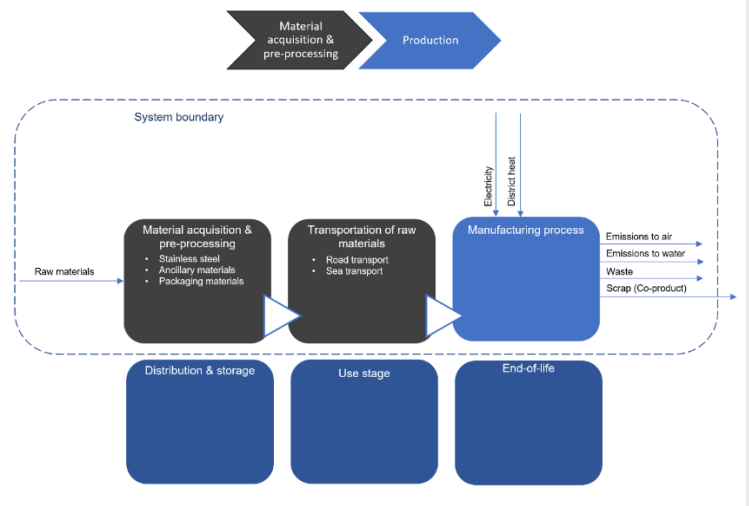
Product Standard GHG Inventory Report

General information and scope

Contact information	OSTP Holding Oy Ab Switchboard: +358 20 778 5500
Studied product name	Butt weld fittings produced in Suonenjoki
Studied product description	Intermediate product
Unit of analysis	1 ton of product
Reference flow	1 ton of product
Type of inventory	Cradle-to-gate inventory
Additional GHGs included in the inventory	No additional GHGs included in the inventory
Sector guidance or product rules	n.a.
Inventory date and version	2023 Version 1
Link to previous inventory reports and description of any methodological changes	n.a.
Disclaimer	The results presented in this report are unique to the assumptions and practices of OSTP Holding Oy. The results are not meant as a platform for comparability to other companies and/or products. Even for similar products, differences in reference flow, economic value allocation and data quality may produce incomparable results. The reader may refer to the GHG Protocol Product Life Cycle Accounting and Reporting Standard

	(www.ghgprotocol.org) for a glossary and additional insight into the GHG inventory process.

Boundary setting

Life cycle stage definition	
Material acquisition and preprocessing	From resource extraction to components entering production site.
Production	Components entering production site and finished product leaves gate of production.
Distribution and storage	n.a.
Use	n.a.
End-of-life	n.a.
Process map	
Non-attributable processes included in the inventory	n.a.
Excluded attributable process, service, material, or energy flows	Storage of products, and transport of waste to treatment from the manufacturing stage.
Justification for a cradle-to-gate boundary	Stainless steel tubular product is classified as intermediate product, that are used as inputs to the production process of other goods and services.
Time period	1 year
Land use change impacts methods(s) when applicable	n.a.

Allocation

Methods used to avoid or perform allocation	Steel scrap produced from the manufacturing process is perceived as co-product and economic allocation is applied. Energy inputs, and waste outputs generated during the production process are allocated equally among all products manufactured at Pietarsaari through mass allocation. Based on the GHG product standard, the recycled content method is applied. The method allocates the recycling process emissions and removals to the life cycle that uses the recycled material. The subsequent user of the waste is then responsible for the effects associated with the treatment and processing of the waste. Thus, the recycling of steel is no longer considered to be within the end-of life stage of the product. In other words, in this study a cut-off method was applied to all cases of end-of-life allocation.
Displaced emissions and removals using the closed loop approximation method	n.a.

Data Collection and Quality

A descriptive statement on the data sources, data quality, and any efforts taken to improve data quality	Primary data is used for processes where the is an ownership or control of these processes involved. The data quality of significant processed was assessed with the recommended indicator matrix system of the GHG standard.
Reporting of data sources, quality and improvement efforts for stainless steel	
Data sources	Activity data: Primary data from OSTP Emission factor: Outokumpu Oyj
Data quality	The activity data reflects the use of different stainless steel grades and surfaces. No information is available on which ratio different steel grades are used as raw materials for the manufactured products, which is why the mass-based division is used in the 2022 deliveries. Each batch of steel produced will come with its own carbon footprint certificate, which includes all GHG emissions (Scope 1,2,3) from the cradle to gate approach. The values are based on a 12-month rolling average, updated monthly, and use emission factors from

	the ecoinvent database, worldsteel, and other relevant industry associations. Completeness: Very good Time: Very good Geography: Very good
Efforts to improve data quality	Efforts to improve data quality are already taken based on the EPDs done in 2022, where the stainless steel was found to be most significant factor in product's life cycle. By using product specific emission factors from Outokumpu, the quality of data improved significantly.

Source of uncertainty	Qualitative description
Scenario uncertainty	
Use profile	n.a.
End-of-life profile	n.a.
Allocation method(s) (co-product and recycling)	Impact from fluctuations of metal prices may add uncertainty to the result, especially for steel scrap
Parameter uncertainty	
Global Warming Potential factors	Environmental impact assessment factors and characterization factors used in the IPCC 2021 GWP100 (incl. CO2 uptake) - method is based on the IPCC report "AR6 Climate Change 2021: The Physical Science Basis". Quantitative uncertainty calculations (using GWP values from IPCC's Fourth Assessment Report and estimations for process data) are not performed.
Model uncertainty	
Model sources not included in scenario or parameter uncertainty	The use of generic process data, which does not model the conditions for this study in detail.

Inventory results: $kgCO_2e$/unit of analysis

Total inventory results	Biogenic		Non-biogenic		Land-use change impacts
2,78E+03	Removals	Emissions	Removals	Emissions	6,89E-01
	-6,07E+02	6,37E+02	n.a.	2,75E+03	

Inventory results: percent of total inventory results per life cycle stage

Stage definition	Value (percent of total CO_2e)
Material acquisition and pre-processing	95 %
Production	5 %
Distribution and storage	n.a.
Use	n.a.
End-of-life	n.a.

Inventory results: carbon storage

Embedded product carbon not released at the end of life	n.a.
Embedded product carbon leaving the gate of a cradle-to-gate inventory	n.a.
Amount of process emissions stored as a result of emission storage	n.a.

Inventory results: cradle-to-gate

Definition	Results (kg CO_2e/unit of analysis)
Cradle-to-gate	2,78E+03
Gate-to-gate	n.a.

Assurance

Assurance type	
Level of assurance achieved or critical review findings	
Summary of the assurance process	
Relevant competencies of the assurance providers	
Explanation of how any potential conflicts of interest were avoided	