



in accordance with ISO 14025 and EN 15804+A2

## ARFEC4210WLL Air Curtain Arden





The Norwegian EPD Foundation

**Owner of the declaration:** Frico AB

Product: ARFEC4210WLL Air Curtain Arden

**Declared unit:** 1 pcs

**This declaration is based on Product Category Rules:** CEN Standard EN 15804:2012+A2:2019 serves as core PCR NPCR 030:2021 Part B for ventilation components **Program operator:** The Norwegian EPD Foundation

**Declaration number:** 

NEPD-8893-8555

**Registration number:** 

NEPD-8893-8555

Issue date: 06.02.2025

Valid to: 06.02.2030

EPD software: LCAno EPD generator ID: 767361



## **General information**

Product ARFEC4210WLL Air Curtain Arden

#### Program operator:

The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo, Norway Phone: +47 977 22 020 web: www.epd-norge.no

#### **Declaration number:**

NEPD-8893-8555

#### This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR NPCR 030:2021 Part B for ventilation components

#### **Statement of liability:**

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

#### **Declared unit:**

1 pcs ARFEC4210WLL Air Curtain Arden

#### Declared unit with option:

A1-A3,A4,C1,C2,C3,C4,D

#### **Functional unit:**

Not declared

#### General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

#### Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Alexander Borg, Asplan Viak AS

(no signature required)

#### **Owner of the declaration:**

Frico AB Contact person: Marie W. Andersson Phone: + 46 31336 86 92 e-mail: mailbox@frico.se

#### Manufacturer:

Frico AB

, Sweden

#### Place of production:

Frico AB Industrivägen 3 793 30 Skinnskatteberg, Sweden

#### Management system:

ISO 9001

### **Organisation no:**

556573-3812

#### Issue date:

06.02.2025

Valid to:

06.02.2030

### Year of study:

2022

#### **Comparability:**

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not seen in a building context.

#### **Development and verification of EPD:**

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system and has been approved by EPD Norway. NEPDT75 Systemair AB

Developer of EPD: Jimmy Frisk

Reviewer of company-specific input data and EPD: Karolina Persson

#### **Approved:**

Håkon Hauan Managing Director of EPD-Norway



## Product

#### **Product description:**

Arden recessed air curtain provides an air barrier between two temperature zones. Provided with no heat (ambient), water heat or electrical heat.

#### **Product specification**

#### The EPD data i provided for size 4210 (reference).

· · · · · · · · · · · · ·		
Materials	kg	%
Electronic - Unspecified	0,31	0,59
Electronic - Wire	0,37	0,70
Hydronic coil (50% AL, 50%CU)	7,50	14,31
Metal - Galvanized Steel	31,73	60,54
Motor	7,50	14,31
Plastic - Polyamide	0,02	0,04
Plastic - Polystyrene (PS)	2,07	3,95
Plastic - Polyvinyl chloride (PVC)	0,04	0,08
Rubber, synthetic	0,47	0,90
Metal - Steel	0,66	1,26
Metal - Steel with aluzinc coating	0,57	1,09
Chemical	0,27	0,52
Plastic - Polyurethane (PUR)	0,88	1,68
Plastics	0,02	0,04
Total	52,41	100,00
Packaging	kg	%
Packaging - Cardboard	2,38	89,71
Packaging - Paper	0,09	3,20
Packaging - Plastic	0,19	7,09
Total incl. packaging	55,06	100,00

#### Technical data:

For complete technical data including dynamic energy performance calculations, please refer to the product page on Frico.net.

Size	Weight [kg]	GWP tot. (A1-A3) [kg CO2 eq]	Factor [-]
10	55.1	286	1.0
15	88.1	408	1.6
20	118.5	529	2.2
25	147.2	633	2.7

#### Market:

Europe

#### **Reference service life, product**

Not declared. Dependent on the application of the product.

#### Reference service life, building or construction works

Not declared.

#### **LCA: Calculation rules**

#### **Declared unit:**

1 pcs ARFEC4210WLL Air Curtain Arden

#### Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

#### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Energy, water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

#### Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Chemical	ecoinvent 3.6	Database	2019
Electronic - Unspecified	ecoinvent 3.6	Database	2019
Electronic - Wire	ecoinvent 3.6	Database	2019
Electronic - Wire	Product composition + ecoinvent 3.6	Supplier data + database	2019
Hydronic coil (50% AL, 50%CU)	ecoinvent 3.6	Database	2019
Metal - Galvanized Steel	Modified ecoinvent 3.6	Database	2019
Metal - Steel	ecoinvent 3.6	Database	2019
Metal - Steel with aluzinc coating	Modified ecoinvent 3.6	Database	2019
Motor	ecoinvent 3.6	Database	2019
Packaging - Cardboard	ecoinvent 3.6	Database	2019
Packaging - Paper	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Plastic - Polyamide	ecoinvent 3.6	Database	2019
Plastic - Polystyrene (PS)	ecoinvent 3.6	Database	2019
Plastic - Polyurethane (PUR)	ecoinvent 3.6	Database	2019
Plastic - Polyvinyl chloride (PVC)	ecoinvent 3.6	Database	2019
Plastics	ecoinvent 3.6	Database	2019
Rubber, synthetic	ecoinvent 3.6	Database	2019

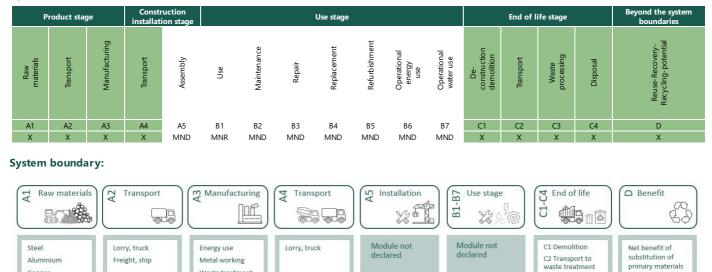
with recycled products

C3 Waste

processing C4 Landfilling of

Grave

masses



### System boundaries (X=included, MND=module not declared, MNR=module not relevant)

### Additional technical information:

Copper

Plastic

Electronics

Cardboard Other

Cradle

Complete project specific technical documentation is generated using our online product selection tool. Please refer to the Frico website for more information.

Waste treatment

Gate

Chemicals

## LCA: Scenarios and additional technical information

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

For A4 a generic transportation distance (EURO6 truck) of 300 km is declared. True transportation distance can be provided in project specific EPD. For C2 a generic transportation distance (EURO6 truck) of 50 km is declared. True transportation distance can be provided in project specific EPD

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 6 (km)	53,3 %	300	0,023	l/tkm	6,90
De-construction demolition (C1)	Unit	Value			
Demolition of building per kg of ventilation product (kg)	kg	52,00000000			
Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 6 (km)	53,3 %	50	0,023	l/tkm	1,15
Waste processing (C3)	Unit	Value			
Waste treatment per kg wire plastic, municipal incineration (kg)	kg	0,066			
Materials to recycling (kg)	kg	43,50			
Waste treatment per kg Electronics scrap, Control units, incineration (kg)	kg	0,31			
Waste treatment per kg Expanded Polystyrene (EPS), incineration (kg)	kg	1,035			
Waste treatment per kg Hazardous waste, incineration (kg)	kg	0,27			
Waste treatment per kg bulk waste, excluding reinforcement, sorting plant (kg)	kg	7,50			
Waste treatment per kg Plastics, from incineration (kg)	kg	0,021			
Waste treatment per kg Polyurethane (PU), incineration with fly ash extraction (kg)	kg	0,44			
Waste treatment per kg Polyvinylchloride (PVC), incineration (kg)	kg	0,020			
Waste treatment per kg Rubber, incineration (kg)	kg	0,47			
Disposal (C4)	Unit	Value			
Landfilling of ashes from incineration per kg wire plastic, process per kg ashes and residues (kg)	kg	0,0098			
Waste, plastic, mixture, to landfill (kg)	kg	0,54			
Waste, copper, to landfill (kg)	kg	0,51			
Landfilling of ashes from incineration of Electronics scrap, Control units, process of ashes and residues (kg)	kg	0,21			
Waste, expanded polystyrene, EPS, to landfill (kg)	kg	1,035			
Landfilling of ashes from incineration of Expanded polystyrene (EPS), process per kg ashes and residues (kg)	kg	0,037			
Waste, aluminium, to landfill (kg)	kg	0,30			
Landfilling of ashes from incineration per kg Hazardous waste, process per kg ashes and residues (kg)	kg	0,051			
Waste, steel, to landfill (kg)	kg	3,85			
Landfilling of ashes from incineration of Plastics, process per kg ashes and residues (kg)	kg	0,00050			
Landfilling of ashes from incineration of Polyurethane (PU), process per kg ashes and residues (kg)	kg	0,016			
Landfilling of ashes from incineration of Polyvinylchloride (PVC), process per kg ashes and residues (kg)	kg	0,0031			
Landfilling of ashes from incineration of Rubber, process per kg ashes and residues (kg)	kg	0,024			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of thermal energy, district heating (MJ)	MJ	44,47			
Substitution of electricity (MJ)	MJ	2,93			
Substitution of primary copper with net scrap (kg)	kg	3,46			
Substitution of primary aluminium with net scrap (kg)	kg	3,56			
Substitution of primary steel with net scrap (kg)	kg	22,74			

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environ	Environmental impact										
	Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D		
P	GWP-total	kg CO <sub>2</sub> -eq	2,86E+02	1,44E+00	6,86E-02	2,40E-01	7,11E+00	3,04E-01	-6,60E+01		
P	GWP-fossil	kg CO <sub>2</sub> -eq	2,83E+02	1,44E+00	6,86E-02	2,40E-01	7,11E+00	3,04E-01	-6,52E+01		
P	GWP-biogenic	kg CO <sub>2</sub> -eq	1,65E+00	6,17E-04	1,29E-05	1,03E-04	1,89E-03	1,05E-04	-1,98E-01		
P	GWP-luluc	kg CO <sub>2</sub> -eq	1,44E+00	4,39E-04	5,40E-06	7,31E-05	1,95E-04	2,37E-05	-6,30E-01		
Ò	ODP	kg CFC11 -eq	2,27E-05	3,47E-07	1,48E-08	5,79E-08	8,61E-08	1,91E-08	-1,88E-02		
Ê	AP	mol H+ -eq	3,36E+00	4,64E-03	7,17E-04	7,73E-04	2,72E-03	4,75E-04	-1,73E+00		
	EP-FreshWater	kg P -eq	2,33E-02	1,15E-05	2,50E-07	1,91E-06	1,62E-05	1,09E-06	-1,21E-02		
	EP-Marine	kg N -eq	3,38E-01	1,02E-03	3,17E-04	1,69E-04	1,10E-03	2,64E-04	-1,10E-01		
	EP-Terrestial	mol N -eq	7,18E+00	1,13E-02	3,47E-03	1,89E-03	1,12E-02	1,78E-03	-1,45E+00		
	РОСР	kg NMVOC -eq	1,29E+00	4,45E-03	9,55E-04	7,41E-04	2,77E-03	5,55E-04	-4,68E-01		
HD	ADP-minerals&metals <sup>1</sup>	kg Sb-eq	1,43E-01	2,57E-05	1,05E-07	4,28E-06	3,10E-06	6,89E-07	-8,16E-03		
Ð	ADP-fossil <sup>1</sup>	MJ	3,72E+03	2,34E+01	9,44E-01	3,90E+00	3,76E+00	1,42E+00	-6,90E+02		
%	WDP <sup>1</sup>	m <sup>3</sup>	4,32E+04	1,79E+01	2,00E-01	2,99E+00	2,53E+01	1,03E+01	-1,64E+04		

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential 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: EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009"

\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

#### **Remarks to environmental impacts**

This product uses electric energy for fan drive. If heated, it distributes thermal energy via a water coil or electric coil. Total environmental impact is project specific and vary depending on several variables such as:

-Climate

-Estate properties

-Energy source

Additional	Additional environmental impact indicators										
h	ndicator	Unit	A1-A3	A4	C1	C2	C3	C4	D		
	PM	Disease incidence	6,17E-04	1,32E-07	1,90E-08	2,20E-08	2,07E-08	8,22E-09	-7,19E-06		
()~() E	IRP <sup>2</sup>	kgBq U235 -eq	1,43E+01	1,02E-01	4,04E-03	1,70E-02	1,59E-02	6,65E-03	-1,78E+00		
	ETP-fw <sup>1</sup>	CTUe	2,36E+04	1,71E+01	5,16E-01	2,85E+00	2,69E+01	1,98E+02	-1,47E+04		
444 × *****	HTP-c <sup>1</sup>	CTUh	1,53E-06	0,00E+00	0,00E+00	0,00E+00	8,56E-10	1,21E-08	-3,81E-07		
4 <u>8</u>	HTP-nc <sup>1</sup>	CTUh	3,34E-05	1,65E-08	4,68E-10	2,76E-09	1,79E-08	8,27E-07	-1,38E-05		
è	SQP <sup>1</sup>	dimensionless	1,18E+03	2,68E+01	1,20E-01	4,47E+00	1,30E+00	4,63E+00	-2,06E+02		

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009" \*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Resource use									
	ndicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
i i i i i i i i i i i i i i i i i i i	PERE	MJ	5,02E+02	2,94E-01	5,10E-03	4,90E-02	5,63E-01	6,53E-02	-2,15E+02
	PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
্দ্য	PERT	MJ	5,02E+02	2,94E-01	5,10E-03	4,90E-02	5,63E-01	6,53E-02	-2,15E+02
A	PENRE	MJ	3,58E+03	2,34E+01	9,44E-01	3,90E+00	3,76E+00	1,42E+00	-6,90E+02
Ås	PENRM	MJ	1,27E+02	0,00E+00	0,00E+00	0,00E+00	-1,22E+02	0,00E+00	0,00E+00
IA	PENRT	MJ	3,71E+03	2,34E+01	9,44E-01	3,90E+00	-1,18E+02	1,42E+00	-6,90E+02
	SM	kg	2,54E+01	0,00E+00	4,63E-04	0,00E+00	8,27E-05	3,69E-05	2,42E+00
2	RSF	MJ	5,40E+00	1,03E-02	1,26E-04	1,72E-03	1,23E-02	1,43E-03	1,07E+00
<u>I</u>	NRSF	MJ	1,95E+01	3,45E-02	1,85E-03	5,75E-03	-1,06E-04	1,08E-02	2,57E+01
95	FW	m <sup>3</sup>	3,84E+00	2,66E-03	4,86E-05	4,44E-04	1,26E-02	2,18E-03	-1,08E+00

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources; SENRE = Use of non renewable primary energy resources; SENRE = Use of secondary materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009" \*INA Indicator Not Assessed

End of life - Waste										
Indicator		Unit	A1-A3	A4	C1	C2	C3	C4	D	
A	HWD	kg	2,99E+00	1,28E-03	2,78E-05	2,13E-04	1,04E-03	6,97E-02	-9,06E-02	
Ū	NHWD	kg	9,62E+01	2,03E+00	1,12E-03	3,39E-01	4,17E-01	6,54E+00	-2,35E+01	
<b></b>	RWD	kg	1,11E-02	1,60E-04	6,55E-06	2,66E-05	1,56E-06	2,59E-06	-1,68E-03	

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009" \*INA Indicator Not Assessed

End of life - Output flo	End of life - Output flow										
Indicat	or	Unit	A1-A3	A4	C1	C2	C3	C4	D		
¢۵	CRU	kg	0,00E+00								
\$	MFR	kg	1,24E+01	0,00E+00	4,55E-04	0,00E+00	4,35E+01	8,12E-05	-9,47E-02		
DB	MER	kg	2,98E+00	0,00E+00	1,41E-06	0,00E+00	2,30E+00	2,23E-06	-1,25E-02		
5D	EEE	MJ	1,71E+00	0,00E+00	4,84E-06	0,00E+00	3,11E+00	8,12E-05	-3,05E-02		
Þ	EET	MJ	2,59E+01	0,00E+00	7,32E-05	0,00E+00	4,71E+01	1,23E-03	-4,62E-01		

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009" \*INA Indicator Not Assessed

Biogenic Carbon Content								
Indicator	Unit	At the factory gate						
Biogenic carbon content in product	kg C	0,00E+00						
Biogenic carbon content in accompanying packaging	kg C	0,00E+00						

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2



### **Additional requirements**

#### Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Source	Amount	Unit
Electricity, Vattenfall Nordic Hydropower (kWh) - SE - S-P-00088	S-P-00088	7,26	g CO2-eq/kWh

#### **Dangerous substances**

The product contains no substances on the REACH Candidate list at or above 100 ppm, 0,01 % by weight.

#### Indoor environment

The Arden recessed air curtain provides a barrier to devide two different climates, distributed by an EC-fans. Arden together with an external control offers fully automatic indoor climate adaptable to each unique area of use.

### **Additional Environmental Information**

Additional environmental impact indicators required in NPCR Part A for construction products									
Indicator Unit A1-A3 A4 C1 C2 C3 C4 D								D	
GWPIOBC	kg CO <sub>2</sub> -eq	2,85E+02	1,44E+00	6,86E-02	2,40E-01	7,11E+00	3,04E-01	-7,26E+01	

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.



## Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.

EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products. ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.

ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.

Iversen et al., (2021) eEPD v2021.09 Background information for EPD generator tool system verification, LCA.no Report number: 07.21 Graafland and Iversen (2022) EPD generator for NPCR 030 Ventilation components, Background information for EPD generator application and LCA data, LCA.no report number: 12.22

NPCR Part A: Construction products and services. Ver. 2.0. April 2021, EPD-Norge. NPCR 030 Part B for Ventilation components, Ver. 1.0, 18.05.2021, EPD Norway.

C epd-norge	Program operator and publisher The Norwegian EPD Foundation	Phone: e-mail:	+47 977 22 020 post@epd-norge.no
Global program operatør	Post Box 5250 Majorstuen, 0303 Oslo, Norway	web:	www.epd-norge.no
	Owner of the declaration:	Phone:	+ 46 31336 86 92
FRILD	Frico AB	e-mail:	mailbox@frico.se
	Industrivägen 41, 433 61 Sävedalen, Sweden	web:	www.frico.net
	Author of the Life Cycle Assessment	Phone:	+47 916 50 916
	LCA.no AS	e-mail:	post@lca.no
	Dokka 6A, 1671 Kråkerøy, Norway	web:	www.lca.no
	Developer of EPD generator	Phone:	+47 916 50 916
	LCA.no AS	e-mail:	post@lca.no
	Dokka 6A, 1671 Kråkerøy, Norway	web:	www.lca.no
FCO PLATFORM	ECO Platform	web:	www.eco-platform.org
	ECO Portal	web:	ECO Portal