also made additional training material of sampling and physical methods, which was not planned in the training material.

Most of the participants already used some standards in their operations, but more detailed analysis cannot be done based on the questionnaire. The questionnaire form was much too detailed and many of the respondents did not bother to go through all questions. Some of the questions, especially the questions regarding the current and future use of the standards were confusing. There was a possibility to mark a "category" of standards (e.g. "Physical and mechanical properties") and/or individual standards (e.g. EN 14774). Part of the respondents marked only the categories, another part marked only individual standards - and third part marked them both. Moreover, in the question of future use of standards, some respondents marked also those standards which are already in use, while others marked only additional ones. Consequently, no frequencies can be calculated from the answers and it is impossible to make any reliable conclusions regarding the current or future use of any individual standard. Only some general assumptions of trends can be made. Also the questions regarding the awareness about different European standards (e.g. ÖNORM) were clearly irritating. "Are you aware of...? No, because..." time after time provoked frustrated answers, and it seemed that many of the respondents lost their interest in replying at this phase – if not already during the questions about the use of standards. Also for this part of the questionnaire, the conclusions to be drawn may be unreliable.

Regarding the quality of the event, the participants were especially glad about the possibility to see ENAS Oy's analysis laboratory, so this kind of visit can be recommended to be included in future training events whenever possible.

The total target number of participants was reached, but the separate targets for solid biofuel producers and traders were not achieved. It needs to be noticed, however, that the classification of different companies is partly based on assumptions. The type of organisation was asked in the questionnaire, but as the responses were anonymous, it is impossible to determine for sure, how many companies there were representing each organisation type – there was no way to recognise which responses were from the same company. Therefore, either the targets for participation should be based on number of persons and not companies, or the questionnaire should be filled only once per company. Or, the name of the company could be asked as well, but losing the anonymity may impact on the answers.



In Finland training of different standards (general part) attached 40 participants from all target groups. Programme included also tailor-made slides on sampling, sample preparation, most important physical properties and chemical analysis methods.



Most of the events included also visits to analysis laboratory. Finnish participants are visiting analysis laboratory of ENAS Oy, which is situating in same facilities as VTT.

In the Netherlands, in general the training materials were satisfactory for the purpose they have been developed. This also appears from the evaluation by the participants. The time schedule of the programme rather corresponds with the actual timeframe applied during the training event. So, this schedule can be adopted for the next training event. The total sustainability module is (too) long. There was no time to discuss the additional slides. The graphs provided in the main part of the slides were not clear. The teacher had therefore to hide the slides concerned, but based on the hand-outs, some questions were asked. Also questions were asked about the GHG calculations of the examples provided in the supply chain. So, this part of the training materials needs clarification/adjustments. The programme that was offered on the second day was additional to the SolidStandards training materials. Although it was questionable whether participants would invest two working days in training, the programme of the second day was well attended and well received and can be applied again. It is important to anticipate on the background and interest of the participants. The training event was rather theoretic. Next time, samples of all kind of biomass sources can be used to do some exercises (as presented in Vienna meeting by HFA). However, the participants did not mention that they had missed exercises or cases.

4. Conclusions

The following conclusions of training material and concepts could be drawn:

- Training events were successful. The total participant's number was reached and in most of the event also the number of different stakeholder target groups was reached. Also the feedback was very positive usually 4.1 to 4.8.
- There's definitely a need for this kind of training. Implementing standards needs
 examples from different biomass fuel sector and experts to explain how to use them
 in real work.
- Practical parts (e.g. visit to analysis laboratory, testing moisture content) were found useful and interesting.
- Training concept should include also presentations from the industry, which is using already standards. This was not possible for all events, because some of the standards were published in June 2012.
- Feedback questionnaire was found too long and too many questions. Most of the
 participant's didn't fill the whole questionnaire. Because answers were anonymous, it
 was difficult to recognize the different target groups.
- Training material was found useful and some comments were given by participants during the training events.
- Some participants found material too academic and long. More practical information like fuel examples of HFA, would help in implementing standards
- Full day event, if it includes only lectures is too long. In the future it might be more useful to have only ½ lecturers and ½ practical works.
- Training concepts could be more tailored according to target audience and target country. This could be done by existing modules.
- There were no many requests for face-to-face meeting. Some participants contacted the partners after the seminar by email or phone (hotline work) asking some specific questions.

Recommendations for future work

- Training concepts are well-working and practical exercise or visit to analysis laboratory should be organised. Training concepts should also include in the remaining 20 events experiences from companies participating in WP4 (Implementing standards)
- If more than one day event is organised, there should be some study tour, in which participants can see in practice e.g. fuel sampling at a plant or other quality control.
- Training material will be updated after the comments received from the second stakeholder consultation.

Planned training events from October 2012.

Nro	Date	Place, Country	Topic	Comments
16	23.11.2012	Poznań, Poland	Wood pellets	
17	29.11.2012	Leipzig, Germany	Non-woody pellets	
18	20.11.2012	Rottenburg, Germany	wood chips	
19	Nov.2012	TBD, Bulgaria	Wood pellets	
20	Dec.2012	TBD, Bulgaria	Firewood	
21	Nov 2012	Zagreb, Croatia	Wood chips	
22	March 2013	Saarijärvi, Finland	Wood chips	Event will be organised in the facilities of JAMK and POKE in Saarijärvi
23	29.3.2013	Leipzig, Germany	Wood chips	
24	February 2013	Haskovo, Bulgaria	Wood chips	
25	May 2012	Haskovo, Bulgaria	Wood pellets	
26	January 2013	Verona/Italy	Wood pellets	Event will be organised in cooperation with AIEL and ENAMA at the premises of Verona Trade fare
27	11. April 2013	Ort, Austria	Wood chips	Event will be organised in the facilities of FAST Ort, in cooperation with BFW
28	Spring 2013	Italy	Wood chips	not planned yet
29	April-May 2013	Denmark	Wood pellets	The event will be organised in conjunction with the Danish Wood Pellet Conference 2013
30	March-Aug 2013	The Netherlands	General, sustainability, wood pellets	
31	Spring 2013	Poland	Non-woody pellets	
32-35	Not planned	Not planned	Not planned	

List of training reports

VTT – Training report: General training on standards, 21.3.2012, Jyväskylä, Finland

VTT - Training report: Training of firewood, 22.3.2012, Jyväskylä, Finland

FORCE – Training report: Training of wood pellets, 8.5.2012, Randers, Denmark

HFA – Training report: Training of wood chips, 12.4.2012, Vienna, Austria

BAPE – Training report: Training of non-woody pellets, 30.5.2012, Poland

BAPE – Training report: Training of wood pellets, 31.5.2012, Poland

BAPE – Training report: Training of wood briquettes, wood chips and firewood, Poznan, Poland

CZ Biom - Training report: Training of wood chips, 31.5.2012, Most, Czech Republic

REGEA – Training report: Training of wood pellets, 20.6.2012, Zagreb, Croatia

CZ Biom – Training report: Training of firewood, 17.7.2012, Prague, Czech Republic

CZ Biom – Training report: Training on non-woody pellets, 19.9.2012, Prague, Czech Republic

NEN – Training report: Training on wood pellets, 7 – 8.6.2012, Utrecht, the Netherlands

ERATO - Training report: Training of wood pellets, 18.5.2012, Haskovo, Bulgaria

DBFZ – Training report: Training of wood pellets standards, 12.5.2012, Leipzig, Germany

ERATO - Training report: Training of wood chips, 27.6.2012, Haskovo, Bulgaria

Appendix 1. Part 5 of feedback questionnaire – Questions about the quality of the training

5.1 What did you learn during this training?												
☐ I am aware of the existence of many more standards for biomass, than I already knew												
I am aware of the existence of a few more standards, than I already knewI was aware of the existence of all treated standards, but I learned more about the content												
☐ I learned very much about the content of the standards												
☐ I learned much about the content of the standards												
☐ I learned a little bit about the content of the standards												
5.2 Could you please evaluate the items below at a scale of 1 to 5, of which the score of 5 is excellent and 1 inferior												
Content of the training as a whole												
Choice of subjects		1		2		3		4		5		
Order of subjects		1		2		3		4		5		
Quality of the material		1		2		3		4		5		
Structure of presentations		1		2		3		4		5		
General												
Presentation		1		2		3		4		5		
Organization		1		2		3		4		5		
Readiness to help		1		2		3		4		5		
Training location		1		2		3		4		5		
Catering		1		2		3		4		5		
Has this training met your expectations?		1		2		3		4		5		
5.3 Please specify for each question asked, especially if scored 1 or 2?												

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5.4 How did you know about the training?