

Product Environmental Footprint

Pump-controlled pressure unit AT8340P

Nordic Average



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Created with MÅLBAR LCA software by Armatec A/S

Self-assessment – Not third-party verified.

This LCA screening follows the Product Environmental Footprint (PEF) method developed by the European Commission. The report exclusively reports the climate footprint (kg CO₂ eq)

GENERAL INFORMATION

Product: Control unit + packaging.

Product description: Variomat controller with pump for active pressure maintenance, ensuring smooth and stable operation in heating and cooling systems. The VS pump controller is used in combination with one or more vessels as a pressure maintenance system and is designed to accommodate volume changes in heating or cooling systems caused by temperature fluctuations during operation. The controller monitors and regulates a constant system operating pressure, maintaining stable conditions despite varying temperatures.

Functional Unit: Cradle-to grave of one control unit with a reference service life of 15 years¹.

¹ The lifetime value used for calculation is a reference value and does not equate with the minimum, average or real lifetime.

DATA SUMMARY

Product type: Control unit
Life cycle coverage: Cradle-to-grave

Total climate impact per Size:	kg CO ₂ eq.	Net Weight (kg)
VS 1	536	25
VS 2-1/35	642	30
VS 2-1/50	768	36
VS 2-1/75	1040	49
VS 2-1/95	1080	51
VS 1-1/140	1000	47
VS 2-2/35	1320	63
VS 2-2/60	1280	61
VS 2-2/75	1870	89
VS 2-2/95	1930	92
VS 1-2/140	2890	138

LCA INFORMATION

Reference Service Life (time): 15 years

Method: Product Environmental Footprint (PEF) methodology developed by the European Commission, attributional approach.
Modeled using the software www.maalbar.dk

Databases: EF 3.1 and ecoinvent 3.11

Primary data: User-provided inputs from Armattec A/S (material weights, packaging, logistics).

Secondary data: EF 3.1 and ecoinvent 3.11 datasets.

Where primary data were unavailable, PEF compliant average assumptions were applied.

Geographical representativeness: Nordic estimate based on production in Wąbrzeźno (Poland) and warehouse locations in Vejle (Denmark), Glostrup (Denmark), Mölndal (Sweden), Trollåsen (Norway) and Vantaa (Finland). The product is primarily distributed to B2B customers across the European Union, North America and Asia.

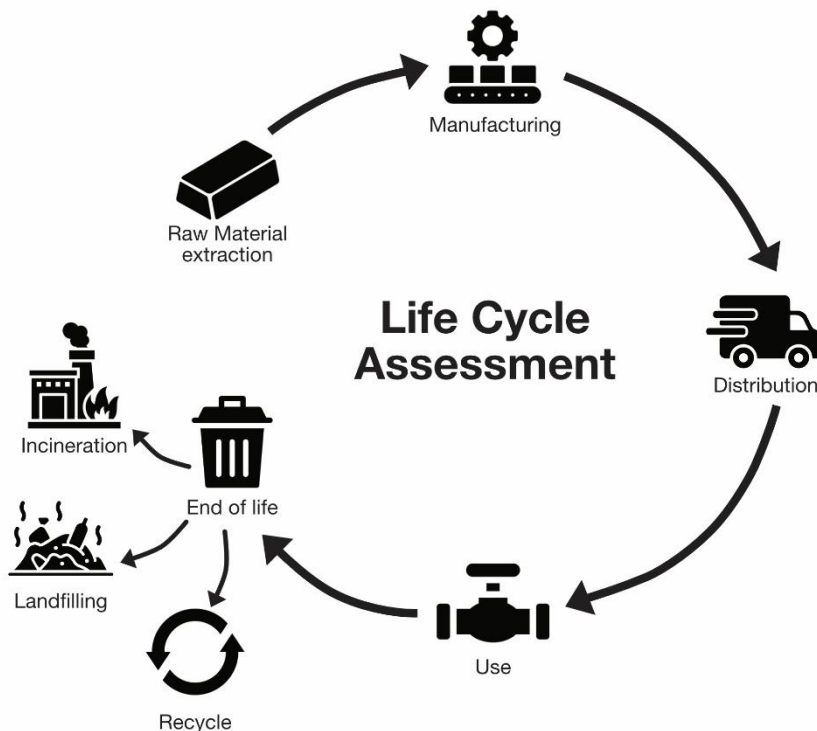
Purpose: The objective is to quantify the climate impact of the screened product using the Product Environmental Footprint (PEF) methodology. Other impact categories are not included in this assessment.

The report is a self-assessment, and the results are therefore intended for internal use only. Therefore, no independent third-party verification has been performed.

SYSTEM BOUNDARIES

Life cycle coverage: Cradle-to-grave.

Includes raw materials, preprocessing, component production, final manufacturing, packaging, distribution, use phase, and end of life treatment. The specific processes included in the life cycle can be found in the appendix 1 data qualification.



LIFE IMPACT ASSESSMENT

The assessment quantifies the cradle-to-grave climate impact (kg CO₂e) of the declared unit including both the control unit and its associated packaging. The contribution of each lifecycle stage is presented in the table below, enabling identification of the primary impact sources throughout the product life cycle.

Lifecycle Stage/size	VS 1 PIM: [insert]	VS 2-1/35 PIM: [insert]	VS 2-1/50 PIM: [insert]	VS 2-1/75 PIM: [insert]	VS 2-1/95 PIM: [insert]	VS 1-1/140 PIM: [insert]
	Net: 25 kg Gross: 26.63 kg	Net: 30 kg Gross: 31.63 kg	Net: 36 kg Gross: 37.6 kg	Net: 49 kg Gross: 50.6 kg	Net: 51 kg Gross: 52.6 kg	Net: 47 kg Gross: 48.6 kg
	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.
Material	192	229	275	372	388	357
Manufacturing	327	392	470	639	665	613
Distribution	11.2	12.7	14.6	18.7	19.3	18.1
Use Phase	2.13	2.55	3.06	4.15	4.32	3.98
End of life	4.44	5.15	6	7.84	8.12	7.55
Total	536	642	768	1040	1080	1000

Lifecycle Stage/size	VS 2-2/35 PIM: [insert]	VS 2-2/60 PIM: [insert]	VS 2-2/75 PIM: [insert]	VS 2-2/95 PIM: [insert]	VS 1-2/140 PIM: [insert]
	Net: 63 kg Gross: 64.63 kg	Net: 61 kg Gross: 62.63 kg	Net: 89 kg Gross: 90.63 kg	Net: 92 kg Gross: 93.6 kg	Net: 138 kg Gross: 139.6 kg
	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.
Material	449	434	632	654	979
Manufacturing	838	811	1180	1220	1830
Distribution	23.1	22.5	31.3	32.2	46.7
Use Phase	5.27	5.1	7.43	7.68	11.5
End of life	9.61	9.34	13.2	13.6	20
Total	1320	1280	1870	1930	2890

METHODS

Standard for calculation

This LCA screening follows the EU Product Environmental Footprint (PEF) methodology. When Armatec A/S data were unavailable, average values were used. All life cycle stages are included. For the post-factory gate stages, Use Phase and End of Life, PEF-based average assumptions are applied based on the geographical location. Data sources include EF 3.1 PEF, ecoinvent 3.11, and other PEF compliant datasets (see more at maalbar.dk/transparency).

Relationship to other methods and standards

Each PEF requirement is developed based on recommendations from recognized environmental accounting methods and guidance documents. The main methodological guides considered are:

A. EN ISO 14040:2006	G. EN ISO 14025:2010	M. Ecological Footprint Standard
B. EN ISO 14044:2006	H. ISO 14050:2020	N. Greenhouse Gas Protocol
C. EN ISO 14067:2018	I. CEN ISO/TS 14071:2016	O. BP X30-323-0:2015
D. ISO 14046:2014	J. ISO 17024:2012	P. PAS 2050:2011
E. EN ISO 14020:2001	K. PEF Guide	Q. ENVIFOOD Protocol
F. EN ISO 14021:2016	L. ILCD	R. FAO:2026

DISCLAIMER

Armatec A/S is solely responsible for all user-input data (including material weights, packaging weight and dimensions, origins of production, origins of material, transport information and warehouse and retail information). In cases where specific product data were not available, Armatec developed estimates to ensure completeness of the assessment.

The distribution modelling represents a Nordic average based on the included warehouse locations and standard market assumptions. Actual results may therefore vary slightly in practice depending on the specific destination and shipment route. See appendix 1 for a detailed explanation of the data.

REPORT DISCLAIMER

This report is based on an automatically generated assessment report produced using MÅLBAR LCA, with Armatec A/S conducting the self-assessment.

APPENDIX 1: DATA QUALIFICATION

This LCA-screening is based on user-input data from Armatec A/S, along with average data in conformity with PEF. Where no user-input has been applied, average assumptions have been used following PEF guidance. The modelling inputs used can be found in the tables below.

Data Input		Description	Assumptions and limitations
Component production and waste	Percentage share of the total weight		
Pumps and motor	58% (VS 1 – VS 1-1/140), 62% (VS 2-2/35 - VS 1-2/140)	55% Pump (80% stainless steel, 8% machined steel, 3% Brass, 5% EPDM, 4% PA6) and 45 Electric motor < 500W	All weights distributions and production methods are estimates provided by the engineers at Armatec A/S. In cases where the correct material or production method is not available in the database, alternative options have been identified and estimated by the engineers at Armatec (Waste from material origin and during production is estimated based on PEF database standards.)
Valves, check valves, filters, manifolds	15% (VS 1 – VS 1-1/140), 13% (VS 2-2/2 – 2 1-2/140)	½ Brass die cast and ½ steel investment cast (lost wax).	
Control cabinet	10% (VS 1 – VS 1-1/140), 8% (VS 2-2/35 - VS 1-2/140)	35% PCB, 28% thermoplastic, 20% copper, 15% steel, 2% aluminum	
Sensors and cables	4% (For all sizes)	15% PCB, 20% thermoplastic, 50% copper, 10% steel, 5% Brass	
Frame and supporting steel components	13% (For all sizes)	98% Steel, 2% Powder coating	
Total:	100%		

Data Input		Description	Assumptions and limitations
Packaging: Half Pallet 200 L – 600 L	Weight (kg)		
	0.0025	Molded polypropylene (PP) item	All component weights are estimates provided by Armathec A/S.
	0.0094	Paper w/ black & white print	In cases where the correct material or production method is not available in the database, alternative options have been identified and estimated by the engineers at Armathec
	0.005	Polyethylene bag (PE-LD)	Estimations have been made for the geographical location of packaging production.
	1.22	Paper for packaging	
	0.012	Plastic stretch film	
	0.018	Polypropylene strapping band	
	1.6	Solid softwood	It is estimated that there can be 1 package of this size on a pallet (80 cm × 60 cm).

Data Input	Description	Assumptions and limitations
Location Tier 1 Warehouse	Wąbrzeźno, Poland. Vejle, Denmark; Glostrup, Denmark; Mölnä, Sweden; Trollåsen, Norway; Vantaa, Finland	It is assumed that production and assembly takes place in Poland. Nordic distribution is estimated using warehouse locations in Vejle, Glostrup, Mölnä, Trollåsen and Vantaa. The origin of materials is modelled based on PEF database standards.
Routes Tier 1 -> Warehouse Warehouse -> b2b	Tier 1 → warehouse average: 723.925 km road Europe: approx. 1,000 km road USA/Canada: approx. 7,500 km total, incl. 6,500 km sea + 1,000 km road. Asia: approx. 27,000 km total, incl. 26,960 km sea + 40 km road.	Transport distances are estimated using EcoTransIT (www.ecotransit.org), while transport modes are based on standard logistics assumptions. Road transport is assumed to be by lorry (14-20 tonnes) and sea transport by container vessel. Additional transport modelling follows PEF database methodologies. An average transport distance between suppliers and warehouse locations has also been estimated, as the assessment is intended to represent the aggregated logistics network across all Nordic locations. This screening estimate uses Gadheim (Germany), Toronto (Canada), and Shanghai (China) as representative destinations for Europe, North America, and Asia for B2B estimation. Where specific logistics data are unavailable, Nordic average assumptions are applied. Actual transport routes and distances may vary.
Product replacements - Logistics	0.1%	Estimate provided by the engineers at Armathec A/S
Product replacements - Quality	0.4%	Estimate provided by the engineers at Armathec A/S
Use phase Product category	Control unit, lifetime 15 years. Operational consumption: VS 1: 0.70 kW VS 2-1/35: 0.80 kW VS 2-1/60 – VS 1-1/140: 1.1 kW VS 2-2/35: 1.5 kW VS 2-2/35 – VS 11-2/140: 2.2 kW	Consists of: Product replacements, Quality and Energy use (if relevant) Estimate provided by the engineers at Armathec A/S
EoL Country share 2025	95% B2B – Europe 2.5% B2B – North America 2.5% B2B – Asia	This is an estimate prepared by Armathec's Country Share for the year 2025. Country share is based on warehouse activity shares. Each warehouse is assumed to use the same market split.