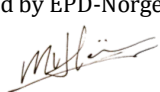
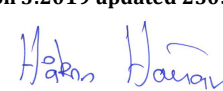


ENVIRONMENTAL PRODUCT DECLARATION

# 8DJH 24 – blue GIS

Type III according to ISO 14025



<b>Owner of the declaration:</b> Siemens AG	<b>Program holder and publisher:</b> The Norwegian EPD foundation
<b>Registration number:</b> NEPD-7270-6672-EN	<b>Issue date:</b> 21.08.2024 <b>Valid to:</b> 21.08.2029
<b>IN COMPLIANCE WITH</b> ISO 14025 and EN 50693; and PCR EPD Italy007; EPDIItaly015	
<b>EPD Type Specific product</b>	<b>EPD scope:</b> Cradle-to-Grave
<b>Independent Verification:</b> Independent verification of the declaration and data, according to ISO14025:2011-10 Internal External x Independent verifier approved by EPD-Norge NAME: Martijn van Hövell; SGS 	<b>Program instructions:</b> The Norwegian EPD Foundation/EPD-Norge, General Programme Instructions 2019, version 3:2019 updated 250523  Håkon Hauan Managing Director of EPD-Norway

# General information

This environmental product declaration (EPD) is based on the international standard ISO 14025. The data in this EPD has been evaluated on a full-scale life cycle assessment (LCA) study according to ISO 14040/44, taking into account the product category rules (PCR) for electronic and electrotechnical products and systems defined in EN 50693 :2019 as well as PCR EPDItaly007 Electronic and electrical products and systems and PCR EPDItaly015 – Switchboards.

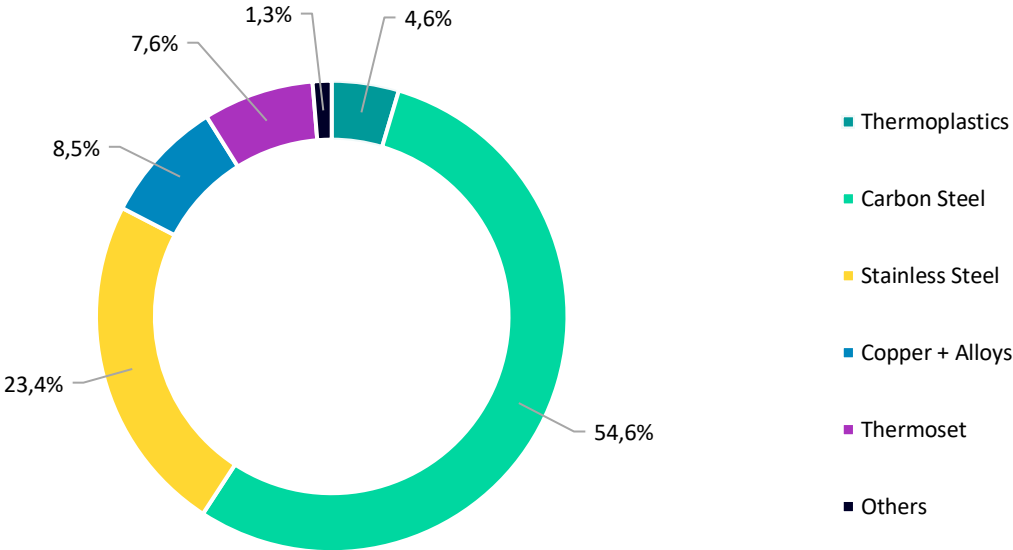
Siemens is dedicated to an environmentally conscious design of its products in line with IEC 62430 and has implemented an integrated management system according to ISO 9001, ISO 14001 and ISO 45001.

<b>Product</b>	8DJH 24
<b>Represented by</b>	8DJH 24 RRT block
<b>Product Description</b>	F-Gas free load-break switchgear for the secondary distribution level tested according to IEC 62271-200. This switchgear is available for the rating up to Ur = 24 kV, Ik = 21kA, Ir = 630 A. with an expected service life of 40 years
<b>Functional Unit</b>	8DJH 24 RRT – Secondary distribution blue GIS, insulation gas Clean Air, without LV components, maintenance free, operating 24h, 365 days/a with a load rate of 35 % for a reference service life of 20 years (in accordance with PCR EPDItaly015) with rating of Ur = 24 kV, Ik = 21 kA, Ir = 630 A
<b>Production site</b>	Manufactured in switchgear factory Frankfurt

# Material composition

The following chart outlines the overall material composition of the calculated reference product without packaging. Product weight of 423 kg adds up with packaging weight of 51 kg to a total weight of 474 kg. Packaging consists of: Wooden pallet and PE film.

Product Weight 423 kg



# Substance assessment

At Siemens, we are committed to the development and production of environmentally sound and sustainably produced equipment. This includes avoiding hazardous substances in our products without compromising their benefits for our customers. Please visit the following website to learn more about how we comply with product-related environmental regulations like REACH and others: [Product Related Environmental Protection](#)

## System boundaries & Scenarios

The EPD covers the cradle to grave of the product including the following stages.

Product stage			Distribution	Installation	Use stage							End of life stage				Benefits & loads beyond system boundary
Raw materials	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-Installation	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	0	0	0	0	X	0	0	X	X	X	X

### Temporal & geographical scope & representativeness

Primary data of 2023; Secondary data: GaBi 9.5, Database valid 2025  
 The materials and components used in production are globally sourced and have been selected from Sphera data sets according to the global or regional representativeness.

### Data quality

Both primary and secondary data are used. To ensure the high quality and completeness of the LCA results, primary Data have been used whenever possible. The main sources for primary data are the bill of materials and the bill of processes. Site specific data are provided by Siemens reporting system.

Datasets for resources, such as electrical energy or natural gas, are chosen from the region where the device is produced and assembled. If primary data are not available, datasets reflecting state-of-the-art manufacturing technology are considered. Generic data originating from the LCA tool: GaBi 9.5, Database: GaBi Professional & Extensions, 2020 are used.

**Allocation:** Amount of resources used and waste generated in production at Siemens is allocated based on annual production volume. For the end-of-life allocation, the “Polluter Pays” principle is adopted as required by the PCR EPDItaly007 and PCR EPDItaly015. Waste treatment processes are allocated to the product system that generates the waste until the end-of-waste state is reached. The environmental burdens of recycling and energy recovery processes are therefore allocated to the product system that generates the waste, while the product system that uses the exported energy and recycled materials receives it burden-free. Potential benefits and avoided loads from recovery and recycling processes are considered in separate Benefits & Loads beyond system boundary section.

**Cut-off** According to EN 50693, the cut-off criteria can be set to a maximum of 5 % of the overall environmental impacts. In this LCA, stickers, labels, tape, and staples used in the packaging have been excluded as their weights are negligible.

## Scenarios:

The following information describe the scenarios in the different modules of the EPD.

<b>Manufacturing</b>	This stage covers the extraction of natural resources, production of raw materials, manufacturing, packaging, and upstream transportation
<b>Transportation to production site</b>	85% local, 3% intracontinental, 11% international transport acc. to EN 50693; GLO: Truck-trailer, Euro IV, 27 t payload, 85% loading rate, GLO: Container ship, 5000 to 200.000 dwt payload capacity, deep sea Sphera
<b>Production energy model used</b>	100% used electricity in operations DE: Green Electricity Grid Mix Sphera with GWP of 0.0767 kg CO <sub>2</sub> eq./kWh. Residual mix Germany; GWP = 0.7199 kg CO <sub>2</sub> eq./kWh [Source: AIB]
<b>Distribution</b>	This stage covers the product’s distribution.
<b>Distribution transport model used</b>	300 km default distance; GLO: Truck-trailer, Euro IV, 27 t payload, 85% loading rate
<b>Installation</b>	This stage covers the End-of-Life treatment of transport packaging
<b>Installation energy model used</b>	Not relevant
<b>Use</b>	This stage covers the operational energy use and the gas leakage of blue gas. All other modules do not apply for this product. Different operating conditions can lead to deviations from the reference scenario
<b>Energy model used and use scenario</b>	RER: Electricity grid mix 1kV-60kV; GWP = 0.312 kg CO <sub>2</sub> eq./kWh. Reference service life of 20 years, 24/7 utilization at a load rate of 35%
<b>End of Life (EoL)</b>	This stage covers the disassembly, material recycling in addition to thermal treatment of all recoverable materials and the disposal of all other materials
<b>EoL: Transport model used</b>	100 km default distance; GLO: Truck-trailer, Euro IV, 27 t payload, 85% loading rate
<b>EoL: Energy model used</b>	RER: Electricity grid mix; GWP = 0.33 kg CO <sub>2</sub> eq./kWh

# Life Cycle Assessment -Results

The following impact categories characterize the product’s environmental footprint. They have been calculated with LCIA methodology EN15804+A2 (EF 3.1); LCA tool: GaBi 9.5, Database: GaBi Professional & Extensions, 2020.

## Environmental performance indicators

Indicators	Unit	Total - (w/o D)	A1-A3	A4	A5	B1-B7	C1-C4	D
			Manufacturing	Distribution	Installation	Use stage	End of life	Benefits & Loads
CC - total	kg CO2 eq	3.29E+03	1.38E+03	-5.61E+01	8.59E+01	1.71E+03	1.83E+02	-7.78E+02
CC - fossil	kg CO2 eq	3.27E+03	1.37E+03	2.35E+01	4.34E+00	1.69E+03	1.82E+02	-7.79E+02
CC - biogenic	kg CO2 eq	2.23E+01	5.48E+00	-7.98E+01	8.16E+01	1.47E+01	3.58E-01	1.43E+00
CC - luluc	kg CO2 eq	1.59E+00	1.24E+00	1.32E-01	2.30E-06	1.84E-01	3.30E-02	-6.57E-01
ODP	kg CFC11 eq	7.51E-06	7.37E-06	1.10E-10	1.12E-07	3.12E-08	8.87E-10	2.12E-07
AP	molc H+ eq	1.21E+01	8.21E+00	1.42E-01	4.58E-02	3.60E+00	1.40E-01	-3.44E+00
EP- freshwater	kg P eq	1.09E-02	4.32E-03	8.09E-05	6.00E-07	6.34E-03	1.92E-04	-3.23E-04
EP -marine	kg N eq	2.17E+00	1.19E+00	6.43E-02	1.97E-02	8.64E-01	3.80E-02	-4.64E-01
EP - terrestrial	molc N eq	2.32E+01	1.28E+01	7.07E-01	2.32E-01	9.02E+00	4.55E-01	-4.98E+00
POCP	kg NMVOC eq	6.19E+00	3.57E+00	1.76E-01	5.09E-02	2.30E+00	9.50E-02	-1.56E+00
ADP-M&M <sup>2</sup>	kg Sb-Eq	1.13E-01	1.12E-01	1.94E-06	-3.20E-06	2.61E-04	7.58E-06	-8.90E-02
ADP-fossil <sup>2</sup>	MJ	5.35E+04	1.66E+04	3.90E+02	3.39E+01	3.55E+04	1.07E+03	-6.61E+03
WDP <sup>2</sup>	m <sup>3</sup>	6.01E+02	1.95E+02	1.88E+00	9.38E+00	3.72E+02	2.26E+01	-8.16E+01
PM	Disease incidence	1.50E-04	1.05E-04	1.31E-05	1.62E-07	3.03E-05	1.16E-06	-3.61E-05
IRP	kBq U235 eq.	1.01E+03	4.16E+01	2.98E+00	3.15E-02	9.37E+02	2.56E+01	1.12E+01
ETP-fw	CTUe	1.73E+04	6.86E+03	2.14E+02	4.18E+00	9.88E+03	3.19E+02	-1.77E+03
HTP-c	CTUh	1.32E-04	1.32E-04	1.13E-08	1.13E-09	5.23E-07	1.70E-08	-1.07E-06
HTP-nc	CTUh	3.54E-05	2.64E-05	1.92E-07	8.43E-08	8.33E-06	4.39E-07	-6.83E-06

Indicators	Unit	Total - (w/o D)	A1-A3	A4	A5	B1-B7	C1-C4	D
			Manufacturing	Distribution	Installation	Use stage	End of life	Benefits & Loads
SQP	Dimension-less	3.87E+04	7.04E+03	1.73E+04	8.73E-02	1.40E+04	4.12E+02	-9.73E+02

**CC-total:** Climate change; **CC-fossil:** Climate change fossil fuels; **CC-biogenic:** Climate change biogenic; **CC-LULUC:** Climate change land use and land use change; **ODP:** Depletion potential of the stratospheric ozone layer; **AP:** Acidification potential, Accumulated Exceedance; **EP-freshwater:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See “additional Norwegian requirements” for indicator given as PO4 eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial:** Eutrophication potential, Accumulated Exceedance; **POCP:** Formation potential of tropospheric ozone; **ADP-M&M:** Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil:** Abiotic depletion potential for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water consumption; **PM:** Particulate matter emissions; **IRP:** Ionizing radiation, human health; **ETP-fw:** Ecotoxicity (freshwater); **ETP-c:** Human toxicity, cancer effects; **HTP-nc:** Human toxicity, non-cancer effects; **SQP:** Land use related impacts / soil quality

## Resource use indicators

Indicators	Unit	Total - (w/o D)	A1-A3	A4	A5	B1-B7	C1-C4	D
			Manufacturing	Distribution	Installation	Use stage	End of life	Benefits & Loads
PERE	MJ	3.05E+04	7.44E+03	9.67E+02	8.80E-01	2.13E+04	8.59E+02	1.84E+02
PERM	MJ	0.00E+00	2.60E+02	0.00E+00	0.00E+00	0.00E+00	-2.60E+02	0.00E+00
PERT	MJ	3.05E+04	7.70E+03	9.67E+02	8.80E-01	2.13E+04	5.99E+02	1.84E+02
PENRE	MJ	5.36E+04	1.38E+04	3.90E+02	3.39E+01	3.55E+04	3.89E+03	-6.67E+03
PENRM	MJ	0.00E+00	2.82E+03	0.00E+00	0.00E+00	0.00E+00	-2.82E+03	0.00E+00
PENRT	MJ	5.36E+04	1.66E+04	3.90E+02	3.39E+01	3.55E+04	1.07E+03	-6.67E+03
SM	kg	9.92E+00	9.92E+00					
RSF	MJ	4.46E-22	4.46E-22	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	5.24E-21	5.24E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m <sup>3</sup>	2.40E+01	5.87E+00	8.76E-02	2.18E-01	1.71E+01	7.64E-01	-1.81E+00
Biogenic Carbon Content of the product	Kg of C	0.00E+00	0.00E+00					

Indicators	Unit	Total - (w/o D)	A1-A3	A4	A5	B1-B7	C1-C4	D
			Manufacturing	Distribution	Installation	Use stage	End of life	Benefits & Loads

Biogenic  
Carbon  
content of the  
associated  
packaging

Unit	Kg of C	2.04E+01	2.04E+01
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**PERE** Use of renewable primary energy; **PERM** Use of renewable primary energy recourses used as raw material; **PERT** Total use of renewable primary energy resources; **PENRE** Use of non-renewable primary energy; **PENRM** Use of non-renewable primary energy resources used as raw material; **PENRT** Total use of non-renewable primary energy resources; **RSF** Use of renewable secondary fuels; **NRSF** Use of non-renewable secondary fuels; **FW** Use of net fresh water.

## End of life – Waste & output flows

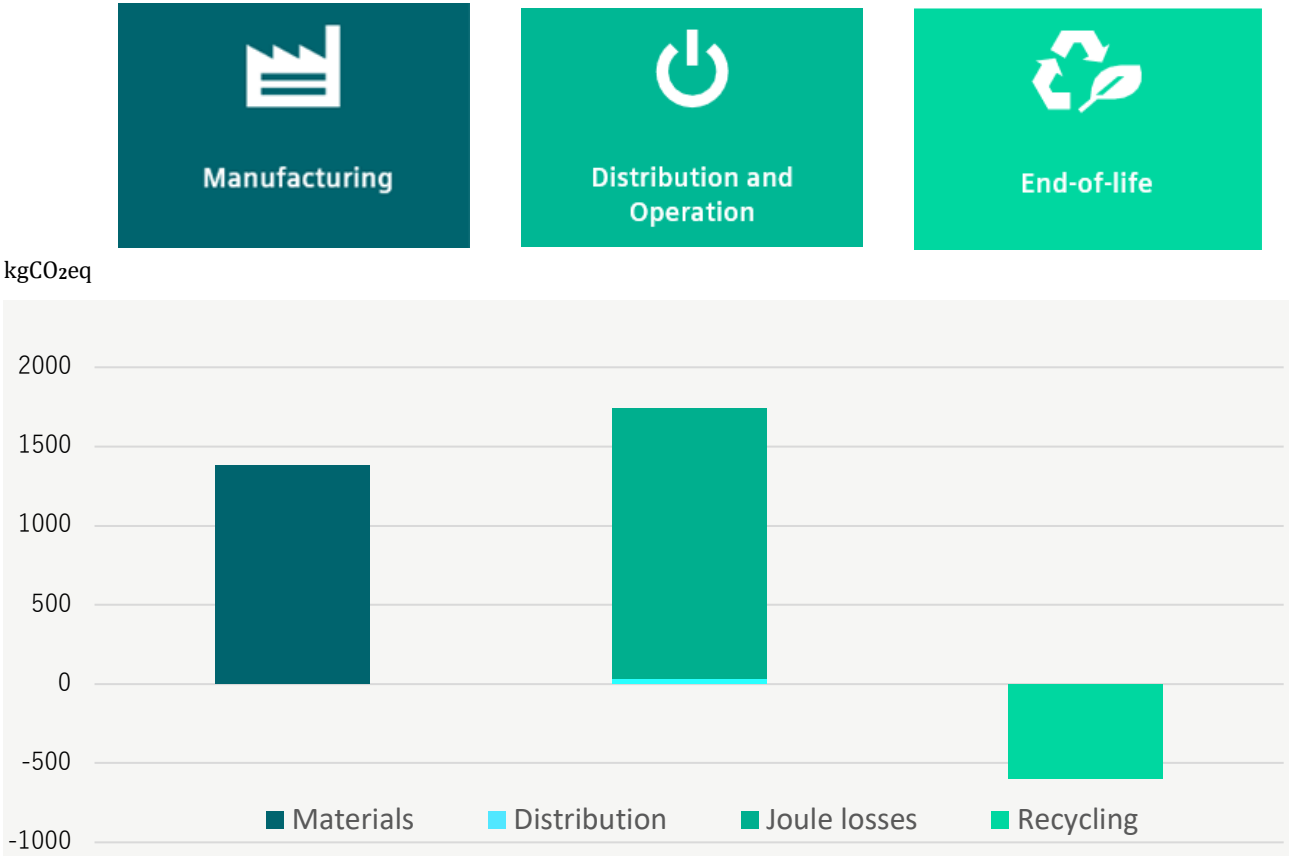
Indicators	Unit	Total - (w/o D)	A1-A3	A4	A5	B1-B7	C1-C4	D
			Manufacturing	Distribution	Installation	Use stage	End of life	Benefits & Loads
HWD	kg	5.44E-03	5.45E-03	-3.72E-09	6.23E-12	-2.78E-06	-7.61E-08	1.66E-07
NHWD	kg	1.78E+02	1.18E+02	1.35E-01	9.24E-03	2.61E+01	3.43E+01	-5.53E+01
RWD	kg	6.17E+00	3.62E-01	1.82E-02	1.83E-03	5.64E+00	1.55E-01	2.55E-02
MER	kg	5.35E+01	8.84E-01	0.00E+00	0.00E+00	0.00E+00	5.26E+01	0.00E+00
MFR	kg	3.75E+02	2.38E+01	0.00E+00	0.00E+00	0.00E+00	3.51E+02	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	MJ	4.85E+02	1.48E+01	0.00E+00	0.00E+00	0.00E+00	4.70E+02	0.00E+00
EEE	MJ	2.09E+02	6.43E+00	0.00E+00	0.00E+00	0.00E+00	2.03E+02	0.00E+00

**HWD:** hazardous waste disposed; **NHWD:** non-hazardous waste disposed; **RWD:** radioactive waste disposed; **MER:** materials for energy recovery; **MFR:** material for recycling; **CRU:** components for reuse; **ETE:** exported thermal energy; **EEE:** exported electricity energy.

# Additional Environmental Information

## Climate change

This chart shows the overall impact of the product on climate change – total. The operations phase is the lifecycle phase with the biggest overall impact. Different operating conditions can lead to deviations from the reference scenario.



## Recyclability potential

The end-of-life stage was modelled by using state of the art processes, including sorting and material separation. The end-of-life parameters are calculated according to IEC TR 62635 and EN 45555. It leads to:

- an overall **product recyclability of up to 83%** mainly due to metal content
- an **energy recoverability of up to 12%** from plastic materials
- a **minimum disposal rate of 5%**

The exact final values depend on the used recycling process and add up to 100%.

Note: The device should not be disposed of as unsorted municipal waste. Special treatment for specific components may be mandated by law or recommended for environmental reasons. Observe all local and applicable laws.



## References

ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14040/44	Lifecycle Assessment – Principles and framework
EN 50693	Product category rules for life cycle assessments of electronic and electrical products and systems
EPDItaly007	Core PCR EN 50693 - ELECTRONIC AND ELECTRICAL PRODUCTS AND SYSTEMS
EPDItaly015	Sub PCR EN 50693 - ELECTRONIC AND ELECTRICAL PRODUCTS AND SYSTEMS - SWITCHBOARDS



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