**Name:** Fe-eze Anyafulu

**Programme:** MEng Electrical and Electronics Engineering

**Part:** 4

**Project Role:** Electric Vehicle Project Manager

**Subgroup:** Electric Vehicle

***Design V- Cost and Sustainability Report***

|  |  |  |  |
| --- | --- | --- | --- |
| Map | |  |  | | --- | --- | | Description: Description: suse | Manufacturing Region  The choice of manufacturing region determines the energy sources and technologies used in the modeled material creation and manufacturing steps of the product’s life cycle. | |
| |  |  | | --- | --- | | Description: Description: seol | Use Region  The use region is used to determine the energy sources consumed during the product’s use phase (if applicable) and the destination for the product at its end-of-life. Together with the manufacturing region, the use region is also used to estimate the environmental impacts associated with transporting the product from its manufacturing location to its use location. | |

|  |  |  |
| --- | --- | --- |
| **Environmental Impact (calculated using TRACI impact assessment methodology)** | | |
| |  |  | | --- | --- | | **Carbon Footprint** | | | circleCarbon | |  |  |  | | --- | --- | --- | | Description: Description: smaterial | Material: | 990 kg CO2e | | Description: Description: smanufacturing | Manufacturing: | 45 kg CO2e | | Description: Description: suse | Use: | 0.00 kg CO2e | | Description: Description: Purple | Transportation: | 23 kg CO2e | | Description: Description: seol | End of Life: | 130 kg CO2e | | | 1200 kg CO2e |  | | |  |  | | --- | --- | | **Total Energy Consumed** | | | circleEnergy | |  |  |  | | --- | --- | --- | | Description: Description: smaterial | Material: | 1.2E+4 MJ | | Description: Description: smanufacturing | Manufacturing: | 750 MJ | | Description: Description: suse | Use: | 0.00 MJ | | Description: Description: Purple | Transportation: | 350 MJ | | Description: Description: seol | End of Life: | 95 MJ | | | 1.3E+4 MJ |  | | |
| |  |  | | --- | --- | | **Air Acidification** | | | circleWater | |  |  |  | | --- | --- | --- | | Description: Description: smaterial | Material: | 320 mol H⁺ e | | Description: Description: smanufacturing | Manufacturing: | 15 mol H⁺ e | | Description: Description: suse | Use: | 0.00 mol H⁺ e | | Description: Description: Purple | Transportation: | 9.4 mol H⁺ e | | Description: Description: seol | End of Life: | 5.1 mol H⁺ e | | | 350 mol H⁺ e |  | | |  |  | | --- | --- | | **Water Eutrophication** | | | circleAir | |  |  |  | | --- | --- | --- | | Description: Description: smaterial | Material: | 0.086 kg N e | | Description: Description: smanufacturing | Manufacturing: | 5.4E-3 kg N e | | Description: Description: suse | Use: | 0.00 kg N e | | Description: Description: Purple | Transportation: | 9.0E-3 kg N e | | Description: Description: seol | End of Life: | 0.033 kg N e | | | 0.133 kg N e |  | | |
| |  |  |  | | --- | --- | --- | | **Material Financial Impact** | 176.10 USD |  | | | |
| |  | | --- | | Comments | | | |
| [Click here for alternative units such as ‘Miles Driven in a Car’](http://www.solidworks.com/plugins/sustainability/calculator.htm?LANG=en&BSLca=46.818&BSLai=0.261&BSLwa=0.017&BSLen=575.685&CURca=40.370&CURai=0.136&CURwa=0.012&CURen=499.642&BSLname=Plate1&CURname=Plate1&CML=yes&Month=Jan&Day=10&Year=2011&Time=12%3A16&VID=PR) | | **Description: Description: sw_vert_gray_short** |

**Component Environmental Impact**

Top Ten Components Contributing Most to the Four Areas of Environmental Impact

| Component | Carbon | | | | | | | | | | Water | | | | | | | | | | Air | | | | | | | | | Energy | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| box\_TopCover | 37 |  | | | | | | | |  | 3.3E-3 |  | | | | | | | |  | 11 |  | | | | | | |  | 460 | |  | | | | | | | |  |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| box\_base | 33 |  | | | | | | |  | | 2.9E-3 |  | | | | | | |  | | 10 |  | | | | | |  | | 400 | |  | | | | | | |  | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| box\_back | 20 |  | | | | | |  | | | 1.8E-3 |  | | | | | |  | | | 6.3 |  | | | | |  | | | 250 | |  | | | | | |  | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| box\_side | 20 |  | | | | |  | | | | 1.8E-3 |  | | | | |  | | | | 6.2 |  | | | | |  | | | | 250 | |  | | | | |  | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| box\_sidemirrored | 20 |  | | | |  | | | | | 1.7E-3 |  | | | |  | | | | | 6.1 |  | | | |  | | | | 240 | |  | | | | |  | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| box\_frontdivider | 17 |  | | |  | | | | | | 1.5E-3 |  | | |  | | | | | | 5.4 |  | | |  | | | | | 220 | |  | | | |  | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| box\_inner | 12 |  | |  | | | | | | | 1.1E-3 |  | |  | | | | | | | 3.9 |  | |  | | | | | | 150 | |  | | |  | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| box\_front | 5.7 |  |  | | | | | | | | 5.0E-4 |  |  | | | | | | | | 1.8 |  |  | | | | | | | 71 | |  | |  | | | | | | |