Environmental Product Declaration

in accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

Flexcon premium 3 bar expansion vessel (18 litres)

Publication Date

2024-01-29

Valid until

2029-01-28

Owner of Declaration

Aalberts N.V.

LCA Practitioner

Hedgehog Company B.V.

Programme

The International EPD® System,
www.environdec.com

Program Operator

EPD International AB

EPD number

S-P-12390

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

Hedgehog Company

General information

Programme information

Programme	The International EPD® System
Address	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
ISO standard ISO 21930 and CEN standard EN 15804 serve as the core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products, version 1.3.2
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Life Cycle Assessment (LCA)
LCA accountability: Nata Dovgalenok, Hedgehog Company nata@hhc.earth Donauweg 10, 1043 AJ Amsterdam, The Netherlands
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Matthew Fishwick, Fishwick Environmental Ltd. Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒No [Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organised entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

EPDs of construction products may not be comparable if they do not comply with EN 15804+A2.

Hedgehog Company

Product description

Flexcon premium 3 bar expansion vessel with the capacity of 18 litres serves as a pressure-regulating device for water heating systems. The body of the vessel is mainly composed of a rubber membrane and a powder coated steel outer body kept together by a steel clench ring. Other smaller components are present such as valves, small plastic components, and nuts and bolts. The product falls in the UN CPC class 4324. The technical specifications of the product are presented in table 1.

Table 1. Technical specifications of the Flexcon premium 3 bar expansion vessel.

Technical specifications
Maximum working pressure: 3.0
Vessels in accordance with EN13831
Suitable for systems with a maximum system temperature of 120 °C
Min./ max. temperature diaphragm: -10 / 70 °C
Suitable for addition of glycol-based antifreeze up to 50%
In accordance with Pressure Equipment Directive 2014/68/EU
Red (RAL 3002) epoxy powder coating

Company

Aalberts HFC is a subdivision of Aalberts N.V., which is a Dutch company that was founded in 1975. Aalberts HFC specialises in manufacturing and marketing of hydronic flow control systems in the construction industry. They strive to deliver fail-safe solutions that maximise efficiency of boiler room technologies and distribution and emitter technologies. Flamco is the brand that manufactured all boiler room products of Aalberts, including connection systems, safety valves, hot water units, air vents, as well as expansion vessels, such as the Flexcon premium 3 bar expansion vessel.

Manufacturer	Aalberts HFC
Address, corporate office and production site	Fort Blauwkapel 1 1358 DB Almere The Netherlands
E-mail	info@aalberts-hfc.com
Phone	036 526 2300
Website	www.aalberts-hfc.com

EPD scope and background

Reference service life	15 years

Declared Unit	one unit of a Flexcon premium 3 bar expansion vessel with the capacity of 18 litres

The data were collected for one vessel. One vessel with the capacity of 18 litres weighs 3,54 kg, excluding packaging.

The Ecoinvent v3.8 database is used as a source of secondary data. The study meets the requirements of NEN-EN ISO 14025:2010 [1] and the EN 15804+A2:2019 [2]. This EPD follows the PCR 2019:14 v1.3.2 [3], General Programme Instructions v4.0 [4]. The Ecochain software Mobius version 1.0.346 is used to model the product system. The foreground data are based on the year 2022.

The EPD system boundaries are cradle-to-gate with options, modules A4-A5, C2-C4, and D. The manufacturing phase of the product is modelled for the geographical area of the Netherlands. The end-of-life stage impact is calculated for the geographical area Europe, since this is the typical market for the product.

The impact of manufacturing, maintenance and end-of-life treatment of infrastructure is accounted for when it is incorporated in the Ecoinvent 3.8 datasets. Otherwise, no active data collection, modelling or impact assessment of infrastructure is carried out.

Table 2. Life cycle modules considered in this EPD. X = module declared in the EPD. ND = module not declared in the EPD.

	Module			Geography	Spec. data	Variation - products	Variation - locations
Production stage	A1	x	Raw material supply	EU			
	A2	x	Transport	EU	10%	0%	0%
	A3	x	Production	NL			
Construction stage	A4	x	Transport to site	NL, FR, DK	-	-	-
	A5	x	Construction - installation process	EU	-	-	-
Use stage	B1	ND	Use	-	-	-	-
	B2	ND	Maintenance	-	-	-	-
	B3	ND	Repair	-	-	-	-
	B4	ND	Replacement	-	-	-	-
	B5	ND	Refurbishment	-	-	-	-
	B6	ND	Operational energy use	-	-	-	-
	B7	ND	Operational water use	-	-	-	-
End-of-life stage	C1	ND	Deconstruction demolition	-	-	-	-
	C2	x	Transport	EU	-	-	-
	C3	x	Waste processing	EU	-	-	-
	C4	x	Waste disposal	EU	-	-	-
Benefits and loads beyond the system boundaries	D	x	Reuse - Recovery - Recycling potential	EU	-	-	-

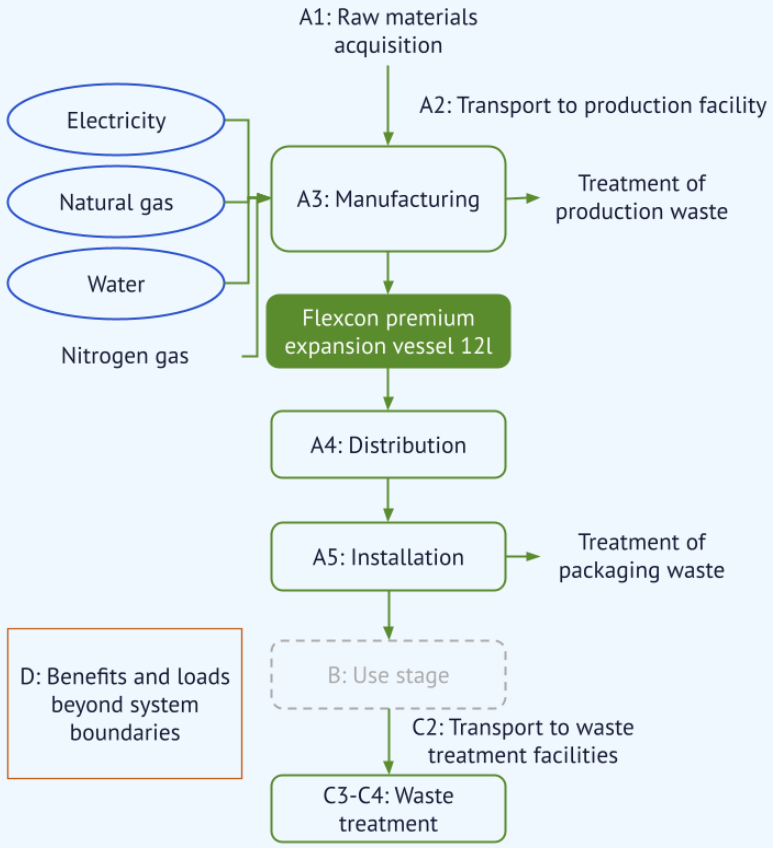

Figure 1. Flowchart of the product system.

Data quality assessment

It is assumed that the data quality of the information from the processes at the producer is higher than that of the other processes. Therefore, producer specific data are used when possible. These data are recent (2022), complete and based on one year averaged data. The technological coverage and geographical coverage reflect the physical reality of the product. Furthermore, the economic flows approach reality as closely as possible within practically feasible limits for the LCA practitioner.

The time representativeness of the used references for generic data is accurate, since the difference between the reference year (2022) and the time period for which the data is representative (2019) is <3 years.

The geographical coverage of this study is representative of the geographical scope of the production process. Where possible, specific country specific datasets are selected. Where this is not possible, region-specific datasets are selected. The quality level ranges from good to very good.

The technological coverage of this study is representative as specific business, product, and process data of the year 2022 are used to model the product system under study. Therefore, the data quality is very good.

The scenarios in this study are currently in use and are representative for one of the most probable alternatives.

Allocation procedures

The principle of modularity is maintained. Where processes influence the product's environmental performance during its life cycle, their impact is attributed to the module in the life cycle where they occur. The sum of the

allocated inputs and outputs of a unit process is equal to the inputs and outputs of the unit process before allocation. This means no double counting or omission of inputs or outputs through allocation occurs.

Allocation of co-products

Allocation is avoided when possible. When allocation is necessary, it is based on physical properties when the revenue is low and on economic values in all other cases. Materials flows with specific inherent properties (e.g. biogenic carbon) are allocated according to their physical flows. Avoided impacts from allocated co-products are not declared in module D.

Allocation of end-of-life scenarios

The end-of-life system boundary of the product system is set where outputs of the system have reached the end-of-waste state. Examples of these outputs are materials, products or construction elements. This approach ensures that all waste processing during any module of the products system is included up to the system boundary of the respective module. Potential loads and benefits of secondary material, secondary fuel, or recovered energy leaving the product system are declared in module D. When a secondary material or fuel crosses the system boundary, for example at the end-of-waste state substituting another material or fuel in the following product system, the benefits and/or loads will be calculated based on a specified scenario based on current average practice.

Cut-off criteria and assumptions

All inputs and outputs for which data is available are included in the LCA. Data gaps are filled with conservative assumptions and generic data. The cut-off criteria for data gaps is 1% of renewable and nonrenewable energy usage and 1% of the total mass input of that unit process. The total of excluded input floss per module will not exceed 5% of energy usage and mass input. This LCA uses expert judgement and conservative considerations to determine which inputs comply with these criteria.

Galvanised steel

There is no reference dataset for galvanised steel in the Ecoinvent 3.8 database. For this study, galvanised steel is modelled according to the same principles as used in the Dutch Nationale Milieu database [9]. 98,6% of the weight is modelled as low-alloyed steel using the datasets *'steel production, converter, low-alloyed [EUR]'* and *'steel production, electric, low-alloyed [EUR]'* in an approximately 74% to 26% proportion in order to accurately represent the the secondary content of steel. The rest of the weight is assumed to be the zinc coating. For 1 kg of galvanised steel, 0,06 m^2 of zinc coating is assumed, which is modelled using the dataset *'zinc coating, coils [EUR]'*.

Exclusion of installation and deinstallation energy inputs

The installation and deinstallation of the expansion vessels only require manual energy. Any electricity inputs that might take place during individual installation are considered negligible.

Recycling of regular steel

The end-of-life scenario for Greentec steel produced by Voestalpine is specified in the Greentec steel EPD used in this LCA (see table 5). The waste treatment modelling of other steel is based on both the average European steel recycling values [5]. The share of steel that is recycled at the end of life of the expansion vessels is assumed to be 90%. The rest of the material is assumed to be landfilled as a worst-case scenario.

Content declaration

The table below displays the material content of one unit of the Flexcon premium 3 bar expansion vessel with the capacity of 18 litres. The packaging per unit of product is also included in the table.

Table 3. Material content of one unit of the Flexcon premium 3 bar expansion vessel with the capacity of 18 litres.

Material	Weight (kg per 18-litre vessel)	Post-consumer recycled material, weight-%	Biogenic material, weight-% and kg C/18-litre vessel
Polyester coating	0,042	-	-
Greentec steel	2,540	25	-
Other steel	0,715	25,79	-
Thermoplastic polyolefins	0,232	-	-
PP	0,010	-	-
PA-66	0,005	-	-
Nitrogen gas	0,000015		
Total weight excl. packaging	**3,540**		
Material (packaging)	Weight (kg per 18-litre vessel)	Weight-% (versus product)	Biogenic material, weight - % and kg C/18-litre vessel
Cardboard	0,480	13,56	44,52%; 0,214
Total weight incl. packaging	**3,450**		

Declaration of material content of SVHC

The product does not contain any substances from the Candidate List of Substances of Very High Concern (SVHC) for authorisation in amounts greater than 0,1% (1000 ppm).

Calculation rules

Production stage (A1-A3)

The materials for one unit of the are listed in table 3. The raw materials are transported to the manufacturing facility by truck. The manufacturing takes place at the Aalberts HFC production facility in Almere, the Netherlands.

The production process starts with processing steel coils to create the body of the tank. Steel coils are flattened and cut into round disc shapes that form the basis for the expansion vessel. To make the clench ring, the coils are rolled into ring shapes. The flat discs undergo deep drawing to make the two halves of the vessel. Holes and threads are added to the vessel body. After the vessel halves dry up, they are pre-treated, cleaned, passivated, and coated with a powder coating, followed by baking to ensure proper adhesion. Valves are threaded into the valve openings created during deep drawing. A testing station evaluates the valves for leakage resistance. A membrane is inserted between the two halves. A clench ring secures the assembly, and hydraulic pressing forms a complete vessel. All the vessels are (pressure) tested for strength, then pressurised with nitrogen gas to desired levels, and equipped with valve caps, caps, water nipple caps, and labels.The vessels are then packed into boxes and stacked on pallets.

The process consumes wind generated electricity. The electricity was allocated based on the total consumption of one machine line per 24 hours and the approximate output quantity of expansion vessels during 24 hours.

The manufacturing waste that occurs at Aalberts consists only of Greentec steel, which is transported to the steel manufacturer to be recycled.

Construction stage (A4-A5)

The Flexcon premium 3 bar expansion vessels are mostly sold in the Netherlands, France, and Denmark. The products are always distributed by truck. A weighted average transport distance is calculated on the basis of distribution data provided by Aalberts on how many products are delivered over which distance. The transportation by truck (496 km) is modelled with a European average reference. This reference includes various lorry types and emission classes. The table below shows the characteristics of the included lorries.

The installation of the expansion vessel is done manually, therefore, there is no energy consumption during installation. The installation does not require any ancillary materials, water or other resources. There are no known direct emissions during the installation of the vessel. There are also no installation losses.

The waste processing impact of packaging is attributed to module A5, since the packaging is discarded at this stage.

Table 4. Transportation information per transportation type. The values for lorries are based on averages of vehicles of emission type EURO3-EURO6.

Type	Capacity utilisation (%)	Volume capacity utilisation factor	Bulk density product (kg/m3)	Fuel consumption per tkm	Fuel consumption per km
Lorry 3,5-7,5t	Default*	1	1577	0,109-0,111 kg	5,94E-05 kg
Lorry 7,5-16t D	Default*	1	1577	0,0472-0,0481 kg	2,57E-05 kg
Lorry 16-32t	Default*	1	1577	0,0366-0,0378 kg	1,86E-05 kg
Lorry >32t	Default*	1	1577	0,0192-0,0196 kg	1,05E-05 kg

* the default value from the Ecoinvent reference 'market group for transport, freight, lorry, unspecified | transport, freight, lorry, unspecified | Cutoff, U [GLO]' was used. More information can be found in the ecoinvent v3.8 database.

End-of-life stage (C2-C4)

For transport of waste to a waste treatment facility, the standard Dutch transport values from the NMD's Assessment Method [5]. The table below shows these values per waste scenario. The end-of-life waste processing of the expansion vessel is modelled based on average EU values on waste treatment [6][7][8] and the EPD for Greentec steel provided by Aalberts [9].

Table 5. Distance to waste treatment facilities and end-of-life waste treatment scenarios for the Flexcon premium expansion vessel.

Transportation distance (km)	50	100	50	0
Material	Landfill (%)	Incineration (%)	Recycling (%)	Reuse (%)
Greentec steel	5	0	95	0
Regular steel	10	0	90	0
Plastic and rubber	24,9	42,6	32,5	0
Paper and cardboard	0	18,5	81,5	0

Benefits and loads beyond the system boundaries (D)

The impact attributed to module D includes benefits from energy recovery due to incineration and primary material recovery due to recycling, as well as loss of secondary material due to incineration. The table below details the benefits and loads beyond the system boundaries of the life cycle of the Flexcon premium 3 bar expansion vessel with the capacity of 18 litres.

Table 6. Benefits and loads beyond the system boundaries of the life cycle of the Flexcon premium 3 bar expansion vessel with the capacity of 18 litres.

Benefit	Unit	Amount
Energy recovery (fossil)	MJ	3,780
Prevented steel production (Greentec)	kg	1,810
Prevented steel production (other steel)	kg	0,523
Prevented plastic and rubber production	kg	0,094
Load	Unit	Amount
Lost secondary steel (Greentec)	kg	0,032
Lost secondary steel (other steel)	kg	0,013

Environmental impact per declared unit (1 unit)

Tables 7 to 11 show the complete environmental profile of one unit of the Flexcon premium expansion vessel (18 l). The impact assessment results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

The GWP-GHG indicator is required by the PCR v1.3.2 of EPD International. The indicator accounts for all greenhouse gases, with the exception of biogenic carbon dioxide uptake, emissions or storage. It was calculated with the GWP-biogenic and GWP-fossil categories from EF 3.0. In this method, the characterisation factor for biogenic CO_2 is zero. The characterisation factor for fossil CH_4 is 36,8 and for biogenic CH_4 is 34. This impact category is not included in Climate change - total.

Additionally, the impact on climate change of electricity used during manufacturing is calculated using the GWP-GHG indicator and is 0,017 kg CO_2-eq/kWh.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks."

Disclaimer: the results of modules A1-A3 should not be used without considering the results of module C.

Table 7. Environmental impact of 1 unit of the Flexcon premium expansion vessel (18 l), in the core impact categories.

Impact category	A1-A3	A4	A5	B	C1	C2	C3	C4	D
GWP-total	8,94E+00	4,35E-02	5,14E-01	0,00E+00	0,00E+00	2,78E-02	4,17E-01	9,46E-03	-5,29E+00
GWP-f	9,72E+00	4,34E-02	-2,69E-01	0,00E+00	0,00E+00	2,78E-02	4,17E-01	9,46E-03	-5,28E+00
GWP-b	-7,85E-01	0,00E+00	7,85E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	1,21E-02	1,77E-05	-2,02E-03	0,00E+00	0,00E+00	1,13E-05	9,74E-05	1,85E-06	-1,90E-03
ODP	3,97E-07	1,02E-08	-3,23E-08	0,00E+00	0,00E+00	6,53E-09	1,31E-08	6,54E-10	-1,20E-07
AP	4,35E-02	2,46E-04	-1,36E-03	0,00E+00	0,00E+00	1,58E-04	6,63E-04	1,67E-05	-1,28E-02
EP-fw	1,64E-04	3,19E-07	-2,10E-05	0,00E+00	0,00E+00	2,05E-07	3,69E-06	2,50E-08	-5,21E-05
EP-m	7,03E-03	8,85E-05	-7,43E-04	0,00E+00	0,00E+00	5,67E-05	2,48E-04	1,42E-05	-2,68E-03
EP-t	1,27E-01	9,74E-04	-4,22E-03	0,00E+00	0,00E+00	6,24E-04	2,13E-03	6,24E-05	-2,72E-02
POCP	2,36E-02	2,79E-04	-8,30E-04	0,00E+00	0,00E+00	1,78E-04	6,03E-04	1,98E-05	-1,12E-02
ADP-mm [2]	9,16E-05	1,46E-07	-1,33E-06	0,00E+00	0,00E+00	9,32E-08	2,51E-06	5,06E-09	-1,94E-05
ADP-f [2]	1,09E+02	6,69E-01	-3,95E+00	0,00E+00	0,00E+00	4,28E-01	1,38E+00	4,76E-02	-5,25E+01
WDP [2]	2,11E+00	2,19E-03	-1,10E-01	0,00E+00	0,00E+00	1,41E-03	3,27E-02	2,10E-03	-4,78E-01
PM	5,22E-07	4,80E-09	-2,17E-08	0,00E+00	0,00E+00	3,07E-09	1,05E-08	3,27E-10	-1,75E-07

IR [1]	2,04E-01	2,90E-03	-1,25E-02	0,00E+00	0,00E+00	1,86E-03	6,31E-03	1,91E-04	-6,21E-02
ETP-fw [2]	1,13E+02	5,29E-01	-5,20E+00	0,00E+00	0,00E+00	3,39E-01	1,07E+01	5,68E-02	-3,95E+01
HTP-c [2]	1,87E-08	2,11E-11	-1,32E-10	0,00E+00	0,00E+00	1,35E-11	2,29E-10	1,08E-12	-6,15E-09
HTP-nc [2]	1,45E-07	6,10E-10	-3,22E-09	0,00E+00	0,00E+00	3,91E-10	4,08E-09	2,84E-11	-6,71E-08
SQP [2]	3,83E+01	5,70E-01	-1,40E+01	0,00E+00	0,00E+00	3,65E-01	3,38E+00	1,04E-01	-6,47E+00

GWP-total = Climate change [kg CO2 eq]; **GWP-f** = Climate change - Fossil [kg CO2 eq]; **GWP-b** = Climate change - Biogenic [kg CO2 eq]; **GWP-luluc** = Climate change - Land use and LU change [kg CO2 eq]; **ODP** = Ozone depletion [kg CFC11 eq]; **AP** = Acidification [mol H+ eq]; **EP-fw** = Eutrophication, freshwater [kg P eq]; **EP-m** = Eutrophication, marine [kg N eq]; **EP-T** = Eutrophication, terrestrial [mol N eq]; **POCP** = Photochemical ozone formation [kg NMVOC eq]; **ADP-mm** = Resource use, minerals and metals [kg Sb eq]; **ADP-f** = Resource use, fossils [MJ]; **WDP** = Water use [m3 depriv.]; **PM** = Particulate matter [disease inc.]; **IR** = Ionising radiation [kBq U-235 eq]; **ETP-fw** = Ecotoxicity, freshwater [CTUe]; **HTP-c** = Human toxicity - cancer; **HTP-nc =** Human toxicity - non-cancer; **SQP =** Land use [Pt] **1.** This impact category deals mainly with the eventual impact of low dose ionising 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 ionising radiation from the soil, from radon and from some construction materials is also not measured by this indicator. **2.** 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 experience with the indicator.

Table 8. The impact of 1 unit of the Flexcon premium expansion vessel (18 l), in the resource use indicators.

Resource use	A1-A3	A4	A5	B	C1	C2	C3	C4	D
PERE	2,87E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,87E+00
PERM	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	1,45E+01	9,61E-03	-3,00E+00	0,00E+00	0,00E+00	6,15E-03	1,13E-01	6,26E-04	-3,08E+00
PENRE	5,19E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,37E+01
PENRM	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	1,13E+02	7,10E-01	-4,27E+00	0,00E+00	0,00E+00	4,55E-01	1,46E+00	5,05E-02	-5,41E+01
SM	8,20E-01	0,00E+00	-8,88E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,02E-02
RSF	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	6,58E-02	7,97E-05	-4,13E-03	0,00E+00	0,00E+00	5,11E-05	1,13E-03	5,04E-05	-1,79E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ]; **PERM** = Use of renewable primary energy resources used as raw materials [MJ]; **PERT** = Total use of renewable primary energy resources [MJ]; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [MJ]; **PENRM** = Use of non-renewable primary energy resources used as raw materials [MJ]; **PENRT** = Total use of non-renewable primary energy resources [MJ]; **SM** = Use of secondary material [kg]; **RSF** = Use of renewable secondary fuels [MJ]; **NRSF** = Use of non-renewable secondary fuels [MJ]; **FW** = Use of net fresh water [m3]

Table 9. The impact of 1 unit of the Flexcon premium expansion vessel (18 l), in the waste indicators.

Waste categories	A1-A3	A4	A5	B	C1	C2	C3	C4	D
HWD	3,78E-04	1,71E-06	-5,01E-06	0,00E+00	0,00E+00	1,09E-06	3,32E-06	7,20E-08	-6,70E-05
NHWD	1,17E+00	4,46E-02	-4,88E-02	0,00E+00	0,00E+00	2,86E-02	1,07E-01	2,71E-01	-4,44E-01
RWD	5,29E-04	4,51E-06	-1,19E-05	0,00E+00	0,00E+00	2,89E-06	7,55E-06	2,99E-07	-2,71E-04

HWD = Hazardous waste disposed [kg]; **NHWD** = Non-hazardous waste disposed [kg]; **RWD** = Radioactive waste disposed [kg]

Table 10. The impact of 1 unit of the Flexcon premium expansion vessel (18 l), in the output flow indicators.

Output flows	A1-A3	A4	A5	B	C1	C2	C3	C4	D
CRU	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU = Components for re-use [kg]; **MFR** = Materials for recycling [kg]; **MER** = Materials for energy recovery [kg]; **EEE** = Exported energy, electric [MJ]; **EET** = Exported energy, thermal [MJ]

Table 11. The environmental impact of 1 unit of the Flexcon premium expansion vessel (18 l), on the additional indicator.

Additional indicators	A1-A3	A4	A5	B	C1	C2	C3	C4	D
GWP-GHG	9,73E+00	4,35E-02	-2,71E-01	0,00E+00	0,00E+00	2,78E-02	4,17E-01	9,46E-03	-5,29E+00

GWP-GHG = Climate change - greenhouse gases [kg CO2 eq]

Hedgehog Company

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