

**Inspection Report:**  
**BEA2021204**

**Date:** 2021-09-08

## Inspection according ENplus®

**Client:** **Pelcko s.r.o**  
Attn.: Mr. Alessandro Ianniello  
Výrobná hala – 1205  
034 81 Lisková  
SLOVAK REPUBLIC

**Subject:** Wood pellets production **Pelcko s.r.o**;  
plant in Slovak Republic, address: Výrobná hala – 1205,  
034 81 Lisková

**Content:** Site Audit 2021 including pellet testing according to ENplus®

**Order:** According to the order from 2021-07-13

**Date of audit  
and sampling:** 2021-07-21 by DI Philipp Koskarti

**Receipt of samples:** 2021-07-21

**Ref:** Kos



BEA Institut für Bioenergie GMBH - Accredited inspection body acc. to EN ISO/IEC 17020 | Accredited testing laboratory acc. to EN ISO/IEC 17025

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## 1 SCOPE OF WORK

Inspection of the wood pellet production plant especially of quality measures, evaluation of quality related documents and internal testing of product quality of wood pellets production according ENplus® requirements. A sample of the production is to be taken and tested according EN ISO 17225-2 for verification of pellet quality.

## 2 SCOPE OF APPLICATION

The test results given in this report have been obtained under the specific conditions of the individual tests. They shall serve as proof for the conformity of the sample(s) tested. The client is responsible for the conformity of products with ENplus® regulations which will be assured when quality assurance measures according ENplus® regulations are continuously applied.

## 3 INSPECTION AUDIT

The inspection audit was carried out according ENplus® Handbook (in the currently version) on 2021-07-21 by DI Philipp Koskarti attended by Mr. Alessandro Ianniello. (duration of audit approximately 2 hours).

Responsibilities in the factory are assigned clearly, a company organogram exists.

The responsibility in the company is divided as follows:

Contact, plant/quality manager: Mr. Alessandro Ianniello ([direzione@pelcko.eu](mailto:direzione@pelcko.eu))

### 3.1 Products

Certified products	wood pellets EN ISO 17225-2, class A1	
Dimensions	6mm	
ENplus® ID	SK002	
Certification body	HFA	
Subcontracted service providers	None	
Affiliated Companies	None	
Products and dispatch*	Full load deliveries of bulk pellets to end-users	No

	Part load deliveries of bulk pellets to end-users	No
	Bagging of pellets	Yes
	Sourcing pellets from another certified company	No
Brand names*	Krone Gold, Krone Silver, Krone Green, Bioabete, Ar-tel, Timber Premium (new), Roby Pellet and Biotim-ber (all approved by EPC), other listed brands not in use anymore, some brands with own trader ID SK310	
Production amount*	2020: 9.453t Estimation 2021: 20.000t	
Storage capacity	Hall: ~8.000t (bagged pellets on pallets, no silo)	
Relevant storage sites	None	

\* according statement of client

### 3.2 Raw material

Origin of wood	100 % external purchase
Source raw material	100% chemically untreated wood residues (1.2.1 acc. EN ISO 17225-1)
Raw material species	100% spruce
Form of raw material	Sawdust and shavings
Raw material storage	The raw material is stored inside a hall on paved ground.
Control and documentation of raw material	All incoming raw material is visually inspected, weighed and moisture controlled: 100% clean and un-contaminated timber by-products.
Suppliers	There is a list of suppliers (incl. contracts).
Sustainability of raw material	No certification.
Other raw materials used (e.g. pressing aids)	No additives or binders are used.

### 3.3 Production process

Changes in production process	None
Raw material preparation	Hammer mill
Drying	Raw material is dried by a drum drier using biomass fuel for the heat.
Separation of contaminants and impurities	Oversized particles and impurities are removed by sieves, stone traps and metal separators are used.
Pellet production	The raw material is grinded by a hammer mill and is pelletized by one ring die press and cooled by a counter current cooler.
Removal of fines	Fines are removed by vibrating sieves with suitable size and sieve aperture, dust is removed by air separators.
Non-complying pellets	A possibility for separation of low-quality batches exists.
Documentation of failures, breakdowns and maintenance	A shift book exists containing all relevant information.
Storage of pellets	Pellets are directly packed in 15kg bags and stored in a hall. Pellets are protected against moisture and contamination.
Bagging station	Weighing system is checked with calibrated scale at least 1x per shift.
Carbon footprint of production	Emissions bulk pellets: --- Emissions bagged pellets: 39g CO <sub>2-eq</sub> ./kg pellets

### 3.4 Quality control measures

The factory production control is carried out in accordance with the requirements of the regulations. Tests are done regular and are documented properly.

Parameter	Test frequency	Test equipment
Moisture	once per hour	IR-dryer
Bulk density	once a shift	5l stainless steel container
Mechanical durability	once a shift	Self-made tumbler (1 box)
Length	once a shift	Caliper rule
Fines	once a shift	3,15mm sieve, 400mm Ø

Instruments are maintained properly, calibration and/or performance tests are done.

### Comparison of analysis results:

parameter	Unit	Pelcko	BEA
Moisture	%	5,75	6,4
Bulk density	kg/m <sup>3</sup>	660	670
Mechanical durability	%	98,8	98,8

Results comply well within expected variation.

### 3.5 Quality assurance

Quality management system	<p>There is a quality management system implemented; SOP's are available covering:</p> <ul style="list-style-type: none"> <li>• Receipt of raw materials</li> <li>• Requirements for measuring and test equipment</li> <li>• Instruction of self-inspection</li> <li>• Responsibilities</li> <li>• Customer complaint management</li> <li>• Training of staff</li> </ul>
Documentation raw material	<p>All incoming raw materials are documented, data are collected including date, amount, quality and name of supplier.</p> <p>A list of suppliers exists.</p> <p>Since additives are not used, there is no documentation.</p>
Customer complaints	<p>Customer complaints are documented. Documentation contains date, reason and action to achieve customer satisfaction. Complaints: 5x logistic problems (accepted).</p>
Documentation of outgoing goods	<p>Documentation of outgoing goods is done according to the requirements.</p>
Measuring pellets temperature at loading station	<p>Not necessary, only bagged pellets</p>
Training of staff	<p>External ENplus® training planned for 2021.</p> <p>Internal trainings done according requirements.</p>

### 3.6 Retain samples

Not necessary since the whole production is bagged to 15kg bags.

### 3.7 Labelling

The labelling corresponds with the requirements (Bag design approved by EPC).

## 4 SAMPLING

Samples were taken following the principles of ISO 18135.

One 15kg bag was taken from the bagging station. The bag was signed by the auditor and taken by the auditor to the auditor's lab.

## 5 TESTS

Laboratory testing took place in July/August 2021 according to EN ISO 17225-2.

## 6 PELLET LAB ANALYSIS RESULTS

Sample 2021204	Standard	unit	Pellets	Limit values according class A1	
				ENplus®	DINplus
mechanical durability	ISO 17831-1:2015	[%]	98,8	≥ 98,0	≥ 97,5
bulk density (ar)	ISO 17828:2015	[kg/m³]	670	750≥BD≥600	750≥BD≥600
moisture content	ISO 18134-2:2017	[%]	6,4	≤ 10	≤ 10
ash content 550°C(db)	ISO 18122:2015**	[%]	0,4	≤ 0,7	≤ 0,7
net calorific value (ar)	ISO 18125:2017	[MJ/kg]	17,3	≥ 16,5	≥ 16,5
net calorific value (ar)	ISO 18125:2017	[kWh/kg]	4,8	≥ 4,6	≥ 4,6
net calorific value (db)	ISO 18125:2017	[MJ/kg]	18,6	-	-
net calorific value (db)	ISO 18125:2017	[kWh/kg]	5,2	-	-
gross calorific value (ar)	ISO 18125:2017	[MJ/kg]	18,8	-	-
gross calorific value (ar)	ISO 18125:2017	[kWh/kg]	5,2	-	-
Sulphur content (db)	ISO 16994:2016***	[%]	0,007	≤ 0,04	≤ 0,04
Chlorine content (db)	ISO 16994:2016***	[%]	0,005	≤ 0,02	≤ 0,02
Nitrogen content (db)	ISO 16948:2015	[%]	0,05	≤ 0,30	≤ 0,30
pressing aid / additives	-	[%]	0	≤ 1,8	≤ 2
<b>dimensions</b>					
finer (< 3,15 mm)	ISO 18846:2016	[%]	0,1	≤ 0,5* / ≤ 1,0	≤ 0,5* / ≤ 1,0
length (3,15 ≤ L ≤ 40 mm)	ISO 17829:2015	[%]	99,3	> 98,5* / > 98	> 98,5* / > 98
length (40 ≤ L ≤ 45 mm)	ISO 17829:2015	[%]	0,6	≤ 1	≤ 1
length (> 45 mm)	ISO 17829:2015	[amount]	0	0	0
diameter	ISO 17829:2015	[mm]	6	6 or 8 ± 1	6 or 8 ± 1
<b>heavy metals</b> (quantification according to ISO 17294-2:2016)					
Chromium (db)	ISO 16968:2015	[mg/kg]	< 1	≤ 10	≤ 10
Copper (db)	ISO 16968:2015	[mg/kg]	1,1	≤ 10	≤ 10
Zinc (db)	ISO 16968:2015	[mg/kg]	9,9	≤ 100	≤ 100
Lead (db)	ISO 16968:2015	[mg/kg]	< 0,5	≤ 10	≤ 10
Mercury (db)	ISO 16968:2015	[mg/kg]	< 0,075	≤ 0,1	≤ 0,1
Cadmium (db)	ISO 16968:2015	[mg/kg]	0,2	≤ 0,5	≤ 0,5
Arsenic (db)	ISO 16968:2015	[mg/kg]	< 0,5	≤ 1	≤ 1
Nickel (db)	ISO 16968:2015	[mg/kg]	< 1	≤ 10	≤ 10
<b>ash melting behaviour</b> (oxidizing atmosphere, ash preparation at 815°C)					
shrinking temperature SST	CEN/TS 15370-1:2006	[°C]	1080	-	-
deformation temperature DT	CEN/TS 15370-1:2006	[°C]	1230	≥ 1200	≥ 1200
hemisphere temperature HT	CEN/TS 15370-1:2006	[°C]	1270	-	-
flow temperature FT	CEN/TS 15370-1:2006	[°C]	1290	-	-

\* for bags or sealed big bags

\*\* performed with proximate analyzer

\*\*\* quantification according to ISO10304-1:2007

ar...as received, db...dry basis

## 7 SUMMARY

The pellet production of **Pelcko s.r.o.** in Lisková (SLOVAK REPUBLIC) is complying with all requirements of

**ENplus<sup>®</sup>, quality A1.**



### Deviations from 2020:

- ◆ None.

### Type A, B and C non-conformities:

- ◆ None.

### Recommendations for improvements till next audit 2022:

- ◆ None, the production is working on a high level.

This inspection report no. **BEA2021204** comprises 7 pages and 0 appendix(es).

EPC-listed Auditor in Charge



*Philipp Koskarti*  
Dipl.-Ing. Philipp Koskarti