Product Carbon Footprint for AOC Product

QA&CSR/QMD TW/GCM

Project Description

- Project Objectives
  - USI Green Product Lifecycle Assessment – AOC Study

- Project Implementation Framework
  - The Green Product Lifecycle Assessment Project is planned for one year, with the goal of promoting the establishment of product LCA, and strengthening the ability to implement product LCA, to fulfill the corporate social responsibility, to give full play to the influence of the EMS industry, and to improve the performance of international sustainability questionnaires (e.g., DJSI, CDP, etc.).

Project Description

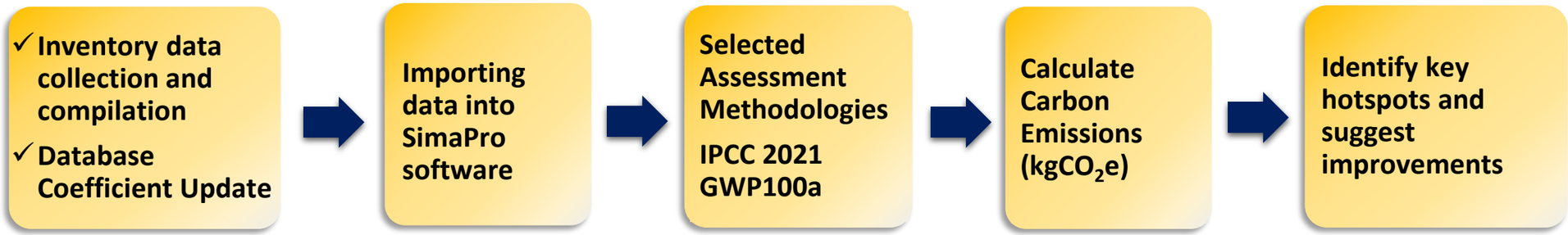
- Anticipated Benefits
  - Perform life cycle assessment on the target product to the USI control subsidiary to more comprehensively identify the environmental impacts associated with the product production process, as well as to identify improvement hotspots in the production process, and to fulfill its corporate social responsibility.

NPI / RMA Summary

Target

Target Product	AOC Cards
Functional unit	**The production of AOC products**
System Boundary	B2B (Raw materials, manufacturing, waste)
Software	SimaPro 9.4.0.1
Database Use	Ecoinvent 3.8
Inventory Data	The data collection period is one year
Carbon Footprint	IPCC 2021 GWP100a

Carbon Footprint Execution Process



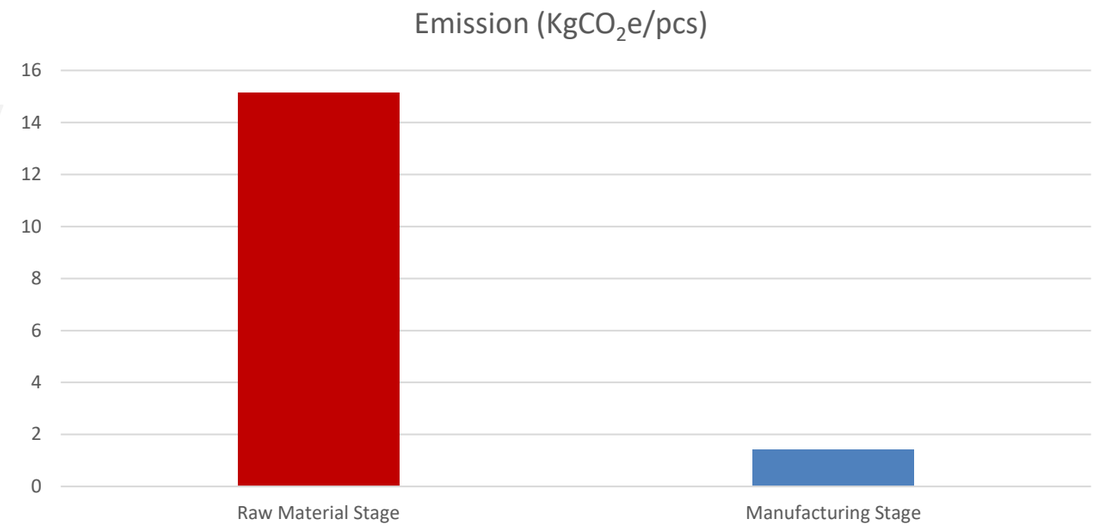
Inventory Data

- 2022/01/01~2022/12/31

Stages	Use of Information	Data Source	Allocation
Raw material stage	Raw Material Activity Data	SAP、OA、Replacement of Records	AOC Number of production/all products in production
	Transportation Distance, Vehicle Type	Supplier Information、Google Map、ELCD、ICAO	
Manufacturing stage	Resources	Electricity Bills, Greenhouse Gas Inventory Data, Meter Reading Records	Floor area of production line/floor area of the whole factory*product quantity distribution
Waste Stage	Waste	Statistical Tables, Weigh Bills, Coupons	Floor area of production line/floor area of the whole factory*product quantity distribution
	Transportation Distance, Vehicle Type	Supplier Information、Google Map	

AOC Carbon Footprint Assessment Results (1/2)

- Using the life cycle assessment software SimaPro and the IPCC 2021 100a methodology, we examined the carbon emissions of AOC products and found that the total carbon emissions were 16.56 $kgCO_2e/pcs$.
- The raw material stage (15.14 $kgCO_2e/pcs$) has a higher carbon footprint than the manufacturing stage (1.42 $kgCO_2e/pcs$).



AOC Carbon Footprint Assessment Results (2/2)

- Critical Material

Number	Categorization	Name	Carbon footprint ($kgCO_2e$/pcs)	Percentage
M035	Raw materials	AL CAPACITOR	6.09E+00	36.8%
M103	Raw materials	IC FPBGA	3.28E+00	19.82%
M012	Raw materials	CER.CAP	9.98E-01	6.03%

Conclusion and Recommendation

- In the ranking of critical raw materials (except for the process stage), AL CAPACITOR , IC FPBGA , and CER.CAP used in the raw material stage are the hotspots that affect carbon emissions.

  →It is recommended to optimize the ratio of inputs of these critical raw materials to strengthen raw material management and avoid unnecessary consumption, thus improving the environmental impact.

Thank You

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