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INSPEKTIONSBERICHT 2023

Hauptkontrolle

gemäss folgenden Anforderungen:

Puro.earth - Biochar Methodology

NovoCarbo GmbH
59555 Lippstadt
Betriebs-Nr.: PE-70401.001

Angaben zum Unternehmen

Name und Adresse des Unternehmen

NovoCarbo GmbH
 Beckumer Str. 87
 DE-59555 Lippstadt

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Kontaktperson

Herr Caspar von Ziegner

Angaben zum Inspektionsbesuch

Datum

23.02.2023

Dauer

1 h 0 m

Anwesende Personen mit Angabe der Funktion:

GROSS, Cimberley, Project manager
 LAGE, Florian, Head of Production & Sales
 Philipp Seitz, bio.inspecta AG, Auditor/in

sehr gut

ungenügend

Übersichtlichkeit der Dokumente:

Vorbereitung des Kontrollbesuchs:

Erfüllt
 Massnahme nötig
 Nicht kontrolliert
 Nicht relevant

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				1	Audit Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.01	Audited Standard: <i>Puro.earth CO2 Removal Marketplace General Rules 3.0 – Biochar Methodology (Annex A)</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.02	Type of Audit: <i>Output Audit</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.03	Auditing Body: <i>bio.inspecta AG, Ackerstrasse 117, CH-5070 Frick www.bio-inspecta.ch</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.04	Auditor Initials: <i>PS</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.05	Audit ID: <i>PE-70401.001</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.06	Audit Date: <i>23.02.2023</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.07	Production Facility Location: <i>Beckumer Str. 87, 59555 Lippstadt</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.08	Production period: <i>02. - 25.11.2023</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.09	Audit could be finished within the scheduled time frame
				2	Standing Data Confirmation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.01	The standing data has been collected from Puro and checked for consistency against other evidence. (GL Ref.1.2.3.) <i>Trade registry available; location evidenced; removal method eligible; crediting period encompasses 02. - 25.11.22 - which corresponds to the first production following the pilot stage and registration of the first EBC batch ba-de-30-4-1 on 19.10.22; no public support!</i>
				3	Evidence Confirmation

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				3 Evidence Confirmation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>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.)</p> <p><i>Proof of product quality: (1) EUROFINS laboratory analyses AR-22-FR-025149-01 and PR-22-FR-001570-01; Proof of output volume: Only a fraction of the the initial EBC batch ba-de-30-4-1 is being reported to PE for carbon accounting, encompassing the period form 02.11. to 25.11.22 - which corresponds to the first production following the pilot stage and registration of the first EBC batch ba-de-30-4-1 on 19.10.22; Proof of sales: The reported volumes were sold to one client: Hasselfors Garden AB; point of delivery: HANVEDSMOSSEN Hummeltorpsvägen 514791 GRÖDINGE, Sweden. Deliver notes and invoices available (2); Proof of no double counting: Written declaration of buyer available, Carbon Credit Withdrawal Right issued, thereby transferring the right to generate carbon credits from the carbon content of the biochar.</i></p>
				4 Eligibility Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>4.01 Biochar is used in applications other than energy. (GL Ref. 1.1.1.)</p> <p><i>Written declaration of buyer Hasselfors Garden AB available stating that the said volumes will not be combusted.</i></p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>4.02 Biochar is produced from sustainable forest or waste biomass raw materials (consult positive list of biomasses). (GL Ref. 1.1.2)</p> <p><i>Evidence of sustainable sourced waste biomass supplier Brüning-Holding GmbH available. Certificate type: Multisite Chain of Custody. Certificate registration code NC-PEFC/COC-028118 (see attached). However, with the submitted documentation it is not possible to establish a link between the certificate holder and UMWELTKONTOR, the supplier of waste material.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>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.)</p> <p><i>No external energy sources required other than LPG gas for ignition (start-up energy). Included in the LCA. Rule of thumb: 12h per system start with a 450 kW start burner—natural gas or liquid gas as starting gas.</i></p>

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				4 Eligibility Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	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.) <i>The excess gases (Syngases) produced in the pyrolysis are recovered, combusted and converted into heat. They are assumed to cover the full heating requirement for the pyrolysis and drying. Excess heat from this is modelled as a non-valuable by-product and are allocated 0% of the emissions.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.06 The molar H/Corg ratio is less than 0.7. <i>The molar H/Corg ratio significantly below 0.7 according to AR-22-FR-025149-01 (=0.21) and ba-de-30-4-1 analytical reference report PR-22-FR-001570-01 (=0.34).</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.07 Evidence of safe handling and transport is provided and adequate for the production facility. (GL Ref. 1.1.12) <i>Moisture b/ween 20 - 30% confirmed through moisture measurements of each individual big bag.</i>
				5 LCA Checklist
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.01 LCA complete and shows: - The emissions from the process. - The carbon content of the biochar. - Requirements 1.1.6 - 1.1.11. <i>Emissions provided in the VästLCA. Carbon content for pilot analysis AR-22-FR-025149-01 74%. Carbon content 64.4% according to EUROFINS analytical reference report PR-22-FR-001570-01 for ba-de-30-4-1; Requirement 1.1.6: LPG gas for ignition only; Requirement 1.1.7: Gases recovered and converted into heat; Requirement 1.1.8: Waste heat used for drying of chips and for heating of neighbouring factory and own facilities; Requirement 1.1.9 Carbon content 74% according to analytical report EUROFINS AR-22-FR-025149-01 and 64.4% according to EUROFINS analytical reference report PR-22-FR-001570-01; Requirement 1.1.10 The molar H/Corg ratio significantly below 0.7 according to EUROFINS analytical reference reports AR-22-FR-025149-01 (=0.21) & PR-22-FR-001570-01 (=0.34).</i>

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				5	LCA Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.02	<p>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)</p> <p><i>LCA provided by VästLCA. The studied system is a cradle-to-grave within a 100-year time boundary. Infrastructure is included.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.03	<p>Life cycle assessment (LCA) follows ISO standard, WRI GHG protocol or similar method. (GL Ref. 3.2)</p> <p><i>LCA follows ISO 14040:2006, ISO 14044:2006 and ISO 14067:2018.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.04	<p>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</p> <p><i>Combustion of waste biomass is taken into account.</i></p>
				6	Production Facility Checklist (Desktop and Verbal Confirmation)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.01	<p>The Production Facility documents the quantity of biochar produced and sold. (GL Ref. 1.2.)</p> <p><i>Each big bag of biochar is recorded with sequential numbers. Moisture measured for each big bag. Average of all moisture readings is deducted from the difference of brut weighing between empty and loaded trucks at dispatch. Weight of pallets and big bags deducted. Calculation for reported volumes: 18.8 t (big bags 21 to 76 = 56 big bags = 2 dispatches). After deduction of pellet and big bag weights = 17.78 t. After deduction of 25% moisture the reported weight is 13.34 t.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.02	<p>The Production Facility's documentation system is accurate and reliable. (GL Ref. 1.2.)</p> <p><i>Each big bag of biochar is recorded with sequential numbers. Moisture measured for each big bag.</i></p>

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6 Production Facility Checklist (Desktop and Verbal Confirmation)				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.03 Metering infrastructure is used to determine: - production output - energy use of Production facility (GL Ref. 1.2.)</p> <p><i>Weight taken and moisture measured for each big bag. Annual use of electricity and natural gas for start-up collected based on existing operations from the pyrolysis site. For gas consumption, the calculatory path from L to MJ is not traceable; the validator relies on the veracity of VästLCA.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.04 Appropriate calculations 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 (GL Ref. 1.2.)</p> <p><i>Excess gases (syngas) produced in the pyrolysis are combusted and are assumed to cover the full heating requirement for the pyrolysis and drying. Excess heat from this is modelled as a non-valuable by-product and are allocated 0% of the emissions. Annual use of electricity and natural gas for start-up collected based on existing operations from the pyrolysis site.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.05 An appropriate process is in place to quantify emissions from the harvest of raw materials. These account for: - forest biomass vs biomass from other waste (GL Ref. 1.2.)</p> <p><i>No activities are reported in A1 as the sourced biomass is waste.</i></p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.06 An appropriate process is in place to quantify emissions from the transport of raw materials to the Production Facility. These account for: - distance transported - fuel used (GL Ref. 1.2.)</p> <p><i>Emissions form the transport of raw materials (distance and fuel used) provided in VästLCA. Distance 61.6 km. Weight of raw material based on the empirically obtained yield from pyrolysis = 24.1% and factored 20% moisture content. Delivery notes are issued by the hauling company but not the actual supplier of the biomass (Umweltkontor). The transport distance is therefore not verifiable; this is complicated by the fact that the supplier has many supplying sites by its name.</i></p>

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				6	Production Facility Checklist (Desktop and Verbal Confirmation)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	6.07	<p>An appropriate system is in place to account for other uncertainties or losses and these are added to the buffer. (GL Ref. 1.2.)</p> <p><i>The data uncertainty has not been assessed in this report as the goal is to produce a fixed number for CORCs issuance (the mean), and the spread above and below the mean is irrelevant. However, as all figures come from direct measurements, the uncertainty should be low (stated in VästLCA).</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.08	<p>The process recovers pyrolysis gases and waste heat from the production of biochar. (GL Ref. 1.1.7.)</p> <p><i>The excess gases (Syngases) produced in the pyrolysis are recovered, combusted and converted into heat. They are assumed to cover the full heating requirement for the pyrolysis and drying. Excess heat from this is modelled as a non-valuable by-product and are allocated 0% of the emissions.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.09	<p>An appropriate process is in place to collect and maintain proofs as per Section 5 of the Biochar Guidelines. - Proof of product quality - Proof of production volume - Proof of sales - Proof of no double counting/C positive marketing (GL Ref. 5.)</p> <p><i>Proof of product quality: (1) EUROFINS laboratory analyses AR-22-FR-025149-01 and PR-22-FR-001570-01; Proof of output volume: Only a fraction of the initial EBC batch ba-de-30-4-1 is being reported to PE for carbon accounting, encompassing the period from 02.11. to 25.11.22 - which corresponds to the first production following the pilot stage and registration of the first EBC batch ba-de-30-4-1 on 19.10.22; Proof of sales: The reported volumes were sold to one client: Hasselfors Garden AB; point of delivery: HANVEDSMOSSEN Hummeltorpsvägen 514791GRÖDINGE, Sweden. Deliver notes and invoices available (2); Proof of no double counting: Written declaration of buyer available, Carbon Credit Withdrawal Right issued, thereby transferring the right to generate carbon credits from the carbon content of the biochar.</i></p>
				7	Calculation Checklist

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				7	Calculation Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.01	<p>Qbiochar = Quantity of biochar produced and sold to end user. (GL Ref. 4.6.)</p> <p><i>Each big bag of biochar is recorded with sequential numbers. Moisture measured for each big bag. Average of all moisture readings is deducted from the brut weighing of empty and loaded trucks at dispatch. Weight of pallets is deducted. Calculation for reported volumes: 18.8 t (big bags 21 to 76 = 56 big bags = 2 dispatches). After deduction of pellet and big bag weights = 17.78 t factored. After deduction of 25% moisture the reported weight is 13.34 t. Proof of sales: The reported volumes were sold to one client: Hasselfors GardenAB. Deliver notes and invoices are available (2).</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.02	<p>FpTHTs = $c + m \times H/Corg$ (GL Ref. 4.2.)</p> <p>97,01%</p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.03	<p>Cbiochar = CO2 storage volume of the biochar. (GL Ref. 4.6.)</p> <p><i>Carbon content for pilot analysis AR-22-FR-025149-01 74%. Carbon content 64.4% according to EUROFINS analytical reference report PR-22-FR-001570-01 for ba-de-30-4-1.</i></p> <p><i>Despite the big variance of C-contents between the analyses, the VästLCA takes the higher C-content of the pilot analysis into account. Please provide a reasonable explanation why the higher but likelier less accurate C-content of the pilot stage was considered instead of the lower but more reliable data of the post pilot stage.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.04	<p>Estored = biochar carbon storage = Qbiochar x Cbiocharorg x FpTHTs x 44/12 (GL Ref. 4.2.)</p> <p><i>Provided in the Gross Embodied CORC calculator (attached).</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.05	<p>Ebiochar = Net emissions from biochar production to the atmosphere, taking into account the own use of energy in a closed system. (GL Ref. 4.6.)</p> <p><i>Activities for pyrolyzing the feedstock required for 1 ton biochar shown in table 4 of the VästLCA; range for both outputs and inputs exhaustive.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.06	<p>Lbiochar = Possible leakage from biochar production. (GL Ref. 4.6.)</p> <p><i>All potential leakages identified in the VästLCA.</i></p>

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				7	Calculation Checklist
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	7.07	Erawmaterial = Emissions from harvesting the raw material, including possible loss of sinks. (GL Ref. 4.6.) <i>No activities are reported in A1 as the sourced biomass is waste.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.08	Quantity of CORCs (calculation cell). <i>Carbon dioxide stored over reporting period (Estored)</i> CORCs: 34.83
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.09	Quantity of CORCs (in evidence). <i>The net embodied kg CO2 is indicated on a unit basis. CORC are presented in tonne equivalents.</i> CORCs: 34,83
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.10	Confirm consistency. <i>Sensitivity checks for energy allocation and wood chips as free waste conducted. As all flows are reported directly (from Eurofins test report, PYREG or Muller-BBM), the precision is considered reasonable. All known relevant flows are accounted for. All stages and allocations procedures utilize a consistent methodology. Data collection method is described in the LCI chapter, and all datasets are referenced.</i>
				8	Site Visit Checklist
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.01	The raw material is of eligible type and sustainably sourced <i>Processed wood waste material. Evidence of sustainable sourced waste biomass supplier Brüning-Holding GmbH available. Certificate type: Multisite Chain ofCustody. Certificate registration code NC-PEFC/COC-028118 (see attached). However, with the submitted documentation it is not possible to establish a link between the certificate holder and UMWELTKONTOR, the supplier of waste material.</i>

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				8	Site Visit Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.02	<p>The LCA specifics and emissions boundary are consistent with observations on site</p> <p><i>LCA boundary established by a reputable LCA provider (VästLCA) includes all required emission sources of emission categories A1 (No activities as the waste is pre-cured burden-free); A2 (transport of the collected feedstock to the drying and pyrolysis site); A3 (All materials, fuels, energy, and direct emissions for pyrolyzing the feedstock into biochar); A4 (Transporting the biochar to the field where it will be applied); B1 (Fuel for spreading the biochar and the carbon leakage that occur within 100 years from application).</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.03	<p>There are no fossil fuels used to heat the pyrolysis reactor (GL Ref. 1.1)</p> <p><i>No external energy sources required other than LPG gas for ignition (start-up energy). Included in the LCA. Rule of thumb: 12h per system start with a 450 kW start burner — natural gas or liquid gas as starting gas.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.04	<p>Pyrolysis gases are recovered in the biochar production process</p> <p><i>The excess gases (Syngases) produced in the pyrolysis are recovered, combusted and converted into heat. They are assumed to cover the full heating requirement for the pyrolysis and drying.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.05	<p>For output >50 tonnes, at least 70% of waste heat must be recovered</p> <p><i>Waste heat used for drying of chips and for heating of neighbouring factory and own facilities.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.06	<p>Stabile fixed carbon content is over 50%</p> <p><i>Carbon content for pilot analysis AR-22-FR-025149-01 74%. Carbon content 64.4% according to EUROFINS analytical reference report PR-22-FR-001570-01 for ba-de-30-4-1.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.07	<p>The molar H/Corg ratio is less than 0.7</p> <p><i>The molar H/Corg ratio for pilot analysis AR-22-FR-025149-01 is 0,21 for EUROFINS analytical reference report PR-22-FR-001570-01 (ba-de-30-4-1) = 0,34.</i></p>

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				8	Site Visit Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.08	<p>Confirm how the Production Facility documents the quantity of biochar produced and sold</p> <p><i>Each big bag of biochar is recorded with sequential numbers. Moisture measured for each big bag. Average of all moisture readings is deducted from the difference of brut weighing between empty and loaded trucks at dispatch. Weight of pallets and big bags deducted. Calculation for reported volumes: 18.8 t (big bags 21 to 76 = 56 big bags = 2 dispatches). After deduction of pellet and big bag weights = 17.78 t. After deduction of 25% moisture the reported weight is 13.34 t.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.09	<p>Confirm that the Production Facility's documentation system is accurate and reliable</p> <p><i>Moisture measured for each big bag. Average of all moisture readings is deducted from the difference of brut weighing between empty and loaded trucks at dispatch.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.10	<p>Confirm that appropriate metering infrastructure is present and calibrated correctly to determine production output</p> <p><i>Weighing scale and moisture meter calibrated.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.11	<p>Confirm that appropriate metering infrastructure is present to quantify the energy use of the Production Facility</p> <p><i>Electricity sourced form the grid is renewable. Guarantee of origin attached to VästLCA (appendix B). Natural gas for start-up energy included. However, for gas consumption, the calculatory path from L to MJ is not traceable; the validator relies on the veracity of VästLCA.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.12	<p>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</p> <p><i>Excess gases (syngas) produced in the pyrolysis are combusted and are assumed to cover the full heating requirement for the pyrolysis and drying. Excess heat from this is modelled as a non-valuable by-product and are allocated 0% of the emissions. Annual use of electricity and natural gas for start-up collected based on existing operations from the pyrolysis site. Electricity sourced form the grid is renewable. Guarantee of origin attached to VästLCA (appendix B). Natural gas for start-up energy included. However, for gas consumption, the calculatory path from L to MJ is not traceable; the validator relies on the veracity of VästLCA.</i></p>

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				8	Site Visit Checklist
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	8.13	<p>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</p> <p><i>No activities are reported in A1 as the sourced biomass is waste.</i></p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.14	<p>Confirm the process that is in place to quantify emissions from the transport of raw materials to the Production Facility. These account for: - distance transported - fuel used</p> <p><i>Emissions form the transport of raw materials (distance and fuel used) provided in VästLCA. Distance 61.6 km. Weight of raw material based on empirically obtained yield from pyrolysis = 24.1% and factored 20% moisture content. It is not clear whether the moisture content is brought down to 20% at the supplier or producer. Delivery notes are issued by the hauling company but not the actual supplier of the biomass (Umweltkontor). The transport distance is therefore not verifiable; this is complicated by the fact that the supplier has many supplying sites by its name.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.15	<p>Confirm the process that is in place to calculate the uncertainty buffer for the O/Corg ratio: - where O/Corg <0.2, the buffer = 2.5% - where O/Corg >0.2, the buffer = 5%"</p> <p><i>The molar O/Corg ratio for pilot analysis AR-22-FR-025149-01 is 0,041; for EUROFINS analytical reference report PR-22-FR-001570-01 (ba-de-30-4-1) = 0,017. Instead of buffer application, the permanence factor of 97.01% is being factored.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.16	<p>Confirm the system that is in place to account for other uncertainties or losses and these are added to the buffer.</p> <p><i>The background system data quality assessment has provided optimal results, therefore no extra buffer was added. The data uncertainty has not been assessed in this report as the goal is to produce a fixed number for CORCs issuance (the mean), and the spread above and below the mean is irrelevant. However, as all figures comes from direct measurements, the uncertainty should be low.</i></p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	8.17	<p>The requirements for Quantification of CO2 Removal have been explained to the Supplier by the Auditor for the purpose of compiling the Output Report</p> <p><i>Done on behalf of the LCA supplier.</i></p>

Erfüllt
 Massnahme nötig
 Nicht kontrolliert
 Nicht relevant

BINT-97.01 Puro.earth - Biochar FA

8 Site Visit Checklist				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.18 Confirm the process that is in place to collect and maintain proofs as per Section 5 of the Biochar Guidelines. - Proof of product quality - Proof of production volume - Proof of sales - Proof of no double counting/C positive marketing" <i>Proof of product quality: (1) EUROFINS laboratory analyses AR-22-FR-025149-01 and PR-22-FR-001570-01; Proof of output volume: Only a fraction of the initial EBC batch ba-de-30-4-1 is being reported to PE for carbon accounting, encompassing the period form 02.11. to 25.11.22 - which corresponds to the first production following the pilot stage and registration of the first EBC batch ba-de-30-4-1 on 19.10.22; Proof of sales: The reported volumes were sold to one client: Hasselfors GardenAB. Deliver notes and invoices are available (2); Proof of no double counting: Written declaration of buyer available, Carbon Credit Withdrawal Right issued, thereby transferring the right to generate carbon credits from the carbon content of the biochar.</i>
9 Overall conclusion				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.01 Overall conclusion: <i>The validator confirms that the LCA calculation for crediting period 02.11. – 25.11.22 (corresponding to ba-de-30-4-1) provides a credible and faithful account of output volumes and emissions, and thus of declared carbon dioxide removals eligible for CORCs as stated in the Output statement. The validator is confident that the conservativeness has been applied to a sufficient degree to say that declared CO2 removals are fully justified.</i>

Beurteilung und Zertifizierungsantrag der InspektorIn

Abweichung	Massnahme	Frist
Puro.earth - Biochar Methodology		
4.02 The submitted documentation is not self-explanatory as to the link between the certificate holder and UMWELTKONTOR, the supplier of waste material.	Please provide documentation which can establish a clear link between the certificate holder and the end supplier. Evidence submitted.	10.05.2023, Closed 13.04.2023
5.01 Despite the big variance of C contents between the analyses, the VästLCA takes the higher C content of the pilot analysis into account.	Please provide a reasonable explanation why the higher but likelier less accurate C content of the pilot stage was considered instead of the lower but more reliable data of the post-pilot stage. Evidence submitted	10.05.2023, Closed 13.04.2023
6.06 Delivery notes are issued by the hauling company but not the actual supplier of the biomass (Umweltkontor). The transport distance is therefore not verifiable; this is complicated by the fact that the supplier has many supplying sites by its name.	Please submit documentary evidence that specifies supply sites and enables calculation of supply distances. Evidence submitted	10.05.2023, Closed 13.04.2023
8.01 The submitted documentation is not self-explanatory as to the link between the certificate holder and UMWELTKONTOR, the supplier of waste material.	Please provide documentation which can establish a clear link between the certificate holder and the end supplier. Evidence submitted	10.05.2023, Closed 13.04.2023
8.14 The distance to the end consumer reported in the VästLCA (=394 km) is not corresponding with the distance indicated in google maps (=1.184 km).	Please correct the emissions to the end consumer if a calculatory mistake has occurred. Evidence submitted	10.05.2023, Closed 13.04.2023

Rechtsmittelbelehrung

Der/Die Unterzeichnende hat das Ergebnis des in diesem Bericht dokumentierten Audits eingesehen, und er/sie bestätigt die Vollständigkeit und Richtigkeit der von ihm/ihr am Audit gemachten Angaben und den Inhalt dieses Berichtes.

Er/Sie hat die im vorliegenden Bericht beschriebenen Abweichungen, Massnahmen, Fristen und Sanktionen zur Kenntnis genommen.

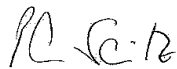
Der/Die Unterzeichnende hat die Möglichkeit, innerhalb von drei Werktagen nach Erhalt dieses Berichtes schriftlich bei der bio.inspecta AG eine Gegendarstellung einzureichen. Erfolgt innerhalb dieser Frist keine Gegendarstellung, so gilt der Inhalt dieses Berichtes als anerkannt.

Frick, 22.05.2023

Lippstadt, den

bio.inspecta AG

NovoCarbo GmbH



Philipp Seitz

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