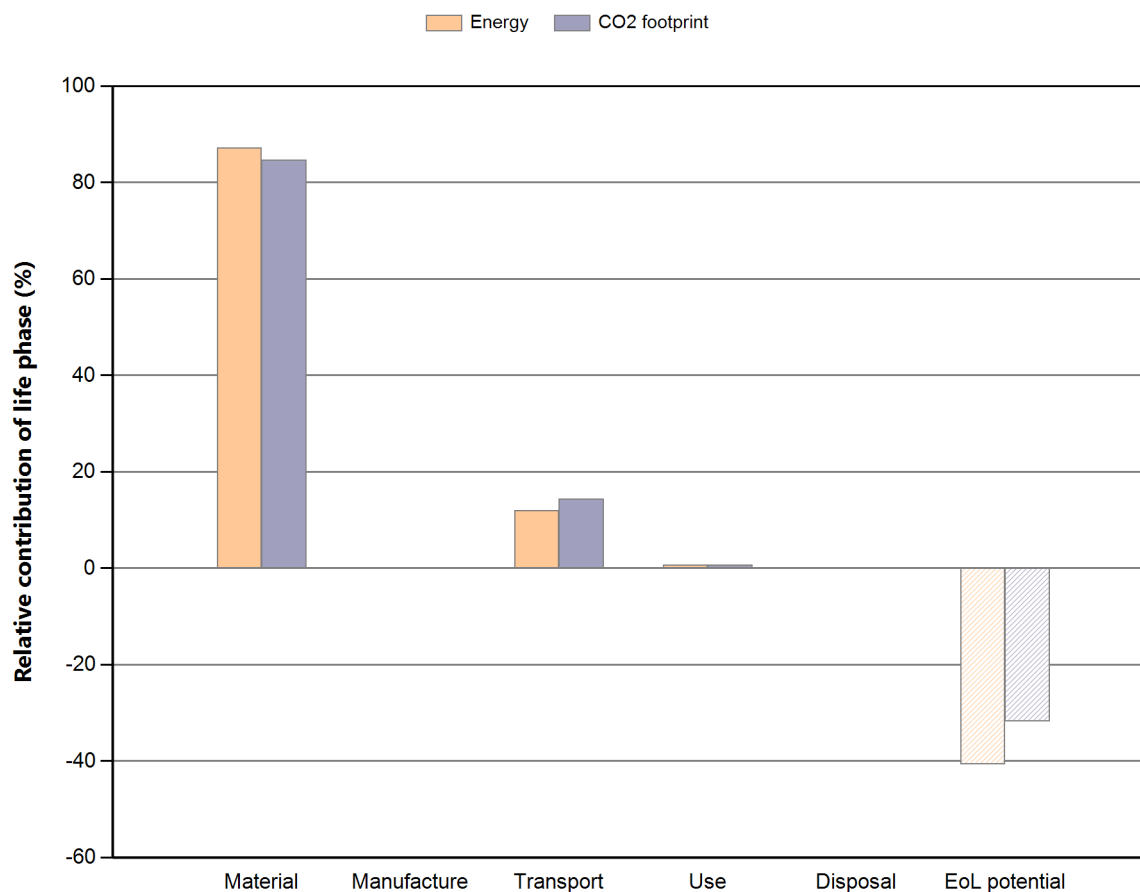


Eco Audit Report

Product name OTV_MaterialMermaids
Country of use United States
Product life (years) 1

Summary:



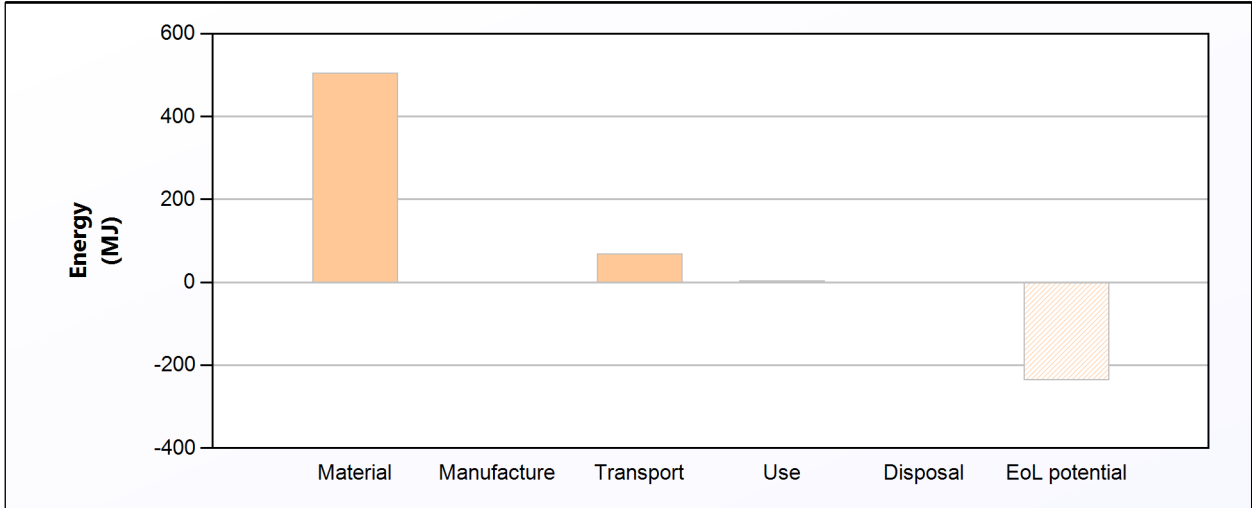
[Energy details](#)

[CO2 footprint details](#)

Phase	Energy (MJ)	Energy (%)	CO2 footprint (kg)	CO2 footprint (%)
Material	505	87.2	29.2	84.6
Manufacture	0	0.0	0	0.0
Transport	69.2	11.9	4.98	14.4
Use	4.19	0.7	0.247	0.7
Disposal	1.07	0.2	0.0749	0.2
Total (for first life)	580	100	34.5	100
End of life potential	-236		-11	

Energy Analysis

[Summary](#)



	Energy (MJ/year)
Equivalent annual environmental burden (averaged over 1 year product life):	580

Detailed breakdown of individual life phases

Material:

[Summary](#)

Component	Material	Recycled content* (%)	Part mass (kg)	Qty.	Total mass (kg)	Energy (MJ)	%
Wheels	Styrene butadiene rubber (SBR, unreinforced)	Reused part	0.69	4	2.8	0	0.0
Plywood	Plywood (3 ply, beech), parallel to face layer	Virgin (0%)	0.7	1	0.7	19	3.8
Ultrasonic Sensors	Printed circuit board assembly	Virgin (0%)	0.008	1	0.008	1	0.2
Wifi Module	Printed circuit board assembly	Virgin (0%)	0.01	1	0.01	1.3	0.3
Wood Screws	Carbon steel, AISI 1010, annealed	Virgin (0%)	0.005	1	0.005	0.15	0.0
Motors TT20	Fan	Virgin (0%)	0.81	1	0.81	2e+02	39.6
Battery Pack	NiMH, rechargeable battery (for laptops)	Virgin (0%)	0.28	1	0.28	2.6e+02	51.3
Arduino Mega	Printed circuit board assembly	Virgin (0%)	0.035	1	0.035	4.5	0.9
3D Printed Material	PLA (general purpose)	Virgin (0%)	0.23	1	0.23	10	2.1
Load Cell/HX711	PC (high viscosity, molding and extrusion)	Virgin (0%)	0.081	1	0.081	8.6	1.7
Wires	Cable	Virgin (0%)	0.008	1	0.008	0.73	0.1
Total				14	4.9	5.1e+02	100

*Typical: Includes 'recycle fraction in current supply'

***User-defined material

Manufacture:[Summary](#)

Component	Process	Amount processed	Energy (MJ)	%
Total				100

Transport:[Summary](#)**Breakdown by transport stage**

Stage name	Transport type	Distance (km)	Energy (MJ)	%
Ultrasonic Sensors	Ocean freight	1.2e+04	11	15.4
Motors TT20	Light goods vehicle	3.2e+03	35	50.1
Battery Pack	Ocean freight	1.2e+04	11	15.4
Arduino Mega	14 tonne (2 axle) truck	3.5e+02	2.6	3.7
Load Cell/HX711	Ocean freight	1.2e+04	11	15.4
Total		4e+04	69	100

Breakdown by components

Component	Mass (kg)	Energy (MJ)	%
Wheels	2.8	39	56.0
Plywood	0.7	9.8	14.2
Ultrasonic Sensors	0.008	0.11	0.2
Wifi Module	0.01	0.14	0.2
Wood Screws	0.005	0.07	0.1
Motors TT20	0.81	11	16.4
Battery Pack	0.28	3.9	5.7
Arduino Mega	0.035	0.49	0.7
3D Printed Material	0.23	3.2	4.7
Load Cell/HX711	0.081	1.1	1.6
Wires	0.008	0.11	0.2
Total	4.9	69	100

Use:[Summary](#)**Static mode**

Energy input and output type	Electric to mechanical (electric motors)
Country of use	United States
Power rating (W)	9.6
Usage (hours per day)	2
Usage (days per year)	25
Product life (years)	1

Relative contribution of static and mobile modes

Mode	Energy (MJ)	%
Static	4.2	100.0
Mobile	0	
Total	4.2	100

Disposal:

[Summary](#)

Component	End of life option	Energy (MJ)	%
Wheels	Reuse	0.55	51.6
Plywood	Reuse	0.14	13.1
Ultrasonic Sensors	Reuse	0.0016	0.1
Wifi Module	Reuse	0.002	0.2
Wood Screws	Landfill	0.001	0.1
Motors TT20	Reuse	0.16	15.1
Battery Pack	Downcycle	0.14	13.1
Arduino Mega	Reuse	0.007	0.7
3D Printed Material	Landfill	0.046	4.3
Load Cell/HX711	Reuse	0.016	1.5
Wires	Reuse	0.0016	0.1
Total		1.1	100

EoL potential:

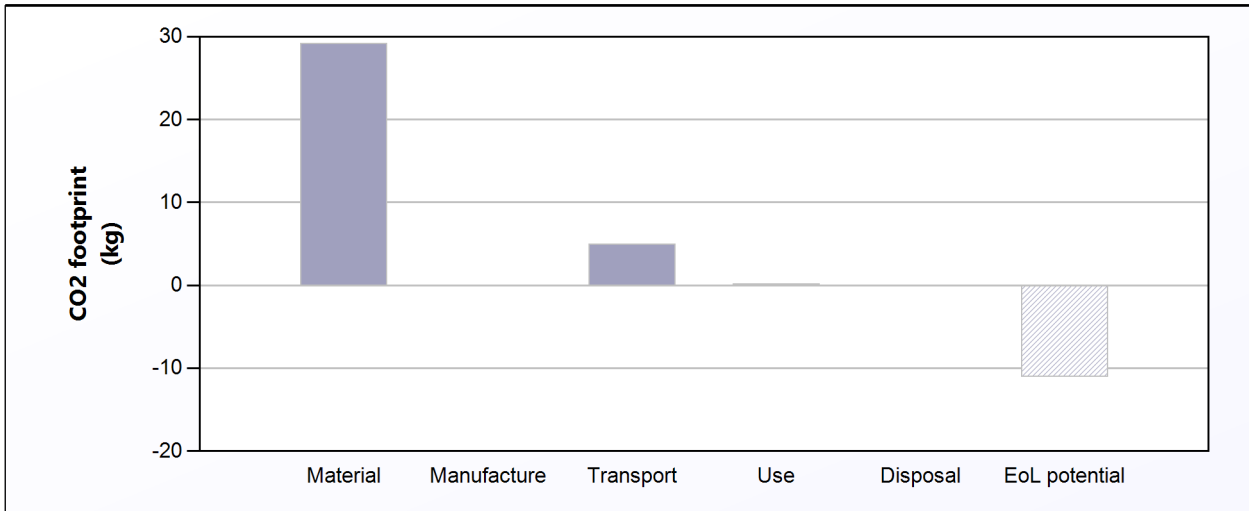
Component	End of life option	Energy (MJ)	%
Wheels	Reuse	0	0.0
Plywood	Reuse	-19	8.1
Ultrasonic Sensors	Reuse	-1	0.4
Wifi Module	Reuse	-1.3	0.6
Wood Screws	Landfill	0	0.0
Motors TT20	Reuse	-2e+02	85.0
Battery Pack	Downcycle	0	0.0
Arduino Mega	Reuse	-4.5	1.9
3D Printed Material	Landfill	0	0.0
Load Cell/HX711	Reuse	-8.6	3.6
Wires	Reuse	-0.73	0.3
Total		-2.4e+02	100

Notes:

[Summary](#)

CO2 Footprint Analysis

[Summary](#)



	CO2 (kg/year)
Equivalent annual environmental burden (averaged over 1 year product life):	34.5

Detailed breakdown of individual life phases

Material:

[Summary](#)

Component	Material	Recycled content* (%)	Part mass (kg)	Qty.	Total mass (kg)	CO2 footprint (kg)	%
Wheels	Styrene butadiene rubber (SBR, unreinforced)	Reused part	0.69	4	2.8	0	0.0
Plywood	Plywood (3 ply, beech), parallel to face layer	Virgin (0%)	0.7	1	0.7	0.45	1.6
Ultrasonic Sensors	Printed circuit board assembly	Virgin (0%)	0.008	1	0.008	0.078	0.3
Wifi Module	Printed circuit board assembly	Virgin (0%)	0.01	1	0.01	0.097	0.3
Wood Screws	Carbon steel, AISI 1010, annealed	Virgin (0%)	0.005	1	0.005	0.011	0.0
Motors TT20	Fan	Virgin (0%)	0.81	1	0.81	9.5	32.4
Battery Pack	NiMH, rechargeable battery (for laptops)	Virgin (0%)	0.28	1	0.28	18	60.6
Arduino Mega	Printed circuit board assembly	Virgin (0%)	0.035	1	0.035	0.34	1.2
3D Printed Material	PLA (general purpose)	Virgin (0%)	0.23	1	0.23	0.53	1.8
Load Cell/HX711	PC (high viscosity, molding and extrusion)	Virgin (0%)	0.081	1	0.081	0.48	1.6
Wires	Cable	Virgin (0%)	0.008	1	0.008	0.055	0.2
Total				14	4.9	29	100

*Typical: Includes 'recycle fraction in current supply'

***User-defined material

Manufacture:[Summary](#)

Component	Process	Amount processed	CO2 footprint (kg)	%
Total				100

Transport:[Summary](#)**Breakdown by transport stage**

Stage name	Transport type	Distance (km)	CO2 footprint (kg)	%
Ultrasonic Sensors	Ocean freight	1.2e+04	0.77	15.4
Motors TT20	Light goods vehicle	3.2e+03	2.5	50.1
Battery Pack	Ocean freight	1.2e+04	0.77	15.4
Arduino Mega	14 tonne (2 axle) truck	3.5e+02	0.19	3.7
Load Cell/HX711	Ocean freight	1.2e+04	0.77	15.4
Total		4e+04	5	100

Breakdown by components

Component	Mass (kg)	CO2 footprint (kg)	%
Wheels	2.8	2.8	56.0
Plywood	0.7	0.71	14.2
Ultrasonic Sensors	0.008	0.0081	0.2
Wifi Module	0.01	0.01	0.2
Wood Screws	0.005	0.0051	0.1
Motors TT20	0.81	0.82	16.4
Battery Pack	0.28	0.28	5.7
Arduino Mega	0.035	0.035	0.7
3D Printed Material	0.23	0.23	4.7
Load Cell/HX711	0.081	0.082	1.6
Wires	0.008	0.0081	0.2
Total	4.9	5	100

Use:[Summary](#)**Static mode**

Energy input and output type	Electric to mechanical (electric motors)
Country of use	United States
Power rating (W)	9.6
Usage (hours per day)	2
Usage (days per year)	25
Product life (years)	1

Relative contribution of static and mobile modes

Mode	CO2 footprint (kg)	%
Static	0.25	100.0
Mobile	0	
Total	0.25	100

Disposal:

[Summary](#)

Component	End of life option	CO2 footprint (kg)	%
Wheels	Reuse	0.039	51.6
Plywood	Reuse	0.0098	13.1
Ultrasonic Sensors	Reuse	0.00011	0.1
Wifi Module	Reuse	0.00014	0.2
Wood Screws	Landfill	7e-05	0.1
Motors TT20	Reuse	0.011	15.1
Battery Pack	Downcycle	0.0098	13.1
Arduino Mega	Reuse	0.00049	0.7
3D Printed Material	Landfill	0.0032	4.3
Load Cell/HX711	Reuse	0.0011	1.5
Wires	Reuse	0.00011	0.1
Total		0.075	100

EoL potential:

Component	End of life option	CO2 footprint (kg)	%
Wheels	Reuse	0	0.0
Plywood	Reuse	-0.45	4.1
Ultrasonic Sensors	Reuse	-0.078	0.7
Wifi Module	Reuse	-0.097	0.9
Wood Screws	Landfill	0	0.0
Motors TT20	Reuse	-9.5	86.3
Battery Pack	Downcycle	0	0.0
Arduino Mega	Reuse	-0.34	3.1
3D Printed Material	Landfill	0	0.0
Load Cell/HX711	Reuse	-0.48	4.4
Wires	Reuse	-0.055	0.5
Total		-11	100

Notes:

[Summary](#)