EPD Environmental product declaration

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

AIRFLOW REGULATORS

Constant airflow (CAV):
RPM-K
RPMC-K

Variable airflow (VAV):
RPM-V
RPM-LV

Approval number: 3013EPD-25-0168
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MANDÍK®

GENERAL INFORMATION

Programme	National Environmental Labelling Program (NPEZ)
Programme operator	MŽP, Ministry of the Environment of the Czech Republic
Contact	Vršovická 1442/65, Prague 10, 100 10 Czech Republic ekoznacka@mzp.cz www.ekoznacka.cz
LCA accountability	Lubos Nobilis, Nesuchyně 12, 270 07 Czech Republic nobilis.lubos@gmail.com
EPD owner	MANDÍK. a.s.

Product Category Rules (PCR)
CEN standard EN 15804 serve as the core Product Category Rules (PCR)
Third-party verification
Independent verification of the declaration and data, according to EN ISO 14025:2010: ☐ internal ☒ external
Third-party verifier: Building Research Institute – Certification company, Ltd. (Výzkumný ústav pozemních staveb – Certifikační společnost, s.r.o.) Pražská 810/16, 102 00 Praha 10, Czech Republic Jan Weinzettel, weinzettel@seznam.cz

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.

COMPANY INFORMATION

Manufacturing company (the headquarters and the production site)	MANDÍK. a.s. Dobříšská 550, Hostomice 267 24 Czech Republic Registration Nº: 26718405 VAT Nº: CZ26718405
Contacts	Phone: +420 311 706 706 E-mail: mandik@mandik.cz Web: https://mandik.cz/

Company information

MANDÍK, a.s. is a Czech family-owned company founded in 1990. Currently, it is one of the major European manufacturers of fire protection and air handling components, central air–handling units and industrial heating systems.

The company has established itself on the European market through its emphasis on quality, affordability, a wide product portfolio and flexibility in processing customer requests for changes to existing products or the development of new products.

Emphasis is also placed on supporting customers and our deliveries with service and technical support. Customers can thus rely on the successful completion of any business case. The current technical and commercial maturity of the company is documented by deliveries for buildings of the world's largest technology companies, banks, office complexes, high-rise buildings and deliveries of technically demanding custom products for nuclear power plants, etc. across the entire European continent, including deliveries outside Europe.

Up-to-date information on certifications and declarations are on the company's website.

The headquarters and production plant of the company is located in Hostomice, in the district of Beroun, in Czech Republic.

PRODUCT INFORMATION

Variable airflow regulators

Air flow regulators with constant flow are designed for regulating of air supply or air exhaust in ventilation systems. They can be installed in a horizontal, vertical or inclined positions. To ensure proper operation, the regulator must be installed with horizontal position of its blade´s axis. The aerodynamic forces acting on the regulator blade due to the flow are balanced by the control device, which is set according to the required flow. Adjustment of required flow is simply performed by lever with a pointer and scale. Mechanical controllers need not be connected to any external power source. The controller consists of the casing of the controller with a control blade and control device. Control device is placed inside of box with scale for adjustment of required flow. Accuracy of the scale is ± 5 %. Regulators can be alternatively equipped by actuating mechanism. It enable remote adjustment of required flow.

RPM-K

TPM 094/13

- Constant airflow regulator - round
- For keeping and regulation of constant airflow volume in HVAC systems
- Dimensions from DN 80 up to DN 400 mm
- Airflow volume from 50 up to 4 500 m3/h
- Set the desired flow rate manually or by actuator
- Material: casing and actuating mechanism made of galvanized steel, leaf made of aluminium, leaf axe, bearings and spring made of austenitic steel

RPMC-K

TPM 105/14

- Constant airflow regulator - square
- For keeping and regulation of constant airflow volume in HVAC systems
- Dimensions from 200 × 100 up to 600 × 600 mm
- Airflow volume from 250 up to 12 000 m3/h
- Set the desired flow rate manually or by actuator
- Material: casing and actuating mechanism made of galvanized steel, leaf made of aluminium, leaf axe, bearings and spring made of austenitic steel

Constant airflow regulators

Air flow controllers are intended for the use in buildings, installed in air supply or air exhaust ducts of HVAC systems. Controlling the air flow in different branches of the system, the air is directed to where needed when needed in order to assure both well-being and economic operation.

RPM-V

TPM 085/12

- For regulation of variable or constant airflow volume in HVAC systems
- Dimensions from DN 80 to DN 630 mm
- Airflow volume from 18 to 7 900 m3/h
- For Air velocities from 1 m/s
- Each regulator is equipped with an airflow pressure probe and electrical actuating
- Control based on flow, duct pressure, or room pressure
- With a compact VAV controller (LMV/NMV/SMV...), or a separate VAV controller (VRU) and drive
- Communication options: MP-BUS, NFC wireless, MODBUS RTU, BACnet MS/TP

RPM-LV

TPM 144/19

- For regulation of variable or constant airflow volume in HVAC systems
- Regulátor variabilního prútoku vzduchu - kruhový
- Průměr od DN 80 do DN 315 mm
- Prútok od 9 do 2 244 m3/h (tj. od 2,5 do 623 l/s)
- Pro rychlosti vzduchu od 0,5 m/s
- Pracuje již od regulační tlakové ztráty 2 Pa
- Každý regulátor je vybaven tlakovými sondami a servopohonem (Belimo LMV-D3W-MP.1 MDK, napájecí napětí 24 V, ovládací napětí 0–10 V nebo 2-10V)
- Možnost komunikace MP-BUS, NFC wireless, MODBUS RTU

Possible designs and other detailed information is given in the technical specifications of the products available on the company's website.

MATERIAL CONTENT

Table 1: Material content of the product – RPM-K manual

RPM-K manual								
Dimension (mm)	Ø 80		Ø 200		Ø 400		Post-consumer recycled material, weight-%*	Biogenic material, weight-% and kg C/DU
Weight (kg/DU)	2.09		3.76		6.56			
	kg	%	kg	%	kg	%		
Steel*	2.03E+00	97.04%	3.58E+00	95.17%	5.88E+00	88.33%	0	0
Plastics and rubber	2.67E-02	1.28%	5.83E-02	1.55%	9.85E-02	1.48%	0	0
Others	3.51E-02	1.68%	1.23E-01	3.28%	5.88E-01	8.84%	0	0

** the recyclate content is not declared, a pessimistic scenario of 0 % content is considered*

Table 2: Material content of packaging – RPM-K manual

RPM-K manual									
Dimension (mm)	Ø 80			Ø 200			Ø 400		
Packaging	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Cardboard	3.42E-02	1.64%	1.53E-02	6.15E-02	1.64%	2.75E-02	1.07E-01	1.64%	4.78E-02
PE	1.12E-02	0.54%	0	2.01E-02	0.54%	0	3.52E-02	0.54%	0
PVC	6.36E-03	0.30%	0	1.14E-02	0.30%	0	2.00E-02	0.30%	0
PP	1.53E-04	0.01%	0	2.76E-04	0.01%	0	4.82E-04	0.01%	0
Steel	1.20E-04	0.01%	0	2.17E-04	0.01%	0	3.78E-04	0.01%	0
Wood	1.18E-02	13.56%	5.27E-03	2.12E-02	13.56%	9.46E-03	3.71E-02	13.56%	1.66E-02
Total	6.38E-02	16.05%	2.05E-02	1.15E-01	16.05%	3.69E-02	2.01E-01	16.05%	6.43E-02

Table 3: Material content of the product – RPM-K with the actuator

RPM-K with the actuator								
Dimension (mm)	Ø 80		Ø 200		Ø 400		Post-consumer recycled material, weight-%*	Biogenic material, weight-% and kg C/DU
Weight (kg/DU)	2.65		4.30		7.38			
	kg	%	kg	%	kg	%		
Steel*	2.11E+00	79.90%	3.62E+00	84.13%	5.96E+00	80.81%	2.11E+00	79.90%
Plastics and rubber	2.67E-02	1.01%	5.98E-02	1.39%	9.85E-02	1.33%	2.67E-02	1.01%
Electronics	4.70E-01	17.77%	4.70E-01	10.93%	7.30E-01	9.89%	4.70E-01	17.77%
Others	3.51E-02	1.33%	1.52E-01	3.55%	5.88E-01	7.96%	3.51E-02	1.33%

** the recyclate content is not declared, a pessimistic scenario of 0 % content is considered*

Table 4: Material content of packaging – RPM-K with the actuator

RPM-K with the actuator									
Dimension (mm)	Ø 80			Ø 200			Ø 400		
Packaging	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Cardboard	4.33E-02	1.64%	1.93E-02	7.04E-02	1.64%	3.14E-02	1.21E-01	1.64%	5.40E-02
PE	1.42E-02	0.54%	0	2.31E-02	0.54%	0	3.96E-02	0.54%	0
PVC	8.06E-03	0.30%	0	1.31E-02	0.30%	0	2.25E-02	0.30%	0
PP	1.94E-04	0.01%	0	3.16E-04	0.01%	0	5.42E-04	0.01%	0
Steel	1.52E-04	0.01%	0	2.48E-04	0.01%	0	4.25E-04	0.01%	0
Wood	1.50E-02	13.56%	6.70E-03	2.43E-02	13.56%	1.08E-02	4.17E-02	13.56%	1.86E-02
Total	8.08E-02	16.05%	2.60E-02	1.31E-01	16.05%	4.23E-02	2.26E-01	16.05%	7.26E-02

Table 5: Material content of the product – RPMC-K manual

RPCM-K manual								
Dimension (mm)	200x100		300x300		600x600		Post-consumer recycled material, weight-%*	Biogenic material, weight-% and kg C/ DU
Weight (kg/DU)	4.19		6.68		19.34			
	kg	%	kg	%	kg	%		
Steel*	4.10E+00	97.87%	6.26E+00	93.78%	1.61E+01	83.31%	0	0
Aluminium	8.59E-02	2.05%	4.09E-01	6.13%	3.21E+00	16.59%	0	0
Plastics and rubber	3.48E-03	0.08%	5.91E-03	0.09%	1.96E-02	0.10%	0	0

** the recyclate content is not declared, a pessimistic scenario of 0 % content is considered*

Table 6: Material content of packaging – RPMC-K manual

RPCM-K manual									
Dimension (mm)	200x100			300x300			600x600		
Packaging	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Cardboard	6.86E-02	1.64%	3.06E-02	1.09E-01	1.64%	4.87E-02	3.17E-01	1.64%	1.42E-01
PE	2.25E-02	0.54%	0	3.58E-02	0.54%	0	1.04E-01	0.54%	0
PVC	1.28E-02	0.30%	0	2.03E-02	0.30%	0	5.89E-02	0.30%	0
PP	3.08E-04	0.01%	0	4.90E-04	0.01%	0	1.42E-03	0.01%	0
Steel	2.42E-04	0.01%	0	3.85E-04	0.01%	0	1.11E-03	0.01%	0
Wood	2.37E-02	13.56%	1.06E-02	3.77E-02	13.56%	1.68E-02	1.09E-01	13.56%	4.87E-02
Total	1.28E-01	16.05%	4.12E-02	2.04E-01	16.05%	6.55E-02	5.91E-01	16.05%	1.90E-01

Table 7: Material content of the product – RPMC-K with the actuator

RPCM-K s pohonem								
Dimension (mm)	200x100		300x300		600x600		Post-consumer recycled material, weight-%*	Biogenic material, weight-% and kg C/ DU
Weight (kg/DU)	4.72		7.49		21.49			
	kg	%	kg	%	kg	%		
Steel*	4.17E+00	88.19%	6.34E+00	84.71%	1.64E+01	76.14%	0	0
Aluminium	8.59E-02	1.82%	4.09E-01	5.46%	3.21E+00	14.93%	0	0
Electronics	4.70E-01	9.94%	7.30E-01	9.75%	1.90E+00	8.84%		
Plastics and rubber	2.48E-03	0.05%	5.91E-03	0.08%	1.96E-02	0.09%	0	0

** the recyclate content is not declared, a pessimistic scenario of 0 % content is considered*

Table 8: Material content of packaging – RPMC-K with the actuator

RPCM-K s pohonem									
Dimension (mm)	200x100			300x300			600x600		
Packaging	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Cardboard	7.74E-02	1.64%	3.46E-02	1.23E-01	1.64%	5.49E-02	3.52E-01	1.64%	1.57E-01
PE	2.53E-02	0.54%	0	4.02E-02	0.54%	0	1.15E-01	0.54%	0
PVC	1.44E-02	0.30%	0	2.28E-02	0.30%	0	6.54E-02	0.30%	0
PP	3.47E-04	0.01%	0	5.50E-04	0.01%	0	1.58E-03	0.01%	0
Steel	2.72E-04	0.01%	0	4.32E-04	0.01%	0	1.24E-03	0.01%	0
Wood	2.67E-02	13.56%	1.19E-02	4.23E-02	13.56%	1.89E-02	1.21E-01	13.56%	5.40E-02
Total	1.44E-01	16.05%	4.65E-02	2.29E-01	16.05%	7.38E-02	6.57E-01	16.05%	2.11E-01

Table 9: Material content of the product – RPM-V

RPM-V								
Dimension (mm)	Ø 80		Ø 315		Ø 630		Post-consumer recycled material, weight-%*	Biogenic material, weight-% and kg C/ DU
Weight (kg/DU)	1.54		5.21		19.70			
	kg	%	kg	%	kg	%		
Steel*	9.14E-01	59.16%	4.45E+00	85.42%	1.85E+01	93.76%	0	0
Electronics	5.50E-01	35.61%	5.50E-01	10.56%	9.10E-01	4.61%	0	0
Plastics and rubber	6.90E-02	4.47%	1.69E-01	3.24%	2.30E-01	1.16%	0	0
Others	0	0%	1.05E-03	0.02%	6.05E-02	0.31%	0	0

** the recyclate content is not declared, a pessimistic scenario of 0 % content is considered*

Table 10: Material content of packaging – RPM-V

RPM-V									
Dimension (mm)	Ø 80			Ø 315			Ø 630		
Packaging	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Cardboard	2,10E-02	1,64%	9,38E-03	7,08E-02	1,64%	3,16E-02	1,20E-01	1,64%	5,40E-02
PE	6,87E-03	0,54%	0	2,32E-02	0,54%	0	8,79E-02	0,54%	0
PVC	3,90E-03	0,30%	0	1,32E-02	0,30%	0	4,99E-02	0,30%	0
PP	9,41E-05	0,01%	0	3,18E-04	0,01%	0	1,20E-03	0,01%	0
Steel	7,39E-05	0,01%	0	2,49E-04	0,01%	0	9,45E-04	0,01%	0
Wood	7,25E-03	13,56%	3,24E-03	2,44E-02	13,56%	1,09E-02	4,13E-02	13,56%	1,86E-02
Total	3,92E-02	16,05%	1,26E-02	1,32E-01	16,05%	4,25E-02	1,61E-01	16,05%	7,26E-02

Table 11: Material content of the product - RPM-V, with insulation

RPM-V, with insulation								
Dimension (mm)	Ø 80		Ø 315		Ø 630		Post-consumer recycled material, weight-%*	Biogenic material, weight-% and kg C/DU
Weight (kg/DU)	3.16		8.84		27.5			
	kg	%	kg	%	kg	%		
Steel*	2,05E+00	64,92%	7,07E+00	79,94%	2,45E+01	89,16%	0	0
Electronics	5,50E-01	17,40%	5,50E-01	6,22%	9,10E-01	3,31%	0	0
Rock wool	4,45E-01	14,08%	9,84E-01	11,13%	1,74E+00	6,31%	0	0
Plastics and rubber	9,66E-02	3,05%	1,99E-01	2,25%	2,47E-01	0,90%	0	0
Others	1,05E-03	0,03%	1,05E-03	0,01%	5,94E-02	0,22%	0	0

** the recyclate content is not declared, a pessimistic scenario of 0 % content is considered*

Table 12: Material content of packaging – RPM-V, with insulation

RPM-V, with insulation									
Dimension (mm)	Ø 80			Ø 315			Ø 630		
Packaging	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Cardboard	4,29E-02	1,64%	1,92E-02	1,20E-01	1,64%	5,36E-02	3,74E-01	1,64%	1,67E-01
PE	1,41E-02	0,54%	0	3,94E-02	0,54%	0	1,22E-01	0,54%	0
PVC	7,99E-03	0,30%	0	2,24E-02	0,30%	0	6,95E-02	0,30%	0
PP	1,93E-04	0,01%	0	5,39E-04	0,01%	0	1,68E-03	0,01%	0
Steel	1,51E-04	0,01%	0	4,23E-04	0,01%	0	1,32E-03	0,01%	0
Wood	1,48E-02	13,56%	6,61E-03	4,15E-02	13,56%	1,85E-02	1,29E-01	13,56%	5,76E-02
Total	8,02E-02	16,05%	2,58E-02	2,24E-01	16,05%	7,21E-02	6,98E-01	16,05%	2,25E-01

Table 13: Material content of the product – RPM-LV

RPM-V								
Dimension (mm)	Ø 80		Ø 160		Ø 315		Post-consumer recycled material, weight-%*	Biogenic material, weight-% and kg C/ DU
Weight (kg/DU)	1.50		2.41		5.33			
	kg	%	kg	%	kg	%		
Steel*	8.42E-01	56.18%	1.71E+00	71.18%	4.56E+00	85.68%	0	0
Electronics	5.50E-01	36.71%	5.50E-01	22.85%	5.50E-01	10.33%	0	0
Plastics and rubber	8.26E-02	5.51%	1.13E-01	4.70%	1.82E-01	3.41%	0	0
Others	1.66E-02	1.11%	2.34E-02	0.97%	2.37E-02	0.44%	0	0

** the recyclate content is not declared, a pessimistic scenario of 0 % content is considered*

Table 14: Material content of packaging – RPM-LV

RPM-V									
Dimension (mm)	Ø 80			Ø 160			Ø 315		
Packaging	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Cardboard	2.04E-02	1.64%	9.11E-03	3.27E-02	1.64%	1.46E-02	7.24E-02	1.64%	3.23E-02
PE	6.67E-03	0.54%	0	1.07E-02	0.54%	0	2.37E-02	0.54%	0
PVC	3.79E-03	0.30%	0	6.09E-03	0.30%	0	1.35E-02	0.30%	0
PP	9.13E-05	0.01%	0	1.47E-04	0.01%	0	3.25E-04	0.01%	0
Steel	7.17E-05	0.01%	0	1.15E-04	0.01%	0	2.55E-04	0.01%	0
Wood	7.03E-03	13.56%	3.14E-03	1.13E-02	13.56%	5.04E-03	2.50E-02	13.56%	1.12E-02
Total	3.80E-02	16.05%	1.22E-02	6.11E-02	16.05%	1.96E-02	1.35E-01	16.05%	4.35E-02

Table 15: Material content of the product – RPM-LV, with insulation

RPM-V, with insulation								
Dimension (mm)	Ø 80		Ø 160		Ø 315		Post-consumer recycled material, weight-%*	Biogenic material, weight-% and kg C/ DU
Weight (kg/DU)	2.45		3.83		8.94			
	kg	%	kg	%	kg	%		
Steel*	1.56E+00	63.82%	2.79E+00	73.05%	7.14E+00	79.89%	0	0
Electronics	5.50E-01	22.46%	5.50E-01	14.38%	5.50E-01	6.15%	0	0
Rock wool	2.30E-01	9.39%	3.32E-01	8.68%	1.03E+00	11.48%	0	0
Plastics and rubber	9.18E-02	3.75%	1.28E-01	3.36%	1.92E-01	2.15%	0	0
Others	7.17E-03	0.29%	1.35E-02	0.35%	2.21E-02	0.25%	0	0

** the recyclate content is not declared, a pessimistic scenario of 0 % content is considered*

Table 16: Material content of packaging – RPM-LV, with insulation

RPM-V, with insulation									
Dimension (mm)	Ø 80			Ø 160			Ø 315		
Packaging	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU	kg/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/DU
Cardboard	3.33E-02	1.64%	1.49E-02	5.20E-02	1.64%	2.32E-02	1.22E-01	1.64%	5.45E-02
PE	1.09E-02	0.54%	0	1.70E-02	0.54%	0	3.98E-02	0.54%	0
PVC	6.19E-03	0.30%	0	9.67E-03	0.30%	0	2.26E-02	0.30%	0
PP	1.49E-04	0.01%	0	2.33E-04	0.01%	0	5.45E-04	0.01%	0
Steel	1.17E-04	0.01%	0	1.83E-04	0.01%	0	4.28E-04	0.01%	0
Wood	1.15E-02	13.56%	5.13E-03	1.80E-02	13.56%	8.04E-03	4.20E-02	13.56%	1.88E-02
Total	6.21E-02	16.05%	2.00E-02	9.71E-02	16.05%	3.13E-02	2.27E-01	16.05%	7.32E-02

LCA INFORMATION

Declared unit:	1 pc of constant airflow regulator of a specific type. The weight of 1 pc is listed in the material content.
Reference service life:	20 years (used for calculation of energy consumption in the use phase)
Geografilcal scope:	Stage A1-A3 Europe, A4-C4 Global
Time representativeness:	2022
Database(s) and LCA software used:	Ecoinvent 3.9 (using the Cut-off processes/allocation model), Simapro v. 9.5 EN 15804 reference package based on EF 3.1 For the RPM-V and RPM-LV products, which were added to the EPD by revision no. 1, the Ecoinvent 3.10 database was used (using EN 15804/process cut off/ allocation model)
Cut-off rules:	Neglected flow in all modules is less than 1% of the energy use and total mass.
Allocation method:	Weight allocations: A3 energy/fuels consumption, waste and air emissions outputs are allocated by total products (constant airflow regulators) manufactured over 1 year.
Description of system boundaries:	The type of EPD is Cradle to Grave and module D (EPD Type c - Modules A1-A3, A4-A5, B1-B7, C1-C4, and D).
Infrastructure/capital goods:	Infrastructure is part of the generic processes used for upstream and downstream. For the Core phase, infrastructure was not considered.
Determination of representatives:	The EPD is processed for representatives of the dimensional range of individual product types - the smallest, medium and largest dimensions. The results are divided by type of control - manual or by actuating mechanism, or according to the insulation content.

Production stage (A1-A3)

The A1 module contains primarily the production of components for the assembly of complete constant airflow regulators. These are profiles and components made of steel, aluminium, plastics and electronics. Furthermore, it concerns the production of electricity, the extraction and distribution of natural gas, and the production of fuels and operational inputs for production.
Phase A2 includes the transportation of the above-mentioned materials and components to production in phase A3.
In production (A3), the processing of purchased materials takes place, especially formatting, punching, plasma cutting, welding, etc. of galvanized sheets, other metals.
This is related to the consumption of electricity, natural gas and fuels for internal and commercial transport and emissions from their use.
PE foil, PVC, PP, cardboard, wood (disposable pallets) and steel are used for product packaging.
Production generates waste from production (iron and steel, plastics) and waste packaging (plastics, paper and cardboard, mixed).

Transport to construction stage (A4)

The A4 module represents transport to customers around the world in the reference year. The truck, 16-32 t, diesel, consupmption 38 l per 100 km, EURO 6, are considered. The distance is given by a summary of specific transports for the product line.

Construction-Installation (A5)

In phase A5, the generation of waste from product packaging is considered. The installation of airflow regulators to building is considered as manual (in ventilation ducts) without any ancillary materials for instalation. There are output materials as result of waste processing at the building site - packaging waste (cardboard, PE, PP, PVC, steel), their quantity is determined by the type of product. There are no direct emissions to ambient air, soil and water.

Use stage (B1-B7)

In the use phase, the operating electrical energy consumption of the actuator in module B6 is considered. On the basis of expert estimation, a service life of 20 years with continuous operation is considered. For the calculation, 5 % of the adjustment time of the regulator blade and the remaining time in stand-by mode is considered. The power output of the actuator depends on the parameters of the specific type.

The usage module (B1) is without inputs and outputs, as is the operational water consumption (B7). The repair (B3) and replacement (B4) modules are modeled without inputs and outputs, as these situations may occur, but do not result directly from the requirements for using the product. Cleaning may occur in the maintenance module (B2), but it is not specified in technical specifications.

End-of-Life stage (C1-C4)

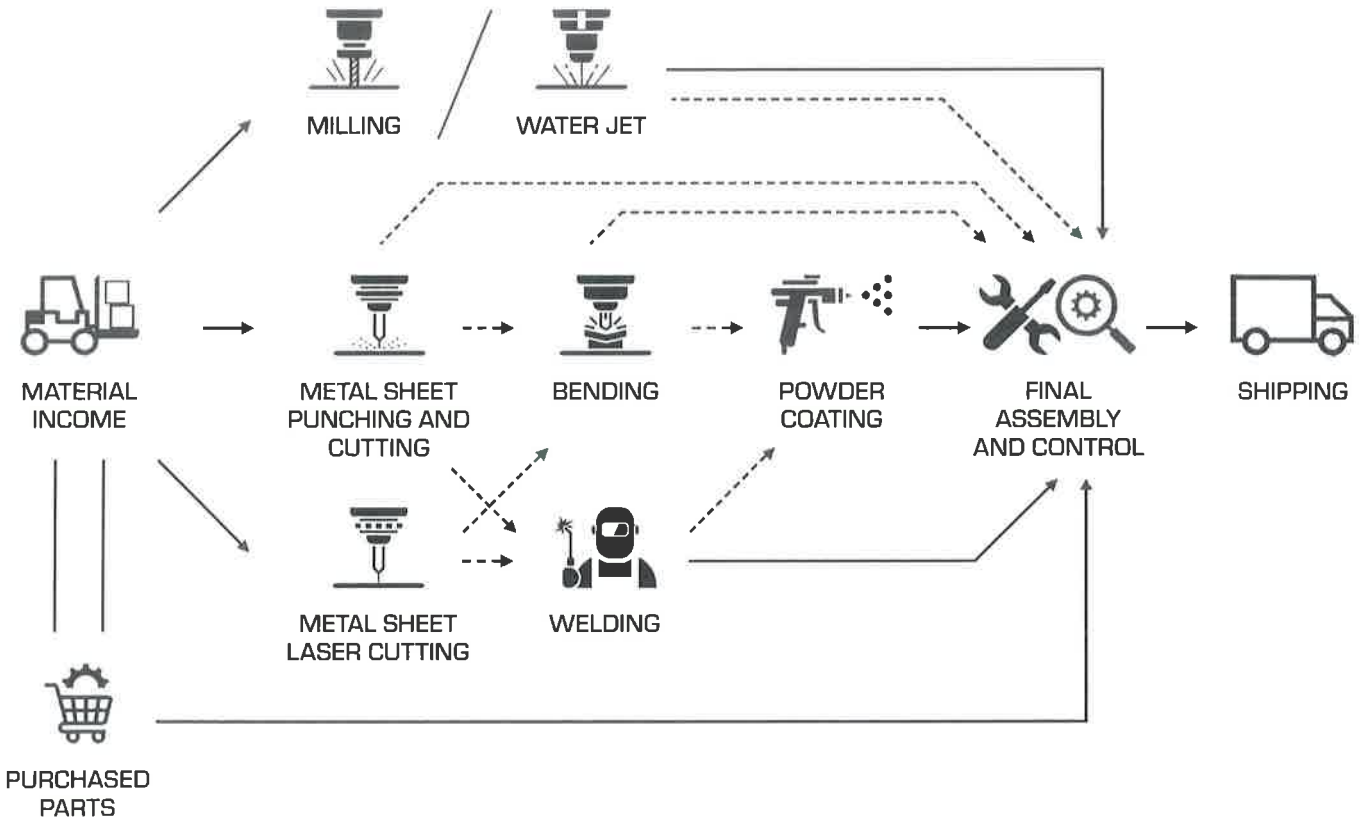
In the C1 and C2 modules, manual deconstruction and transport for processing at a distance of 50 km is considered. All electronic equipment is collected separately and handed over for take-back.
In the C3 module, the recycling of metal and electronic components (70 %), the energy use of plastics (1 %) and the landfilling of the remaining materials (29 %) are calculated.

Benefits and loads beyond the system boundary (D) - Reuse, Recovery, Recycling potentials

Benefits and costs beyond the boundary of the product system correspond to the replacement of primary materials and energy due to the generation of metal recycle and electricity and heat from energy use in phase C3.

Specific technical information for scenarios of a specific product type will be provided by the company upon request.

SYSTEM DIAGRAM



SYSTEM BOUNDARIES

	Product stage			Construction stage		Use stage	End of life stage				Benefits and loads beyond the system boundary
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use Maintenance Repair Replacement Refurbishment Operational energy use Operational water use	De-construction / demolition	Transport	Waste processing	Disposal	Reuse-recovery
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

X – module declared
ND – module not declared

LCA RESULTS

Unlisted modules have zero results.
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.
It is not recommended to use the results of modules A1-A3 without considering the results of module C.
An example of electrical energy savings of an HVAC system when using VAV vs. CAV is given in the additional environmental information.

Table 17: Core environmental impact indicators - RPM-K, DN 80 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	7,31E+00	2,64E-01	5,29E-04	1,92E-02	2,54E-02	1,87E-04	-3.91E+00
Climate change - Biogenic	kg CO2 eq	4,71E-02	2,42E-04	4,75E-03	1,76E-05	3,46E-06	1,19E-06	-8,86E-03
Climate change - Land use and LU change	kg CO2 eq	1,23E-02	1,30E-04	6,20E-08	9,49E-06	1,27E-07	1,36E-07	-7,86E-03
Climate change	kg CO2 eq	7,37E+00	2,65E-01	5,27E-03	1,92E-02	2,54E-02	1,89E-04	-3,93E+00
GWP-GHG	kg CO2 eq	7,35E+00	2,64E-01	1,49E-03	1,92E-02	2,54E-02	1,88E-04	-3,92E+00
Ozone depletion	kg CFC11 eq	1,65E-07	5,75E-09	4,38E-12	4,18E-10	2,84E-11	4,43E-12	-7,01E-08
Acidification	mol H+ eq	7,91E-02	5,78E-04	1,60E-06	4,20E-05	5,51E-06	1,33E-06	-1,85E-02
Eutrophication, freshwater*	kg P eq	3,93E-03	1,88E-05	8,15E-08	1,37E-06	5,50E-08	4,91E-08	-1,90E-03
Eutrophication, marine	kg N eq	9,68E-03	1,46E-04	5,04E-06	1,06E-05	3,24E-06	4,99E-07	-4,04E-03
Eutrophication, terrestrial	mol N eq	2,84E-01	1,48E-03	7,70E-06	1,08E-04	2,75E-05	5,34E-06	-4,10E-02
Photochemical ozone formation	kg NMVOC eq	3,35E-02	8,97E-04	3,01E-06	6,52E-05	6,88E-06	1,81E-06	-1,83E-02
Resource use, minerals and metals*	kg Sb eq	1,84E-04	8,64E-07	4,11E-10	6,28E-08	9,43E-10	3,80E-10	-2,63E-05
Resource use, fossils*	MJ	9,11E+01	3,75E+00	3,07E-03	2,73E-01	3,72E-03	4,06E-03	-4,21E+01
Water use*	m^3 depriv.	4,82E-01	1,55E-02	-1,72E-05	1,13E-03	1,34E-04	1,72E-04	1,86E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 18: Additional environmental impact indicators - RPM-K, DN 80 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Particulate matter	disease inc.	9,89E-07	1,97E-08	3,52E-11	1,43E-09	2,45E-11	2,87E-11	-3,37E-07
Human toxicity, non-cancer*	CTUh	1,68E-07	2,66E-09	1,16E-11	1,94E-10	6,03E-11	1,17E-12	-8,96E-08
Human toxicity, cancer*	CTUh	3,87E-08	1,20E-10	1,72E-12	8,76E-12	1,43E-12	1,05E-13	-2,98E-08
Land use*	Pt	2,51E+01	2,27E+00	5,72E-03	1,65E-01	1,04E-03	9,27E-03	-1,29E+01
Ionising radiation**	kBq U-235 eq	6,39E-01	5,08E-03	5,10E-06	3,69E-04	1,29E-05	5,35E-06	-1,58E-01
Ecotoxicity, freshwater	CTUe	7,97E+01	1,86E+00	2,13E-02	1,35E-01	5,40E-02	1,78E-03	-2,13E+01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
** Disclaimer: 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.

Table 19: Parameters describing resource use - RPM-K, DN 80 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	8,48E+00	5,90E-02	7,96E-05	4,29E-03	2,18E-04	6,97E-05	-4,82E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	8,48E+00	5,90E-02	7,96E-05	4,29E-03	2,18E-04	6,97E-05	-4,82E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	9,71E+01	3,99E+00	3,27E-03	2,90E-01	4,04E-03	4,32E-03	-4,46E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	9,71E+01	3,99E+00	3,27E-03	2,90E-01	4,04E-03	4,32E-03	-4,46E+01
Use of secondary material	kg	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of net fresh water	m3	2,48E-02	7,18E-04	1,83E-03	3,19E-05	2,76E-05	5,14E-05	-6,46E-03

Table 20: Other environmental information describing waste categories - RPM-K, DN 80 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Hazardous waste	kg	6,24E-03	9,40E-05	1,54E-05	6,83E-06	2,85E-04	1,01E-07	-1,11E-03
Non-hazardous waste disposed	kg	2,92E+00	1,86E-01	5,38E-03	1,36E-02	3,49E-04	1,60E-02	-1,69E+00
Radioactive waste disposed/stored	kg	1,58E-04	1,23E-06	1,19E-09	8,97E-08	3,20E-09	1,29E-09	-3,97E-05

Table 21: Environmental information describing output flows - RPM-K, DN 80 mm, manual

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	3,79E-02	0	0	2,06E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	4,18E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	8,17E-02	0	0

Table 22: Core environmental impact indicators - RPM-K, DN 80 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,01E+01	3,36E-01	6,69E-04	5,29E+01	2,44E-02	1,50E-01	1,87E-04	-4,09E+00
Climate change - Biogenic	kg CO2 eq	5,62E-02	3,08E-04	6,00E-03	5,03E-01	2,23E-05	3,46E-06	1,19E-06	-9,22E-03
Climate change - Land use and LU change	kg CO2 eq	1,67E-02	1,66E-04	7,84E-08	7,18E-02	1,20E-05	7,60E-06	1,36E-07	-8,01E-03
Climate change	kg CO2 eq	1,02E+01	3,37E-01	6,67E-03	5,35E+01	2,44E-02	1,49E-01	1,89E-04	-4,11E+00
GWP-GHG	kg CO2 eq	1,02E+01	3,36E-01	1,89E-03	5,30E+01	2,44E-02	1,50E-01	1,88E-04	-4,09E+00
Ozone depletion	kg CFC11 eq	2,11E-07	7,32E-09	5,54E-12	3,80E-07	5,31E-10	2,02E-10	4,43E-12	-7,31E-08
Acidification	mol H+ eq	1,18E-01	7,35E-04	2,03E-06	2,37E-01	5,33E-05	8,26E-05	1,33E-06	-1,94E-02
Eutrophication, freshwater*	kg P eq	7,02E-03	2,39E-05	1,03E-07	8,29E-02	1,73E-06	2,45E-06	4,91E-08	-1,98E-03
Eutrophication, marine	kg N eq	1,37E-02	1,85E-04	6,38E-06	5,15E-02	1,35E-05	3,07E-05	4,99E-07	-4,25E-03
Eutrophication, terrestrial	mol N eq	3,36E-01	1,88E-03	9,75E-06	3,81E-01	1,37E-04	3,48E-04	5,34E-06	-4,31E-02
Photochemical ozone formation	kg NMVOC eq	4,89E-02	1,14E-03	3,81E-06	1,12E-01	8,28E-05	7,04E-05	1,81E-06	-1,92E-02
Resource use, minerals and metals*	kg Sb eq	5,17E-04	1,10E-06	5,20E-10	3,44E-04	7,97E-08	8,42E-08	3,80E-10	-2,75E-05
Resource use, fossils*	MJ	1,24E+02	4,78E+00	3,88E-03	8,55E+02	3,46E-01	8,16E-02	4,06E-03	-4,40E+01
Water use*	m^3 depriv.	1,22E+00	1,97E-02	-2,18E-05	9,08E+00	1,43E-03	4,27E-03	1,72E-04	1,96E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 23: Additional environmental impact indicators - RPM-K, DN 80 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	1,25E-06	2,51E-08	4,45E-11	5,72E-07	1,82E-09	9,18E-10	2,87E-11	-3,52E-07
Human toxicity, non-cancer*	CTUh	5,38E-07	3,39E-09	1,46E-11	5,99E-07	2,46E-10	2,00E-09	1,17E-12	-9,33E-08
Human toxicity, cancer*	CTUh	5,17E-08	1,53E-10	2,18E-12	1,76E-08	1,11E-11	2,12E-11	1,05E-13	-3,11E-08
Land use*	Pt	3,99E+01	2,89E+00	7,24E-03	8,87E+01	2,09E-01	1,78E-01	9,27E-03	-1,36E+01
Ionising radiation**	kBq U-235 eq	8,45E-01	6,46E-03	6,46E-06	2,21E+01	4,69E-04	3,35E-04	5,35E-06	-1,63E-01
Ecotoxicity, freshwater	CTUe	1,20E+02	2,36E+00	2,70E-02	1,87E+02	1,71E-01	1,27E+00	1,78E-03	-2,24E+01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
** Disclaimer: 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.

Table 24: Parameters describing resource use - RPM-K, DN 80 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,20E+01	7,51E-02	1,01E-04	5,83E+01	5,44E-03	1,53E-02	6,97E-05	-4,98E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,20E+01	7,51E-02	1,01E-04	5,83E+01	5,44E-03	1,53E-02	6,97E-05	-4,98E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,32E+02	5,08E+00	4,14E-03	9,06E+02	3,68E-01	8,75E-02	4,32E-03	-4,66E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,32E+02	5,08E+00	4,14E-03	9,06E+02	3,68E-01	8,75E-02	4,32E-03	-4,66E+01
Use of secondary material	kg	0	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	3,16E-02	9,12E-04	2,33E-03	2,39E-02	4,05E-05	3,51E-05	6,53E-05	-8,20E-03

Table 25: Other environmental information describing waste categories - RPM-K, DN 80 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	1,22E-02	1,20E-04	1,94E-05	6,45E-02	8,67E-06	2,58E-03	1,01E-07	-1,17E-03
Non-hazardous waste disposed	kg	3,85E+00	2,37E-01	6,82E-03	5.22E+00	1,72E-02	7.73E-03	1,60E-02	-1,77E+00
Radioactive waste disposed/stored	kg	2,09E-04	1,57E-06	1,51E-09	5,31E-03	1,14E-07	8,27E-08	1,29E-09	-4,10E-05

Table 26: Environmental information describing output flows - RPM-K, DN 80 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	4,80E-02	0	0	2,62E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	4,18E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	8,17E-02	0	0

Table 27: Core environmental impact indicators - RPM-K, DN 200 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,36E+01	4,77E-01	9,51E-04	3,47E-02	4,34E-02	4,69E-04	-7,46E+00
Climate change - Biogenic	kg CO2 eq	8,64E-02	4,37E-04	8,52E-03	3,18E-05	5,92E-06	2,98E-06	-1,76E-02
Climate change - Land use and LU change	kg CO2 eq	3,24E-02	2,35E-04	1,11E-07	1,71E-05	2,16E-07	3,41E-07	-2,34E-02
Climate change	kg CO2 eq	1,37E+01	4,77E-01	9,47E-03	3,48E-02	4,34E-02	4,72E-04	-7,50E+00
GWP-GHG	kg CO2 eq	1,37E+01	4,77E-01	2,68E-03	3,47E-02	4,34E-02	4,70E-04	-7,47E+00
Ozone depletion	kg CFC11 eq	3,08E-07	1,04E-08	7,87E-12	7,56E-10	4,85E-11	1,11E-11	-1,36E-07
Acidification	mol H+ eq	1,45E-01	1,04E-03	2,88E-06	7,59E-05	9,42E-06	3,33E-06	-3,67E-02
Eutrophication, freshwater*	kg P eq	7,26E-03	3,39E-05	1,46E-07	2,47E-06	9,40E-08	1,23E-07	-3,60E-03
Eutrophication, marine	kg N eq	1,79E-02	2,63E-04	9,06E-06	1,92E-05	5,54E-06	1,25E-06	-7,69E-03
Eutrophication, terrestrial	mol N eq	5,11E-01	2,67E-03	1,38E-05	1,95E-04	4,70E-05	1,33E-05	-7,78E-02
Photochemical ozone formation	kg NMVOC eq	6,18E-02	1,62E-03	5,41E-06	1,18E-04	1,18E-05	4,51E-06	-3,44E-02
Resource use, minerals and metals*	kg Sb eq	3,29E-04	1,56E-06	7,38E-10	1,14E-07	1,61E-09	9,51E-10	-4,72E-05
Resource use, fossils*	MJ	1,70E+02	6,77E+00	5,51E-03	4,93E-01	6,37E-03	1,01E-02	-8,12E+01
Water use*	m^3 depriv.	1,03E+00	2,79E-02	-3,09E-05	2,03E-03	2,30E-04	4,30E-04	1,99E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 28: Additional environmental impact indicators - RPM-K, DN 200 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Particulate matter	disease inc.	1,81E-06	3,55E-08	6,32E-11	2,59E-09	4,20E-11	7,19E-11	-6,37E-07
Human toxicity, non-cancer*	CTUh	3,15E-07	4,80E-09	2,08E-11	3,50E-10	1,03E-10	2,93E-12	-1.73E-07
Human toxicity, cancer*	CTUh	6,98E-08	2,17E-10	3,09E-12	1,58E-11	2,44E-12	2,62E-13	-5,41E-08
Land use*	Pt	4,54E+01	4,09E+00	1,03E-02	2,98E-01	1,77E-03	2,32E-02	-2,33E+01
Ionising radiation**	kBq U-235 eq	1,22E+00	9,16E-03	9,17E-06	6,68E-04	2,20E-05	1,34E-05	-3,45E-01
Ecotoxicity, freshwater	CTUe	1,43E+02	3,35E+00	3,83E-02	2,44E-01	9,23E-02	4,45E-03	-3,95E+01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
** Disclaimer: 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.

Table 29: Parameters describing resource use - RPM-K, DN 200 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,78E+01	1,06E-01	1,43E-04	7,75E-03	3,72E-04	1,74E-04	-1,09E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,78E+01	1,06E-01	1,43E-04	7,75E-03	3,72E-04	1,74E-04	-1,09E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,82E+02	7,20E+00	5,87E-03	5,24E-01	6,91E-03	1,08E-02	-8,61E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,82E+02	7,20E+00	5,87E-03	5,24E-01	6,91E-03	1,08E-02	-8,61E+01
Use of secondary material	kg	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of net fresh water	m3	4,48E-02	1,29E-03	3,30E-03	5,74E-05	4,97E-05	9,26E-05	-1,16E-02

Table 30: Other environmental information describing waste categories - RPM-K, DN 200 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Hazardous waste	kg	1,13E-02	1,70E-04	2,76E-05	1,24E-05	4,88E-04	2,53E-07	-2,13E-03
Non-hazardous waste disposed	kg	5,37E+00	3,36E-01	9,68E-03	2,45E-02	5,96E-04	4,01E-02	-3,13E+00
Radioactive waste disposed/stored	kg	3,01E-04	2,23E-06	2,14E-09	1,62E-07	5,47E-09	3,23E-09	-8,71E-05

Table 31: Environmental information describing output flows - RPM-K, DN 200 mm, manual

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	6,82E-02	0	0	3,70E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	7,15E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	1,40E-01	0	0

Table 32: Core environmental impact indicators - RPM-K, DN 200 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,66E+01	5,45E-01	1,09E-03	5,29E+01	3,97E-02	1,71E-01	4,69E-04	-7,81E+00
Climate change - Biogenic	kg CO2 eq	9,59E-02	4,99E-04	9,78E-03	5,03E-01	3,64E-05	5,92E-06	2,98E-06	-1,87E-02
Climate change - Land use and LU change	kg CO2 eq	4,18E-02	2,69E-04	1,28E-07	7,18E-02	1,96E-05	7,70E-06	3,41E-07	-2,80E-02
Climate change	kg CO2 eq	1,68E+01	5,46E-01	1,09E-02	5,35E+01	3,98E-02	1,71E-01	4,72E-04	-7,85E+00
GWP-GHG	kg CO2 eq	1,67E+01	5,45E-01	3,08E-03	5,30E+01	3,97E-02	1,71E-01	4,70E-04	-7,82E+00
Ozone depletion	kg CFC11 eq	3,55E-07	1,19E-08	9,03E-12	3,80E-07	8,65E-10	2,26E-10	1,11E-11	-1,43E-07
Acidification	mol H+ eq	1,85E-01	1,19E-03	3,31E-06	2,37E-01	8,68E-05	8,73E-05	3,33E-06	-3,90E-02
Eutrophication, freshwater*	kg P eq	1,04E-02	3,87E-05	1,68E-07	8,29E-02	2,82E-06	2,50E-06	1,23E-07	-3,75E-03
Eutrophication, marine	kg N eq	2,20E-02	3,01E-04	1,04E-05	5,15E-02	2,19E-05	3,34E-05	1,25E-06	-8,07E-03
Eutrophication, terrestrial	mol N eq	5,62E-01	3,05E-03	1,59E-05	3,81E-01	2,23E-04	3,72E-04	1,33E-05	-8,16E-02
Photochemical ozone formation	kg NMVOC eq	7,79E-02	1,85E-03	6,21E-06	1,12E-01	1,35E-04	7,63E-05	4,51E-06	-3,59E-02
Resource use, minerals and metals*	kg Sb eq	6,59E-04	1,78E-06	8,47E-10	3,44E-04	1,30E-07	8,50E-08	9,51E-10	-4,81E-05
Resource use, fossils*	MJ	2,06E+02	7,74E+00	6,33E-03	8,55E+02	5,64E-01	8,48E-02	1,01E-02	-8,55E+01
Water use*	m^3 depriv.	1,86E+00	3,19E-02	-3,54E-05	9,08E+00	2,33E-03	4,39E-03	4,30E-04	1,42E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 33: Additional environmental impact indicators - RPM-K, DN 200 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	2,08E-06	4,06E-08	7,25E-11	5,72E-07	2,96E-09	9,39E-10	7,19E-11	-6,65E-07
Human toxicity, non-cancer*	CTUh	6,90E-07	5,49E-09	2,39E-11	5,99E-07	4,00E-10	2,05E-09	2,93E-12	-1,81E-07
Human toxicity, cancer*	CTUh	8,28E-08	2,48E-10	3,54E-12	1,76E-08	1,81E-11	2,24E-11	2,62E-13	-5,54E-08
Land use*	Pt	6,02E+01	4,68E+00	1,18E-02	8,87E+01	3,41E-01	1,79E-01	2,32E-02	-2,41E+01
Ionising radiation**	kBq U-235 eq	1,45E+00	1,05E-02	1,05E-05	2,21E+01	7,64E-04	3,46E-04	1,34E-05	-3,79E-01
Ecotoxicity, freshwater	CTUe	1,86E+02	3,83E+00	4,39E-02	1,87E+02	2,79E-01	1,32E+00	4,45E-03	-4,10E+01

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Table 34: Parameters describing resource use - RPM-K, DN 200 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	2,24E+01	1,22E-01	1,64E-04	5,83E+01	8,87E-03	1,55E-02	1,74E-04	-1,21E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	2,24E+01	1,22E-01	1,64E-04	5,83E+01	8,87E-03	1,55E-02	1,74E-04	-1,21E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	2,19E+02	8,23E+00	6,74E-03	9,06E+02	6,00E-01	9,09E-02	1,08E-02	-9,06E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	2,19E+02	8,23E+00	6,74E-03	9,06E+02	6,00E-01	9,09E-02	1,08E-02	-9,06E+01
Use of secondary material	kg	0	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	5,13E-02	1,48E-03	3,78E-03	3,89E-02	6,58E-05	5,70E-05	1,06E-04	-1,33E-02

Table 35: Other environmental information describing waste categories - RPM-K, DN 200 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	1,73E-02	1,94E-04	3,17E-05	6,45E-02	1,41E-05	2,82E-03	2,53E-07	-2,23E-03
Non-hazardous waste disposed	kg	6,34E+00	3,85E-01	1,11E-02	5,22E+00	2,80E-02	8,03E-03	4,01E-02	-3,25E+00
Radioactive waste disposed/stored	kg	3,60E-04	2,55E-06	2,45E-09	5,31E-03	1,85E-07	8,54E-08	3,23E-09	-9,60E-05

Table 36: Environmental information describing output flows - RPM-K, DN 200 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	7,80E-02	0	0	4,24E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	7,76E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	1,52E-01	0	0

Table 37: Core environmental impact indicators - RPM-K, DN 400 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	2,65E+01	8,31E-01	1,66E-03	6,06E-02	4,38E-02	9,37E-04	-1,56E+01
Climate change - Biogenic	kg CO2 eq	1,60E-01	7,62E-04	1,49E-02	5,55E-05	5,99E-06	5,96E-06	-4,09E-02
Climate change - Land use and LU change	kg CO2 eq	1,20E-01	4,10E-04	1,95E-07	2,99E-05	2,19E-07	6,82E-07	-9,83E-02
Climate change	kg CO2 eq	2,68E+01	8,33E-01	1,66E-02	6,07E-02	4,38E-02	9,44E-04	-1,57E+01
GWP-GHG	kg CO2 eq	2,66E+01	8,32E-01	4,69E-03	6,06E-02	4,38E-02	9,40E-04	-1,56E+01
Ozone depletion	kg CFC11 eq	5,80E-07	1,81E-08	1,38E-11	1,32E-09	4,90E-11	2,21E-11	-2,99E-07
Acidification	mol H+ eq	2,67E-01	1,82E-03	5,04E-06	1,32E-04	9,53E-06	6,67E-06	-8,48E-02
Eutrophication, freshwater*	kg P eq	1,38E-02	5,91E-05	2,56E-07	4,31E-06	9,50E-08	2,46E-07	-7,39E-03
Eutrophication, marine	kg N eq	3,35E-02	4,59E-04	1,59E-05	3,34E-05	5,60E-06	2,50E-06	-1,60E-02
Eutrophication, terrestrial	mol N eq	8,81E-01	4,66E-03	2,42E-05	3,40E-04	4,75E-05	2,67E-05	-1,61E-01
Photochemical ozone formation	kg NMVOC eq	1,17E-01	2,82E-03	9,47E-06	2,06E-04	1,19E-05	9,03E-06	-6,92E-02
Resource use, minerals and metals*	kg Sb eq	5,47E-04	2,72E-06	1,29E-09	1,98E-07	1,63E-09	1,90E-09	-8,19E-05
Resource use, fossils*	MJ	3,33E+02	1,18E+01	9,64E-03	8,61E-01	6,44E-03	2,03E-02	-1,76E+02
Water use*	m^3 depriv.	2,71E+00	4,87E-02	-5,41E-05	3,55E-03	2,32E-04	8,60E-04	-4,93E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 38: Additional environmental impact indicators - RPM-K, DN 400 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Particulate matter	disease inc.	3,28E-06	6,20E-08	1,11E-10	4,52E-09	4,24E-11	1,44E-10	-1,31E-06
Human toxicity, non-cancer*	CTUh	6,18E-07	8,38E-09	3,64E-11	6,11E-10	1,04E-10	5,87E-12	-3,73E-07
Human toxicity, cancer*	CTUh	1,24E-07	3,79E-10	5,40E-12	2,76E-11	2,46E-12	5,24E-13	-9,73E-08
Land use*	Pt	8,03E+01	7,14E+00	1,80E-02	5,20E-01	1,79E-03	4,64E-02	-4,21E+01
Ionising radiation**	kBq U-235 eq	2,53E+00	1,60E-02	1,60E-05	1,17E-03	2,23E-05	2,68E-05	-9,77E-01
Ecotoxicity, freshwater	CTUe	2,49E+02	5,84E+00	6,69E-02	4,26E-01	9,33E-02	8,90E-03	-7,59E+01

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Table 39: Parameters describing resource use - RPM-K, DN 400 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	4,63E+01	1,86E-01	2,50E-04	1,35E-02	3,77E-04	3,49E-04	-3,28E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	4,63E+01	1,86E-01	2,50E-04	1,35E-02	3,77E-04	3,49E-04	-3,28E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	3,55E+02	1,26E+01	1,03E-02	9,15E-01	6,98E-03	2,16E-02	-1,86E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	3,55E+02	1,26E+01	1,03E-02	9,15E-01	6,98E-03	2,16E-02	-1,86E+02
Use of secondary material	kg	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of net fresh water	m3	7,82E-02	2,26E-03	5,77E-03	1,00E-04	8,70E-05	1,62E-04	-2,03E-02

Table 40: Other environmental information describing waste categories - RPM-K, DN 400 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Hazardous waste	kg	2,00E-02	2,96E-04	4,83E-05	2,16E-05	4,93E-04	5,05E-07	-4,47E-03
Non-hazardous waste disposed	kg	1,01E+01	5,87E-01	1,69E-02	4,28E-02	6,03E-04	8,02E-02	-6,08E+00
Radioactive waste disposed/stored	kg	6,30E-04	3,88E-06	3,74E-09	2,83E-07	5,53E-09	6,45E-09	-2,49E-04

Table 41: Environmental information describing output flows - RPM-K, DN 400 mm, manual

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	1,19E-01	0	0	6,46E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	7,24E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	1,41E-01	0	0

Table 42: Core environmental impact indicators - RPM-K, DN 400 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	2,75E+01	9,37E-01	1,87E-03	5,88E+01	6,82E-02	2,37E-01	9,37E-04	-1,58E+01
Climate change - Biogenic	kg CO2 eq	1,69E-01	8,58E-04	1,68E-02	5,59E-01	6,25E-05	5,99E-06	5,96E-06	-4,13E-02
Climate change - Land use and LU change	kg CO2 eq	1,21E-01	4,62E-04	2,19E-07	7,98E-02	3,37E-05	1,18E-05	6,82E-07	-9,85E-02
Climate change	kg CO2 eq	2,78E+01	9,38E-01	1,86E-02	5,95E+01	6,83E-02	2,36E-01	9,44E-04	-1,59E+01
GWP-GHG	kg CO2 eq	2,76E+01	9,37E-01	5,27E-03	5,89E+01	6,82E-02	2,37E-01	9,40E-04	-1,58E+01
Ozone depletion	kg CFC11 eq	6,09E-07	2,04E-08	1,55E-11	4,22E-07	1,48E-09	3,19E-10	2,21E-11	-3,02E-07
Acidification	mol H+ eq	2,71E-01	2,05E-03	5,67E-06	2,64E-01	1,49E-04	1,29E-04	6,67E-06	-8,57E-02
Eutrophication, freshwater*	kg P eq	1,44E-02	6,66E-05	2,88E-07	9,21E-02	4,85E-06	3,81E-06	2,46E-07	-7,47E-03
Eutrophication, marine	kg N eq	3,48E-02	5,17E-04	1,78E-05	5,73E-02	3,76E-05	4,82E-05	2,50E-06	-1,62E-02
Eutrophication, terrestrial	mol N eq	8,93E-01	5,25E-03	2,72E-05	4,24E-01	3,82E-04	5,46E-04	2,67E-05	-1,64E-01
Photochemical ozone formation	kg NMVOC eq	1,22E-01	3,18E-03	1,06E-05	1,24E-01	2,31E-04	1,11E-04	9,03E-06	-7,02E-02
Resource use, minerals and metals*	kg Sb eq	5,51E-04	3,06E-06	1,45E-09	3,82E-04	2,23E-07	1,31E-07	1,90E-09	-8,32E-05
Resource use, fossils*	MJ	3,47E+02	1,33E+01	1,08E-02	9,51E+02	9,68E-01	1,27E-01	2,03E-02	-1,78E+02
Water use*	m^3 depriv.	2,81E+00	5,49E-02	-6,07E-05	1,01E+01	3,99E-03	6,66E-03	8,60E-04	-4,83E-01

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Table 43: Additional environmental impact indicators - RPM-K, DN 400 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	3,34E-06	6,98E-08	1,24E-10	6,35E-07	5,08E-09	1,43E-09	1,44E-10	-1,32E-06
Human toxicity, non-cancer*	CTUh	6,30E-07	9,44E-09	4,09E-11	6,66E-07	6,87E-10	3,11E-09	5,87E-12	-3,76E-07
Human toxicity, cancer*	CTUh	1,26E-07	4,27E-10	6,07E-12	1,95E-08	3,11E-11	3,32E-11	5,24E-13	-9,86E-08
Land use*	Pt	8,33E+01	8,04E+00	2,02E-02	9,87E+01	5,85E-01	2,76E-01	4,64E-02	-4,29E+01
Ionising radiation**	kBq U-235 eq	2,68E+00	1,80E-02	1,80E-05	2,46E+01	1,31E-03	5,22E-04	2,68E-05	-9,83E-01
Ecotoxicity, freshwater	CTUe	2,53E+02	6,58E+00	7,54E-02	2,08E+02	4,79E-01	1,99E+00	8,90E-03	-7,71E+01

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Table 44: Parameters describing resource use - RPM-K, DN 400 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	4,71E+01	2,09E-01	2,82E-04	6,48E+01	1,52E-02	2,38E-02	3,49E-04	-3,30E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	4,71E+01	2,09E-01	2,82E-04	6,48E+01	1,52E-02	2,38E-02	3,49E-04	-3,30E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	3,70E+02	1,41E+01	1,16E-02	1,01E+03	1,03E+00	1,37E-01	2,16E-02	-1,88E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	3,70E+02	1,41E+01	1,16E-02	1,01E+03	1,03E+00	1,37E-01	2,16E-02	-1,88E+02
Use of secondary material	kg	0	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	8,80E-02	2,54E-03	6,49E-03	6,67E-02	1,13E-04	9,78E-05	1,82E-04	-2,29E-02

Table 45: Other environmental information describing waste categories - RPM-K, DN 400 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	2,07E-02	3,33E-04	5,42E-05	7,17E-02	2,42E-05	4,06E-03	5,05E-07	-4,53E-03
Non-hazardous waste disposed	kg	1,04E+01	6,61E-01	1,91E-02	5,80E+00	4,81E-02	1,21E-02	8,02E-02	-6,17E+00
Radioactive waste disposed/stored	kg	6,66E-04	4,37E-06	4,21E-09	5,90E-03	3,18E-07	1,29E-07	6,45E-09	-2,51E-04

Table 46: Environmental information describing output flows - RPM-K, DN 400 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	1,34E-01	0	0	7,28E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	7,24E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	1,41E-01	0	0

Table 47: Core environmental impact indicators - RPMC-K, 200x100 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,46E+01	4,19E-01	1,06E-03	3,88E-02	4,12E-03	2,04E-05	-8,04E+00
Climate change - Biogenic	kg CO2 eq	9,47E-02	3,84E-04	9,54E-03	3,55E-05	5,63E-07	1,30E-07	-1,83E-02
Climate change - Land use and LU change	kg CO2 eq	2,71E-02	2,07E-04	1,25E-07	1,92E-05	2,06E-08	1,48E-08	-1,82E-02
Climate change	kg CO2 eq	1,47E+01	4,20E-01	1,06E-02	3,89E-02	4,12E-03	2,05E-05	-8,08E+00
GWP-GHG	kg CO2 eq	1,47E+01	4,20E-01	3,00E-03	3,88E-02	4,12E-03	2,04E-05	-8,05E+00
Ozone depletion	kg CFC11 eq	3,22E-07	9,13E-09	8,80E-12	8,45E-10	4,61E-12	4,82E-13	-1,44E-07
Acidification	mol H+ eq	1,61E-01	9,17E-04	3,22E-06	8,48E-05	8,96E-07	1,45E-07	-3,85E-02
Eutrophication, freshwater*	kg P eq	7,93E-03	2,98E-05	1,64E-07	2,76E-06	8,94E-09	5,34E-09	-3,89E-03
Eutrophication, marine	kg N eq	1,95E-02	2,31E-04	1,01E-05	2,14E-05	5,27E-07	5,43E-08	-8,31E-03
Eutrophication, terrestrial	mol N eq	5,78E-01	2,35E-03	1,55E-05	2,17E-04	4,47E-06	5,81E-07	-8,42E-02
Photochemical ozone formation	kg NMVOC eq	6,70E-02	1,42E-03	6,05E-06	1,32E-04	1,12E-06	1,96E-07	-3,76E-02
Resource use, minerals and metals*	kg Sb eq	3,70E-04	1,37E-06	8,25E-10	1,27E-07	1,53E-10	4,14E-11	-5,34E-05
Resource use, fossils*	MJ	1,80E+02	5,96E+00	6,16E-03	5,51E-01	6,06E-04	4,41E-04	-8,66E+01
Water use*	m^3 depriv.	8,86E-01	2,46E-02	-3,46E-05	2,27E-03	2,19E-05	1,87E-05	3,49E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 48: Additional environmental impact indicators - RPMC-K, 200x100 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Particulate matter	disease inc.	2,00E-06	3,13E-08	7,07E-11	2,89E-09	3,99E-12	3,13E-12	-6,92E-07
Human toxicity, non-cancer*	CTUh	3,41E-07	4,23E-09	2,33E-11	3,91E-10	9,81E-12	1,28E-13	-1,85E-07
Human toxicity, cancer*	CTUh	7,80E-08	1,91E-10	3,46E-12	1,77E-11	2,32E-13	1,14E-14	-6,07E-08
Land use*	Pt	4,92E+01	3,60E+00	1,15E-02	3,33E-01	1,69E-04	1,01E-03	-2,62E+01
Ionising radiation**	kBq U-235 eq	1,29E+00	8,06E-03	1,02E-05	7,46E-04	2,10E-06	5,82E-07	-3,30E-01
Ecotoxicity, freshwater	CTUe	1,58E+02	2,94E+00	4,27E-02	2,72E-01	8,78E-03	1,93E-04	-4,36E+01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
** Disclaimer: 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.

Table 49: Parameters describing resource use - RPMC-K, 200x100 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,73E+01	9,36E-02	1,60E-04	8,66E-03	3,54E-05	7,58E-06	-1,03E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,73E+01	9,36E-02	1,60E-04	8,66E-03	3,54E-05	7,58E-06	-1,03E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,92E+02	6,33E+00	6,57E-03	5,86E-01	6,57E-04	4,70E-04	-9,18E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,92E+02	6,33E+00	6,57E-03	5,86E-01	6,57E-04	4,70E-04	-9,18E+01
Use of secondary material	kg	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of net fresh water	m3	5,00E-02	1,44E-03	3,69E-03	6,41E-05	5,56E-05	1,03E-04	-1,30E-02

Table 50: Other environmental information describing waste categories - RPMC-K, 200x100 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Hazardous waste	kg	1,26E-02	1,49E-04	3,09E-05	1,38E-05	4,64E-05	1,10E-08	-2,28E-03
Non-hazardous waste disposed	kg	5,75E+00	2,96E-01	1,08E-02	2,74E-02	5,67E-05	1,74E-03	-3,45E+00
Radioactive waste disposed/stored	kg	3,18E-04	1,96E-06	2,39E-09	1,81E-07	5,20E-10	1,40E-10	-8,30E-05

Table 51: Environmental information describing output flows - RPMC-K, 200x100 mm, manual

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	7,61E-02	0	0	4,19E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	6,82E-03	0	0
Exported energy, heat	MJ	0	0	0	0	0	1,33E-02	0	0

Table 52: Core environmental impact indicators - RPMC-K, 200x100 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,53E+01	1,12E+01	1,20E-03	1,12E+01	4,36E-02	1,27E-01	1,45E-05	-8,18E+00
Climate change - Biogenic	kg CO2 eq	1,01E-01	1,06E-01	1,08E-02	1,06E-01	3,99E-05	5,63E-07	9,24E-08	-1,86E-02
Climate change - Land use and LU change	kg CO2 eq	2,78E-02	1,52E-02	1,40E-07	1,52E-02	2,15E-05	7,48E-06	1,06E-08	-1,83E-02
Climate change	kg CO2 eq	1,54E+01	1,13E+01	1,20E-02	1,13E+01	4,37E-02	1,27E-01	1,46E-05	-8,21E+00
GWP-GHG	kg CO2 eq	1,47E+01	4,20E-01	3,00E-03	0,00E+00	3,88E-02	4,12E-03	2,04E-05	-8,05E+00
Ozone depletion	kg CFC11 eq	3,38E-07	8,02E-08	9,93E-12	8,02E-08	9,50E-10	1,77E-10	3,43E-13	-1,47E-07
Acidification	mol H+ eq	1,64E-01	5,01E-02	3,64E-06	5,01E-02	9,53E-05	7,77E-05	1,03E-07	-3,91E-02
Eutrophication, freshwater*	kg P eq	8,33E-03	1,75E-02	1,85E-07	1,75E-02	3,10E-06	2,40E-06	3,81E-09	-3,94E-03
Eutrophication, marine	kg N eq	2,03E-02	1,09E-02	1,14E-05	1,09E-02	2,40E-05	2,78E-05	3,87E-08	-8,48E-03
Eutrophication, terrestrial	mol N eq	5,86E-01	8,06E-02	1,75E-05	8,06E-02	2,44E-04	3,24E-04	4,14E-07	-8,59E-02
Photochemical ozone formation	kg NMVOC eq	7,01E-02	2,37E-02	6,83E-06	2,37E-02	1,48E-04	6,43E-05	1,40E-07	-3,83E-02
Resource use, minerals and metals*	kg Sb eq	3,73E-04	7,26E-05	9,31E-10	7,26E-05	1,43E-07	8,34E-08	2,95E-11	-5,43E-05
Resource use, fossils*	MJ	1,90E+02	1,81E+02	6,96E-03	1,81E+02	6,19E-01	7,83E-02	3,15E-04	-8,81E+01
Water use*	m^3 depriv.	9,53E-01	1,92E+00	-3,89E-05	1,92E+00	2,55E-03	4,15E-03	1,33E-05	3,56E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 53: Additional environmental impact indicators - RPMC-K, 200x100 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	2,05E-06	1,21E-07	7,97E-11	1,21E-07	3,25E-09	8,96E-10	2,23E-12	-7,04E-07
Human toxicity, non-cancer*	CTUh	3,49E-07	1,27E-07	2,62E-11	1,27E-07	4,39E-10	1,94E-09	9,10E-14	-1,88E-07
Human toxicity, cancer*	CTUh	7,94E-08	3,72E-09	3,90E-12	3,72E-09	1,99E-11	1,99E-11	8,11E-15	-6,17E-08
Land use*	Pt	5,19E+01	1,88E+01	1,30E-02	1,88E+01	3,74E-01	1,77E-01	7,19E-04	-2,68E+01
Ionising radiation**	kBq U-235 eq	1,38E+00	4,68E+00	1,16E-05	4,68E+00	8,38E-04	3,23E-04	4,15E-07	-3,34E-01
Ecotoxicity, freshwater	CTUe	1,61E+02	3,96E+01	4,84E-02	3,96E+01	3,06E-01	1,22E+00	1,38E-04	-4,45E+01

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Table 54: Parameters describing resource use - RPMC-K, 200x100 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,78E+01	1,23E+01	1,81E-04	1,23E+01	9,73E-03	1,51E-02	5,40E-06	-1,04E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,78E+01	1,23E+01	1,81E-04	1,23E+01	9,73E-03	1,51E-02	5,40E-06	-1,04E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	2,03E+02	1,92E+02	7,41E-03	1,92E+02	6,58E-01	8,39E-02	3,35E-04	-9,33E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	2,03E+02	1,92E+02	7,41E-03	1,92E+02	6,58E-01	8,39E-02	3,35E-04	-9,33E+01
Use of secondary material	kg	0	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	5,64E-02	1,63E-03	4,16E-03	4,27E-02	7,23E-05	6,27E-05	1,17E-04	-1,46E-02

Table 55: Other environmental information describing waste categories - RPMC-K, 200x100 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	1,31E-02	1,36E-02	3,48E-05	1,36E-02	1,55E-05	2,33E-03	7,83E-09	-2,32E-03
Non-hazardous waste disposed	kg	6,04E+00	1,10E+00	1,22E-02	1,10E+00	3,08E-02	7,43E-03	1,24E-03	-3,52E+00
Radioactive waste disposed/stored	kg	3,40E-04	1,12E-03	2,70E-09	1,12E-03	2,04E-07	7,99E-08	1,00E-10	-8,40E-05

Table 56: Environmental information describing output flows - RPMC-K, 200x100 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	8,58E-02	0	0	4,72E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	4,86E-03	0	0
Exported energy, heat	MJ	0	0	0	0	0	9,50E-03	0	0

Table 57: Core environmental impact indicators - RPMC-K, 300x300 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	2,55E+01	6,69E-01	1,69E-03	6,17E-02	7,01E-03	3,47E-05	-1,47E+01
Climate change - Biogenic	kg CO2 eq	1,59E-01	6,13E-04	1,52E-02	5,65E-05	9,58E-07	2,21E-07	-3,67E-02
Climate change - Land use and LU change	kg CO2 eq	8,99E-02	3,30E-04	1,98E-07	3,05E-05	3,50E-08	2,52E-08	-7,10E-02
Climate change	kg CO2 eq	2,57E+01	6,70E-01	1,68E-02	6,18E-02	7,02E-03	3,49E-05	-1,48E+01
GWP-GHG	kg CO2 eq	2,56E+01	6,69E-01	4,77E-03	6,17E-02	7,01E-03	3,48E-05	-1,47E+01
Ozone depletion	kg CFC11 eq	5,61E-07	1,46E-08	1,40E-11	1,34E-09	7,85E-12	8,19E-13	-2,75E-07
Acidification	mol H+ eq	2,67E-01	1,46E-03	5,12E-06	1,35E-04	1,52E-06	2,47E-07	-7,65E-02
Eutrophication, freshwater*	kg P eq	1,35E-02	4,75E-05	2,60E-07	4,39E-06	1,52E-08	9,09E-09	-7,01E-03
Eutrophication, marine	kg N eq	3,30E-02	3,69E-04	1,61E-05	3,40E-05	8,97E-07	9,23E-08	-1,51E-02
Eutrophication, terrestrial	mol N eq	9,16E-01	3,75E-03	2,46E-05	3,46E-04	7,60E-06	9,88E-07	-1,53E-01
Photochemical ozone formation	kg NMVOC eq	1,14E-01	2,27E-03	9,63E-06	2,09E-04	1,90E-06	3,34E-07	-6,66E-02
Resource use, minerals and metals*	kg Sb eq	5,75E-04	2,19E-06	1,31E-09	2,02E-07	2,61E-10	7,04E-11	-8,49E-05
Resource use, fossils*	MJ	3,15E+02	9,50E+00	9,81E-03	8,76E-01	1,03E-03	7,51E-04	-1,63E+02
Water use*	m^3 depriv.	2,11E+00	3,92E-02	-5,49E-05	3,61E-03	3,72E-05	3,18E-05	-5,88E-02

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 58: Additional environmental impact indicators - RPMC-K, 300x300 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Particulate matter	disease inc.	3,30E-06	4,98E-08	1,12E-10	4,60E-09	6,79E-12	5,32E-12	-1,25E-06
Human toxicity, non-cancer*	CTUh	5,98E-07	6,74E-09	3,70E-11	6,22E-10	1,67E-11	2,17E-13	-3,47E-07
Human toxicity, cancer*	CTUh	1,27E-07	3,05E-10	5,49E-12	2,81E-11	3,94E-13	1,94E-14	-9,89E-08
Land use*	Pt	8,05E+01	5,74E+00	1,83E-02	5,30E-01	2,87E-04	1,72E-03	-4,27E+01
Ionising radiation**	kBq U-235 eq	2,36E+00	1,29E-02	1,63E-05	1,19E-03	3,57E-06	9,91E-07	-8,03E-01
Ecotoxicity, freshwater	CTUe	2,53E+02	4,70E+00	6,81E-02	4,33E-01	1,49E-02	3,29E-04	-7,47E+01

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Table 59: Parameters describing resource use - RPMC-K, 300x300 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	3,90E+01	1,49E-01	2,55E-04	1,38E-02	6,02E-05	1,29E-05	-2,65E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	3,90E+01	1,49E-01	2,55E-04	1,38E-02	6,02E-05	1,29E-05	-2,65E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	3,36E+02	1,01E+01	1,04E-02	9,32E-01	1.12E-03	7,99E-04	-1,73E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	3,36E+02	1,01E+01	1,04E-02	9,32E-01	1,12E-03	7,99E-04	-1,73E+02
Use of secondary material	kg	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of net fresh water	m3	7,96E-02	2,30E-03	5,88E-03	1,02E-04	8,85E-05	1,65E-04	-2,07E-02

Table 60: Other environmental information describing waste categories - RPMC-K, 300x300 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Hazardous waste	kg	2,03E-02	2,38E-04	4,90E-05	2,19E-05	7,89E-05	1,87E-08	-4,20E-03
Non-hazardous waste disposed	kg	9,84E+00	4,72E-01	1,72E-02	4,35E-02	9,65E-05	2,97E-03	-5,95E+00
Radioactive waste disposed/stored	kg	5,85E-04	3,12E-06	3,80E-09	2,88E-07	8,84E-10	2,39E-10	-2,04E-04

Table 61: Environmental information describing output flows - RPMC-K, 300x300 mm, manual

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	1,21E-01	0	0	6,67E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	1,16E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	2,26E-02	0	0

Table 62: Core environmental impact indicators - RPMC-K, 300x300 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	2,96E+01	7,50E-01	1,89E-03	7,86E+00	6,91E-02	1,96E-01	1,45E-05	-1,49E+01
Climate change - Biogenic	kg CO2 eq	1,72E-01	6,87E-04	1,70E-02	7,46E-02	6,33E-05	9,58E-07	9,24E-08	-3,70E-02
Climate change - Land use and LU change	kg CO2 eq	9,66E-02	3,70E-04	2,22E-07	1,07E-02	3,41E-05	1,16E-05	1,06E-08	-7,11E-02
Climate change	kg CO2 eq	2,99E+01	7,51E-01	1,89E-02	7,94E+00	6,92E-02	1,96E-01	1,46E-05	-1,50E+01
GWP-GHG	kg CO2 eq	2,98E+01	7,50E-01	5,34E-03	5,89E+01	6,91E-02	1,96E-01	1,46E-05	-1,49E+01
Ozone depletion	kg CFC11 eq	6,27E-07	1,63E-08	1,57E-11	5,63E-08	1,50E-09	2,73E-10	3,43E-13	-2,78E-07
Acidification	mol H+ eq	3,25E-01	1,64E-03	5,74E-06	3,52E-02	1,51E-04	1,20E-04	1,03E-07	-7,73E-02
Eutrophication, freshwater*	kg P eq	1,82E-02	5,33E-05	2,92E-07	1,23E-02	4,91E-06	3,73E-06	3,81E-09	-7,08E-03
Eutrophication, marine	kg N eq	3,89E-02	4,14E-04	1,81E-05	7,64E-03	3,81E-05	4,30E-05	3,87E-08	-1,54E-02
Eutrophication, terrestrial	mol N eq	9,84E-01	4,20E-03	2,76E-05	5,66E-02	3,87E-04	5,02E-04	4,14E-07	-1,55E-01
Photochemical ozone formation	kg NMVOC eq	1,37E-01	2,55E-03	1,08E-05	1,66E-02	2,34E-04	9,95E-05	1,40E-07	-6,75E-02
Resource use, minerals and metals*	kg Sb eq	1,08E-03	2,45E-06	1,47E-09	5,10E-05	2,26E-07	1,29E-07	2,95E-11	-8,59E-05
Resource use, fossils*	MJ	3,64E+02	1,07E+01	1,10E-02	1,27E+02	9,81E-01	1,21E-01	3,15E-04	-1,65E+02
Water use*	m^3 depriv.	3,23E+00	4,39E-02	-6,16E-05	1,35E+00	4,05E-03	6,44E-03	1,33E-05	-5,08E-02

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 63: Additional environmental impact indicators - RPMC-K, 300x300 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	3,67E-06	5,59E-08	1,26E-10	8,48E-08	5,15E-09	1,39E-09	2,23E-12	-1,26E-06
Human toxicity, non-cancer*	CTUh	1,17E-06	7,56E-09	4,14E-11	8,90E-08	6,96E-10	3,02E-09	9,10E-14	-3,50E-07
Human toxicity, cancer*	CTUh	1,46E-07	3,42E-10	6,16E-12	2,61E-09	3,15E-11	3,09E-11	8,11E-15	-1,00E-07
Land use*	Pt	1,03E+02	6,44E+00	2,05E-02	1,32E+01	5,93E-01	2,74E-01	7,19E-04	-4,35E+01
Ionising radiation**	kBq U-235 eq	2,65E+00	1,44E-02	1,83E-05	3,28E+00	1,33E-03	5,01E-04	4,15E-07	-8,08E-01
Ecotoxicity, freshwater	CTUe	3,13E+02	5,27E+00	7,62E-02	2,78E+01	4,85E-01	1,90E+00	1,38E-04	-7,57E+01

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Table 64: Parameters describing resource use - RPMC-K, 300x300 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	4,42E+01	1,67E-01	2,85E-04	8,65E+00	1,54E-02	2,35E-02	5,40E-06	-2,67E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	4,42E+01	1,67E-01	2,85E-04	8,65E+00	1,54E-02	2,35E-02	5,40E-06	-2,67E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	3,88E+02	1,13E+01	1,17E-02	1,35E+02	1,04E+00	1,30E-01	3,35E-04	-1,75E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	3,88E+02	1,13E+01	1,17E-02	1,35E+02	1,04E+00	1,30E-01	3,35E-04	-1,75E+02
Use of secondary material	kg	0	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	8,93E-02	2,58E-03	6,59E-03	6,77E-02	1,15E-04	9,93E-05	1,85E-04	-2,32E-02

Table 65: Other environmental information describing waste categories - RPMC-K, 300x300 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	2,94E-02	2,67E-04	5,50E-05	9,57E-03	2,46E-05	3,60E-03	7,83E-09	-4,25E-03
Non-hazardous waste disposed	kg	1,12E+01	5,29E-01	1,93E-02	7,75E-01	4,88E-02	1,15E-02	1,24E-03	-6,04E+00
Radioactive waste disposed/stored	kg	6,59E-04	3,50E-06	4,26E-09	7,88E-04	3,23E-07	1,24E-07	1,00E-10	-2,05E-04

Table 66: Environmental information describing output flows - RPMC-K, 300x300 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	1,36E-01	0	0	7,48E+00	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	1,16E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	2,26E-02	0	0

Table 67: Core environmental impact indicators - RPMC-K, 600x600 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	8,95E+01	1,94E+00	4,89E-03	1,80E-01	2,32E-02	1,15E-04	-5,66E+01
Climate change - Biogenic	kg CO2 eq	5,26E-01	1,78E-03	4,39E-02	1,65E-04	3,17E-06	7,30E-07	-1,62E-01
Climate change - Land use and LU change	kg CO2 eq	6,07E-01	9,58E-04	5,74E-07	8,90E-05	1,16E-07	8,36E-08	-5,18E-01
Climate change	kg CO2 eq	9,07E+01	1,94E+00	4,88E-02	1,81E-01	2,32E-02	1,16E-04	-5,73E+01
GWP-GHG	kg CO2 eq	8,44E+01	1,80E+00	2,87E-03	1,67E-01	2,32E-02	1,03E-04	-5,34E+01
Ozone depletion	kg CFC11 eq	1,96E-06	4,22E-08	4,05E-11	3,93E-09	2,60E-11	2,71E-12	-1,13E-06
Acidification	mol H+ eq	8,48E-01	4,24E-03	1,48E-05	3,94E-04	5,05E-06	8,17E-07	-3,34E-01
Eutrophication, freshwater*	kg P eq	4,56E-02	1,38E-04	7,55E-07	1,28E-05	5,03E-08	3,01E-08	-2,64E-02
Eutrophication, marine	kg N eq	1,09E-01	1,07E-03	4,67E-05	9,94E-05	2,97E-06	3,06E-07	-5,79E-02
Eutrophication, terrestrial	mol N eq	2,57E+00	1,09E-02	7,13E-05	1,01E-03	2,52E-05	3,27E-06	-5,82E-01
Photochemical ozone formation	kg NMVOC eq	3,84E-01	6,58E-03	2,79E-05	6,12E-04	6,30E-06	1,11E-06	-2,42E-01
Resource use, minerals and metals*	kg Sb eq	1,53E-03	6,34E-06	3,80E-09	5,89E-07	8,64E-10	2,33E-10	-2,43E-04
Resource use, fossils*	MJ	1,12E+03	2,76E+01	2,84E-02	2,56E+00	3,41E-03	2,49E-03	-6,56E+02
Water use*	m^3 depriv.	1,13E+01	1,14E-01	-1,59E-04	1,06E-02	1,23E-04	1,05E-04	-4,76E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 68: Additional environmental impact indicators - RPMC-K, 600x600 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Particulate matter	disease inc.	1,02E-05	1,45E-07	3,25E-10	1,34E-08	2,25E-11	1,76E-11	-4,66E-06
Human toxicity, non-cancer*	CTUh	2,13E-06	1,96E-08	1,07E-10	1,82E-09	5,52E-11	7,19E-13	-1,39E-06
Human toxicity, cancer*	CTUh	3,85E-07	8,84E-10	1,59E-11	8,22E-11	1,31E-12	6,41E-14	-3,02E-07
Land use*	Pt	2,45E+02	1,67E+01	5,29E-02	1,55E+00	9,50E-04	5,68E-03	-1,31E+02
Ionising radiation**	kBq U-235 eq	9,09E+00	3,73E-02	4,72E-05	3,47E-03	1,18E-05	3,28E-06	-4,39E+00
Ecotoxicity, freshwater	CTUe	7,23E+02	1,36E+01	1,97E-01	1,27E+00	4,94E-02	1,09E-03	-2,54E+02

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Table 69: Parameters describing resource use - RPMC-K, 600x600 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,99E+02	4,33E-01	7,37E-04	4,03E-02	1,99E-04	4,27E-05	-1,52E+02
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,99E+02	4,33E-01	7,37E-04	4,03E-02	1,99E-04	4,27E-05	-1,52E+02
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,19E+03	2,93E+01	3,03E-02	2,72E+00	3,70E-03	2,65E-03	-6,97E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,19E+03	2,93E+01	3,03E-02	2,72E+00	3,70E-03	2,65E-03	-6,97E+02
Use of secondary material	kg	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0
Use of net fresh water	m3	2,31E-01	6,66E-03	1,70E-02	2,96E-04	2,56E-04	4,77E-04	-5,99E-02

Table 70: Other environmental information describing waste categories - RPMC-K, 600x600 mm, manual

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
Hazardous waste	kg	6,01E-02	6,90E-04	1,42E-04	6,41E-05	2,61E-04	6,19E-08	-1,63E-02
Non-hazardous waste disposed	kg	3,36E+01	1,37E+00	4,98E-02	1,27E-01	3,19E-04	9,82E-03	-2,06E+01
Radioactive waste disposed/stored	kg	2,28E-03	9,06E-06	1,10E-08	8,42E-07	2,93E-09	7,90E-10	-1,12E-03

Table 71: Environmental information describing output flows - RPMC-K, 600x600 mm, manual

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	3,51E-01	0	0	1,93E+01	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	3,84E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	7,51E-02	0	0

Table 72: Core environmental impact indicators - RPMC-K, 600x600 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	9,07E+01	1,95E+00	4,90E-03	2,74E+00	1,78E-01	4,73E-01	1,03E-04	-5,14E+01
Climate change - Biogenic	kg CO2 eq	5,06E-01	1,78E-03	4,40E-02	2,60E-02	1,63E-04	3,17E-06	6,57E-07	-1,47E-01
Climate change - Land use and LU change	kg CO2 eq	5,63E-01	9,61E-04	5,74E-07	3,71E-03	8,78E-05	2,73E-05	7,52E-08	-4,67E-01
Climate change	kg CO2 eq	9,17E+01	1,95E+00	4,89E-02	2,77E+00	1,78E-01	4,72E-01	1,04E-04	-5,20E+01
GWP-GHG	kg CO2 eq	9,11E+01	1,95E+00	1,38E-02	5,30E+01	1,78E-01	4,73E-01	1,04E-04	-5,15E+01
Ozone depletion	kg CFC11 eq	1,93E-06	4,24E-08	4,06E-11	1,96E-08	3,87E-09	6,56E-10	2,44E-12	-1,03E-06
Acidification	mol H+ eq	9,02E-01	4,25E-03	1,49E-05	1,23E-02	3,89E-04	2,85E-04	7,35E-07	-3,03E-01
Eutrophication, freshwater*	kg P eq	5,23E-02	1,38E-04	7,56E-07	4,29E-03	1,26E-05	8,76E-06	2,71E-08	-2,39E-02
Eutrophication, marine	kg N eq	1,13E-01	1,07E-03	4,67E-05	2,66E-03	9,81E-05	1,03E-04	2,75E-07	-5,27E-02
Eutrophication, terrestrial	mol N eq	2,48E+00	1,09E-02	7,14E-05	1,97E-02	9,97E-04	1,19E-03	2,94E-06	-5,29E-01
Photochemical ozone formation	kg NMVOC eq	4,01E-01	6,60E-03	2,79E-05	5,79E-03	6,04E-04	2,37E-04	9,95E-07	-2,20E-01
Resource use, minerals and metals*	kg Sb eq	2,58E-03	6,36E-06	3,81E-09	1,78E-05	5,82E-07	3,04E-07	2,10E-10	-2,21E-04
Resource use, fossils*	MJ	1,12E+03	2,76E+01	2,84E-02	4,42E+01	2,53E+00	2,86E-01	2,24E-03	-5,95E+02
Water use*	m^3 depriv.	1,28E+01	1,14E-01	-1,60E-04	4,70E-01	1,04E-02	1,52E-02	9,48E-05	-4,26E+00

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Table 73: Additional environmental impact indicators - RPMC-K, 600x600 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	1,01E-05	1,45E-07	3,26E-10	2,96E-08	1,33E-08	3,27E-09	1,58E-11	-4,23E-06
Human toxicity, non-cancer*	CTUh	3,25E-06	1,96E-08	1,07E-10	3,10E-08	1,79E-09	7,10E-09	6,47E-13	-1,26E-06
Human toxicity, cancer*	CTUh	3,92E-07	8,87E-10	1,59E-11	9,09E-10	8,11E-11	7,31E-11	5,77E-14	-2,74E-07
Land use*	Pt	2,73E+02	1,67E+01	5,30E-02	4,59E+00	1,53E+00	6,43E-01	5,11E-03	-1,20E+02
Ionising radiation**	kBq U-235 eq	8,96E+00	3,74E-02	4,73E-05	1,14E+00	3,42E-03	1,18E-03	2,95E-06	-3,96E+00
Ecotoxicity, freshwater	CTUe	7,95E+02	1,37E+01	1,97E-01	9,70E+00	1,25E+00	4,48E+00	9,81E-04	-2,31E+02

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Table 74: Parameters describing resource use - RPMC-K, 600x600 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,92E+02	4,34E-01	7,38E-04	3,02E+00	3,97E-02	5,51E-02	3,84E-05	-1,37E+02
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,92E+02	4,34E-01	7,38E-04	3,02E+00	3,97E-02	5,51E-02	3,84E-05	-1,37E+02
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,20E+03	2,94E+01	3,03E-02	4,69E+01	2,69E+00	3,07E-01	2,38E-03	-6,32E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0,00E+00	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,20E+03	2,94E+01	3,03E-02	4,69E+01	2,69E+00	3,07E-01	2,38E-03	-6,32E+02
Use of secondary material	kg	0,00E+00	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ, net calorific value	0,00E+00	0	0	0	0	0	0	0
Use of non renewable secondary fuels	MJ, net calorific value	0,00E+00	0	0	0	0	0	0	0
Use of net fresh water	m3	2,56E-01	7,40E-03	1,89E-02	1,94E-01	3,29E-04	2,85E-04	5,30E-04	-6,66E-02

Table 75: Other environmental information describing waste categories - RPMC-K, 600x600 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	7,57E-02	6,92E-04	1,42E-04	3,34E-03	6,33E-05	8,59E-03	5,57E-08	-1,48E-02
Non-hazardous waste disposed	kg	3,36E+01	1,37E+00	4,98E-02	2,70E-01	1,26E-01	2,72E-02	8,84E-03	-1,87E+01
Radioactive waste disposed/stored	kg	2,24E-03	9,08E-06	1,10E-08	2,75E-04	8,31E-07	2,92E-07	7,11E-10	-1,02E-03

Table 76: Environmental information describing output flows - RPMC-K, 600x600 mm, with the actuator

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1-C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	3,90E-01	0	0	2,15E+01	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	3,84E-02	0	0
Exported energy, heat	MJ	0	0	0	0	0	7,51E-02	0	0

Table 77: Core environmental impact indicators - RPM-V, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	6,55E+00	3,06E-01	2,57E-02	1,22E+02	1,46E-02	1,88E-01	6,31E-05	-1,97E+00
Climate change - Biogenic	kg CO2 eq	-6,78E-02	2,06E-04	4,47E-06	1,43E+00	9,87E-06	6,78E-02	3,59E-07	-2,57E-03
Climate change - Land use and LU change	kg CO2 eq	8,62E-03	1,02E-04	9,26E-08	2,00E-01	4,87E-06	3,45E-05	1,53E-08	-1,05E-03
Climate change	kg CO2 eq	6,49E+00	3,06E-01	2,57E-02	1,24E+02	1,46E-02	2,56E-01	6,35E-05	-1,97E+00
GWP-GHG	kg CO2 eq	6,74E+00	3,06E-01	2,57E-02	1,23E+02	1,47E-02	3,09E-01	7,40E-05	-1,98E+00
Ozone depletion	kg CFC11 eq	9,33E-08	6,08E-09	8,22E-12	8,84E-07	2,91E-10	3,38E-10	1,98E-12	-1,07E-08
Acidification	mol H+ eq	8,04E-02	6,37E-04	5,50E-06	5,42E-01	3,05E-05	2,24E-04	6,96E-07	-8,14E-03
Eutrophication, freshwater*	kg P eq	4,74E-03	2,07E-05	6,14E-08	1,86E-01	9,91E-07	1,29E-05	1,06E-07	-8,38E-04
Eutrophication, marine	kg N eq	8,72E-03	1,53E-04	3,27E-06	1,18E-01	7,32E-06	9,30E-05	1,73E-07	-1,86E-03
Eutrophication, terrestrial	mol N eq	1,89E-01	1,65E-03	2,77E-05	8,77E-01	7,89E-05	7,32E-04	1,86E-06	-1,90E-02
Photochemical ozone formation	kg NMVOC eq	2,90E-02	1,06E-03	6,92E-06	2,57E-01	5,06E-05	1,85E-04	6,82E-07	-6,38E-03
Resource use, minerals and metals*	kg Sb eq	4,77E-04	9,94E-07	1,02E-09	8,49E-04	4,75E-08	5,50E-07	1,20E-10	-1,22E-05
Resource use, fossils*	MJ	7,41E+01	4,30E+00	3,90E-03	2,13E+03	2,06E-01	3,44E-01	1,47E-03	-2,04E+01
Water use*	m^3 depriv.	2,41E+00	2,43E-02	1,26E-03	5,65E+01	1,16E-03	1,27E-02	-7,62E-04	-5,43E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 78: Additional environmental impact indicators - RPM-V, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	7,80E-07	2,25E-08	2,52E-11	1,30E-06	1,08E-09	3,21E-09	1,06E-11	-1,71E-07
Human toxicity, non-cancer*	CTUh	4,08E-07	2,78E-09	5,88E-11	1,41E-06	1,33E-10	3,17E-09	1,76E-12	-4,24E-08
Human toxicity, cancer*	CTUh	3,30E-07	2,17E-09	4,35E-12	1,84E-07	1,04E-10	5,33E-10	3,58E-13	-1,92E-07
Land use*	Pt	5,04E+01	2,60E+00	9,35E-04	2,41E+02	1,24E-01	1,13E+00	3,60E-03	-6,33E+00
Ionising radiation**	kBq U-235 eq	5,12E-01	5,58E-03	1,40E-05	5,55E+01	2,67E-04	3,12E-03	1,97E-06	-7,69E-02
Ecotoxicity, freshwater	CTUe	1,70E+02	1,17E+00	5,53E-02	4,69E+02	5,60E-02	1,87E+00	1,08E-03	-6,31E+01

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Table 79: Parameters describing resource use - RPM-V, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,16E+01	7,38E-02	2,39E-04	1,63E+02	3,53E-03	5,60E-02	3,05E-05	-1,76E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,16E+01	7,38E-02	2,39E-04	1,63E+02	3,53E-03	5,60E-02	3,05E-05	-1,76E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	7,42E+01	4,30E+00	3,90E-03	2,13E+03	2,06E-01	3,44E-01	1,47E-03	-2,04E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	7.42E+01	4,30E+00	3,90E-03	2,13E+03	2,06E-01	3,44E-01	1,47E-03	-2,04E+01
Use of secondary material	kg	5,91E-01	2,00E-03	4,34E-06	2,06E-01	9,55E-05	7,23E-04	4,88E-07	-3,24E-01
Use of renewable secondary fuels	MJ, net calorific value	7.78E-02	2,52E-05	1,47E-07	1,78E-03	1,21E-06	1,19E-04	8,83E-09	-2,03E-04
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	6,02E-02	5,98E-04	2,93E-05	1,35E+00	2,86E-05	3,11E-04	-1,77E-05	-1,40E-02

Table 80: Other environmental information describing waste categories - RPM-V, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	1,65E+00	6,28E-03	3,23E-04	3,74E+00	3,00E-04	1,69E-02	2,48E-06	-7,18E-01
Non-hazardous waste disposed	kg	2,67E+01	1,33E-01	1,28E-02	9.10E+02	6,34E-03	2,21E-01	2,25E-02	-8,56E+00
Radioactive waste disposed/ stored	kg	6,98E-05	1,39E-06	3,60E-09	1,33E-02	6,63E-08	7,95E-07	4,81E-10	-1,89E-05

Table 81: Environmental information describing output flows - RPM-V, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	2,33E-01	3,27E-05	4,89E-05	1,24E-01	1,56E-06	1,01E+00	1,90E-08
Materials for energy recovery	kg	2,34E-05	2,77E-07	2,22E-10	2,11E-05	1,32E-08	8,31E-08	3,65E-11
Exported energy, electricity	MJ	2,56E-02	7,40E-04	3,52E-06	1,16E+00	3,54E-05	4,59E-04	6,10E-07
Exported energy, heat	MJ	3,94E-02	1,07E-03	3,86E-06	2,80E-01	5,12E-05	1,02E-04	1,37E-06

Table 82: Core environmental impact indicators - RPM-V, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,92E+01	1,03E+00	8,69E-02	1,22E+02	4,95E-02	2,89E-01	2,02E-05	-9,37E+00
Climate change - Biogenic	kg CO2 eq	-2,23E-01	6,96E-04	1,51E-05	1,43E+00	3,34E-05	7,27E-01	1,15E-07	-1,02E-02
Climate change - Land use and LU change	kg CO2 eq	2,23E-02	3,43E-04	3,13E-07	2,00E-01	1,65E-05	1,10E-04	4,91E-09	-4,71E-03
Climate change	kg CO2 eq	1,90E+01	1,03E+00	8,69E-02	1,24E+02	4,95E-02	1,02E+00	2,04E-05	-9,39E+00
GWP-GHG	kg CO2 eq	1,99E+01	1,03E+00	8,69E-02	1,23E+02	4,96E-02	5,46E-01	2,37E-05	-9,42E+00
Ozone depletion	kg CFC11 eq	2,70E-07	2,05E-08	2,78E-11	8,84E-07	9,84E-10	9,48E-10	6,33E-13	-4,74E-08
Acidification	mol H+ eq	2,24E-01	2,15E-03	1,86E-05	5,42E-01	1,03E-04	6,23E-04	2,23E-07	-3,88E-02
Eutrophication, freshwater*	kg P eq	1,02E-02	6,99E-05	2,08E-07	1,86E-01	3,35E-06	4,76E-05	3,39E-08	-3,92E-03
Eutrophication, marine	kg N eq	2,52E-02	5,16E-04	1,11E-05	1,18E-01	2,48E-05	2,85E-04	5,56E-08	-8,78E-03
Eutrophication, terrestrial	mol N eq	7,25E-01	5,57E-03	9,36E-05	8,77E-01	2,67E-04	1,80E-03	5,97E-07	-9,00E-02
Photochemical ozone formation	kg NMVOC eq	7,73E-02	3,57E-03	2,34E-05	2,57E-01	1,71E-04	5,01E-04	2,19E-07	-3,02E-02
Resource use, minerals and metals*	kg Sb eq	8,24E-04	3,35E-06	3,46E-09	8,49E-04	1,61E-07	2,12E-06	3,85E-11	-5,96E-05
Resource use, fossils*	MJ	2,17E+02	1,45E+01	1,32E-02	2,13E+03	6,96E-01	1,02E+00	4,70E-04	-9,66E+01
Water use*	m^3 depriv.	6,53E+00	8,18E-02	4,25E-03	5,65E+01	3,93E-03	2,76E-02	-2,44E-04	-2,60E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 83: Additional environmental impact indicators - RPM-V, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	2,66E-06	7,60E-08	8,52E-11	1,30E-06	3,64E-09	1,03E-08	3,39E-12	-8,31E-07
Human toxicity, non-cancer*	CTUh	6,79E-07	9,39E-09	1,99E-10	1,41E-06	4,51E-10	5,73E-09	5,65E-13	-2,06E-07
Human toxicity, cancer*	CTUh	1,18E-06	7,33E-09	1,47E-11	1,84E-07	3,51E-10	1,55E-09	1,15E-13	-9,38E-07
Land use*	Pt	1,47E+02	8,76E+00	3,16E-03	2,41E+02	4,20E-01	4,51E+00	1,15E-03	-2,99E+01
Ionising radiation**	kBq U-235 eq	1,59E+00	1,88E-02	4,75E-05	5,55E+01	9,03E-04	1,26E-02	6,30E-07	-3,22E-01
Ecotoxicity, freshwater	CTUe	5,41E+02	3,95E+00	1,87E-01	4,69E+02	1,90E-01	3,25E+00	3,46E-04	-3,08E+02

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Table 84: Parameters describing resource use - RPM-V, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	3,42E+01	2,49E-01	8,09E-04	1,63E+02	1,19E-02	1,81E-01	9,78E-06	-8,49E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	3,42E+01	2,49E-01	8,09E-04	1,63E+02	1,19E-02	1,81E-01	9,78E-06	-8,49E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	2,17E+02	1,45E+01	1,32E-02	2,13E+03	6,96E-01	1,02E+00	4,70E-04	-9,66E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	2,17E+02	1,45E+01	1,32E-02	2,13E+03	6,96E-01	1,02E+00	4,70E-04	-9,66E+01
Use of secondary material	kg	2,07E+00	6,73E-03	1,47E-05	2,06E-01	3,23E-04	2,26E-03	1,56E-07	-1,59E+00
Use of renewable secondary fuels	MJ, net calorific value	2,63E-01	8,51E-05	4,97E-07	1,78E-03	4,08E-06	2,16E-04	2,83E-09	-9,92E-04
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	1,63E-01	2,02E-03	9,93E-05	1,35E+00	9,67E-05	6,95E-04	-5,68E-06	-6,70E-02

Table 85: Other environmental information describing waste categories - RPM-V, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	4,95E+00	2,12E-02	1,09E-03	3,74E+00	1,02E-03	2,69E-02	7,96E-07	-3,51E+00
Non-hazardous waste disposed	kg	6,85E+01	4,47E-01	4,34E-02	9,10E+02	2,14E-02	7,58E-01	7,22E-03	-4,11E+01
Radioactive waste disposed/ stored	kg	2,01E-04	4,68E-06	1,22E-08	1,33E-02	2,24E-07	3,22E-06	1,54E-10	-7,98E-05

Table 86: Environmental information describing output flows - RPM-V, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	7,79E-01	1,10E-04	1,65E-04	1,24E-01	5,29E-06	4,80E+00	6,08E-09
Materials for energy recovery	kg	7,65E-05	9,34E-07	7,52E-10	2,11E-05	4,48E-08	2,31E-07	1,17E-11
Exported energy, electricity	MJ	7,59E-02	2,50E-03	1,19E-05	1,16E+00	1,20E-04	1,96E-03	1,96E-07
Exported energy, heat	MJ	1,08E-01	3,61E-03	1,30E-05	2,80E-01	1,73E-04	2,74E-04	4,38E-07

Table 87: Core environmental impact indicators - RPM-V, DN 630 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	6.90E+01	3,91E+00	3,29E-01	1,89E+02	1,88E-01	6,90E-01	6,15E-04	-3,84E+01
Climate change - Biogenic	kg CO2 eq	-8,14E-01	2,64E-03	5,73E-05	2,22E+00	1,27E-04	8,14E-01	3,50E-06	-3,79E-02
Climate change - Land use and LU change	kg CO2 eq	5,61E-02	1,30E-03	1,19E-06	3,08E-01	6,24E-05	3,54E-04	1,49E-07	-1,89E-02
Climate change	kg CO2 eq	6,83E+01	3,92E+00	3,29E-01	1,92E+02	1,88E-01	1,50E+00	6,19E-04	-3,85E+01
GWP-GHG	kg CO2 eq	7,18E+01	3,91E+00	3,29E-01	1,89E+02	1,88E-01	7,86E-01	7,21E-04	-3,86E+01
Ozone depletion	kg CFC11 eq	9,77E-07	7,78E-08	1,05E-10	1,36E-06	3,73E-09	3,03E-09	1,93E-11	-1,86E-07
Acidification	mol H+ eq	8,08E-01	8,15E-03	7,04E-05	8,37E-01	3,91E-04	1,99E-03	6,78E-06	-1,60E-01
Eutrophication, freshwater*	kg P eq	3,33E-02	2,65E-04	7,88E-07	2,87E-01	1,27E-05	1,64E-04	1,03E-06	-1,58E-02
Eutrophication, marine	kg N eq	9,05E-02	1,96E-03	4,19E-05	1,82E-01	9,38E-05	9,24E-04	1,69E-06	-3,61E-02
Eutrophication, terrestrial	mol N eq	2,86E+00	2,11E-02	3,55E-04	1,35E+00	1,01E-03	5,50E-03	1,82E-05	-3,70E-01
Photochemical ozone formation	kg NMVOC eq	2,69E-01	1,35E-02	8,88E-05	3,97E-01	6,49E-04	1,58E-03	6,65E-06	-1,24E-01
Resource use, minerals and metals*	kg Sb eq	2,44E-03	1,27E-05	1,31E-08	1,31E-03	6,09E-07	7,42E-06	1,17E-09	-2,48E-04
Resource use, fossils*	MJ	7,67E+02	5,51E+01	5,00E-02	3,28E+03	2,64E+00	3,32E+00	1,43E-02	-3,93E+02
Water use*	m^3 depriv.	2,13E+01	3,10E-01	1,61E-02	8,72E+01	1,49E-02	7,94E-02	-7,42E-03	-1,07E+01

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Table 88: Additional environmental impact indicators - RPM-V, DN 630 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	1,02E-05	2,88E-07	3,23E-10	2,01E-06	1,38E-08	3,43E-08	1,03E-10	-3,45E-06
Human toxicity, non-cancer*	CTUh	1,95E-06	3,56E-08	7,54E-10	2,18E-06	1,71E-09	1,57E-08	1,72E-11	-8,54E-07
Human toxicity, cancer*	CTUh	4,61E-06	2,78E-08	5,57E-11	2,84E-07	1,33E-09	4,58E-09	3,49E-12	-3,90E-06
Land use*	Pt	5,32E+02	3,32E+01	1,20E-02	3,72E+02	1,59E+00	1,60E+01	3,51E-02	-1,23E+02
Ionising radiation**	kBq U-235 eq	5,74E+00	7,14E-02	1,80E-04	8,56E+01	3,42E-03	4,42E-02	1,92E-05	-1,19E+00
Ecotoxicity, freshwater	CTUe	2,05E+03	1,50E+01	7,09E-01	7,24E+02	7,18E-01	8,61E+00	1,05E-02	-1,28E+03

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Table 89: Parameters describing resource use - RPM-V, DN 630 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,20E+02	9,45E-01	3,06E-03	2,52E+02	4,53E-02	6,06E-01	2,97E-04	-3,50E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,20E+02	9,45E-01	3,06E-03	2,52E+02	4,53E-02	6,06E-01	2,97E-04	-3,50E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	7,67E+02	5,51E+01	5,00E-02	3,28E+03	2,64E+00	3,32E+00	1,43E-02	-3,93E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	7,67E+02	5,51E+01	5,00E-02	3,28E+03	2,64E+00	3,32E+00	1,43E-02	-3,93E+02
Use of secondary material	kg	8,08E+00	2,55E-02	5,56E-05	3,19E-01	1,22E-03	6,71E-03	4,76E-06	-6,60E+00
Use of renewable secondary fuels	MJ, net calorific value	9,93E-01	3,23E-04	1,88E-06	2,74E-03	1,55E-05	6,00E-04	8,60E-08	-4,13E-03
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	5,34E-01	7,65E-03	3,76E-04	2,09E+00	3,66E-04	2,02E-03	-1,73E-04	-2,75E-01

Table 90: Other environmental information describing waste categories - RPM-V, DN 630 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	1,83E+01	8,03E-02	4,14E-03	5,77E+00	3,85E-03	6,73E-02	2,42E-05	-1,46E+01
Non-hazardous waste disposed	kg	2,39E+02	1,70E+00	1,64E-01	1,41E+03	8,13E-02	2,56E+00	2,20E-01	-1,68E+02
Radioactive waste disposed/ stored	kg	6,88E-04	1,77E-05	4,61E-08	2,06E-02	8,50E-07	1,13E-05	4,69E-09	-2,96E-04

Table 91: Environmental information describing output flows - RPM-V, DN 630 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	2,94E+00	4,18E-04	6,27E-04	1,91E-01	2,00E-05	1,76E+01	1,85E-07
Materials for energy recovery	kg	2,91E-04	3,54E-06	2,85E-09	3,26E-05	1,70E-07	6,55E-07	3,55E-10
Exported energy, electricity	MJ	2,72E-01	9,47E-03	4,51E-05	1,80E+00	4,54E-04	6,96E-03	5,95E-06
Exported energy, heat	MJ	3,78E-01	1,37E-02	4,94E-05	4,32E-01	6,57E-04	8,51E-04	1,33E-05

Table 92: Core environmental impact indicators - RPM-V, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,14E+01	6,25E-01	5,27E-02	1,22E+02	3,00E-02	2,20E-01	4,58E-03	-4,34E+00
Climate change - Biogenic	kg CO2 eq	-2,10E-01	4,22E-04	9,17E-06	1,43E+00	2,03E-05	2,10E-01	2,61E-05	-4,99E-03
Climate change - Land use and LU change	kg CO2 eq	1,33E-02	2,08E-04	1,90E-07	2,00E-01	9,98E-06	5,84E-05	1,11E-06	-2,22E-03
Climate change	kg CO2 eq	1,12E+01	6,26E-01	5,27E-02	1,24E+02	3,00E-02	4,30E-01	4,61E-03	-4,35E+00
GWP-GHG	kg CO2 eq	1,18E+01	6,25E-01	5,27E-02	1,23E+02	3,00E-02	3,75E-01	5,37E-03	-4,37E+00
Ozone depletion	kg CFC11 eq	1,82E-07	1,24E-08	1,69E-11	8,84E-07	5,97E-10	5,31E-10	1,43E-10	-2,24E-08
Acidification	mol H+ eq	1,31E-01	1,30E-03	1,13E-05	5,42E-01	6,25E-05	3,51E-04	5,05E-05	-1,80E-02
Eutrophication, freshwater*	kg P eq	6,75E-03	4,23E-05	1,26E-07	1,86E-01	2,03E-06	2,39E-05	7,68E-06	-1,82E-03
Eutrophication, marine	kg N eq	1,55E-02	3,13E-04	6,70E-06	1,18E-01	1,50E-05	1,54E-04	1,26E-05	-4,08E-03
Eutrophication, terrestrial	mol N eq	3,79E-01	3,37E-03	5,68E-05	8,77E-01	1,62E-04	1,07E-03	1,35E-04	-4,18E-02
Photochemical ozone formation	kg NMVOC eq	4,92E-02	2,16E-03	1,42E-05	2,57E-01	1,04E-04	2,85E-04	4,95E-05	-1,40E-02
Resource use, minerals and metals*	kg Sb eq	6,11E-04	2,03E-06	2,10E-09	8,49E-04	9,75E-08	1,05E-06	8,71E-09	-2,74E-05
Resource use, fossils*	MJ	1,30E+02	8,79E+00	8,01E-03	2,13E+03	4,22E-01	5,59E-01	1,06E-01	-4,48E+01
Water use*	m^3 depriv.	4,45E+00	4,96E-02	2,58E-03	5,65E+01	2,38E-03	1,74E-02	-5,53E-02	-1,20E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 93: Additional environmental impact indicators - RPM-V, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	1,43E-06	4,60E-08	5,17E-11	1,30E-06	2,21E-09	5,46E-09	7,68E-10	-3,83E-07
Human toxicity, non-cancer*	CTUh	5,04E-07	5,69E-09	1,21E-10	1,41E-06	2,73E-10	3,98E-09	1,28E-10	-9,49E-08
Human toxicity, cancer*	CTUh	6,08E-07	4,44E-09	8,92E-12	1,84E-07	2,13E-10	8,49E-10	2,60E-11	-4,32E-07
Land use*	Pt	9,78E+01	5,31E+00	1,92E-03	2,41E+02	2,55E-01	2,21E+00	2,61E-01	-1,39E+01
Ionising radiation**	kBq U-235 eq	9,49E-01	1,14E-02	2,88E-05	5,55E+01	5,48E-04	6,12E-03	1,43E-04	-1,54E-01
Ecotoxicity, freshwater	CTUe	2,97E+02	2,39E+00	1,14E-01	4,69E+02	1,15E-01	2,31E+00	7,83E-02	-1,42E+02

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** Disclaimer: 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.

Table 94: Parameters describing resource use - RPM-V, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	2,45E+01	1,51E-01	4,91E-04	1,63E+02	7,25E-03	9,57E-02	2,21E-03	-3,92E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	2,45E+01	1,51E-01	4,91E-04	1,63E+02	7,25E-03	9,57E-02	2,21E-03	-3,92E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,30E+02	8,79E+00	8,01E-03	2,13E+03	4,22E-01	5,60E-01	1,06E-01	-4,48E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,30E+02	8,79E+00	8,01E-03	2,13E+03	4,22E-01	5,60E-01	1,06E-01	-4,48E+01
Use of secondary material	kg	1,42E+00	4,08E-03	8,90E-06	2,06E-01	1,96E-04	1,20E-03	3,54E-05	-7,30E-01
Use of renewable secondary fuels	MJ, net calorific value	1,79E-01	5,16E-05	3,01E-07	1,78E-03	2,48E-06	1,50E-04	6,40E-07	-4,56E-04
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	1,12E-01	1,22E-03	6,02E-05	1,35E+00	5,87E-05	4,32E-04	-1,29E-03	-3,09E-02

Table 95: Other environmental information describing waste categories - RPM-V, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	2,77E+00	1,28E-02	6,63E-04	3,74E+00	6,16E-04	2,01E-02	1,80E-04	-1,61E+00
Non-hazardous waste disposed	kg	4,19E+01	2,71E-01	2,63E-02	9,10E+02	1,30E-02	3,92E-01	1,63E+00	-1,90E+01
Radioactive waste disposed/ stored	kg	1,18E-04	2,83E-06	7,39E-09	1,33E-02	1,36E-07	1,57E-06	3,49E-08	-3,81E-05

Table 96: Environmental information describing output flows - RPM-V, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	4,74E-01	6,68E-05	1,00E-04	1,24E-01	3,21E-06	2,22E+00	1,38E-06
Materials for energy recovery	kg	1,11E-03	5,66E-07	4,56E-10	2,11E-05	2,72E-08	1,29E-07	2,65E-09
Exported energy, electricity	MJ	4,61E-02	1,51E-03	7,22E-06	1,16E+00	7,26E-05	9,35E-04	4,43E-05
Exported energy, heat	MJ	7,32E-02	2,19E-03	7,91E-06	2,80E-01	1,05E-04	1,57E-04	9,91E-05

Table 97: Core environmental impact indicators - RPM-V, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	2,98E+01	1,75E+00	1,47E-01	1,22E+02	8,40E-02	3,56E-01	9,87E-03	-1,48E+01
Climate change - Biogenic	kg CO2 eq	-5,32E-01	1,18E-03	2,56E-05	1,43E+00	5,67E-05	5,32E-01	5,62E-05	-1,55E-02
Climate change - Land use and LU change	kg CO2 eq	2,99E-02	5,82E-04	5,32E-07	2,00E-01	2,79E-05	1,63E-04	2,39E-06	-7,37E-03
Climate change	kg CO2 eq	2,93E+01	1,75E+00	1,48E-01	1,24E+02	8,41E-02	8,88E-01	9,93E-03	-1,48E+01
GWP-GHG	kg CO2 eq	3,10E+01	1,75E+00	1,47E-01	1,23E+02	8,40E-02	6,17E-01	1,16E-02	-1,49E+01
Ozone depletion	kg CFC11 eq	4,40E-07	3,48E-08	4,72E-11	8,84E-07	1,67E-09	1,38E-09	3,09E-10	-7,36E-08
Acidification	mol H+ eq	3,39E-01	3,64E-03	3,15E-05	5,42E-01	1,75E-04	9,06E-04	1,09E-04	-6,14E-02
Eutrophication, freshwater*	kg P eq	1,47E-02	1,18E-04	3,53E-07	1,86E-01	5,69E-06	7,24E-05	1,65E-05	-6,16E-03
Eutrophication, marine	kg N eq	4,00E-02	8,75E-04	1,88E-05	1,18E-01	4,20E-05	4,20E-04	2,71E-05	-1,39E-02
Eutrophication, terrestrial	mol N eq	1,16E+00	9,44E-03	1,59E-04	8,77E-01	4,53E-04	2,54E-03	2,91E-04	-1,42E-01
Photochemical ozone formation	kg NMVOC eq	1,22E-01	6,06E-03	3,97E-05	2,57E-01	2,91E-04	7,23E-04	1,07E-04	-4,77E-02
Resource use, minerals and metals*	kg Sb eq	1,13E-03	5,68E-06	5,87E-09	8,49E-04	2,73E-07	3,24E-06	1,88E-08	-9,46E-05
Resource use, fossils*	MJ	3,39E+02	2,46E+01	2,24E-02	2,13E+03	1,18E+00	1,50E+00	2,29E-01	-1,52E+02
Water use*	m^3 depriv.	1,05E+01	1,39E-01	7,20E-03	5,65E+01	6,66E-03	3,79E-02	-1,19E-01	-4,11E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 98: Additional environmental impact indicators - RPM-V, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	4,14E-06	1,29E-07	1,45E-10	1,30E-06	6,18E-09	1,53E-08	1,65E-09	-1,32E-06
Human toxicity, non-cancer*	CTUh	8,95E-07	1,59E-08	3,38E-10	1,41E-06	7,65E-10	7,55E-09	2,75E-10	-3,27E-07
Human toxicity, cancer*	CTUh	1,81E-06	1,24E-08	2,49E-11	1,84E-07	5,96E-10	2,21E-09	5,60E-11	-1,49E-06
Land use*	Pt	2,52E+02	1,49E+01	5,37E-03	2,41E+02	7,13E-01	6,95E+00	5,63E-01	-4,74E+01
Ionising radiation**	kBq U-235 eq	2,55E+00	3,19E-02	8,06E-05	5,55E+01	1,53E-03	1,93E-02	3,07E-04	-4,89E-01
Ecotoxicity, freshwater	CTUe	8,27E+02	6,70E+00	3,18E-01	4,69E+02	3,22E-01	4,21E+00	1,69E-01	-4,89E+02

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Table 99: Parameters describing resource use - RPM-V, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	6,24E+01	4,22E-01	1,37E-03	1,63E+02	2,03E-02	2.70E-01	4,77E-03	-1,34E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	6,24E+01	4,22E-01	1,37E-03	1,63E+02	2,03E-02	2.70E-01	4,77E-03	-1,34E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	3,40E+02	2,46E+01	2,24E-02	2,13E+03	1,18E+00	1,50E+00	2,29E-01	-1,52E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	3,40E+02	2,46E+01	2,24E-02	2,13E+03	1,18E+00	1.50E+00	2,29E-01	-1,52E+02
Use of secondary material	kg	3,95E+00	1,14E-02	2,49E-05	2,06E-01	5,48E-04	3,24E-03	7,63E-05	-2,52E+00
Use of renewable secondary fuels	MJ, net calorific value	4,89E-01	1,44E-04	8,43E-07	1,78E-03	6,93E-06	2,85E-04	1,38E-06	-1,58E-03
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	2,64E-01	3,42E-03	1,68E-04	1,35E+00	1,64E-04	9,60E-04	-2,77E-03	-1,06E-01

Table 100: Other environmental information describing waste categories - RPM-V, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	7,44E+00	3,59E-02	1,86E-03	3,74E+00	1,72E-03	3,38E-02	3,88E-04	-5,58E+00
Non-hazardous waste disposed	kg	1,02E+02	7,58E-01	7,36E-02	9,10E+02	3,64E-02	1,14E+00	3,52E+00	-6,49E+01
Radioactive waste disposed/ stored	kg	3,04E-04	7,93E-06	2,07E-08	1,33E-02	3,81E-07	4,95E-06	7,52E-08	-1,21E-04

Table 101: Environmental information describing output flows - RPM-V, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	1,32E+00	1,87E-04	2,81E-04	1,24E-01	8,98E-06	7,55E+00	2,96E-06
Materials for energy recovery	kg	2,49E-03	1,58E-06	1,28E-09	2,11E-05	7,61E-08	3,25E-07	5,70E-09
Exported energy, electricity	MJ	1,20E-01	4,23E-03	2,02E-05	1,16E+00	2,03E-04	3,03E-03	9,54E-05
Exported energy, heat	MJ	1,82E-01	6,13E-03	2,21E-05	2,80E-01	2,94E-04	3,93E-04	2,14E-04

Table 102: Core environmental impact indicators - RPM-V, DN 630 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	9,22E+01	5,43E+00	4,59E-01	1,89E+02	2,61E-01	8,81E-01	1,80E-02	-5,09E+01
Climate change - Biogenic	kg CO2 eq	-1,42E+00	3,67E-03	7,98E-05	2,22E+00	1,76E-04	1,42E+00	1,03E-04	-4,97E-02
Climate change - Land use and LU change	kg CO2 eq	7,17E-02	1,81E-03	1,65E-06	3,08E-01	8,69E-05	5,06E-04	4,37E-06	-2,50E-02
Climate change	kg CO2 eq	9,08E+01	5,44E+00	4,59E-01	1,92E+02	2,62E-01	2,30E+00	1,81E-02	-5,09E+01
GWP-GHG	kg CO2 eq	9,60E+01	5,43E+00	4,59E-01	1,89E+02	2,62E-01	8,26E-01	2,11E-02	-5,12E+01
Ozone depletion	kg CFC11 eq	1,32E-06	1,08E-07	1,47E-10	1,36E-06	5,20E-09	4,30E-09	5,64E-10	-2,45E-07
Acidification	mol H+ eq	1,06E+00	1,13E-02	9,82E-05	8,37E-01	5,44E-04	2,83E-03	1,99E-04	-2,12E-01
Eutrophication, freshwater*	kg P eq	4,32E-02	3,68E-04	1,10E-06	2,87E-01	1,77E-05	2,38E-04	3,02E-05	-2,09E-02
Eutrophication, marine	kg N eq	1,22E-01	2,72E-03	5,84E-05	1,82E-01	1,31E-04	1,32E-03	4,96E-05	-4,77E-02
Eutrophication, terrestrial	mol N eq	3,83E+00	2,93E-02	4,94E-04	1,35E+00	1,41E-03	7,71E-03	5,32E-04	-4,90E-01
Photochemical ozone formation	kg NMVOC eq	3,64E-01	1,88E-02	1,24E-04	3,97E-01	9,04E-04	2,24E-03	1,95E-04	-1,64E-01
Resource use, minerals and metals*	kg Sb eq	3,11E-03	1,77E-05	1,83E-08	1,31E-03	8,49E-07	1,08E-05	3,43E-08	-3,28E-04
Resource use, fossils*	MJ	1,03E+03	7,64E+01	6,97E-02	3,28E+03	3,68E+00	4,73E+00	4,19E-01	-5,20E+02
Water use*	m^3 depriv.	2,93E+01	4,31E-01	2,24E-02	8,72E+01	2,07E-02	1,09E-01	-2,18E-01	-1,41E+01

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Table 103: Additional environmental impact indicators - RPM-V, DN 630 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	1,35E-05	4,00E-07	4,50E-10	2,01E-06	1,92E-08	4,92E-08	3,02E-09	-4,57E-06
Human toxicity, non-cancer*	CTUh	2,44E-06	4,95E-08	1,05E-09	2,18E-06	2,38E-09	2,11E-08	5,03E-10	-1,13E-06
Human toxicity, cancer*	CTUh	6,06E-06	3,86E-08	7,76E-11	2,84E-07	1,86E-09	6,42E-09	1,02E-10	-5,18E-06
Land use*	Pt	7,53E+02	4,62E+01	1,67E-02	3,72E+02	2,22E+00	2,33E+01	1,03E+00	-1,64E+02
Ionising radiation**	kBq U-235 eq	7,82E+00	9,91E-02	2,51E-04	8,56E+01	4,77E-03	6,44E-02	5,62E-04	-1,56E+00
Ecotoxicity, freshwater	CTUe	2,70E+03	2,08E+01	9,88E-01	7,24E+02	1,00E+00	1,14E+01	3,08E-01	-1,70E+03

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Table 104: Parameters describing resource use - RPM-V, DN 630 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,78E+02	1,31E+00	4,27E-03	2,52E+02	6,31E-02	8,71E-01	8,71E-03	-4,63E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,78E+02	1,31E+00	4,27E-03	2,52E+02	6,31E-02	8,71E-01	8,71E-03	-4,63E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,03E+03	7,64E+01	6,97E-02	3,28E+03	3,68E+00	4,73E+00	4,19E-01	-5,20E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,03E+03	7,64E+01	6,97E-02	3,28E+03	3,68E+00	4,73E+00	4,19E-01	-5,20E+02
Use of secondary material	kg	1,20E+01	3,55E-02	7,75E-05	3,19E-01	1,71E-03	9,45E-03	1,39E-04	-8,76E+00
Use of renewable secondary fuels	MJ, net calorific value	1,46E+00	4,48E-04	2,62E-06	2,74E-03	2,16E-05	8,09E-04	2,52E-06	-5,47E-03
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	7,39E-01	1,06E-02	5,24E-04	2,09E+00	5,11E-04	2,79E-03	-5,06E-03	-3,64E-01

Table 105: Other environmental information describing waste categories - RPM-V, DN 630 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	2,39E+01	1,11E-01	5,78E-03	5,77E+00	5,36E-03	8,73E-02	7,09E-04	-1,94E+01
Non-hazardous waste disposed	kg	3,13E+02	2,35E+00	2,29E-01	1,41E+03	1,13E-01	3,69E+00	6,43E+00	-2,23E+02
Radioactive waste disposed/ stored	kg	9,14E-04	2,46E-05	6,43E-08	2,06E-02	1,18E-06	1,65E-05	1,37E-07	-3,88E-04

Table 106: Environmental information describing output flows - RPM-V, DN 630 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	4,10E+00	5,81E-04	8,73E-04	1,91E-01	2,79E-05	2,59E+01	5,42E-06
Materials for energy recovery	kg	4,56E-03	4,92E-06	3,97E-09	3,26E-05	2,37E-07	9,10E-07	1,04E-08
Exported energy, electricity	MJ	3,67E-01	1,31E-02	6,28E-05	1,80E+00	6,32E-04	1,02E-02	1,74E-04
Exported energy, heat	MJ	5,33E-01	1,90E-02	6,89E-05	4,32E-01	9,15E-04	1,20E-03	3,90E-04

Table 107: Core environmental impact indicators - RPM-LV, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	6,27E+00	3,12E-01	2,50E-02	1,22E+02	1,42E-02	1,87E-01	1,05E-04	-2,06E+00
Climate change - Biogenic	kg CO2 eq	-7,07E-02	2,10E-04	4,35E-06	1,43E+00	9,62E-06	7,07E-02	5,99E-07	-2,37E-03
Climate change - Land use and LU change	kg CO2 eq	8,12E-03	1,04E-04	9,02E-08	2,00E-01	4,74E-06	3,34E-05	2,55E-08	-1,05E-03
Climate change	kg CO2 eq	6,21E+00	3,12E-01	2,50E-02	1,24E+02	1,43E-02	2,58E-01	1,06E-04	-2,06E+00
GWP-GHG	kg CO2 eq	6,46E+00	3,12E-01	2,50E-02	1,23E+02	1,42E-02	3,41E-01	1,23E-04	-2,07E+00
Ozone depletion	kg CFC11 eq	9,61E-08	6,19E-09	8,00E-12	8,84E-07	2,83E-10	3,24E-10	3,29E-12	-1,06E-08
Acidification	mol H+ eq	8,00E-02	6,49E-04	5,35E-06	5,42E-01	2,97E-05	2,15E-04	1,16E-06	-8,54E-03
Eutrophication, freshwater*	kg P eq	4,98E-03	2,11E-05	5,98E-08	1,86E-01	9,65E-07	1,20E-05	1,76E-07	-8,66E-04
Eutrophication, marine	kg N eq	8,70E-03	1,56E-04	3,18E-06	1,18E-01	7,13E-06	8,91E-05	2,89E-07	-1,94E-03
Eutrophication, terrestrial	mol N eq	1,71E-01	1,68E-03	2,69E-05	8,77E-01	7,69E-05	7,09E-04	3,10E-06	-1,98E-02
Photochemical ozone formation	kg NMVOC eq	2,87E-02	1,08E-03	6,74E-06	2,57E-01	4,93E-05	1,78E-04	1,14E-06	-6,65E-03
Resource use, minerals and metals*	kg Sb eq	5,30E-04	1,01E-06	9,97E-10	8,49E-04	4,63E-08	5,07E-07	2,00E-10	-1,30E-05
Resource use, fossils*	MJ	7,15E+01	4,38E+00	3,80E-03	2,13E+03	2,00E-01	3,30E-01	2,45E-03	-2,12E+01
Water use*	m^3 depriv.	2,61E+00	2,47E-02	1,22E-03	5,65E+01	1,13E-03	1,25E-02	-1,27E-03	-5,71E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 108: Additional environmental impact indicators - RPM-LV, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	7,20E-07	2,29E-08	2,45E-11	1,30E-06	1,05E-09	3,04E-09	1,76E-11	-1,82E-07
Human toxicity, non-cancer*	CTUh	4,53E-07	2,84E-09	5,73E-11	1,41E-06	1,30E-10	3,11E-09	2,94E-12	-4,51E-08
Human toxicity, cancer*	CTUh	2,99E-07	2,21E-09	4,23E-12	1,84E-07	1,01E-10	5,33E-10	5,97E-13	-2,05E-07
Land use*	Pt	5,05E+01	2,65E+00	9,11E-04	2,41E+02	1,21E-01	1,03E+00	6,00E-03	-6,60E+00
Ionising radiation**	kBq U-235 eq	4,89E-01	5,69E-03	1,37E-05	5,55E+01	2,60E-04	2,87E-03	3,28E-06	-7,31E-02
Ecotoxicity, freshwater	CTUe	1,62E+02	1,19E+00	5,39E-02	4,69E+02	5,46E-02	1,85E+00	1,80E-03	-6,73E+01

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** Disclaimer: 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.

Table 109: Parameters describing resource use - RPM-LV, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,12E+01	7,52E-02	2,33E-04	1,63E+02	3,44E-03	5,29E-02	5,08E-05	-1,86E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,12E+01	7,52E-02	2,33E-04	1,63E+02	3,44E-03	5,29E-02	5,08E-05	-1,86E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	7,15E+01	4,38E+00	3,80E-03	2,13E+03	2,00E-01	3,30E-01	2,45E-03	-2,13E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	7,15E+01	4,38E+00	3,80E-03	2,13E+03	2,00E-01	3,30E-01	2,45E-03	-2,13E+01
Use of secondary material	kg	5,41E-01	2,03E-03	4,23E-06	2,06E-01	9,30E-05	7,27E-04	8,13E-07	-3,46E-01
Use of renewable secondary fuels	MJ, net calorific value	7,58E-02	2,57E-05	1,43E-07	1,78E-03	1,18E-06	1,17E-04	1,47E-08	-2,17E-04
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	6,45E-02	6,09E-04	2,86E-05	1,35E+00	2,78E-05	3,05E-04	-2,95E-05	-1,47E-02

Table 110: Other environmental information describing waste categories - RPM-LV, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	1,55E+00	6,39E-03	3,15E-04	3,74E+00	2,92E-04	1,68E-02	4,14E-06	-7,67E-01
Non-hazardous waste disposed	kg	2,69E+01	1,35E-01	1,25E-02	9,10E+02	6,18E-03	2,08E-01	3,75E-02	-9,01E+00
Radioactive waste disposed/ stored	kg	6,59E-05	1,41E-06	3,51E-09	1,33E-02	6,46E-08	7,31E-07	8,01E-10	-1,81E-05

Table 111: Environmental information describing output flows - RPM-LV, DN 80 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	2,27E-01	3,33E-05	4,76E-05	1,24E-01	1,52E-06	8,96E-01	3,16E-08
Materials for energy recovery	kg	2,24E-05	2,82E-07	2,17E-10	2,11E-05	1,29E-08	8,44E-08	6,08E-11
Exported energy, electricity	MJ	2,42E-02	7,54E-04	3,43E-06	1,16E+00	3,45E-05	4,18E-04	1,02E-06
Exported energy, heat	MJ	3,80E-02	1,09E-03	3,76E-06	2,80E-01	4,99E-05	9,95E-05	2,28E-06

Table 112: Core environmental impact indicators - RPM-LV, DN 160 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	9,14E+00	5,00E-01	4,02E-02	1,22E+02	2,29E-02	2,13E-01	1,05E-04	-9,08E+00
Climate change - Biogenic	kg CO2 eq	-1,09E-01	3,37E-04	6,99E-06	1,43E+00	1,55E-05	1,09E-01	5,99E-07	-1,04E-02
Climate change - Land use and LU change	kg CO2 eq	1,13E-02	1,66E-04	1,45E-07	2,00E-01	7,61E-06	6,75E-05	2,55E-08	-7,97E-03
Climate change	kg CO2 eq	9,04E+00	5,00E-01	4,02E-02	1,24E+02	2,29E-02	3,22E-01	1,06E-04	-9,10E+00
GWP-GHG	kg CO2 eq	9,45E+00	5,00E-01	4,02E-02	1,23E+02	2,28E-02	4,13E-01	1,23E-04	-9,13E+00
Ozone depletion	kg CFC11 eq	1,38E-07	9,93E-09	1,29E-11	8,84E-07	4,55E-10	7,37E-10	3,29E-12	-4,79E-08
Acidification	mol H+ eq	1,13E-01	1,04E-03	8,60E-06	5,42E-01	4,77E-05	6,04E-04	1,16E-06	-3,82E-02
Eutrophication, freshwater*	kg P eq	6,25E-03	3,38E-05	9,62E-08	1,86E-01	1,55E-06	3,04E-05	1,76E-07	-3,81E-03
Eutrophication, marine	kg N eq	1,25E-02	2,50E-04	5,11E-06	1,18E-01	1,15E-05	1,58E-04	2,89E-07	-8,52E-03
Eutrophication, terrestrial	mol N eq	2,92E-01	2,70E-03	4,33E-05	8,77E-01	1,24E-04	1,68E-03	3,10E-06	-8,72E-02
Photochemical ozone formation	kg NMVOC eq	3,98E-02	1,73E-03	1,08E-05	2,57E-01	7,92E-05	4,65E-04	1,14E-06	-2,93E-02
Resource use, minerals and metals*	kg Sb eq	6,09E-04	1,62E-06	1,60E-09	8,49E-04	7,44E-08	2,94E-06	2,00E-10	-5,66E-05
Resource use, fossils*	MJ	1,04E+02	7,03E+00	6,11E-03	2,13E+03	3,22E-01	7,30E-01	2,45E-03	-9,42E+01
Water use*	m^3 depriv.	3,51E+00	3,96E-02	1,96E-03	5,65E+01	1,82E-03	2,14E-02	-1,27E-03	-2,66E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 113: Additional environmental impact indicators - RPM-LV, DN 160 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	1,15E-06	3,68E-08	3,94E-11	1,30E-06	1,69E-09	7,99E-09	1,76E-11	-8,01E-07
Human toxicity, non-cancer*	CTUh	5,15E-07	4,55E-09	9,21E-11	1,41E-06	2,08E-10	4,99E-09	2,94E-12	-1,97E-07
Human toxicity, cancer*	CTUh	4,91E-07	3,55E-09	6,80E-12	1,84E-07	1,63E-10	7,71E-10	5,97E-13	-8,88E-07
Land use*	Pt	7,29E+01	4,24E+00	1,46E-03	2,41E+02	1,94E-01	1,36E+00	6,00E-03	-2,86E+01
Ionising radiation**	kBq U-235 eq	7,48E-01	9,12E-03	2,20E-05	5,55E+01	4,18E-04	5,47E-03	3,28E-06	-3,35E-01
Ecotoxicity, freshwater	CTUe	2,46E+02	1,91E+00	8,66E-02	4,69E+02	8,77E-02	2,00E+00	1,80E-03	-2,92E+02

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** Disclaimer: 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.

Table 114: Parameters describing resource use - RPM-LV, DN 160 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,66E+01	1,21E-01	3,74E-04	1,63E+02	5,53E-03	1,26E-01	5,08E-05	-8,91E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,66E+01	1,21E-01	3,74E-04	1,63E+02	5,53E-03	1,26E-01	5,08E-05	-8,91E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,04E+02	7,03E+00	6,11E-03	2,13E+03	3,22E-01	7,30E-01	2,45E-03	-9,42E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,04E+02	7,03E+00	6,11E-03	2,13E+03	3,22E-01	7,30E-01	2,45E-03	-9,42E+01
Use of secondary material	kg	8,78E-01	3,26E-03	6,79E-06	2,06E-01	1,49E-04	1,20E-03	8,13E-07	-1,50E+00
Use of renewable secondary fuels	MJ, net calorific value	1,22E-01	4,12E-05	2,30E-07	1,78E-03	1,89E-06	1,26E-04	1,47E-08	-9,45E-04
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	8,72E-02	9,76E-04	4,59E-05	1,35E+00	4,47E-05	5,28E-04	-2,95E-05	-6,83E-02

Table 115: Other environmental information describing waste categories - RPM-LV, DN 160 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	2,31E+00	1,03E-02	5,06E-04	3,74E+00	4,70E-04	1,86E-02	4,14E-06	-3,37E+00
Non-hazardous waste disposed	kg	3,65E+01	2,17E-01	2,01E-02	9,10E+02	9,92E-03	2,31E-01	3,75E-02	-3,93E+01
Radioactive waste disposed/ stored	kg	9,62E-05	2,27E-06	5,63E-09	1,33E-02	1,04E-07	1,39E-06	8,01E-10	-8,33E-05

Table 116: Environmental information describing output flows - RPM-LV, DN 160 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	3,62E-01	5,34E-05	7,65E-05	1,24E-01	2,45E-06	1,84E+00	3,16E-08
Materials for energy recovery	kg	3,49E-05	4,53E-07	3,48E-10	2,11E-05	2,07E-08	1,56E-07	6,08E-11
Exported energy, electricity	MJ	3,57E-02	1,21E-03	5,50E-06	1,16E+00	5,54E-05	7,90E-04	1,02E-06
Exported energy, heat	MJ	5,39E-02	1,75E-03	6,04E-06	2,80E-01	8,02E-05	1,75E-04	2,28E-06

Table 117: Core environmental impact indicators - RPM-LV, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,86E+01	1,06E+00	8,89E-02	1,22E+02	5,06E-02	2,85E-01	1,05E-05	-9,08E+00
Climate change - Biogenic	kg CO2 eq	-2,32E-01	7,12E-04	1,55E-05	1,43E+00	3,42E-05	2,32E-01	5,99E-08	-1,04E-02
Climate change - Land use and LU change	kg CO2 eq	1,92E-02	3,51E-04	3,21E-07	2,00E-01	1,68E-05	1,07E-04	2,55E-09	-7,97E-03
Climate change	kg CO2 eq	1,84E+01	1,06E+00	8,89E-02	1,24E+02	5,07E-02	5,18E-01	1,06E-05	-9,10E+00
GWP-GHG	kg CO2 eq	1,93E+01	1,06E+00	8,89E-02	1,23E+02	5,05E-02	5,77E-01	1,23E-05	-9,13E+00
Ozone depletion	kg CFC11 eq	2,74E-07	2,10E-08	2,84E-11	8,84E-07	1,01E-09	9,17E-10	3,29E-13	-4,79E-08
Acidification	mol H+ eq	2,14E-01	2,20E-03	1,90E-05	5,42E-01	1,05E-04	6,02E-04	1,16E-07	-3,82E-02
Eutrophication, freshwater*	kg P eq	9,93E-03	7,15E-05	2,13E-07	1,86E-01	3,43E-06	4,57E-05	1,76E-08	-3,81E-03
Eutrophication, marine	kg N eq	2,45E-02	5,28E-04	1,13E-05	1,18E-01	2,53E-05	2,76E-04	2,89E-08	-8,52E-03
Eutrophication, terrestrial	mol N eq	6,87E-01	5,70E-03	9,57E-05	8,77E-01	2,73E-04	1,74E-03	3,10E-07	-8,72E-02
Photochemical ozone formation	kg NMVOC eq	7,53E-02	3,65E-03	2,40E-05	2,57E-01	1,75E-04	4,85E-04	1,14E-07	-2,93E-02
Resource use, minerals and metals*	kg Sb eq	7,99E-04	3,43E-06	3,54E-09	8,49E-04	1,64E-07	2,03E-06	2,00E-11	-5,66E-05
Resource use, fossils*	MJ	2,11E+02	1,48E+01	1,35E-02	2,13E+03	7,12E-01	9,90E-01	2,45E-04	-9,42E+01
Water use*	m^3 depriv.	6,23E+00	8,37E-02	4,34E-03	5,65E+01	4,02E-03	2,70E-02	-1,27E-04	-2,66E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 118: Additional environmental impact indicators - RPM-LV, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	2,54E-06	7,77E-08	8,71E-11	1,30E-06	3,73E-09	9,92E-09	1,76E-12	-8,01E-07
Human toxicity, non-cancer*	CTUh	6,62E-07	9,61E-09	2,04E-10	1,41E-06	4,61E-10	5,59E-09	2,94E-13	-1,97E-07
Human toxicity, cancer*	CTUh	1,12E-06	7,49E-09	1,50E-11	1,84E-07	3,60E-10	1,52E-09	5,97E-14	-8,88E-07
Land use*	Pt	1,47E+02	8,97E+00	3,24E-03	2,41E+02	4,30E-01	4,31E+00	6,00E-04	-2,86E+01
Ionising radiation**	kBq U-235 eq	1,56E+00	1,93E-02	4,86E-05	5,55E+01	9,24E-04	1,20E-02	3,28E-07	-3,35E-01
Ecotoxicity, freshwater	CTUe	5,15E+02	4,04E+00	1,91E-01	4,69E+02	1,94E-01	3,18E+00	1,80E-04	-2,92E+02

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
** Disclaimer: 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.

Table 119: Parameters describing resource use - RPM-LV, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	3,33E+01	2,55E-01	8,28E-04	1,63E+02	1,22E-02	1,74E-01	5,08E-06	-8,91E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	3,33E+01	2,55E-01	8,28E-04	1,63E+02	1,22E-02	1,74E-01	5,08E-06	-8,91E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	2,11E+02	1,48E+01	1,35E-02	2,13E+03	7,12E-01	9,90E-01	2,45E-04	-9,42E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	2,11E+02	1,48E+01	1,35E-02	2,13E+03	7,12E-01	9,90E-01	2,45E-04	-9,42E+01
Use of secondary material	kg	1,98E+00	6,89E-03	1,50E-05	2,06E-01	3,30E-04	2,22E-03	8,13E-08	-1,50E+00
Use of renewable secondary fuels	MJ, net calorific value	2,69E-01	8,71E-05	5,08E-07	1,78E-03	4,18E-06	2,10E-04	1,47E-09	-9,45E-04
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	1,55E-01	2,06E-03	1,02E-04	1,35E+00	9,89E-05	6,80E-04	-2,95E-06	-6,83E-02

Table 120: Other environmental information describing waste categories - RPM-LV, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	4,72E+00	2,17E-02	1,12E-03	3,74E+00	1,04E-03	2,64E-02	4,14E-07	-3,37E+00
Non-hazardous waste disposed	kg	6,60E+01	4,57E-01	4,44E-02	9,10E+02	2,19E-02	7,29E-01	3,75E-03	-3,93E+01
Radioactive waste disposed/ stored	kg	1,89E-04	4,78E-06	1,25E-08	1,33E-02	2,30E-07	3,08E-06	8,01E-11	-8,33E-05

Table 121: Environmental information describing output flows - RPM-LV, DN 315 mm

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	7,96E-01	1,13E-04	1,69E-04	1,24E-01	5,41E-06	4,58E+00	3,16E-09
Materials for energy recovery	kg	7,51E-05	9,56E-07	7,69E-10	2,11E-05	4,59E-08	2,29E-07	6,08E-12
Exported energy, electricity	MJ	7,30E-02	2,55E-03	1,22E-05	1,16E+00	1,23E-04	1,87E-03	1,02E-07
Exported energy, heat	MJ	1,05E-01	3,70E-03	1,33E-05	2,80E-01	1,77E-04	2,66E-04	2,28E-07

Table 122: Core environmental impact indicators - RPM-LV, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	8,92E+00	5,07E-01	4,09E-02	1,22E+02	2,33E-02	2,06E-01	2,31E-03	-3,15E+00
Climate change - Biogenic	kg CO2 eq	-1,47E-01	3,42E-04	7,11E-06	1,43E+00	1,57E-05	1,47E-01	1,32E-05	-3,95E-03
Climate change - Land use and LU change	kg CO2 eq	1,00E-02	1,69E-04	1,47E-07	2,00E-01	7,74E-06	4,73E-05	5,61E-07	-2,55E-03
Climate change	kg CO2 eq	8,78E+00	5,08E-01	4,09E-02	1,24E+02	2,33E-02	3,53E-01	2,33E-03	-3,15E+00
GWP-GHG	kg CO2 eq	9,23E+00	5,07E-01	4,09E-02	1,23E+02	2,32E-02	3,63E-01	2,71E-03	-3,16E+00
Ozone depletion	kg CFC11 eq	1,39E-07	1,01E-08	1,31E-11	8,84E-07	4,63E-10	4,45E-10	7,24E-11	-1,71E-08
Acidification	mol H+ eq	1,03E-01	1,06E-03	8,74E-06	5,42E-01	4,85E-05	2,91E-04	2,55E-05	-1,32E-02
Eutrophication, freshwater*	kg P eq	5,73E-03	3,44E-05	9,77E-08	1,86E-01	1,58E-06	1,86E-05	3,88E-06	-1,33E-03
Eutrophication, marine	kg N eq	1,21E-02	2,54E-04	5,20E-06	1,18E-01	1,16E-05	1,24E-04	6,36E-06	-2,96E-03
Eutrophication, terrestrial	mol N eq	2,72E-01	2,74E-03	4,40E-05	8,77E-01	1,26E-04	9,06E-04	6,83E-05	-3,03E-02
Photochemical ozone formation	kg NMVOC eq	3,91E-02	1,76E-03	1,10E-05	2,57E-01	8,05E-05	2,36E-04	2,50E-05	-1,02E-02
Resource use, minerals and metals*	kg Sb eq	5,37E-04	1,65E-06	1,63E-09	8,49E-04	7,56E-08	8,24E-07	4,40E-09	-1,95E-05
Resource use, fossils*	MJ	1,02E+02	7,14E+00	6,21E-03	2,13E+03	3,27E-01	4,59E-01	5,38E-02	-3,27E+01
Water use*	m^3 depriv.	3,47E+00	4,02E-02	2,00E-03	5,65E+01	1,85E-03	1,53E-02	-2,79E-02	-9,08E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 123: Additional environmental impact indicators - RPM-LV, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	1,08E-06	3,73E-08	4,01E-11	1,30E-06	1,71E-09	4,39E-09	3,88E-10	-2,75E-07
Human toxicity, non-cancer*	CTUh	4,54E-07	4,62E-09	9,36E-11	1,41E-06	2,12E-10	3,60E-09	6,46E-11	-6,76E-08
Human toxicity, cancer*	CTUh	4,62E-07	3,60E-09	6,91E-12	1,84E-07	1,65E-10	7,09E-10	1,31E-11	-3,05E-07
Land use*	Pt	7,59E+01	4,31E+00	1,49E-03	2,41E+02	1,98E-01	1,66E+00	1,32E-01	-9,96E+00
Ionising radiation**	kBq U-235 eq	7,35E-01	9,26E-03	2,23E-05	5,55E+01	4,25E-04	4,66E-03	7,21E-05	-1,23E-01
Ecotoxicity, freshwater	CTUe	2,30E+02	1,94E+00	8,80E-02	4,69E+02	8,92E-02	2,10E+00	3,96E-02	-1,00E+02

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Table 124: Parameters describing resource use - RPM-LV, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	1,81E+01	1,22E-01	3,80E-04	1,63E+02	5,62E-03	7,67E-02	1,12E-03	-3,02E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	1,81E+01	1,22E-01	3,80E-04	1,63E+02	5,62E-03	7,67E-02	1,12E-03	-3,02E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,02E+02	7,14E+00	6,21E-03	2,13E+03	3,27E-01	4,59E-01	5,38E-02	-3,27E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,02E+02	7,14E+00	6,21E-03	2,13E+03	3,27E-01	4,59E-01	5,38E-02	-3,27E+01
Use of secondary material	kg	1,00E+00	3,31E-03	6,90E-06	2,06E-01	1,52E-04	9,86E-04	1,79E-05	-5,15E-01
Use of renewable secondary fuels	MJ, net calorific value	1,34E-01	4,19E-05	2,34E-07	1,78E-03	1,92E-06	1,34E-04	3,24E-07	-3,24E-04
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	8,67E-02	9,91E-04	4,67E-05	1,35E+00	4,55E-05	3,78E-04	-6,50E-04	-2,33E-02

Table 125: Other environmental information describing waste categories - RPM-LV, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	2,17E+00	1,04E-02	5,14E-04	3,74E+00	4,78E-04	1,86E-02	9,10E-05	-1,15E+00
Non-hazardous waste disposed	kg	3,39E+01	2,20E-01	2,04E-02	9,10E+02	1,01E-02	3,09E-01	8,26E-01	-1,36E+01
Radioactive waste disposed/ stored	kg	9,11E-05	2,30E-06	5,73E-09	1,33E-02	1,06E-07	1,19E-06	1,76E-08	-3,04E-05

Table 126: Environmental information describing output flows - RPM-LV, DN 80 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	3,68E-01	5,42E-05	7,78E-05	1,24E-01	2,49E-06	1,60E+00	6,95E-07
Materials for energy recovery	kg	5,89E-04	4,59E-07	3,54E-10	2,11E-05	2,11E-08	1,09E-07	1,34E-09
Exported energy, electricity	MJ	3,56E-02	1,23E-03	5,60E-06	1,16E+00	5,63E-05	8,77E-04	2,24E-05
Exported energy, heat	MJ	5,62E-02	1,78E-03	6,14E-06	2,80E-01	8,15E-05	1,95E-04	5,01E-05

Table 127: Core environmental impact indicators - RPM-LV, DN 160 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	1,32E+01	7,94E-01	6,39E-02	1,22E+02	3,64E-02	2,40E-01	3,34E-03	-5,58E+00
Climate change - Biogenic	kg CO2 eq	-2,22E-01	5,36E-04	1,11E-05	1,43E+00	2,46E-05	2,22E-01	1,90E-05	-6,60E-03
Climate change - Land use and LU change	kg CO2 eq	1,40E-02	2,64E-04	2,30E-07	2,00E-01	1,21E-05	9,78E-05	8,09E-07	-4,71E-03
Climate change	kg CO2 eq	1,30E+01	7,95E-01	6,39E-02	1,24E+02	3,64E-02	4,62E-01	3,36E-03	-5,59E+00
GWP-GHG	kg CO2 eq	1,37E+01	7,94E-01	6,39E-02	1,23E+02	3,63E-02	4,49E-01	3,91E-03	-5,61E+00
Ozone depletion	kg CFC11 eq	2,01E-07	1,58E-08	2,04E-11	8,84E-07	7,23E-10	1,07E-09	1,04E-10	-2,97E-08
Acidification	mol H+ eq	1,50E-01	1,65E-03	1,37E-05	5,42E-01	7,58E-05	8,99E-04	3,68E-05	-2,34E-02
Eutrophication, freshwater*	kg P eq	7,55E-03	5,38E-05	1,53E-07	1,86E-01	2,46E-06	4,64E-05	5,59E-06	-2,35E-03
Eutrophication, marine	kg N eq	1,78E-02	3,97E-04	8,13E-06	1,18E-01	1,82E-05	2,25E-04	9,17E-06	-5,24E-03
Eutrophication, terrestrial	mol N eq	4,47E-01	4,29E-03	6,88E-05	8,77E-01	1,96E-04	2,42E-03	9,85E-05	-5,36E-02
Photochemical ozone formation	kg NMVOC eq	5,60E-02	2,75E-03	1,72E-05	2,57E-01	1,26E-04	6,84E-04	3,60E-05	-1,80E-02
Resource use, minerals and metals*	kg Sb eq	6,52E-04	2,58E-06	2,54E-09	8,49E-04	1,18E-07	4,68E-06	6,34E-09	-3,47E-05
Resource use, fossils*	MJ	1,52E+02	1,12E+01	9,70E-03	2,13E+03	5,12E-01	1,07E+00	7,76E-02	-5,79E+01
Water use*	m^3 depriv.	4,88E+00	6,30E-02	3,12E-03	5,65E+01	2,89E-03	2,87E-02	-4,03E-02	-1,62E+00

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Table 128: Additional environmental impact indicators - RPM-LV, DN 160 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	1,69E-06	5,85E-08	6,26E-11	1,30E-06	2,68E-09	1,20E-08	5,59E-10	-4,91E-07
Human toxicity, non-cancer*	CTUh	5,41E-07	7,23E-09	1,46E-10	1,41E-06	3,31E-10	6,50E-09	9,31E-11	-1,21E-07
Human toxicity, cancer*	CTUh	7,33E-07	5,64E-09	1,08E-11	1,84E-07	2,58E-10	1,02E-09	1,89E-11	-5,44E-07
Land use*	Pt	1,12E+02	6,75E+00	2,33E-03	2,41E+02	3,09E-01	2,01E+00	1,90E-01	-1,76E+01
Ionising radiation**	kBq U-235 eq	1,12E+00	1,45E-02	3,49E-05	5,55E+01	6,64E-04	8,31E-03	1,04E-04	-2,10E-01
Ecotoxicity, freshwater	CTUe	3,49E+02	3,04E+00	1,38E-01	4,69E+02	1,39E-01	2,27E+00	5,70E-02	-1,79E+02

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Table 129: Parameters describing resource use - RPM-LV, DN 160 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	2,68E+01	1,92E-01	5,95E-04	1,63E+02	8,78E-03	1,88E-01	1,61E-03	-5,42E+00
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	2,68E+01	1,92E-01	5,95E-04	1,63E+02	8,78E-03	1,88E-01	1,61E-03	-5,42E+00
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	1,52E+02	1,12E+01	9,70E-03	2,13E+03	5,12E-01	1,07E+00	7,76E-02	-5,79E+01
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	1,52E+02	1,12E+01	9,70E-03	2,13E+03	5,12E-01	1,07E+00	7,76E-02	-5,79E+01
Use of secondary material	kg	1,56E+00	5,18E-03	1,08E-05	2,06E-01	2,37E-04	1,65E-03	2,58E-05	-9,20E-01
Use of renewable secondary fuels	MJ, net calorific value	2,08E-01	6,55E-05	3,65E-07	1,78E-03	3,00E-06	1,45E-04	4,67E-07	-5,79E-04
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	1,22E-01	1,55E-03	7,30E-05	1,35E+00	7,11E-05	7,12E-04	-9,37E-04	-4,17E-02

Table 130: Other environmental information describing waste categories - RPM-LV, DN 160 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	3,23E+00	1,63E-02	8,04E-04	3,74E+00	7,47E-04	2,09E-02	1,31E-04	-2,06E+00
Non-hazardous waste disposed	kg	4,75E+01	3,44E-01	3,19E-02	9,10E+02	1,58E-02	3,13E-01	1,19E+00	-2,41E+01
Radioactive waste disposed/ stored	kg	1,34E-04	3,60E-06	8,95E-09	1,33E-02	1,65E-07	2,12E-06	2,54E-08	-5,20E-05

Table 131: Environmental information describing output flows - RPM-LV, DN 160 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	5,74E-01	8,49E-05	1,22E-04	1,24E-01	3,89E-06	2,93E+00	1,00E-06
Materials for energy recovery	kg	8,50E-04	7,19E-07	5,53E-10	2,11E-05	3,29E-08	2,14E-07	1,93E-09
Exported energy, electricity	MJ	5,26E-02	1,92E-03	8,75E-06	1,16E+00	8,80E-05	1,22E-03	3,23E-05
Exported energy, heat	MJ	8,10E-02	2,78E-03	9,59E-06	2,80E-01	1,27E-04	2,42E-04	7,22E-05

Table 132: Core environmental impact indicators - RPM-LV, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Climate change - Fossil	kg CO2 eq	2,85E+01	1,85E+00	1,49E-01	1,22E+02	8,49E-02	3,43E-01	1,04E-02	-1,40E+01
Climate change - Biogenic	kg CO2 eq	-5,44E-01	1,25E-03	2,59E-05	1,43E+00	5,73E-05	5,44E-01	5,94E-05	-1,51E-02
Climate change - Land use and LU change	kg CO2 eq	2,55E-02	6,17E-04	5,38E-07	2,00E-01	2,82E-05	1,53E-04	2,53E-06	-1,03E-02
Climate change	kg CO2 eq	2,80E+01	1,86E+00	1,49E-01	1,24E+02	8,50E-02	8,88E-01	1,05E-02	-1,40E+01
GWP-GHG	kg CO2 eq	2,97E+01	1,85E+00	1,49E-01	1,23E+02	8,49E-02	6,01E-01	1,22E-02	-1,41E+01
Ozone depletion	kg CFC11 eq	4,27E-07	3,69E-08	4,77E-11	8,84E-07	1,69E-09	1,30E-09	3,27E-10	-7,13E-08
Acidification	mol H+ eq	3,18E-01	3,86E-03	3,19E-05	5,42E-01	1,77E-04	8,54E-04	1,15E-04	-5,86E-02
Eutrophication, freshwater*	kg P eq	1,41E-02	1,26E-04	3,57E-07	1,86E-01	5,75E-06	6,79E-05	1,75E-05	-5,83E-03
Eutrophication, marine	kg N eq	3,82E-02	9,27E-04	1,90E-05	1,18E-01	4,25E-05	3,95E-04	2,87E-05	-1,31E-02
Eutrophication, terrestrial	mol N eq	1,08E+00	1,00E-02	1,61E-04	8,77E-01	4,58E-04	2,41E-03	3,08E-04	-1,35E-01
Photochemical ozone formation	kg NMVOC eq	1,17E-01	6,42E-03	4,02E-05	2,57E-01	2,94E-04	6,83E-04	1,13E-04	-4,52E-02
Resource use, minerals and metals*	kg Sb eq	1,08E-03	6,02E-06	5,94E-09	8,49E-04	2,76E-07	3,04E-06	1,98E-08	-8,85E-05
Resource use, fossils*	MJ	3,25E+02	2,61E+01	2,27E-02	2,13E+03	1,19E+00	1,42E+00	2,43E-01	-1,44E+02
Water use*	m^3 depriv.	9,77E+00	1,47E-01	7,29E-03	5,65E+01	6,74E-03	3,61E-02	-1,26E-01	-4,02E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Table 133: Additional environmental impact indicators - RPM-LV, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Particulate matter	disease inc.	3,89E-06	1,37E-07	1,46E-10	1,30E-06	6,25E-09	1,44E-08	1,75E-09	-1,24E-06
Human toxicity, non-cancer*	CTUh	8,59E-07	1,69E-08	3,42E-10	1,41E-06	7,73E-10	7,22E-09	2,91E-10	-3,07E-07
Human toxicity, cancer*	CTUh	1,70E-06	1,32E-08	2,52E-11	1,84E-07	6,03E-10	2,08E-09	5,92E-11	-1,39E-06
Land use*	Pt	2,50E+02	1,58E+01	5,43E-03	2,41E+02	7,21E-01	6,52E+00	5,95E-01	-4,44E+01
Ionising radiation**	kBq U-235 eq	2,49E+00	3,38E-02	8,15E-05	5,55E+01	1,55E-03	1,81E-02	3,25E-04	-4,82E-01
Ecotoxicity, freshwater	CTUe	7,73E+02	7,10E+00	3,21E-01	4,69E+02	3,25E-01	4,03E+00	1,78E-01	-4,57E+02

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
** Disclaimer: 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.

Table 134: Parameters describing resource use - RPM-LV, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Use of renewable primary energy excl. raw materials	MJ, net calorific value	6,10E+01	4,48E-01	1,39E-03	1,63E+02	2,05E-02	2,54E-01	5,04E-03	-1,34E+01
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources	MJ, net calorific value	6,10E+01	4,48E-01	1,39E-03	1,63E+02	2,05E-02	2,54E-01	5,04E-03	-1,34E+01
Use of non-renewable primary energy excl. raw materials	MJ, net calorific value	3,25E+02	2,61E+01	2,27E-02	2,13E+03	1,19E+00	1,42E+00	2,43E-01	-1,44E+02
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ, net calorific value	3,25E+02	2,61E+01	2,27E-02	2,13E+03	1,19E+00	1,42E+00	2,43E-01	-1,44E+02
Use of secondary material	kg	3,79E+00	1,21E-02	2,52E-05	2,06E-01	5,54E-04	3,06E-03	8,07E-05	-2,35E+00
Use of renewable secondary fuels	MJ, net calorific value	4,96E-01	1,53E-04	8,53E-07	1,78E-03	7,01E-06	2,73E-04	1,46E-06	-1,48E-03
Use of non renewable secondary fuels	MJ, net calorific value	0	0	0	0	0	0	0	0
Use of net fresh water	m3	2,47E-01	3,62E-03	1,70E-04	1,35E+00	1,66E-04	9,12E-04	-2,93E-03	-1,03E-01

Table 135: Other environmental information describing waste categories - RPM-LV, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
Hazardous waste	kg	6,99E+00	3,80E-02	1,88E-03	3,74E+00	1,74E-03	3,25E-02	4,10E-04	-5,25E+00
Non-hazardous waste disposed	kg	9,62E+01	8,04E-01	7,44E-02	9,10E+02	3,68E-02	1,07E+00	3,72E+00	-6,09E+01
Radioactive waste disposed/ stored	kg	2,84E-04	8,41E-06	2,09E-08	1,33E-02	3,85E-07	4,64E-06	7,95E-08	-1,20E-04

Table 136: Environmental information describing output flows - RPM-LV, DN 315 mm, with insulation

Impact category	Unit	A1-A3	A4	A5	B6	C2	C3	C4
Components for re-use	kg	0	0	0	0	0	0	0
Materials for recycling	kg	1,33E+00	1,98E-04	2,84E-04	1,24E-01	9,08E-06	7,06E+00	3,13E-06
Materials for energy recovery	kg	2,59E-03	1,68E-06	1,29E-09	2,11E-05	7,69E-08	3,07E-07	6,03E-09
Exported energy, electricity	MJ	1,13E-01	4,49E-03	2,04E-05	1,16E+00	2,05E-04	2,84E-03	1,01E-04
Exported energy, heat	MJ	1,75E-01	6,49E-03	2,24E-05	2,80E-01	2,97E-04	3,72E-04	2,26E-04

Table 137: Information describing the biogenic carbon content - RPM-K

Biogenic carbon content per 1 pc of RPM-K	Unit	Biogenic C content
Biogenic carbon content in product (all types and sizes)	kg C	0
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 80 mm, manual	kg C	2,05E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 80 mm, with the actuator	kg C	2,60E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 200 mm, manual	kg C	3,69E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 200 mm, with the actuator	kg C	4,23E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 400 mm, manual	kg C	6,43E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 400 mm, with the actuator	kg C	7,26E-02
NOTE: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2		

Table 138: Informace o obsahu biogenního uhlíku - RPMC-K

Biogenic carbon content per 1 pc of RPMC-K	Unit	Biogenic C content
Biogenic carbon content in product (all types and sizes)	kg C	0
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), 200x100 mm, manual	kg C	4,12E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), 200x100 mm, with the actuator	kg C	4,65E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), 300x300 mm, manual	kg C	6,55E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), 300x300 mm, with the actuator	kg C	7,38E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), 600x600 mm, manual	kg C	1,90E-01
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), 600x600 mm, with the actuator	kg C	2,11E-01
NOTE: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2		

Table 139: Information describing the biogenic carbon content - RPM-V

Biogenic carbon content per 1 pc of RPM-V	Unit	Biogenic C content
Biogenic carbon content in product (all types and sizes)	kg C	0
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 80 mm	kg C	1,26E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 80 mm, with insulation	kg C	2,58E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 315 mm	kg C	4,25E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 315 mm, with insulation	kg C	7,21E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 630 mm	kg C	1,61E-01
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 630 mm, with insulation	kg C	2,25E-01
NOTE: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2		

Table 140: Informace o obsahu biogenního uhlíku - RPM-LV

Biogenic carbon content per 1 pc of RPM-LV	Unit	Biogenic C content
Biogenic carbon content in product (all types and sizes)	kg C	0
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 80 mm	kg C	1,22E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 80 mm, with insulation	kg C	2,00E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 160 mm	kg C	1,96E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 160 mm, with insulation	kg C	3,13E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 315 mm	kg C	4,35E-02
Biogenic carbon content in accompanying packaging (cardboard and packaging wood), DN 315 mm, with insulation	kg C	7,32E-02
NOTE: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2		

ADDITIONAL ENVIRONMENTAL INFORMATION

EMS

The company has established, maintain and have certified the environmental management system according to EN ISO 14001.


CERTIFICATE

MANDÍK, a.s.

ISO 14001:2015

Packaging waste

The take-back and use of packaging waste that the company has put on the market in the Czech Republic is ensured through the authorized packaging company EKO-KOM, a.s. according to Act No. 447/2001 Sb., on packaging, as amended.

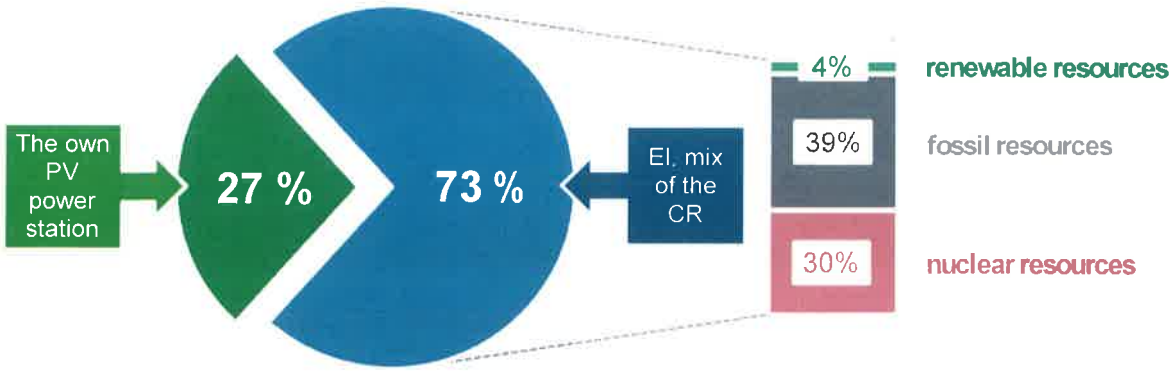
Waste of electrical equipment

The company fulfills the obligations set for manufacturers of electrical equipment for the separate collection, take-back, processing, use and disposal of electrical equipment and electrical waste through the ASEKOL a.s. collective system in the Czech Republic according to Act No. 542/2020 Sb., on end-of-life products, as amended.

Further information about the validity of certification is on the company's website.

Electricity production

The graph shows the considered energy mix of the company in 2022. More than a quater of the electricity comes from renewable resource - from the own photovoltaic power station.



Energy Source and Emission Level for Electricity: Czech residual mix, contains: 53,6 % of fossil fuels, 41 % of nuclear, 5,4 % of renewable sources was used for modelling of electricity an A3 phase.
GWP-GHG from the production of electricity for the Czech residual mix: 0,707 kg CO_2 eq/kWh,
for the company's mix: 0,516 kg CO_2 eq/kWh.

Comparison of energy consumption of CAV and VAV

Constant air flow regulators (CAV) ensure air exchange in the building regardless of current needs and operate on the basis of fixed values and are more optimal in terms of investment costs, but are more expensive in terms of operating costs, which is due to the system's inadaptability - energy waste due to throttling due to air pressure drop. In contrast, the variable air flow regulator system (VAV) controlled by CO2 sensors and VAV box control allows dynamic air flow control based on current conditions and occupancy of the building's spaces, thereby adapting to the use of the building and thus directly reducing energy consumption and operating costs, while still maintaining high quality and quantity of air exchange. However, investment costs are expected to be higher due to the greater sophistication of both the HVAC system and the building's measurement and control system.

Table 141: Comparison of the energy consumption of CAV and VAV air flow regulators for a circular ducts DN 315 at a mean air velocity in the duct of 3 m/s.

Parameter, balance item (unit)	CAV RPM-K	VAV RPM-V
Duct internal diameter DN (mm)	315	
Duct cross section (m^2)	0,078	
Mean air velocity v (m/s)	3	
Air mass flow rate q_v (kg/s)	0,281	
Air pressure drop Δp (Pa)	70,2	15,1
Air flow energy dissipation rate (from throttling) $P_s = q_v \Delta p$ (W)	19,7	4,2
Considered fan+motor energy efficiency η	50%	
Electric power input needed for throttling $P_t = P_s/\eta$ (W)	39,4	8,5
Average electric power input of the VAV motor P_e (W)	0,0	1,1
Total electric power input $P_i = P_e + P_t$ (W)	39,4	9,6
Energy consumption per 1 hour (Wh)	39,4	9,6
Energy consumption per 1 day (Wh)	945,3	230,0
Energy consumption per 365 days (Wh)	**345 034,5**	**83 950,0**
Energy saving of VAV system compared to CAV	-	**75 %**

REFERENCES

ISO 14025:2006, Environmental labels and declarations - Type III environmental declarations — Principles and procedures

EN ISO 14040:2006, Environmental management - Life cycle assessment — Principles and framework

ISO 14044:2006-10, Environmental management - Life Cycle Assessment — Requirements and guidelines

EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the construction products product category

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Adress:

MANDÍK, a.s.
Dobřišská 550
267 24 Hostomice
Czech Republic

Contacts:

tel.: +420 311 706 706
e-mail: mandik@mandik.cz

www.mandik.com