

# LightTools SOLIDWORKS Link Module

## Optimize Parts and Assemblies

### Features at a Glance

- Creates a bidirectional link for communication between LightTools and SOLIDWORKS
- Feature hierarchy for parts and assemblies are visible in the LightTools System Navigator
- Change SOLIDWORKS dimensions from within LightTools
- Retrieve changes to model made from within SOLIDWORKS
- Driving dimensions and numeric parameters of features and mates can be optimization variables or constraints
- Driven dimensions can be optimization constraints or merit function parameters
- LightTools pickups and expressions can be tied to dimensions and numeric parameters of features

### Overview

The LightTools® SOLIDWORKS® Link Module allows you to dynamically link SOLIDWORKS mechanical models to LightTools, where you can assign optical properties, optimize, and directly update your SOLIDWORKS designs.

The SOLIDWORKS Link Module enhances the design and optimization capabilities of LightTools by allowing you to manipulate and modify SOLIDWORKS geometry in LightTools as if you were working with native LightTools geometry. Unlike a data exchange module, the SOLIDWORKS Link Module establishes a bidirectional connection between SOLIDWORKS and LightTools. This enables you to update sketches and features in the SOLIDWORKS model from LightTools, see changes made in SOLIDWORKS to linked parts and assemblies from LightTools, and establish optical properties that are persistently defined in LightTools throughout the process. Because LightTools can update the model in SOLIDWORKS and receive the changes to the model from SOLIDWORKS without user interaction, you can also automatically refine SOLIDWORKS geometry using the LightTools Optimization Module.

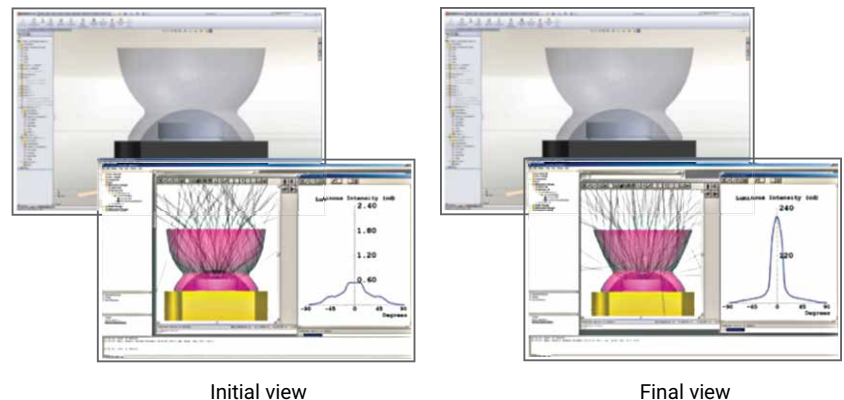


Figure 1: SOLIDWORKS models are directly linked into LightTools, where the system can be optimized. In the above case, the on-axis intensity of the LED was improved greatly by optimizing the SOLIDWORKS-designed optics

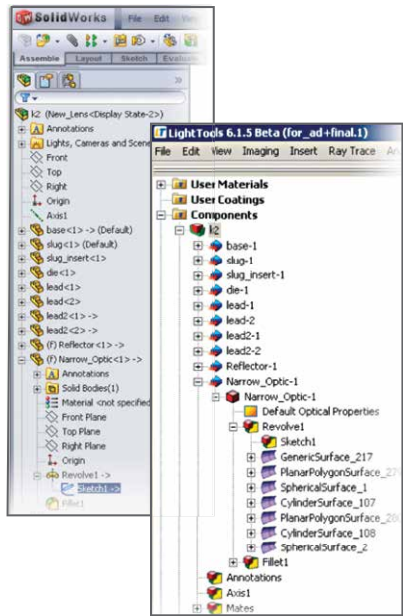


Figure 2: The SOLIDWORKS feature hierarchy is visible in the LightTools System Navigator

Traditionally, when designing an optical system in CAD software, you would create a design, import the model into LightTools, set up sources and receivers, define surface and material properties for the system, perform the optical analysis - and then repeat this process several times, if necessary. With the SOLIDWORKS Link Module, you bring the CAD geometry into the model and set up its optical properties only once. Then, you can click one button to bring any subsequent updates from SOLIDWORKS into LightTools. LightTools automatically assigns the same optical properties to updated geometry that you defined for the original geometry, and the system is ready for analysis.

Alternatively, you can initiate changes to the SOLIDWORKS model from LightTools. The SOLIDWORKS feature-tree hierarchy is visible in the LightTools System Navigator, which allows you to update any driving numeric parameter (i.e., dimension or feature parameter) in the linked SOLIDWORKS model from the LightTools user interface. In addition, you can use any driving parameter as an optimization variable. As with any other geometric entity in LightTools, you can also select SOLIDWORKS geometry to perform Boolean operations to create more complex geometry. This is especially useful if you need to use optical surface definitions, such as a polynomial asphere.

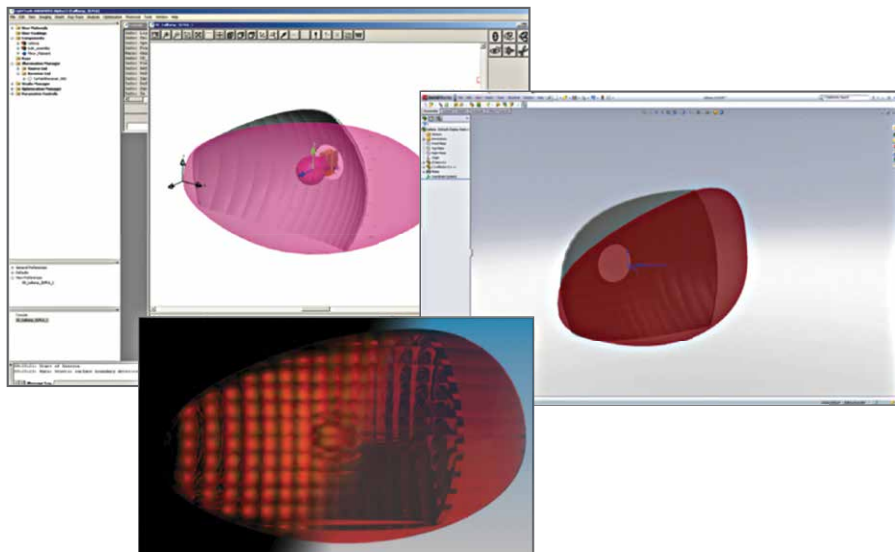


Figure 3: The photorealistic rendering in the left image is a result of modeling the interaction of light with a SOLIDWORKS model in LightTools

By combining the power of the SOLIDWORKS geometric modeler with the optical capabilities of LightTools, the SOLIDWORKS Link Module enables you to design, analyze, and optimize a complete optical system in one software package.

For more information about LightTools and the SLM Module, please contact Synopsys' Optical Solutions Group at (626) 795-9101, visit [synopsys.com/optical-solutions/lighttools](https://www.synopsys.com/optical-solutions/lighttools) or send an email to [optics@synopsys.com](mailto:optics@synopsys.com).