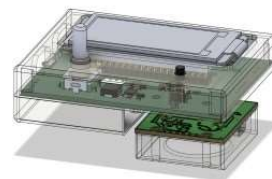
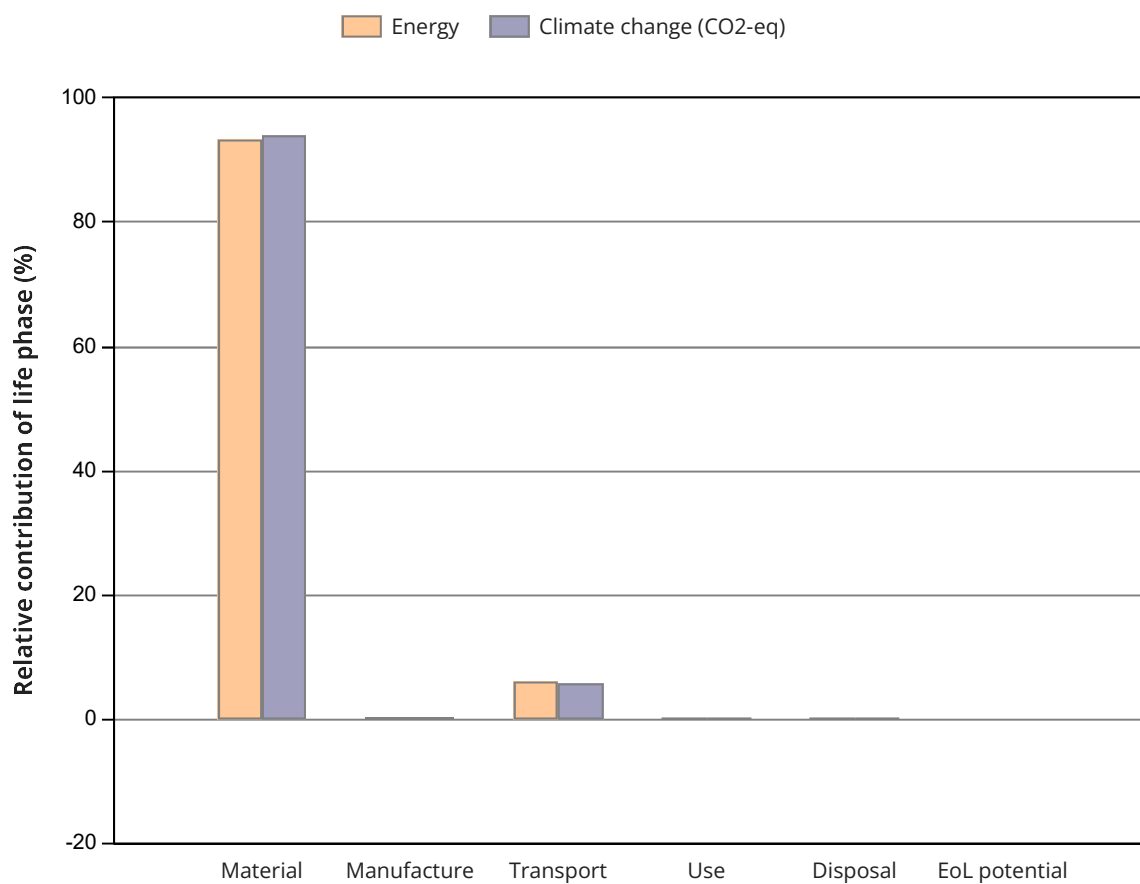


Eco AUDIT REPORT



Product name ENG5021-Spectrometer
Country of use Europe
Product life (years) 3

SUMMARY:



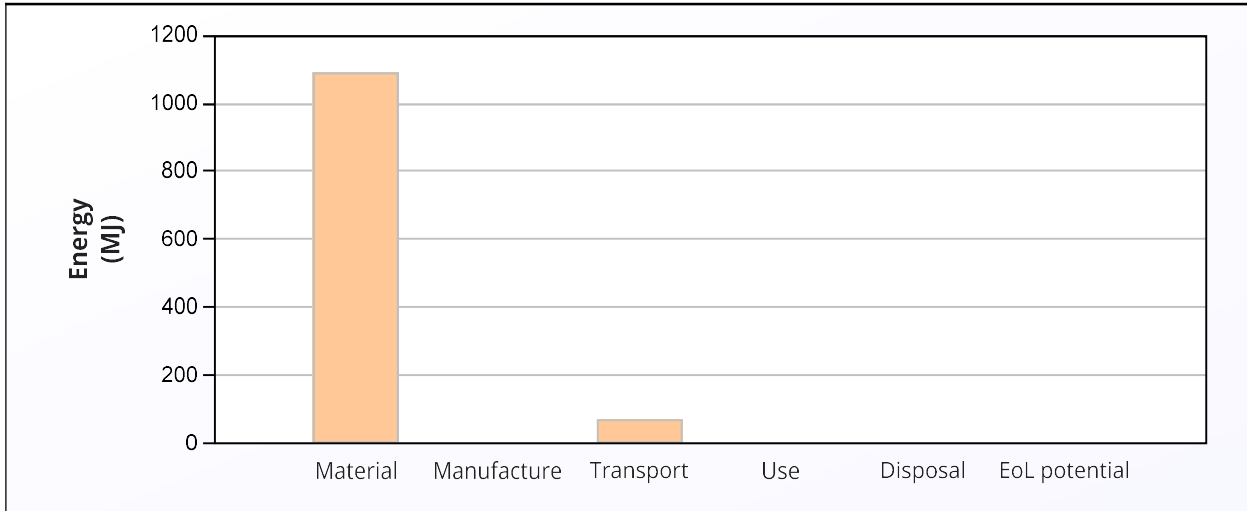
[Energy details](#)

[Climate change \(CO2-eq\) details](#)

Phase	Energy (MJ)	Energy (%)	Climate change (CO2- eq) (kg)	Climate change (CO2- eq) (%)
Material	1.09e+03	93.5	82.3	94.0
Manufacture	0.148	0.0	0.0111	0.0
Transport	72.7	6.2	5.11	5.8
Use	3.46	0.3	0.12	0.1
Disposal	0.0892	0.0	0.00624	0.0
Total (for first life)	1.17e+03	100	87.6	100
End of life potential	0		0	

ENERGY ANALYSIS

[Summary](#)



	Energy (MJ/year)
Equivalent annual environmental burden (averaged over 3 year product life):	389

DETAILED BREAKDOWN OF INDIVIDUAL LIFE PHASES

MATERIAL:

[Summary](#)

Component	Material	Recycled content* (%)	Part mass (kg)	Qty.	Total mass (kg)	Energy (MJ)	%
Spectrometer Board	Small (hand held) electronic devices	Virgin (0%)	0.3	1	0.3	8.5e+02	77.8
LED Board	Small (hand held) electronic devices	Virgin (0%)	0.04	1	0.04	1.1e+02	10.4
Rechargeable Battery	Li-Ion, rechargeable battery (for laptops)	Virgin (0%)	0.016	1	0.016	15	1.4
Sensor PCB	Small (hand held) electronic devices	Virgin (0%)	0.04	1	0.04	1.1e+02	10.4
Plastic Enclosure	PLA (general purpose)	Virgin (0%)	0.025	1	0.025	1.4	0.1
Total				5	0.42	1.1e+03	100

*Typical: Includes 'recycle fraction in current supply'

***User-defined material

MANUFACTURE:[Summary](#)

Component	Process	Amount processed	Energy (MJ)	%
Plastic Enclosure	Polymer extrusion	0.025 kg	0.15	100.0
Total			0.15	100

TRANSPORT:[Summary](#)**BREAKDOWN BY TRANSPORT STAGE**

Stage name	Transport type	Distance (km)	Energy (MJ)	%
LED/Spectrometer PCB	Aircraft, long haul belly-freight	8e+03	41	55.9
Encoder/Sensor PCB	Aircraft, long haul belly-freight	6e+03	30	41.9
RS - Components	Truck 3.5-7.5t, EURO 3	4.4e+02	1.6	2.2
Total		1.4e+04	73	100

BREAKDOWN BY COMPONENTS

Component	Mass (kg)	Energy (MJ)	%
Spectrometer Board	0.3	52	71.2
LED Board	0.04	6.9	9.5
Rechargeable Battery	0.016	2.8	3.9
Sensor PCB	0.04	6.9	9.5
Plastic Enclosure	0.025	4.3	5.9
Total	0.42	73	100

USE:

[Summary](#)

STATIC MODE

Energy input and output type	Electric to thermal
Country of use	Europe
Power rating (W)	0.7
Usage (hours per day)	2
Usage (days per year)	80
Product life (years)	3

RELATIVE CONTRIBUTION OF STATIC AND MOBILE MODES

Mode	Energy (MJ)	%
Static	3.5	100.0
Mobile	0	
Total	3.5	100

DISPOSAL:

[Summary](#)

Component	End of life option	Energy (MJ)	%
Spectrometer Board	Landfill	0.06	67.3
LED Board	Landfill	0.008	9.0
Rechargeable Battery	Downcycle	0.0082	9.2
Sensor PCB	Landfill	0.008	9.0
Plastic Enclosure	Landfill	0.005	5.6
Total		0.089	100

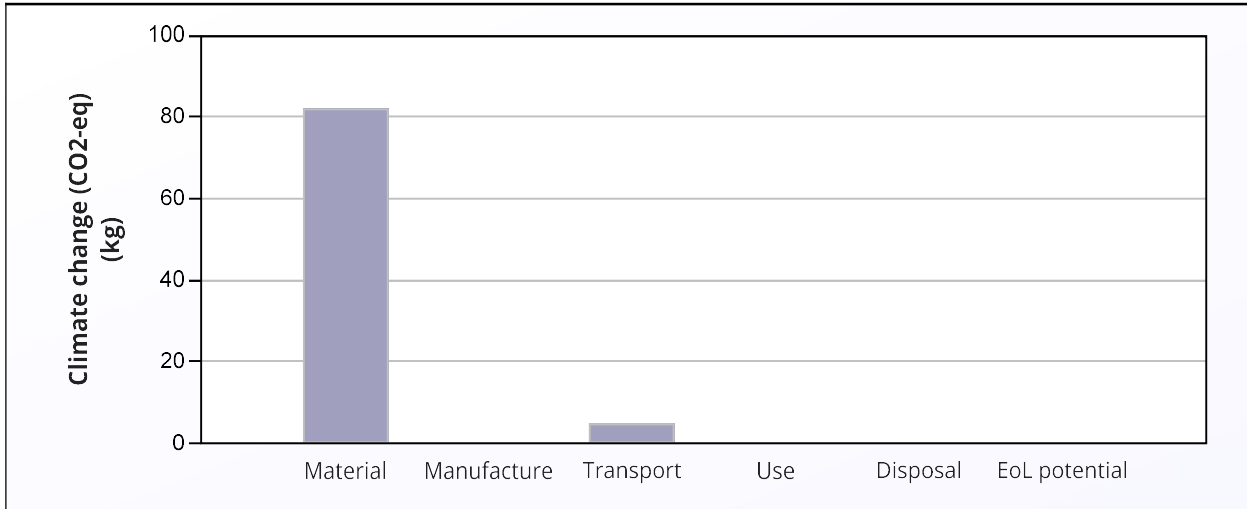
EoL POTENTIAL:

Component	End of life option	Energy (MJ)	%
Spectrometer Board	Landfill	0	
LED Board	Landfill	0	
Rechargeable Battery	Downcycle	0	
Sensor PCB	Landfill	0	
Plastic Enclosure	Landfill	0	
Total		0	100

NOTES:[Summary](#)

CLIMATE CHANGE (CO₂-EQ) ANALYSIS

[Summary](#)



	CO ₂ (kg/year)
Equivalent annual environmental burden (averaged over 3 year product life):	29.2

DETAILED BREAKDOWN OF INDIVIDUAL LIFE PHASES

MATERIAL:

[Summary](#)

Component	Material	Recycled content* (%)	Part mass (kg)	Qty.	Total mass (kg)	Climate change (CO ₂ -eq) (kg)	%
Spectrometer Board	Small (hand held) electronic devices	Virgin (0%)	0.3	1	0.3	64	77.3
LED Board	Small (hand held) electronic devices	Virgin (0%)	0.04	1	0.04	8.5	10.3
Rechargeable Battery	Li-Ion, rechargeable battery (for laptops)	Virgin (0%)	0.016	1	0.016	1.7	2.0
Sensor PCB	Small (hand held) electronic devices	Virgin (0%)	0.04	1	0.04	8.5	10.3
Plastic Enclosure	PLA (general purpose)	Virgin (0%)	0.025	1	0.025	0.071	0.1
Total				5	0.42	82	100

*Typical: Includes 'recycle fraction in current supply'

***User-defined material

MANUFACTURE:[Summary](#)

Component	Process	Amount processed	Climate change (CO2-eq) (kg)	%
Plastic Enclosure	Polymer extrusion	0.025 kg	0.011	100.0
Total			0.011	100

TRANSPORT:[Summary](#)**BREAKDOWN BY TRANSPORT STAGE**

Stage name	Transport type	Distance (km)	Climate change (CO2-eq) (kg)	%
LED/Spectrometer PCB	Aircraft, long haul belly-freight	8e+03	2.9	55.9
Encoder/Sensor PCB	Aircraft, long haul belly-freight	6e+03	2.1	42.0
RS - Components	Truck 3.5-7.5t, EURO 3	4.4e+02	0.11	2.1
Total		1.4e+04	5.1	100

BREAKDOWN BY COMPONENTS

Component	Mass (kg)	Climate change (CO2-eq) (kg)	%
Spectrometer Board	0.3	3.6	71.2
LED Board	0.04	0.49	9.5
Rechargeable Battery	0.016	0.2	3.9
Sensor PCB	0.04	0.49	9.5
Plastic Enclosure	0.025	0.3	5.9
Total	0.42	5.1	100

USE:

[Summary](#)

STATIC MODE

Energy input and output type	Electric to thermal
Country of use	Europe
Power rating (W)	0.7
Usage (hours per day)	2
Usage (days per year)	80
Product life (years)	3

RELATIVE CONTRIBUTION OF STATIC AND MOBILE MODES

Mode	Climate change (CO2-eq) (kg)	%
Static	0.12	100.0
Mobile	0	
Total	0.12	100

DISPOSAL:

[Summary](#)

Component	End of life option	Climate change (CO2-eq) (kg)	%
Spectrometer Board	Landfill	0.0042	67.3
LED Board	Landfill	0.00056	9.0
Rechargeable Battery	Downcycle	0.00057	9.2
Sensor PCB	Landfill	0.00056	9.0
Plastic Enclosure	Landfill	0.00035	5.6
Total		0.0062	100

EoL POTENTIAL:

Component	End of life option	Climate change (CO2-eq) (kg)	%
Spectrometer Board	Landfill	0	
LED Board	Landfill	0	
Rechargeable Battery	Downcycle	0	
Sensor PCB	Landfill	0	
Plastic Enclosure	Landfill	0	
Total		0	100

NOTES:[Summary](#)