



**BOSCH**



# ENVIRONMENTAL PRODUCT DECLARATION



Hybrid systems: Hybrid Smart 7000, Hybrid Medium IST 7000, Hybrid Medium BPU 7000, Hybrid Large 7000

Electric systems: Electric Smart 7000, Electric Medium 7000, Electric Large 7000

Assembled in the production sites of Aveiro (PT, E.N. 16, Km 3.7 – Aveiro 3800-533 Cacia), Manisa (TR, Organize Sanayi Bölgesi Manisa 45030) and Tranås (SE, Hjälmavägen 8 - 573 28 Tranås)

Declaration conforms to ISO 14025 standard

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*An EPD must provide current information and can be updated if conditions change. The declared validity is therefore subject to continuous registration and publication on [www.epditaly.it](http://www.epditaly.it)*

## General information

### About the program

Program Operator

EPDItaly (www.epditaly.it)

Via Gaetano De Castillia 10 - 20124 Milan, Italy

Independent verification

This declaration has been developed in accordance with the EPDItaly Regulation; further information and the Regulation itself are available on the website: [www.epditaly.it](http://www.epditaly.it)

Independent verification of the declaration and data according to ISO 14025:2006.

Internal  External

Third party verification performed by: ICMQ S.p.A, Via Gaetano De Castillia, n°10 - 20124 Milan, Italy.

Accredited by Accredia. Certificate No.: 002H REV. 20

Support



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CPC Code

43913 - Refrigerating and freezing equipment and heat pumps, except household type equipment

Comparability

Environmental claims published within the same product category, but from different programmes, may not be comparable.

Responsibility

Bosch Thermotechnik GmbH relieves EPDItaly from any self-declared non-compliance with the environmental legislation by the manufacturer. The holder of the declaration will be responsible for the supporting information and evidence; EPDItaly declines all responsibility for the information, data and results of the product life cycle assessment released by the manufacturer.

Reference documents

This declaration has been developed following the latest version of the EPDItaly Program Regulations, available on the website: [www.epditaly.it](http://www.epditaly.it).

Product category rules (PCR)

PCR EPDItaly019 – HVAC Home Appliances rev.01 (08/06/2021)

## Company information

EPD owner: Bosch Thermotechnik GmbH  
Sophienstraße 30-32, 35576 Wetzlar (Germany)  
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Contact person: Irina Kvarnstrom  
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Description of the organization: Bosch is a German multinational company founded in 1886 in Stuttgart; it deals with the development of products in the electronics sector such as power tools, automotive components, heating products, semiconductors and household appliances. For more than 100 years, Bosch has been committed to offering solutions for heating, cooling, and domestic hot water production that combine high quality and efficiency, using renewable energy sources to ensure maximum energy savings and environmental friendliness.

Name and address of the production site: Bosch manufactures its products in Aveiro (PT), Manisa (TR), and Tranås (SE).

## Product and production cycle information

Product name: Hybrid Smart 7000, Hybrid Medium IST 7000, Hybrid Medium BPU 7000, Hybrid Large 7000, Electric Smart 7000, Electric Medium 7000, Electric Large 7000

Product description: The products analyzed are 4 hybrid systems (with boiler) and 3 electric with air/water heat pump used for heating, cooling and domestic hot water production. Hybrid systems combine different technologies and energy sources (fossil fuel and renewable sources), allowing the most efficient heat generator (heat pump or condensing boiler or both) to be activated from time to time according to the operating conditions, in terms of external temperature and heating/cooling demand. Electrical systems, on the other hand, only use the heat pump as a heat generator.

The products analyzed are described below.

### HYBRID SMART 7000

Hybrid Smart 7000 is a system consisting of:

1. CS7001iAW 7 OR-S Outdoor Unit (assembled in Tranås)
2. Compress Hybrid 7000i AW FR/IT Indoor Unit (assembled in Aveiro)
3. GC7000iW 24 C 23 Condensing boiler (assembled in Manisa)
4. Magnetic filter 3/4"
5. Flexible kit for connecting the outdoor unit to the pipes
6. Model Puffer PS 100, with a capacity of 103 liters
7. Modulating thermostat CR10
8. Vertical adapter, from 80/125 to 60/100 mm
9. C53x split adapter, 80/125 to 80-80mm



### HYBRID MEDIUM IST 7000

Hybrid Medium IST 7000 is a system consisting of:

1. CS7001iAW 9 OR-S Outdoor Unit (assembled in Tranås)
2. Compress Hybrid 7000i AW FR/IT Indoor Unit (assembled in Aveiro)
3. Condensing boiler GC7000iW 24 C 23 (assembled in Manisa)
4. 3/4" magnetic filter
5. Flexible kit for connecting the outdoor unit to the pipes
6. Puffer PS 100 model, with a capacity of 103 liters
7. Modulating thermostat CR10
8. Vertical adapter, 80/125 to 60/100 mm
9. C53x split adapter, 80/125 to 80-80mm

### HYBRID MEDIUM BPU 7000

1. CS7001iAW 7 OR-S Outdoor Unit (assembled in Tranås)
2. Compress Hybrid 7000i AW FR/IT indoor unit (assembled in Aveiro)
3. Condensing boiler GC7000iW 14 – 14 kW (assembled in Manisa)



4. Combined storage tank BPU300, with DHW capacity of 202 l and thermal flywheel of 78 l
5. Modulating thermostat CR10
6. VW1 3-way diverter valve
7. Thermostatic mixer TWM20 DN20 for drinking water
8. 2 X Vertical adapters, 80/125 to 60/100mm
9. 3/4" magnetic filter
10. Flexible kit for connecting the outdoor unit to the pipes
11. SF3-NTC temperature probe



### HYBRID LARGE 7000

1. CS7001iAW 13 OR-S Outdoor Unit (assembled in Tranas)
2. AWB 13 - 17 Indoor unit (assembled in Aveiro)
3. GC7000i W 24 24 condensing boiler 24 (assembled in Manisa)
4. Flexible kit for connecting the outdoor unit to the pipes
5. Hydraulic compensator HW50
6. Vertical adapter, 80/125 to 60/100 mm
7. C53x split adapter, 80/125 to 80-80mm
8. VW1 3-way diverter valve
9. Puffer PS 100 model, with a capacity of 103 liters
10. FKA 26 mounting kit
11. Twin tubes 15-10 Cu
12. Circulation solar kit, consisting of:
  - a. Forced flat solar collector FT 226-2V
  - b. Roof mounting hydraulic kit FS29-2
  - c. SKY-C/T basic installation set
  - d. SKY-C/T Installation Set Extension and. Model AGS10 MS100-2 double line for connecting up to 10 solar collectors
  - f. Ogive set 22x15 mm SZ 10 (4x)
  - g. Thermostatic mixer TWM20 DN20 for drinking water
  - h. SAG 25 25 liter solar circuit expansion vessel
  - i. Tyfocor L WTF20 20 litre tank for flat solar collectors
  - j. AAS1 kit for solar circuit connection
  - k. BWPS 300

### ELECTRIC SMART 7000

1. CS7001iAW 7 OR-S Outdoor Unit (assembled in Tranås)
2. AWM 5-9 Indoor Unit (assembled in Tranås)
3. Flexible kit for connecting the outdoor unit to the pipes
4. Puffer PS 100 model, with a capacity of 103 liters
5. Modulating thermostat CR10
6. VW1 3-way diverter valve



### ELECTRIC MEDIUM 7000

1. CS7001iAW 9 OR-S Outdoor Unit (assembled in Tranås)
2. AWM 5-9 Indoor Unit (assembled in Tranås)
3. Flexible kit for connecting the outdoor unit to the pipes
4. Puffer PS 100 model, with a capacity of 103 liters
5. Modulating thermostat CR10
6. VW1 3-way diverter valve

### ELECTRIC LARGE 7000

1. CS7001iAW 13 OR-S Outdoor Unit (assembled in Tranås)
2. AWM 13-17 Indoor unit (assembled in Tranås)
3. Flexible kit for connecting the outdoor unit to the pipes
4. Puffer PS 100 model, with a capacity of 103 liters
5. Modulating thermostat CR10
6. VW1 3-way diverter valve
7. FKA 26 mounting kit
8. Thermostatic mixer TWM20 DN20 for drinking water
9. AAS1 kit for solar circuit connection
10. Model AGS10 MS100-2 double line for connecting up to 10 solar collectors
11. SAG 25 25 L Solar Circuit Expansion Vessel
12. Tyfocor L WTF20 20 liter tank for flat solar collectors
13. Twin tubes 15-10 Cu
14. Kit 1FT/ST/B with solar collector with roof mounting system, consisting of:
  - a. Forced flat solar collector FT 226-2V vert
  - b. Roof mounting hydraulic kit FS29-2
  - c. SKY-C/T basic installation set



Description of the production cycle: The main elements of each system (indoor unit, outdoor unit and boiler) are assembled at Bosch sites located in Aveiro (Portugal), Manisa (Turkey) and Tranås (Sweden), while the other smaller components come from different European suppliers.

## Information about the LCA

Functional unit / declared unit: 1 single hybrid/electric system

Reference service life: 20 years

Temporal representativeness: The reference year is 2021.

Geographical scope: Europe.

Database and LCA software used: Ecoinvent 3. 8 and SimaPro 9.3.0.3

Description of the system borders: Cradle to grave

The Upstream phase includes:

- Processes related to the extraction of raw materials, including waste recycling processes and the production of semi-finished and auxiliary products (**A1**);
- Transport of materials entering the production site (**A2**).

The Core phase (A3) includes the following processes:

- Production of components of hybrid/electric systems;
- Assembly of the various components;
- Packaging production;
- Transport and treatment of waste.

The Downstream phase includes the following phases:

- Transport of hybrid/electric systems to installation sites (**A4**);
- End of life of packaging (**A5**);
- Generation of scrap and waste during the installation process (**A5**);
- Energy consumption (electricity and methane) during the use phase (**B1**);
- Planned ordinary and extraordinary maintenance (**B2**);
- Disassembly (**C1**);
- Removal of waste to the treatment process (**C2**);
- Collection of waste for reuse, recovery and/or recycling (**C3**);
- Disposal (**C4**).

Phase B1 considers both the consumption of electricity (as required by the reference PCR) and of methane (in addition to the PCR requests in the case of hybrid systems). Phase B2 (maintenance) is considered to be irrelevant and therefore was not considered in this study; in addition, phase C3 (waste treatment for reuse, recovery and/or recycling) has been merged with phase C4 (product disposal).

Specifications:

Nominal powers, outdoor units (hybrid/electric systems)

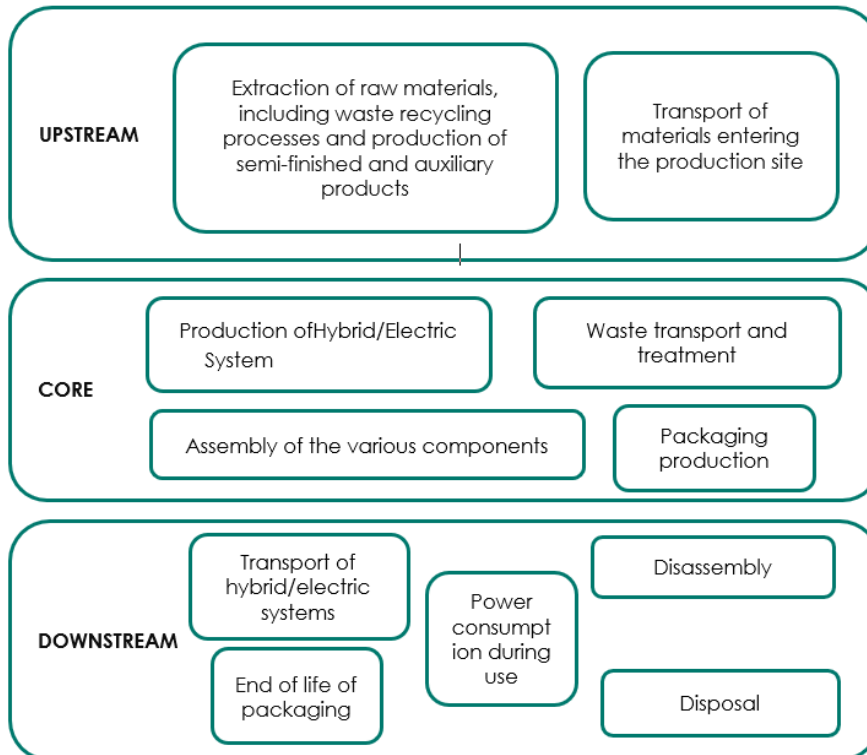
External drive	Nominal power (kW)
CS7001i AW 7 OR-S	2,28
CS7001i AW 9 OR-S	3,77
CS7001i AW 13 OR-S	6,86

Energy information:

Total energy consumption in use phase

System	Total energy [kWh]		
	Heating		Cooling
	Electricity	Natural gas	
Hybrid Smart 7000	1,69E+04	2,35E+04	1,44E+04
Hybrid Medium IST 7000	2,15E+04	3,05E+04	1,28E+04
Hybrid Medium BPU 7000	1,69E+04	2,35E+04	1,44E+04
Hybrid Large 7000	5,31E+04	6,38E+04	2,07E+04
Electric Smart 7000	2,25E+04	-	1,44E+04
Electric Medium 7000	2,87E+04	-	1,28E+04
Electric Large 7000	7,09E+04	-	2,07E+04

System boundaries:





Declared forms:

LIFE CYCLE INFORMATION						
EN50693	Manufacturing		Distribution	Installation	Use & Maintenance	End of life
GPI	Upstream	Core	Downstream			
EN15804	A1-A2	A3	A4	A5	B1-B7	C1-C4
Module declared	x	x	x	x	x	x

Data quality:

Site-specific data related to the assembly phase of hybrid/electric systems refers to 2021 and was provided by Bosch GmbH. Upstream and downstream processes were modelled on data from the Ecoinvent database 3.8.

All the processes indicated in the reference PCR were included; the impacts of consumption for the assembly of minor components were excluded, as they were considered insignificant.

Assumptions:

For the distribution phase, the distance from Frankfurt (German storage site) to Milan (Italian storage site) and an additional 300 km transport to the installation sites were taken into account, as indicated by PCR EPDIItaly019.

To calculate the electricity consumed during the use phase, the formula indicated in the PCR was applied, but the COP and EER energy indexes were used due to the lack of available SCOP and SEER indexes for the units under study.

For the modelling of the hybrid systems, it is taken into account, that a partial consumption of methane is used (calculated taking into account 25% of the consumption starting from the nominal power of the devices and relative operating hours for the entire useful life).

In the case of non-hermetically sealed HVAC, the reference PCR provides for considering a complete refill of the refrigerant gas (R410A for the products of this EPD) in the service life of the various products under study. The same amount of gas contained in the HVAC was considered as a leak, considering the emission into the atmosphere of the substances constituting the gas (R32 and R125).

The percentages of the different end-of-life treatments of packaging have been obtained from the EUROSTAT portal for the year 2020 (most recent available) for the Italian territory.

Other information:

All raw materials used for the products under study, the energy required and the production of waste were considered in the LCA.

With reference to the climate change indicator, the impact of national grid mix in Sweden is 123 g CO<sub>2</sub> eq/kWh, in Portugal it is 323 g CO<sub>2</sub> eq/kWh, in Turkey it is 628 g CO<sub>2</sub> eq/kWh (for Sweden and Portugal the residual mix data were taken from the Association of Issuing Bodies, *European Residual Mixes 2021, Version 1.0, 2022-05-31*).

The devices must be installed, maintained and disassembled by qualified technical personnel in accordance with national regulations and / or the

relevant local requirements, so as to avoid emissions of refrigerant gases into the atmosphere.

Additional information: [www.bosch.com](http://www.bosch.com)

## Content information

### Hybrid Smart 7000

Product components	Weight, kg	Percentage by weight-%
Plastic	44,120	18,2%
Rubber	6,250	2,6%
Epoxy resin	0,079	0,0%
Aluminium/nickel/zinc	52,093	21,5%
Copper	20,94	8,7%
Steel	96,94	40,1%
Other	21,46	8,9%
<b>TOTAL</b>	<b>241,89</b>	<b>100%</b>

### Hybrid Medium IST 7000

Product components	Weight, kg	Percentage by weight-%
Plastic	48,815	18,7%
Rubber	5,745	2,2%
Epoxy resin	0,079	0,0%
Aluminium/nickel/zinc	55,334	21,2%
Copper	25,26	9,7%
Steel	102,89	39,5%
Other	22,66	8,7%
<b>TOTAL</b>	<b>260,78</b>	<b>100%</b>

### Hybrid Medium BPU 7000

Product components	Weight, kg	Percentage by weight-%
Plastic	45,407	14,5%
Rubber	6,213	2,0%
Epoxy resin	0,079	0,0%
Aluminium/nickel/zinc	51,644	16,5%
Copper	18,65	5,9%
Steel	169,63	54,0%
Other	22,30	7,1%
<b>TOTAL</b>	<b>313,92</b>	<b>100%</b>

### Hybrid Large 7000

Product components	Weight, kg	Percentage by weight-%
Plastic	71,73	11,14%
Rubber	4,81	0,75%
Epoxy resin	0,12	0,02%
Aluminium/nickel/zinc	75,61	11,74%
Copper	38,34	5,95%
Steel	381,37	59,21%
Other	71,73	11,14%
<b>TOTAL</b>	<b>644,08</b>	<b>100,00%</b>

### Electric Smart 7000

Product components	Weight, kg	Percentage by weight-%
Plastic	45,104	15,7%
Rubber	6,551	2,3%
Aluminium/nickel/zinc	54,826	19,1%
Copper	20,017	7,0%
Steel	149,23	52,0%
Other	11,43	4,0%
<b>TOTAL</b>	<b>287,16</b>	<b>100,0%</b>

### Electric Medium 7000

Product components	Weight, kg	Percentage by weight-%
Plastic	49,799	16,3%
Rubber	6,047	2,0%
Aluminium/nickel/zinc	58,067	19,0%
Copper	24,334	8,0%
Steel	155,17	50,7%
Other	12,63	4,1%
<b>TOTAL</b>	<b>306,05</b>	<b>100,0%</b>

### Electric Large 7000

Product components	Weight, kg	Percentage by weight-%
Plastic	66,854	14,52%
Rubber	3,572	0,78%
Aluminium/nickel/zinc	81,339	17,67%
Copper	34,104	7,41%
Steel	207,752	45,13%
Other	66,722	14,49%
<b>TOTAL</b>	<b>460,342</b>	<b>100,00%</b>

There are no SVHC (substances of very high concern) in products manufactured by Bosch that are included in ECHA's Candidate List in concentrations greater than 0.1%.

## Environmental information

### HYBRID SMART 7000

#### Potential environmental impacts – mandatory indicators in accordance with EPDItaly019 PCR

EN 50639		MANUFACTURING		DISTRIBUTION	INSTALLATION	USE & MAINTENANCE	END OF LIFE
PCR EPDItaly019		UPSTREAM	CORE	DOWNSTREAM			
Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq	2.24E+03	1.87E+01	9.97E+01	4.37E+00	2,13E+04	3.30E+01
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq	-4.98E+00	1.29E-01	3.20E-02	7.27E+00	1,06E+03	2.31E+01
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq	8.23E+00	1.10E-01	8.14E-04	8.29E-05	9,51E-01	2.05E-02
<b>GWP total</b>	kg CO <sub>2</sub> eq	2.24E+03	1.90E+01	9.98E+01	1.18E+01	2,24E+04	5.77E+01
<b>ODP</b>	kg CFC-11 eq	1.81E-03	1.55E-06	2.39E-05	9.99E-08	3,59E-03	8.91E-07
<b>AP</b>	moles H <sup>+</sup> eq	2.64E+01	1.03E-01	4.67E-01	3.68E-03	5,61E+01	6.70E-02
<b>EP-freshwater</b>	kg P eq	2.32E+00	1.10E-02	4.11E-04	4.29E-05	2,53E+00	5.58E-03
<b>EP-marine</b>	kg N eq	3.09E+00	1.91E-02	1.74E-01	7.18E-03	8,46E+00	6.88E-02
<b>EP-terrestrial</b>	moles N eq	3.23E+01	1.68E-01	1.91E+00	1.71E-02	9,34E+01	1.53E-01
<b>POCP</b>	kg NMVOC eq	9.66E+00	4.62E-02	4.94E-01	5.04E-03	2,85E+01	4.70E-02
<b>ADP-min&amp;met*</b>	kg Sb eq	6.91E-01	2.09E-06	4.37E-06	4.60E-08	3,85E-04	5.22E-07
<b>ADP-fossil*</b>	MJ	3.00E+04	8.44E+02	1.43E+03	5.10E+00	2,65E+05	1.74E+02
<b>WDP*</b>	m <sup>3</sup> eq	1.40E+03	1.27E+01	-2.39E-01	5.55E-02	7,75E+03	1.91E+00
<b>Acronyms</b>	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						

\* Disclaimer: The results of this environmental impact indicator should be used carefully because the uncertainties of these results are high or because experience with the indicator is limited.

## Use of resources

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
PERE	MJ	6.02E+03	4.50E+01	2.19E+00	1.69E-01	6,01E+04	1.74E+01
PERM	MJ	1.44E+03	6.27E+00	5.78E-01	2.42E-02	3,33E+02	3.20E+00
PERT	MJ	7.46E+03	5.13E+01	2.76E+00	1.93E-01	6,05E+04	2.06E+01
PENRE	MJ	2.95E+04	8.44E+02	1.43E+03	5.10E+00	2,65E+05	1.74E+02
PENRM	MJ	5.57E+02	2.08E-03	3.96E-03	5.57E-04	1,31E+00	2.28E-03
PENRT	MJ	3.00E+04	8.44E+02	1.43E+03	5.10E+00	2,65E+05	1.74E+02
SM	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
FW	m3	8.84E+03	1.38E+03	-6.35E-02	1.23E+01	7,49E+03	9.92E+00
<b>Acronyms</b>	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 used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

## Waste generation and outflows

### Waste generation

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
HW	Kg	2.02E-01	1.70E-04	3.75E-03	1.37E-05	2,45E-01	2.07E-04
NHW	Kg	7.65E+02	5.34E-01	5.88E-02	1.10E+01	8,01E+01	3.37E+01
RW	Kg	9.78E-02	1.03E-02	1.02E-02	3.33E-05	5,13E-01	6.53E-04
<b>Acronyms</b>	HW= Hazardous landfill waste; NHW= Non-hazardous waste disposed; RW= Radioactive waste disposed						

### Outbound flows

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
REUSE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECYCLE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EN-REC	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-EL	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-TH	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Acronyms</b>	EN-REC = Materials for energy recovery; EE-EL=Exported electricity energy; EE-TH=Exported thermal energy						

## HYBRID MEDIUM IST 7000

### Potential environmental impacts – mandatory indicators in accordance with EPDItaly019 PCR

EN 50639		MANUFACTURING		DISTRIBUTION	INSTALLATION	USE & MAINTENANCE	END OF LIFE
PCR EPDItaly019		UPSTREAM	CORE	DOWNSTREAM			
Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq	2.40E+03	1.87E+01	1.06E+02	4.37E+00	2,56E+04	3.28E+01
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq	-1.14E+00	1.29E-01	3.39E-02	7.26E+00	1,16E+03	2.45E+01
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq	8.51E+00	1.10E-01	8.61E-04	8.29E-05	1,06E+00	2.21E-02
<b>GWP total</b>	kg CO <sub>2</sub> eq	2.41E+03	1.90E+01	1.06E+02	1.18E+01	2,67E+04	5.90E+01
<b>ODP</b>	kg CFC-11 eq	2.38E-03	1.55E-06	2.53E-05	9.98E-08	4,41E-03	9.45E-07
<b>AP</b>	moles H <sup>+</sup> eq	2.93E+01	1.03E-01	4.94E-01	3.68E-03	6,26E+01	7.18E-02
<b>EP-freshwater</b>	kg P eq	2.48E+00	1.10E-02	4.35E-04	4.28E-05	2,78E+00	6.00E-03
<b>EP-marine</b>	kg N eq	3.30E+00	1.91E-02	1.84E-01	7.17E-03	9,46E+00	7.32E-02
<b>EP-terrestrial</b>	moles N eq	3.48E+01	1.68E-01	2.02E+00	1.71E-02	1,04E+02	1.64E-01
<b>POCP</b>	kg NMVOC eq	1.04E+01	4.62E-02	5.22E-01	5.04E-03	3,23E+01	5.01E-02
<b>ADP-min&amp;met*</b>	kg Sb eq	7.53E-01	2.09E-06	4.62E-06	4.59E-08	4,83E-04	5.46E-07
<b>ADP-fossil*</b>	MJ	3.19E+04	8.44E+02	1.51E+03	5.10E+00	3,09E+05	1.87E+02
<b>WDP*</b>	m <sup>3</sup> eq	1.57E+03	1.27E+01	-2.52E-01	5.54E-02	8,50E+03	2.03E+00
<b>Acronyms</b>	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						

\* Disclaimer: The results of this environmental impact indicator should be used carefully because the uncertainties of these results are high or because experience with the indicator is limited.

## Use of resources

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
PERE	MJ	6.63E+03	4.50E+01	2.31E+00	1.69E-01	6,60E+04	1.87E+01
PERM	MJ	2.24E+06	6.27E+03	6.18E+02	2.44E+01	5,70E+03	1.80E+03
PERT	MJ	2.24E+06	6.32E+03	6.21E+02	2.45E+01	7,17E+04	1.82E+03
PENRE	MJ	3.14E+04	8.44E+02	1.51E+03	5.09E+00	3,09E+05	1.87E+02
PENRM	MJ	5.61E+02	2.08E-03	4.19E-03	5.57E-04	1,44E+00	2.43E-03
PENRT	MJ	3.19E+04	8.44E+02	1.51E+03	5.10E+00	3,09E+05	1.87E+02
SM	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
FW	m3	1.14E+04	1.55E+03	-7.42E-02	1.23E+01	8,21E+03	1.29E+01
<b>Acronyms</b>	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 used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

## Waste generation and outflows

### Waste generation

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
HW	Kg	2.20E-01	1.70E-04	3.97E-03	1.37E-05	2,85E-01	2.10E-04
NHW	Kg	8.53E+02	5.34E-01	6.22E-02	1.10E+01	8,83E+01	3.58E+01
RW	Kg	1.06E-01	1.03E-02	1.08E-02	3.33E-05	5,65E-01	7.03E-04
<b>Acronyms</b>	HW= Hazardous landfill waste; NHW= Non-hazardous waste disposed; RW= Radioactive waste disposed						

### Outbound flows

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
REUSE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECYCLE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EN-REC	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-EL	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-TH	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Acronyms</b>	EN-REC = Materials for energy recovery; EE-EL=Exported electricity energy; EE-TH=Exported thermal energy						

## HYBRID MEDIUM BPU 7000

### Potential environmental impacts – mandatory indicators in accordance with EPDItaly019 PCR

EN 50639		MANUFACTURING		DISTRIBUTION	INSTALLATION	USE & MAINTENANCE	END OF LIFE
PCR EPDItaly019		UPSTREAM	CORE	DOWNSTREAM			
Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq	2.48E+03	1.87E+01	1.16E+02	4.37E+00	2,13E+04	3.69E+01
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq	6.01E+00	1.29E-01	3.72E-02	7.71E+00	1,06E+03	2.68E+01
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq	8.40E+00	1.10E-01	9.46E-04	8.44E-05	9,52E-01	2.66E-02
<b>GWP total</b>	kg CO <sub>2</sub> eq	2.50E+03	1.90E+01	1.16E+02	1.23E+01	2,24E+04	6.55E+01
<b>ODP</b>	kg CFC-11 eq	1.82E-03	1.55E-06	2.78E-05	1.02E-07	3,59E-03	1.12E-06
<b>AP</b>	moles H <sup>+</sup> eq	2.66E+01	1.03E-01	5.43E-01	3.77E-03	5,61E+01	8.56E-02
<b>EP-freshwater</b>	kg P eq	2.37E+00	1.10E-02	4.78E-04	4.33E-05	2,53E+00	7.18E-03
<b>EP-marine</b>	kg N eq	3.36E+00	1.91E-02	2.02E-01	7.45E-03	8,46E+00	8.05E-02
<b>EP-terrestrial</b>	moles N eq	3.41E+01	1.68E-01	2.21E+00	1.74E-02	9,34E+01	1.94E-01
<b>POCP</b>	kg NMVOC eq	1.06E+01	4.62E-02	5.74E-01	5.21E-03	2,85E+01	5.88E-02
<b>ADP-min&amp;met*</b>	kg Sb eq	6.65E-01	2.09E-06	5.08E-06	4.69E-08	3,85E-04	6.41E-07
<b>ADP-fossil*</b>	MJ	3.33E+04	8.44E+02	1.66E+03	5.24E+00	2,65E+05	2.24E+02
<b>WDP*</b>	m <sup>3</sup> eq	1.43E+03	1.27E+01	-2.77E-01	5.64E-02	7,75E+03	2.42E+00
<b>Acronyms</b>	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						

\* Disclaimer: The results of this environmental impact indicator should be used carefully because the uncertainties of these results are high or because experience with the indicator is limited.



## Use of resources

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
PERE	MJ	6.29E+03	4.50E+01	2.54E+00	1.76E-01	6,02E+04	2.23E+01
PERM	MJ	1.50E+03	6.27E+00	6.73E-01	2.47E-02	5,20E+03	2.14E+00
PERT	MJ	7.79E+03	5.13E+01	3.21E+00	2.01E-01	6,53E+04	2.44E+01
PENRE	MJ	3.28E+04	8.44E+02	1.66E+03	5.24E+00	2,65E+05	2.24E+02
PENRM	MJ	5.33E+02	2.08E-03	4.61E-03	5.64E-04	1,31E+00	2.68E-03
PENRT	MJ	3.33E+04	8.44E+02	1.66E+03	5.24E+00	2,65E+05	2.24E+02
SM	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
FW	m3	1.02E+04	1.41E+03	-6.70E-02	1.23E+01	7,49E+03	1.04E+01
<b>Acronyms</b>	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 used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

## Waste generation and outflows

### Waste generation

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
HW	Kg	2.10E-01	1.70E-04	4.36E-03	1.40E-05	2,45E-01	2.41E-04
NHW	Kg	8.57E+02	5.34E-01	6.84E-02	1.11E+01	8,01E+01	3.82E+01
RW	Kg	1.08E-01	1.03E-02	1.19E-02	3.43E-05	5,13E-01	8.41E-04
<b>Acronyms</b>	HW= Hazardous landfill waste; NHW= Non-hazardous waste disposed; RW= Radioactive waste disposed						

### Outbound flows

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
REUSE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECYCLE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EN-REC	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-EL	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-TH	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Acronyms</b>	EN-REC = Materials for energy recovery; EE-EL=Exported electricity energy; EE-TH=Exported thermal energy						

## HYBRID LARGE 7000

### Potential environmental impacts – mandatory indicators in accordance with EPDItaly019 PCR

EN 50639		MANUFACTURING		DISTRIBUTION	INSTALLATION	USE & MAINTENANCE	END OF LIFE
PCR EPDItaly019		UPSTREAM	CORE	DOWNSTREAM			
Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq	4.42E+03	1.87E+01	1.65E+02	6.73E+00	5,05E+04	7.51E+01
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq	7.01E+01	1.29E-01	5.30E-02	6.83E+00	2,50E+03	1.29E+02
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq	8.55E+00	1.10E-01	1.35E-03	1.25E-04	2,27E+00	8.16E-02
<b>GWP total</b>	kg CO <sub>2</sub> eq	4.51E+03	1.90E+01	1.65E+02	1.38E+01	5,31E+04	2.13E+02
<b>ODP</b>	kg CFC-11 eq	3.41E-03	1.55E-06	3.95E-05	1.08E-07	8,05E-03	3.28E-06
<b>AP</b>	moles H <sup>+</sup> eq	5.30E+01	1.03E-01	7.73E-01	3.89E-03	1,34E+02	2.64E-01
<b>EP-freshwater</b>	kg P eq	4.20E+00	1.10E-02	6.80E-04	4.77E-05	5,97E+00	2.26E-02
<b>EP-marine</b>	kg N eq	5.90E+00	1.91E-02	2.87E-01	7.38E-03	2,03E+01	3.36E-01
<b>EP-terrestrial</b>	moles N eq	6.03E+01	1.68E-01	3.15E+00	1.77E-02	2,24E+02	5.90E-01
<b>POCP</b>	kg NMVOC eq	1.90E+01	4.62E-02	8.17E-01	5.33E-03	6,91E+01	1.91E-01
<b>ADP-min&amp;met*</b>	kg Sb eq	1.20E+00	2.09E-06	7.23E-06	6.10E-08	7,96E-04	1.76E-06
<b>ADP-fossil*</b>	MJ	5.78E+04	8.44E+02	2.36E+03	5.01E+00	6,57E+05	6.92E+02
<b>WDP*</b>	m <sup>3</sup> eq	2.88E+03	1.27E+01	-3.95E-01	8.27E-02	1,83E+04	7.12E+00
<b>Acronyms</b>	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						

\* Disclaimer: The results of this environmental impact indicator should be used carefully because the uncertainties of these results are high or because experience with the indicator is limited.

## Use of resources

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
PERE	MJ	1.18E+04	4.50E+01	3.62E+00	2.03E-01	1,42E+05	7.00E+01
PERM	MJ	1.50E+03	6.27E+00	6.73E-01	2.47E-02	1,23E+04	2.14E+00
PERT	MJ	1.33E+04	5.13E+01	4.29E+00	2.28E-01	1,54E+05	7.22E+01
PENRE	MJ	5.71E+04	8.44E+02	2.36E+03	5.01E+00	6,57E+05	6.92E+02
PENRM	MJ	6.75E+02	2.08E-03	6.56E-03	4.28E-04	3,09E+00	1.05E-02
PENRT	MJ	5.78E+04	8.44E+02	2.36E+03	5.01E+00	6,57E+05	6.92E+02
SM	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00	0.00E+00
FW	m3	2.46E+04	2.85E+03	-8.03E-02	1.23E+01	1,77E+04	2.22E+01
<b>Acronyms</b>	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 used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

## Waste generation and outflows

### Waste generation

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
HW	Kg	3.60E-01	1.70E-04	6.20E-03	1.39E-05	6,07E-01	6.13E-04
NHW	Kg	1.99E+03	5.34E-01	9.73E-02	8.26E+00	1,89E+02	1.66E+02
RW	Kg	1.93E-01	1.03E-02	1.69E-02	3.13E-05	1,21E+00	2.62E-03
<b>Acronyms</b>	HW= Hazardous landfill waste; NHW= Non-hazardous waste disposed; RW= Radioactive waste disposed						

### Outbound flows

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
REUSE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECYCLE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EN-REC	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-EL	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-TH	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Acronyms</b>	EN-REC = Materials for energy recovery; EE-EL=Exported electricity energy; EE-TH=Exported thermal energy						

## ELECTRIC SMART 7000

### Potential environmental impacts – mandatory indicators in accordance with EPDItaly019 PCR

EN 50639		MANUFACTURING		DISTRIBUTION	INSTALLATION	USE & MAINTENANCE	END OF LIFE
PCR EPDItaly019		UPSTREAM	CORE	DOWNSTREAM			
Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq	2.64E+03	7.13E+00	9.48E+01	3.69E+00	1.72E+04	3.59E+01
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq	1.36E+01	6.08E-03	3.05E-02	6.22E+00	1.24E+03	1.68E+01
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq	3.65E+00	6.38E-04	7.74E-04	7.09E-05	1.03E+00	2.43E-02
<b>GWP total</b>	kg CO <sub>2</sub> eq	2.66E+03	7.14E+00	9.49E+01	1.01E+01	1.85E+04	5.39E+01
<b>ODP</b>	kg CFC-11 eq	1.83E-03	1.22E-06	2.27E-05	8.40E-08	3.22E-03	1.03E-06
<b>AP</b>	moles H <sup>+</sup> eq	2.71E+01	2.48E-02	4.44E-01	3.09E-03	5.94E+01	7.78E-02
<b>EP-freshwater</b>	kg P eq	2.56E+00	3.00E-04	3.91E-04	3.57E-05	2.93E+00	6.47E-03
<b>EP-marine</b>	kg N eq	3.45E+00	7.07E-03	1.65E-01	6.07E-03	8.88E+00	5.81E-02
<b>EP-terrestrial</b>	moles N eq	3.59E+01	5.35E-02	1.81E+00	1.43E-02	9.85E+01	1.76E-01
<b>POCP</b>	kg NMVOC eq	1.08E+01	1.49E-02	4.69E-01	4.26E-03	2.75E+01	5.16E-02
<b>ADP-min&amp;met*</b>	kg Sb eq	7.29E-01	1.96E-06	4.16E-06	3.90E-08	4.03E-04	5.99E-07
<b>ADP-fossil*</b>	MJ	3.50E+04	8.18E+02	1.36E+03	4.27E+00	2.05E+05	2.04E+02
<b>WDP*</b>	m <sup>3</sup> eq	1.45E+03	9.01E+00	-2.27E-01	4.73E-02	9.08E+03	2.24E+00
<b>Acronyms</b>	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						

\* Disclaimer: The results of this environmental impact indicator should be used carefully because the uncertainties of these results are high or because experience with the indicator is limited.

### Use of resources

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
PERE	MJ	6.49E+03	7.05E-01	2.08E+00	1.45E-01	7.04E+04	2.02E+01
PERM	MJ	1.35E+03	7.82E-02	5.42E-01	2.03E-02	6.08E+03	3.76E+00
PERT	MJ	7.84E+03	7.84E-01	2.62E+00	1.65E-01	7.64E+04	2.39E+01
PENRE	MJ	3.43E+04	8.18E+02	1.36E+03	4.27E+00	2.05E+05	2.04E+02
PENRM	MJ	7.27E+02	1.49E-03	3.77E-03	4.57E-04	1.52E+00	2.04E-03
PENRT	MJ	3.50E+04	8.18E+02	1.36E+03	4.27E+00	2.05E+05	2.04E+02
SM	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	1.02E+04	1.43E+03	-6.02E-02	8.40E+00	8.77E+03	1.02E+01
Acronyms	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 used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

### Waste generation and outflows

#### Waste generation

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
HW	Kg	2.16E-01	1.17E-04	3.56E-03	1.15E-05	1.87E-01	2.24E-04
NHW	Kg	1.07E+03	1.79E-01	5.59E-02	8.99E+00	9.19E+01	2.65E+01
RW	Kg	1.11E-01	1.20E-02	9.70E-03	2.79E-05	5.86E-01	7.63E-04
Acronyms	HW= Hazardous landfill waste; NHW= Non-hazardous waste disposed; RW= Radioactive waste disposed						

#### Outbound flows

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
REUSE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECYCLE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EN-REC	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-EL	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-TH	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acronyms	EN-REC = Materials for energy recovery; EE-EL=Exported electricity energy; EE-TH=Exported thermal energy						

## ELECTRIC MEDIUM 7000

### Potential environmental impacts – mandatory indicators in accordance with EPDItaly019 PCR

EN 50639		MANUFACTURING		DISTRIBUTION	INSTALLATION	USE & MAINTENANCE	END OF LIFE
PCR EPDItaly019		UPSTREAM	CORE	DOWNSTREAM			
Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq	2.80E+03	7.13E+00	1.01E+02	3.69E+00	2.02E+04	3.57E+01
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq	1.74E+01	6.08E-03	3.23E-02	6.21E+00	1.39E+03	1.83E+01
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq	3.93E+00	6.38E-04	8.21E-04	7.08E-05	1.15E+00	2.59E-02
<b>GWP total</b>	kg CO <sub>2</sub> eq	2.82E+03	7.14E+00	1.01E+02	1.01E+01	2.16E+04	5.52E+01
<b>ODP</b>	kg CFC-11 eq	2.40E-03	1.22E-06	2.41E-05	8.39E-08	3.92E-03	1.08E-06
<b>AP</b>	moles H <sup>+</sup> eq	3.01E+01	2.48E-02	4.71E-01	3.09E-03	6.67E+01	8.26E-02
<b>EP-freshwater</b>	kg P eq	2.72E+00	3.00E-04	4.15E-04	3.57E-05	3.29E+00	6.89E-03
<b>EP-marine</b>	kg N eq	3.67E+00	7.07E-03	1.75E-01	6.07E-03	9.97E+00	6.24E-02
<b>EP-terrestrial</b>	moles N eq	3.83E+01	5.35E-02	1.92E+00	1.43E-02	1.11E+02	1.87E-01
<b>POCP</b>	kg NMVOC eq	1.15E+01	1.49E-02	4.98E-01	4.26E-03	3.09E+01	5.47E-02
<b>ADP-min&amp;met*</b>	kg Sb eq	7.92E-01	1.96E-06	4.41E-06	3.90E-08	5.06E-04	6.23E-07
<b>ADP-fossil*</b>	MJ	3.69E+04	8.18E+02	1.44E+03	4.27E+00	2.30E+05	2.18E+02
<b>WDP*</b>	m <sup>3</sup> eq	1.62E+03	9.01E+00	-2.41E-01	4.73E-02	1.02E+04	2.36E+00
<b>Acronyms</b>	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						

\* Disclaimer: The results of this environmental impact indicator should be used carefully because the uncertainties of these results are high or because experience with the indicator is limited.

## Use of resources

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
PERE	MJ	7.10E+03	7.05E-01	2.21E+00	1.44E-01	7.90E+04	2.15E+01
PERM	MJ	1.39E+03	7.82E-02	2.10E+00	2.03E-02	6.82E+03	4.01E+00
PERT	MJ	8.49E+03	7.84E-01	4.30E+00	1.65E-01	8.58E+04	2.55E+01
PENRE	MJ	3.62E+04	8.18E+02	1.44E+03	4.27E+00	2.30E+05	2.18E+02
PENRM	MJ	7.30E+02	1.49E-03	4.00E-03	4.57E-04	1.70E+00	2.18E-03
PENRT	MJ	3.69E+04	8.18E+02	1.44E+03	4.27E+00	2.30E+05	2.18E+02
SM	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	1.15E+04	1.60E+03	-7.09E-02	8.40E+00	9.84E+03	1.32E+01
<b>Acronyms</b>	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 used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

## Waste generation and outflows

### Waste generation

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
HW	Kg	2.35E-01	1.17E-04	3.78E-03	1.15E-05	2.10E-01	2.27E-04
NHW	Kg	1.15E+03	1.79E-01	5.93E-02	8.99E+00	1.03E+02	2.86E+01
RW	Kg	1.19E-01	1.20E-02	1.03E-02	2.79E-05	6.57E-01	8.12E-04
<b>Acronyms</b>	HW= Hazardous landfill waste; NHW= Non-hazardous waste disposed; RW= Radioactive waste disposed						

### Outbound flows

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
REUSE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECYCLE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EN-REC	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-EL	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-TH	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Acronyms</b>	EN-REC = Materials for energy recovery; EE-EL=Exported electricity energy; EE-TH=Exported thermal energy						

## ELECTRIC LARGE 7000

### Potential environmental impacts – mandatory indicators in accordance with EPDItaly019 PCR

EN 50639		MANUFACTURING		DISTRIBUTION	INSTALLATION	USE & MAINTENANCE	END OF LIFE
PCR EPDItaly019		UPSTREAM	CORE	DOWNSTREAM			
Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq	3.46E+03	7.13E+00	1.34E+02	4.01E+00	4.03E+04	4.47E+01
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq	2.84E+01	6.08E-03	4.31E-02	7.68E+00	3.06E+03	8.87E+01
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq	6.54E+00	6.38E-04	1.09E-03	7.99E-05	2.53E+00	4.31E-02
<b>GWP total</b>	kg CO <sub>2</sub> eq	3.50E+03	7.14E+00	1.34E+02	1.19E+01	4.34E+04	1.39E+02
<b>ODP</b>	kg CFC-11 eq	3.33E-03	1.22E-06	3.21E-05	9.70E-08	7.16E-03	1.78E-06
<b>AP</b>	moles H <sup>+</sup> eq	4.43E+01	2.48E-02	6.27E-01	3.57E-03	1.47E+02	1.42E-01
<b>EP-freshwater</b>	kg P eq	3.55E+00	3.00E-04	5.52E-04	3.99E-05	7.26E+00	1.22E-02
<b>EP-marine</b>	kg N eq	4.60E+00	7.07E-03	2.33E-01	7.19E-03	2.20E+01	2.24E-01
<b>EP-terrestrial</b>	moles N eq	4.95E+01	5.35E-02	2.56E+00	1.64E-02	2.44E+02	3.22E-01
<b>POCP</b>	kg NMVOC eq	1.52E+01	1.49E-02	6.63E-01	4.99E-03	6.80E+01	1.09E-01
<b>ADP-min&amp;met*</b>	kg Sb eq	1.08E+00	1.96E-06	5.87E-06	4.43E-08	8.56E-04	9.59E-07
<b>ADP-fossil*</b>	MJ	4.58E+04	8.18E+02	1.92E+03	4.96E+00	5.07E+05	3.68E+02
<b>WDP*</b>	m <sup>3</sup> eq	2.35E+03	9.01E+00	-3.21E-01	5.33E-02	2.25E+04	3.80E+00
<b>Acronyms</b>	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						

\* Disclaimer: The results of this environmental impact indicator should be used carefully because the uncertainties of these results are high or because experience with the indicator is limited.



## Use of resources

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
PEARS	MJ	9.69E+03	7.05E-01	2.94E+00	1.72E-01	1.74E+05	3.79E+01
PERM	MJ	2.37E+06	7.85E+01	7.85E+02	2.34E+01	1.50E+07	3.60E+03
PERT	MJ	2.38E+06	7.92E+01	7.88E+02	2.36E+01	1.52E+07	3.63E+03
PENRE	MJ	4.50E+04	8.18E+02	1.92E+03	4.96E+00	5.07E+05	3.68E+02
PENRM	MJ	7.51E+02	1.49E-03	5.33E-03	5.18E-04	3.75E+00	6.95E-03
PENRT	MJ	4.58E+04	8.18E+02	1.92E+03	4.96E+00	5.07E+05	3.68E+02
SM	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	2.41E+04	2.33E+03	-8.22E-02	8.40E+00	2.17E+04	1.91E+01
<b>Acronyms</b>	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 used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

## Waste generation and outflows

### Waste generation

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
HW	Kg	3.08E-01	1.17E-04	5.04E-03	1.32E-05	4.64E-01	3.59E-04
NHW	Kg	1.52E+03	1.79E-01	7.90E-02	1.02E+01	2.27E+02	1.15E+02
RW	Kg	1.46E-01	1.20E-02	1.37E-02	3.26E-05	1.45E+00	1.41E-03
<b>Acronyms</b>	HW= Hazardous landfill waste; NHW= Non-hazardous waste disposed; RW= Radioactive waste disposed						

### Outbound flows

Indicator	Unit	A1-A2	A3	A4	A5	B1-B7	C1-C4
REUSE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECYCLE	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EN-REC	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-EL	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-TH	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Acronyms</b>	EN-REC = Materials for energy recovery; EE-EL=Exported electricity energy; EE-TH=Exported thermal energy						

## Differences from the previous version

This is the first version of the EPD.

## Bibliography

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