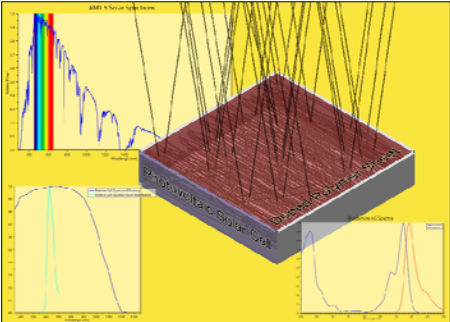


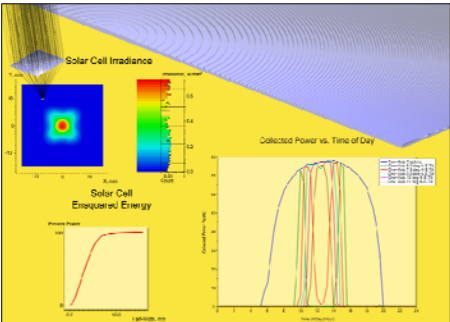
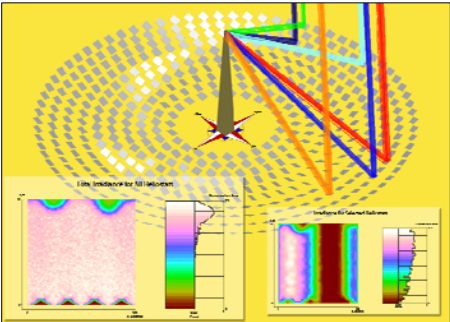
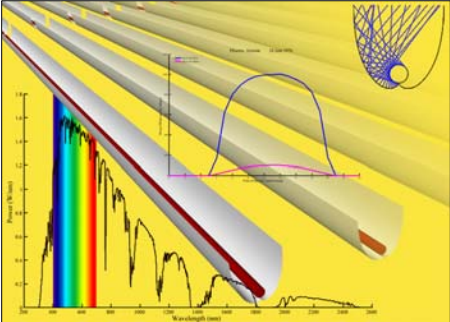


LightTools features and benefits for solar optics design



Developers of solar optics have discovered that *LightTools* software is a proven design tool to meet the industry's unique challenges. *LightTools* delivers ease of use, fast and flexible ray tracing, a fully featured optical and mechanical design environment, and expert technical support. Moreover, with *LightTools*, your design results are right the first time, which allows you to finish projects faster and save product development costs.

Here are just a few examples of the benefits *LightTools* has to offer.



Increase Engineering Productivity	
Benefit	Description
Reach the best design solution faster	<ul style="list-style-type: none"> Optimization that delivers the best design solution automatically. Full software integration and built-in merit functions minimize setup and execution time.
Fast and flexible preliminary design studies	<ul style="list-style-type: none"> Point-and-shoot ray tracing gives you real-time, detailed feedback on your system's light behavior during design iterations.
Rapid model creation	<ul style="list-style-type: none"> Solar Tracking utility to model a one-axis, two-axis, or non-tracking solar collection system, including direct and diffuse sources and a solar cell receiver. Compound Concentrators and Fresnel Lens utilities to model solar optical components. Sophisticated solid modeling with full optical accuracy. State-of-the-art ray tracing speed, with full user control of accuracy and resolution requirements. Extensive source and materials libraries. Robust support of mechanical CAD data import. Interactive, dynamic link with SolidWorks.
Automate routine design tasks	<ul style="list-style-type: none"> A powerful COM interface to <i>LightTools</i> data and commands that allows you to automate design tasks using .Net or Visual Basic. Supplied utilities that target specific design needs, forms, and applications.

(over)

Reduce Hardware Prototypes and Simulations	
Benefit	Description
Rapid design assessment and visualization	<ul style="list-style-type: none"> • Solar Tracking utility with comprehensive analysis features: <ul style="list-style-type: none"> ○ Simulate the movement of the sun across the sky and evaluate the amount of optical power striking a solar collection system at a particular time of day. ○ Perform a solar day scan to calculate a system's incident solar power. ○ Estimate how much energy will be collected over a given day, month, or year in a specific location. ○ Access supplied meteorological data for various locations – including latitude, longitude, time zone and date information. • Ray path feature for identifying system elements that are contributing to energy loss, scatter, or unintentional reflections. • Fastest photorealistic rendering capability for modeling lit appearance. • Receiver filters for analysis. • Interactive re-binning of illumination data, receiver size and location, any time during a simulation. • “On the fly” adjustments to the illumination meter angle. • Low-discrepancy Sobol random number generator, for faster convergence.
Maximize Performance Within Cost and Tolerancing Constraints	
Benefit	Description
Get accurate predictions of as-built performance	<ul style="list-style-type: none"> • Virtual prototypes that accurately represent as-built optics. • Comprehensive, accurate color analysis, ranging from the color of physical bodies and the color of light propagating through the system to the calculation of color metrics at receivers. • Parameter study feature for tolerancing sensitivity analysis.
Support for All Design Needs	
Benefit	Description
More software support choices	<ul style="list-style-type: none"> • Rapid response to any software question by expert optical engineers with more than 40 years of hands-on design experience. • 24/7 access to a dedicated customer Web site with video demos, example models, usage tips, and more. • Comprehensive documentation and examples-based tutorials. • Intro, advanced, and custom training courses.
Flexible subscription terms	<ul style="list-style-type: none"> • Short or long-term subscription options, all with full tech support at no extra cost.

With its superior features and support, *LightTools* will help you get better illumination products to market faster – but don't just take our word for it. Let us show you with a personalized demo. If you're as impressed as we think you'll be, we can promptly set you up with a 30-day trial license. Give us a call at 626-795-9101 between 8:00 a.m.-5:00 p.m. PST, or send an e-mail to info@opticalres.com. We look forward to hearing from you. You can also visit us online at www.opticalres.com for more information.