ISCC Audits for biodiesel based on soy beans, experience in Argentina

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The client: Oil Mill + Biodiesel Plant in Argentina

Farms

Soy beans

Oil Mill = FGP

Soy Meal

Oil (CSO)

Biodiesel Plant

Metanol

Biodiesel (FAME)

Glycerine

Final destination

Transport by truck directly to Oil Mill = First gathering point

Certified by TÜV Rheinland

Transport by truck

Certified by ASG

Transport by truck, storage in port facilities, transport by vessel
The 3 columns of the ISCC audit

- Sustainability criteria at the farms
- Mass balance and traceability
- Green House Gas Calculation
Audit of the sustainability criteria at the farms

- Certification audit:
  - 23 farms operated by the client, owned land and rented land
  - 2 Farms audited on-site. Revision of the documents of all farms by sample in the central office of the client

- Follow up audit:
  - 25 farms operated by the client (23 + 2 new farms)
  - 32 farms from 4 providers of the client, owned land and rented land
  - Visiting the central offices of the 4 providers evaluation of the documents of all farms by sample
  - 6 Farms audited on-site: 1 farm each of each provider and 2 farms operated by the client

- Audit team: Qualified ISCC auditor + agricultural expert
Audit of the sustainability criteria at the farms

- Main topics to audit in the office:
  - Self declarations of all farms
  - Conditions and history of the land (no go areas, satellite images)
  - Contracts of renting the land, documentation of property
  - Contracts with service providers (tilling, harvesting, agro chemicals)
  - Registers of shipment of the grains (carta de porte – nota fiscal)
  - Management system, procedures
  - Structure and responsibility, organisational chart
  - Training records

- Main topics of audit during the on-site farm visits:
  - Conditions of the land and of the surrounding
  - Good agricultural practices
  - Interview with the people: Social and safety conditions, level of knowledge
Mass balance and traceability audit in the Oil Mill

- Applied method:
  - Mass balance with physical mixing of sustainable and non sustainable biomass
  - Book keeping of credits of sustainable biomass
  - Balance period 3 months

- Certification audit:
  - Revision of the balance method (the balance sheet itself was still empty)
  - Structure and responsibility, organisational chart
  - Training records, knowledge of the people

- Follow up audit:
  - Detailed revision of the mass balance sheet (more than 3.000 entries)
  - Sample revision of the shipping papers for sustainable material (carta de portes, nota fiscal, sustainability declarations), about 40 cases evaluated
  - Correct application of conversion factors

- Recommendation:
  - Integration of sustainability accounting in existing IT System for warehouse management in order to control the huge amount of data in future
GHG Calculation step 1: Emissions for each unit

<table>
<thead>
<tr>
<th>Calculation for each process step</th>
<th>Specific consumption per kg product</th>
<th>Emission factor kg CO₂ per unit of consumption</th>
<th>Sum kg CO₂ per kg product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (gas, diesel, electricity)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inputs (fertilizer, hexane, metanol, etc.)</td>
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<td></td>
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<tr>
<td>Waste (waste water)</td>
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</tbody>
</table>

Apply this calculation to every process step: Farm, first gathering point, oil mill, biodiesel plant, transport by truck and vessel.
GHG Calculation step 2: Assamble the parts

- **Farms**
  - **Soja**
    - **Oil Mill = FGP**
      - **Soy Meal**
      - **Aceite (CSO)**
      - **Metanol**
      - **Glycerine**
      - **Biodiesel Plant**
        - **Biodiesel (FAME)**
          - **Final destination**

- **Transport**: Kg CO₂ / kg Soy
- **Conversion Factor**
- **Allocation Factor**
- **Industrial Plant**: Kg CO₂ / kg CSO
- **Industrial Plant**: Kg CO₂ / kg FAME
- **Conversion to**: Kg CO₂ / MJ
- **Savings %**
Audit of the GHG Calculation

- Applied method:
  - Excel sheet similar to step 1 and 2 shown above
  - Default value for the farms, transport and conversion units calculated

- Certification audit:
  - Verify the calculation in details (time consuming)
  - Correct use of the units (kg CO2 / kg Soy, kg CSO, kg FAME, MJ)
  - Sources for emission factors (literature)
  - Statistical security of data in case of own measurements
  - Correct application of conversion and allocation factors
  - Correct use of the default values (The transport from farm to first gathering point is not included in the default value for the farm)
  - Correct application of the transport distances (the truck is empty on its return journey?)

- Follow up audit:
  - No changes since certification audit

- Recommendation:
  - Start collecting data from the farms in order to reach 60 % reduction
Thank you for listening!

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