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Inspection Report 2023
Main Inspection

In accordance with the following requirements:

Puro.earth - Biochar Methodology

OBIO AS
2317 Hamar
Operator's No.: PE-71033

Contact details operator

Name and address

OBIO AS
Vangsvegen 73
NO-2317 Hamar

Phone/Fax

Fixnet: +4790192260
Mobile: -
Fax: -
Email: einar@obio.no

Contact person(s)

Mr. Einar Stuve

Inspection visit details

Date
31.07.2023

Duration
1 h 0 m

Persons present including their function:
Einar Stuve, Production Manager
Paul Ferguson, Consultant
Mathias Börjesson, bio.inspecta AG, Auditor

	very good						not satisfactory
Clarity of documentation:	☒	☐	☐	☐	☐	☐	☐
Visit preparation:	☒	☐	☐	☐	☐	☐	☐

O.K | Corrective action required | Not verified | Not relevant

BINT-97.01 Puro.earth - Biochar FA

O.K	Corrective action required	Not verified	Not relevant		
				1	**Audit Description**
☒	☐	☐	☐	1.01	Audited Standard: *Puro.earth CO2 Removal Marketplace General Rules 3.0 – Biochar Methodology (Annex A)*
☒	☐	☐	☐	1.02	Type of Audit: *Production Facility Audit and Output Audit*
☒	☐	☐	☐	1.03	Auditing Body: *bio.inspecta AG, Ackerstrasse 117, CH-5070 Frick* *www.bio-inspecta.ch*
☒	☐	☐	☐	1.04	Audit order assigned to an impartial auditor, free from any conflicts of interest, capable and qualified to complete this audit according to Puro Standard. *Auditor (name/surname): Mathias Börjesson*
☒	☐	☐	☐	1.05	Audit ID: *Don´t know the Audit ID*
☒	☐	☐	☐	1.06	Audit Date: *31 july 2023*
☒	☐	☐	☐	1.07	Production Facility Location: *Vangsvegen 73, 2317 Hamar*
☒	☐	☐	☐	1.08	Production period: *13/4 2022 - 13/4 2023*
☒	☐	☐	☐	1.09	Audit could be finished within the scheduled time frame *Audit could be finished within the scheduled time frame Audit time should be extended by 0 h, because: there was no timeframe*
				2	**Standing Data Confirmation**

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O.K	Corrective action required	Not verified	Not relevant		
				2	**Standing Data Confirmation**
☒	☐	☐	☐	2.01	The standing data has been collected from Puro and checked for consistency against other evidence. (GL Ref.1.2.5.) *Comment: Looks reliable*
				3	**Evidence Confirmation**
☒	☐	☐	☐	3.01	All necessary evidence has been provided to the auditor by the Production facility and has been used to complete the compliance checklist. (GL Ref. 5.) *Comment: Honest and transparent*
				4	**Eligibility Checklist**
☒	☐	☐	☐	4.01	Biochar is used in applications other than energy. (GL Ref. 1.1.1.) *Used as soilimprovement and animal feed*
☒	☐	☐	☐	4.02	Biochar is produced from sustainable forest or waste biomass raw materials (consult positive list of biomasses). (GL Ref. 1.1.2) *FSC certified wood chips from spurs*
☒	☐	☐	☐	4.04	Pyrolysis reactor input fuel for heating is not a fossil fuel. Unless only used for ignition/pre heating or in a mobile unit and the emissions are fully included in the LCA. The use of waste heat from other industrial processess (eg. Biodigesters, cement production) is permitted. (GL Ref. 1.1.4.) *Only woodchips used to start the process*
☒	☐	☐	☐	4.05	Pyrolysis gases are combusted or recovered. Bio-oil and pyrolysis gases can be stored for later use as renewable energy or materials. (GL Ref. 1.1.5.) *Syngas well combusted inside the combustion chamber*
☒	☐	☐	☐	4.06	The molar H/Corg ratio is less than 0.7. *0,33*

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O.K	Corrective action required	Not verified	Not relevant		
				4	**Eligibility Checklist**
☒	☐	☐	☐	4.07	Evidence of safe handling and transport is provided and adequate for the production facility. (GL Ref. 1.1.7.) *The handling of the biochar are accroding to me good and safe. The biochar are well moisted before stored in bigbags. Then the bigbags are stored outside.*
				5	**LCA Checklist**
☒	☐	☐	☐	5.01	LCA complete and shows: carbon footprint of the biomass production and supply , emissions from the biochar production process , carbon footprint of the biochar end use - cradle to grave. (GL Ref. 1.1.3) *See Audit package*
☒	☐	☐	☐	5.02	The CO2 Removal Supplier provides a life cycle assessment (LCA) for biochar activity including disaggregated information on the emissions arising at different stages. The system boundary is set cradle-to-grave and includes emissions from production and supply of the biomass, from biomass conversion to biochar, and from biochar distribution and use. (GL Ref. 3.1) *See audit package*
☒	☐	☐	☐	5.03	Life cycle assessment (LCA) follows ISO standard, WRI GHG protocol or similar method. (GL Ref. 3.2) *LCA made by Accend which are following the ISO Standard*
☐	☐	☐	☒	5.04	The default baseline emission scenario for the project activity feedstock is zero, which is a conservative assumption since it is not taking into account methane emissions derived from decay of manure or combustion of waste biomass. If a non-zero baseline presented, needs to be accepted by Puro.earth *I don´t know this*
				6	**Production Facility Checklist (Desktop and Verbal Confirmation).**
☒	☐	☐	☐	6.01	Evidence of Production Facility eligibility under the general rules of Puro Standard. (GL Ref. 1.2.1)
☒	☐	☐	☐	6.02	The Production Facility demonstrate Environmental and Social Safeguards. (GL Ref. 1.2.2.)

O.K | Corrective action required | Not verified | Not relevant

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O.K	Corrective action required	Not verified	Not relevant	6	Production Facility Checklist (Desktop and Verbal Confirmation).
☒	☐	☐	☐	6.03	CO2 Removal Supplier shall be able to demonstrate additionality, meaning that the project must convincingly demonstrate that the CO2 removals are a result of carbon finance. Even with substantial non-carbon finance support, projects can be additional if investment is required, risk is present, and/or human capital must be developed. To demonstrate additionality, CO2 removal Supplier must provide full project financials and counterfactual analysis based on Baselines that shall be project-specific, conservative and periodically updated. Suppliers must also show that the project is not required by existing laws, regulations, or other binding obligations. (GL Ref. 1.2.3) *Comment: The production is ofcourse highly legal and follow all the regulations according to Norwegian laws*
☒	☐	☐	☐	6.04	The Production Facility's documentation system is accurate and reliable (GL Ref. 1.2.4) *Comment: Good documentation available*
☒	☐	☐	☐	6.05	The quantity of the biochar produced and sold is quantified and documented in a reliable manner (GL Ref. 1.2.4) *Comment: Yes they have good control over their documentation and especially the understand why this are important*
☒	☐	☐	☐	6.06	Relevant meters are in place and they are calibrated (GL Ref. 1.2.4) *Comment: They have measurements for electricity consumption and of course meters of produced of heat*
☒	☐	☐	☐	6.07	The emissions from the cultivating, harvesting and transporting of the biomass are estimated and calculated in a reliable manner (GL Ref 1.2.4) *Comment: They only use biomass from one supplier which are 53km away from the production-plant.*
☒	☐	☐	☐	6.08	The energy use of the Production Facility can be quantified and the emissions from the process calculated (GL Ref. 1.2.4) *Comment: See LCA*
☒	☐	☐	☐	6.09	The auditor goes through the Quantification of CO2 Removal requirements with the CO2 Removal Supplier, so that the Supplier is able to calculate the CO2 Removal independently in its Output Report *Comment: Remote meeting held 2/8 with Accend who made the LCA*

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O.K	Corrective action required	Not verified	Not relevant		
				7	**Calculation Checklist**
☒	☐	☐	☐	7.01	Qbiochar = Quantity of biochar produced and sold to end user. (dry char) (GL Ref. 4.2.) *Comment: See LCA*
☒	☐	☐	☐	7.02	FpTHTs = c + m x H/Corg (GL Ref. 4.2.) *Comment: See LCA*
☒	☐	☐	☐	7.03	C Biochar = carbon content of biochar (GL Ref. 4.2.) *Comment: 91,7% Dry*
☒	☐	☐	☐	7.04	Estored = biochar carbon storage = Qbiochar x Cbiocharorg x FpTHTs x 44/12 (GL Ref. 4.2.) *Comment: See LCA*
☒	☐	☐	☐	7.05	Ebiomass = LCA emissions of production and supply of biomass (GL Ref. 4.3.) *Comment: See LCA*
☒	☐	☐	☐	7.06	Eproduction = LCA emissions from biochar manufacturing (GL Ref. 4.4) *Comment: See LCA*
☒	☐	☐	☐	7.07	Euse = LCA emissions of the use of biochar, including distribution up to the point of final use (GL Ref 4.5) *Comment: See LCA*
☒	☐	☐	☐	7.08	CORCs = Estored - Ebiomass - Eproduction - Euse *Comment: See LCA summary*
☒	☐	☐	☐	7.09	Quantity of CORCs (in evidence). *Comment: See LCA summary*
☒	☐	☐	☐	7.10	Confirm consistency.
				8	**Site Visit Checklist**

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O.K	Corrective action required	Not verified	Not relevant		
				8	**Site Visit Checklist**
☒	☐	☐	☐	8.01	The raw material is of eligible type and sustainably sourced (GL Ref. 1.1) *Comment: FSC Certified biomass are used. The energy used to process and harvest biomass found in LCA*
☒	☐	☐	☐	8.02	The LCA specifics and emissions boundary are consistent with observations on site (GL Ref. 1.1) *Comment: A waterproofed LCA made by expert in the area. Accend*
☒	☐	☐	☐	8.03	There are no fossil fuels used to heat the pyrolysis reactor (GL Ref. 1.1) *Biomass are used to heat up the process*
☒	☐	☐	☐	8.04	Pyrolysis gases are recovered in the biochar production process (GL Ref. 1.1) *Comment: All syngas that are produced in the process are trapped inside a combustion chamber and are well burnt*
☒	☐	☐	☐	8.05	Evidence of safe handling and transport of the biochar (GL Ref. 1.1) *Comment: Biochar stored in bigbag with moist up to 30%. Then bags are stored outside. Minimal risk in handling of those bags*
☒	☐	☐	☐	8.06	Biochar is used in applications other than energy (GL Ref. 1.1) *Comment: Biochar sold as soil-improvement and animal feed*
☒	☐	☐	☐	8.07	The molar H/Corg ratio is less than 0.7 *Comment: The biochar are well pyrolysed. H/Corg 0.22*
☒	☐	☐	☐	8.08	Confirm how the Production Facility documents the quantity of biochar produced and sold *Comment: This company are 100% serious and understands the importance of documentation.*
☒	☐	☐	☐	8.09	Confirm that the Production Facility's documentation system is accurate and reliable *Comment: I can´t see any reason for not belive in that those documents are fake. Trustworthy company*

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O.K	Corrective action required	Not verified	Not relevant		
				8	**Site Visit Checklist**
☒	☐	☐	☐	8.10	Confirm that appropriate metering infrastructure is present and calibrated correctly to determine production output *Comment: The measurement are according to me and my competence, working as it should*
☒	☐	☐	☐	8.11	Confirm that appropriate metering infrastructure is present to quantify the energy use of the Production Facility *Comment: Electricity are measured by the company that sells the electricity which should be 100% correct. The measurement of the excessive heat made by local "district heating" and of course the plant it self*
☒	☐	☐	☐	8.12	Confirm the calculations that are used to quantify emissions from the process. These account for: - the energy (e.g. waste heat) created by the biochar - the energy source used in the production process *Comment: Accend are making the best LCA calculations I have seen*
☒	☐	☐	☐	8.13	Confirm the process that is in place to quantify emissions from the harvest of raw materials. These account for: - forest biomass vs biomass from other waste *Comment: see 8.12*
☒	☐	☐	☐	8.14	Confirm the process that is in place to quantify emissions from the transport of raw materials to the Production Facility. *Comment: see 8.12*
☒	☐	☐	☐	8.15	The Production Facility demonstrate Environmental and Social Safeguards *Comment: Absolutely*
☒	☐	☐	☐	8.16	Confirm the CO2 removals are a result of carbon finance *Comment: Yes it is*
☒	☐	☐	☐	8.17	The requirements for Quantification of CO2 Removal have been explained to the Supplier by the Auditor for the purpose of compiling the Output Report *Comment: This company has experience in this area*

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O.K	Corrective action required	Not verified	Not relevant		
				8	**Site Visit Checklist**
☒	☐	☐	☐	8.18	Confirm the process that is in place to collect and maintain proofs as per Section 5 of the Biochar Guidelines. - Proof of sustainability of raw material for forest biomass (FSC, SFI, PEFC, other certifications) - Proof of sustainability of raw material for waste biomass - LCA data for biomass and biochar production, supply and use, including climate change impact and the contribution of each life cycle stages - Proof of product quality: laboratory analysis of total organic carbon content, hydrogen content and H/Corg - Proof of production volume: documentation for the whole period and methodology applied to calculate the dry mass of biochar produced. - For mobile units or carbonizer operator: proof of load cell measurement of the biochar for the whole period, and water input measurement. - Proof of end use of biochar: offtake agreement, shipment, and other records indicating the intended use of biochar. - Justification on the soil temperature selected for the calculation of the biochar sequestration. - Proof of sales - Proof of no double counting/C positive marketing. *Comment: All proof needed are available in the EBC inspection*
				9	**Overall conclusion**
☒	☐	☐	☐	9.01	Overall conclusion: *OBIO are acting serious and have full understanding why documentation are important. It´s a pleasure to make an audit for these kind och operator that are transparent with their operation.*

Inspector's evaluation and recommendation

Non-compliance	Corrective action	Deadline
Puro.earth - Biochar Methodology		
None		

Right to appeal

The undersigned has reviewed the outcome of the audit documented in this report and confirms the completeness and accuracy of the information provided in the audit and the content of this report.

He/ she has taken note of the non-conformities, measures, deadlines and sanctions described in this report.
The undersigned has the option of submitting a counter-notification in writing to bio.inspecta AG within three working days of receipt of this report. If no reply is received within this period, the contents of this report shall be deemed to be acknowledged.

Frick, 04.08.2023

Hamar, 30.08.2023

bio.inspecta AG

OBIO AS

Mathias Börjesson

EINAR STUVE

	09/2021 -12/2022
Produced biochar (wet)	**318**
Average Moisture content	
Produced biochar (dry)	**257**
Gross embodied CO2 (100 years)	
Gross embodied CO2 (100 years)	**865**
A1 Emissions from raw materials	39,30
A1 Emissions from feedstock storage	-00,00
A2 Emssions from transport from to production site	0,81
A3 Emissions from manufacturing +infra	6,09
A4 Emissions from Transport to customer	21,00
B1 Use	1,15
Emissions from process	**68,33**
Net embodied CO2	**797**
Net embodied CO2	**3,10**
Sales	
Biochar d/w	256
CORCs	**792**