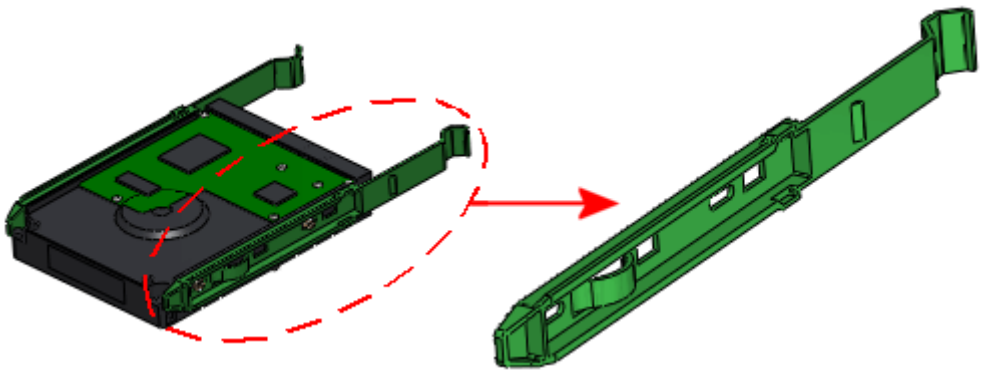
Sustainability Overview

This example demonstrates using SustainabilityXpress to perform an environmental impact analysis of a part.

You analyze a common part used in computers - the drive sled that holds drives in the computer case.



Sustainability measures these areas of environmental impact:

Carbon Footprint
: A measure of carbon dioxide and equivalents, such as carbon monoxide and methane, that are released into the atmosphere primarily by burning fossil fuels, contributing to global warming.

Energy Consumed
: All forms of nonrenewable energy consumed over the entire life cycle of the product.

Air Acidification
: Acidic emissions, such as sulfur dioxide and nitrous oxides, which eventually lead to acid rain.

Water Eutrophication
: Contamination of water ecosystems by waste water and fertilizers, resulting in algae blooms and the eventual death of plant and animal life.

The software measures the environmental impact based on these parameters:

- Material used
- Manufacturing process and region
- Use Region
- End of Life

Follow these steps to analyze parts:

1. Selecting a Material
   You start by activating the application and selecting a material.
2. Setting the Manufacturing and Use Options
   Select the manufacturing process and the regions where the part is manufactured and used.
3. Comparing Similar Materials
   Now you set the baseline material and compare it with other materials, using the Environmental Impact dashboard, to try to minimize the environmental impact.
4. Setting the Material
   Now you set Plastics Nylon 101 as your material in the model and review the results in the

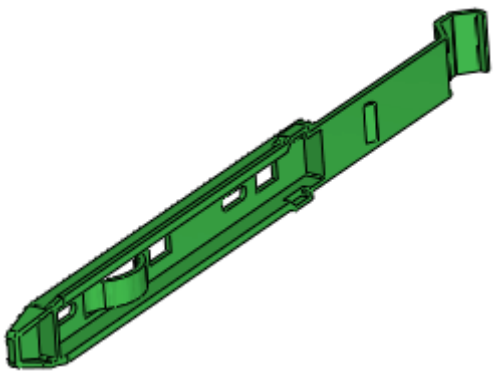
Environmental Impact dashboard.

5. Creating a Report
   You can create a report that provides details about the environmental impact of your design, including comparisons between the final material against the baseline material.

Selecting a Material

You start by activating the application and selecting a material.

1. Open *install_dir*\Samples\WhatsNew\Sustainability\Drive Sled.sldprt.



2. Do one of the following:
   - Click SustainabilityXpress  (Tools toolbar or Evaluate CommandManager tab)
   - Click Tools > SustainabilityXpress

   The application opens in the Task Pane.
3. Under Material:
   a. In Class, select Plastics.
   b. In Name, select PC High Viscosity.

   The software displays the part's weight. The Environmental Impact dashboard at the bottom of the Task Pane provides real-time feedback about the environmental impact of your design.

Parent topic: Sustainability Overview
Next topic: Setting the Manufacturing and Use Options

Setting the Manufacturing and Use Options

Select the manufacturing process and the regions where the part is manufactured and used.

1. Under Manufacturing, in Process, select Injection Molded.
2. For Region, select North America on the map.

Note: Japan has its own region.

3. Under Use, for Region, select North America.

Note: Data is not available for all regions. Regions that contain data are highlighted when you hover over them.

Parent topic: Sustainability Overview
Previous topic: Selecting a Material
Next topic: Comparing Similar Materials

Comparing Similar Materials

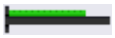
Now you set the baseline material and compare it with other materials, using the Environmental Impact dashboard, to try to minimize the environmental impact.

1. Click Set Baseline  at the bottom of the Task Pane.
   The Baseline bar for each environmental impact adjusts to show the values for the selected material, Plastics PC High Viscosity.
   
   Next you try to find a similar material that is a better environmental choice.
2. Under Material, click Find Similar.
   The dialog box displays the current material with values for multiple parameters.
3. Set these values:

Property	Condition
Density	~ (Approximately)
Tensile Strength	> (Greater than)

4. Click Find Similar next to the list in the dialog box.
   A list of similar materials appears. You select materials from this list to compare them to the

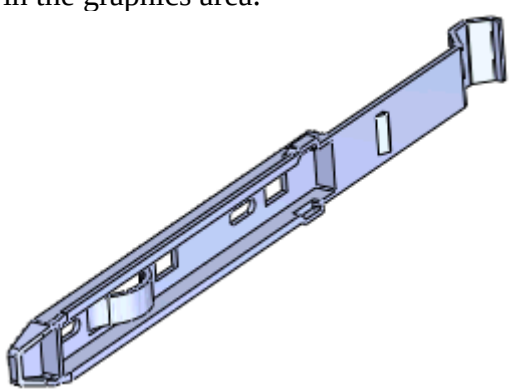
original material. The Environmental Impact dashboard at the bottom of the dialog box gives you intermediate feedback on your selections.

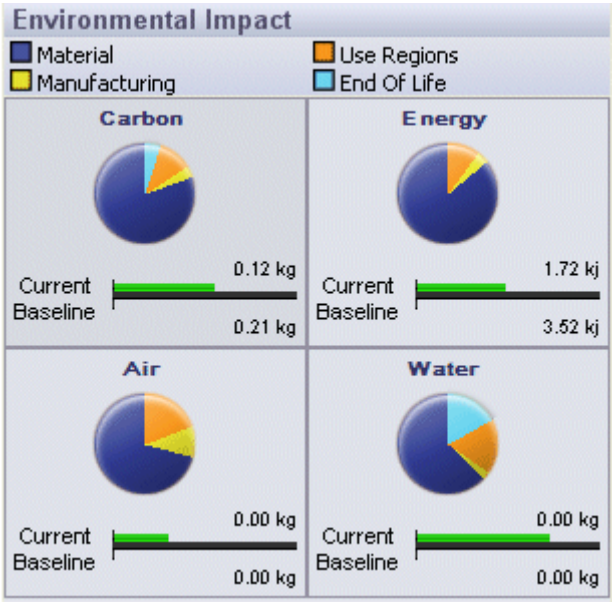
5. Select Acrylic (Medium-high impact).
   In the dialog box's Environmental Impact dashboard, a green bar for Selected appears above the black bar for Original for all four impacts. The pie charts are updated.
   
   The bar's green color and shorter length indicate that the selected material, Acrylic (Medium-high impact), is a better environmental choice than the original material, PC High Viscosity.
6. Now select Nylon 101 from the list to see how it compares to the original material.
   The bars and pie charts are updated. The visual cues indicate that this material is an even better choice than Acrylic (Medium-high impact). You decide to accept this material.
   Note: You can modify the Manufacturing Process using the menu next to the pie charts.
7. Click Accept.
   The dialog box closes. In the Task Pane, under Material, Plastics Nylon 101 is the current material. The pie charts in the Environmental Impact dashboard are updated.

Parent topic: Sustainability Overview
Previous topic: Setting the Manufacturing and Use Options
Next topic: Setting the Material

Setting the Material

Now you set Plastics Nylon 101 as your material in the model and review the results in the Environmental Impact dashboard.

1. In the Task Pane, under Material, click Set Material.
   Nylon 101 becomes the active Material in the FeatureManager design tree. The model updates in the graphics area.
   
2. Hover over the pieces of the pie charts.
   The pie chart colors represent the parameters used to measure the environmental impact. The size of the pieces represent the percentage contributed by the parameters to the total environmental impact.



3. Click and at the bottom of the Task Pane to scroll through detailed reports of the selected material's environmental impact on carbon, energy, air, and water.

Parent topic: Sustainability Overview
Previous topic: Comparing Similar Materials
Next topic: Creating a Report

Creating a Report

You can create a report that provides details about the environmental impact of your design, including comparisons between the final material against the baseline material.

1. Click Generate Report at the bottom of the Task Pane.
   The report opens as a separate document.
2. Scroll through the document and note the detailed information about each type of environmental impact.
   Links after each section bring you to the SolidWorks Sustainability web site where you find more information about this product.
3. Save the report.
4. Save the model and click to close the Sustainability Task Pane.
   The software saves the results with the model.

Parent topic: Sustainability Overview
Previous topic: Setting the Material