

CAD software for physics-based lighting system design

Light Modeling



IMPROVE THE PERFORMANCE AND AESTHETICS OF LIGHT IN YOUR PRODUCT

PERFORM FAST PHOTOMETRIC AND COLORIMETRIC VIRTUAL MEASUREMENT AND ANALYSIS

UNDERSTAND AND MASTER LIGHT PROPAGATION

DETECT WHERE LIGHT LEAKS AND HOTSPOTS OCCUR

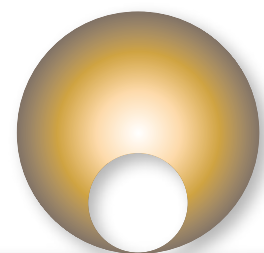
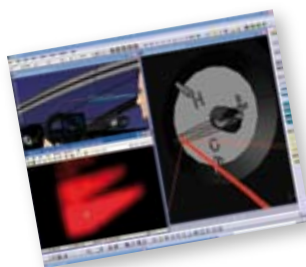
CHECK SYSTEM COMPLIANCES WITH INTERNATIONAL STANDARDS

LEARN AND MASTER THE SOFTWARE FAST

- Technology
 - stand alone
 - SolidWorks® integrated
 - CATIA V5 integrated



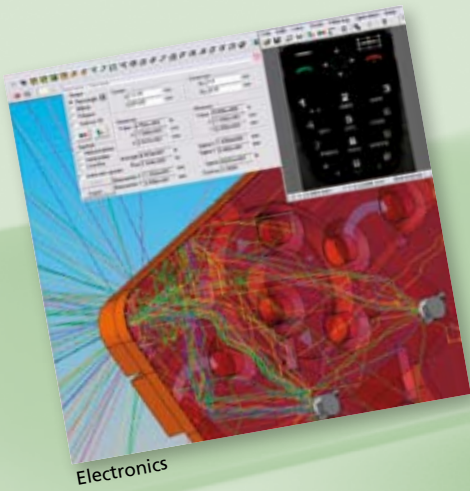
- Automotive • Electrical & Electronics
- Aerospace • Lighting • Consumer goods
- Architecture • Medical • Defense • Luminaires
- Interior design • Yacht • Display...



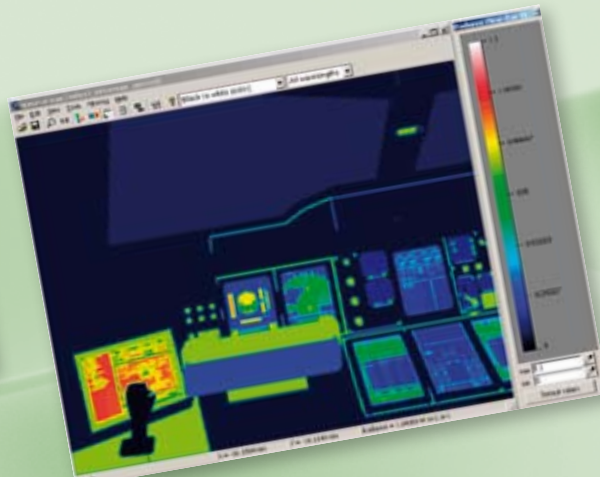
OPTIS

www.optis-world.com

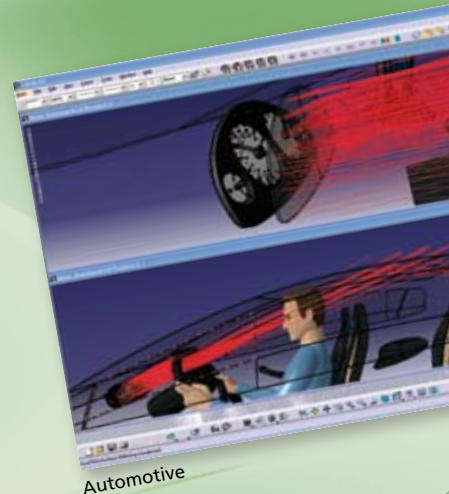
*THE RESULT OF OVER 150 MAN-YEARS OF R&D,
SPEOS LIGHT MODELING IS 100% BASED ON PHYSICS LAWS USED IN DIVERSE APPLICATIONS...*



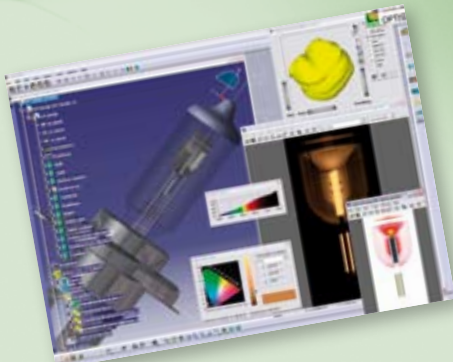
Electronics



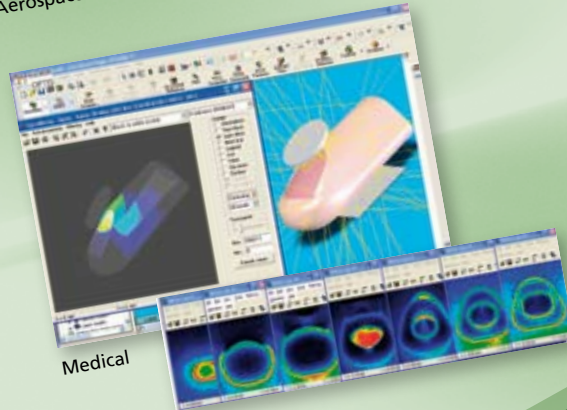
Aerospace



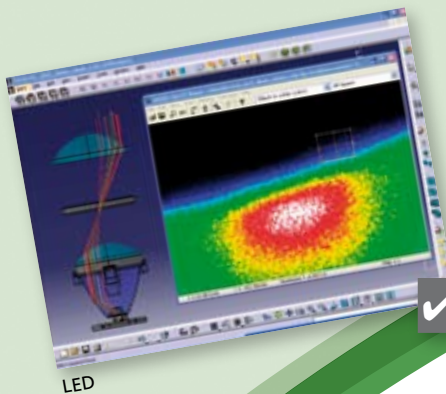
Automotive



Lighting



Medical



LED

✓ SIMULATIONS

- Sources :
- Scattering
- Volume :
- Coatings

✓ MEASUREMENTS

- Surfaces : ALANOD, ANOD
- Materials : plastics (Bayer,
- Sources : automotive (OSI

✓ ON-LINE MEASURED LIBRARIES

✓ SENSORS

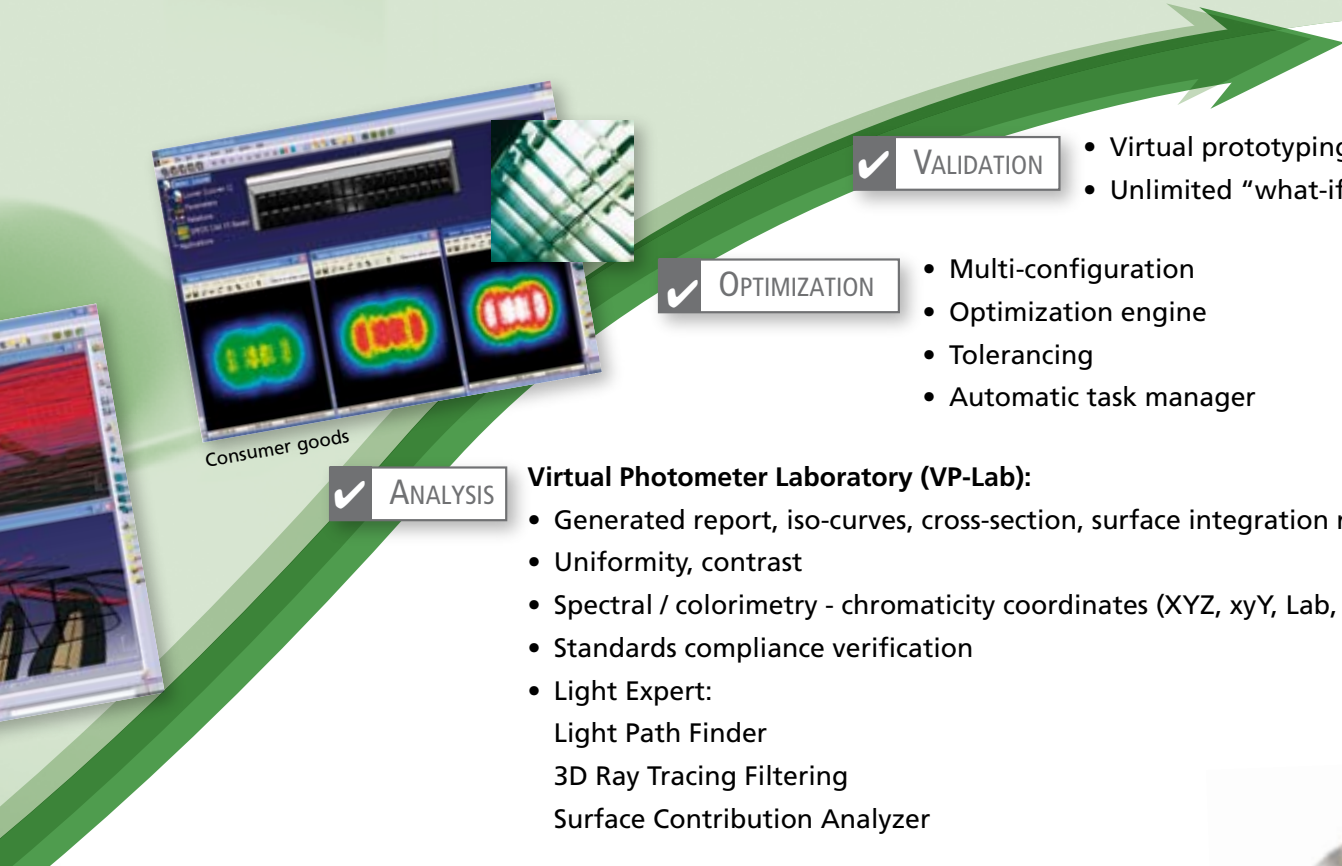
- Colorimetry / photometry / radiometry
- Illuminance (lux) & irradiance (W/m^2) luminous intensity (cd) & radiant intensity ($W/m^2.sr$) - Flux meter, gonio-photometer
- Geometry serves as 3D sensor

✓ SOURCES

- Virtual sources for ray path analysis
- Complex source modeling (incandescent, arc, fluorescent lamps, LED)
- On-line libraries: more than 350 references: see above
- Customized measured sources: see measurements above
- Spectral emission (IR, visible, UV)

✓ MATERIAL & SURFACES

- Surface & volume optical properties (index, reflectance, absorption, scattering, mass diffusion, dispersion, fluorescence, BRDF)
- Specific editor for real life cases (aluminized, tinted opalescent plastic, thin film color filter, paint, glass...)
- On-line libraries: more than 350 references: see above
- Customized measured materials & Surfaces: see measurements above
- Extended spectral behavior (IR, visible, UV)



✓ ANALYSIS

✓ OPTIMIZATION

✓ VALIDATION

- Virtual prototyping
- Unlimited "what-if" scenarios

- Multi-configuration
- Optimization engine
- Tolerancing
- Automatic task manager

Virtual Photometer Laboratory (VP-Lab):

- Generated report, iso-curves, cross-section, surface integration ration
- Uniformity, contrast
- Spectral / colorimetry - chromaticity coordinates (XYZ, xyY, Lab, Luv...)
- Standards compliance verification
- Light Expert:
 - Light Path Finder
 - 3D Ray Tracing Filtering
 - Surface Contribution Analyzer

ATION

- Interactive ray propagation in the 3D view for visual checking
- Illuminance (lux) & irradiance (W/m²) luminous intensity (cd) & radiant intensity (W/sr) luminance (cd/m²) & radiance (W/m².sr)
- Smart engine® for high speed calculations

LEDs, incandescent, fluorescent, arc lamps...
 g surfaces : BRDF, spectral BRDF...
 BSDF, mass diffusing, milky, mass tinted...
 , filters...

FOL, SATMA, CHARMILLES...
 Röhme...), glass (Hoya, Sumito, Schott...)
 RAM, Philips), LEDs (OSRAM, Lumiled, Stanley...), CCFL...

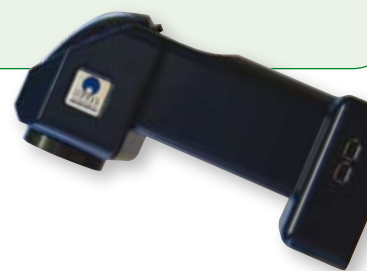
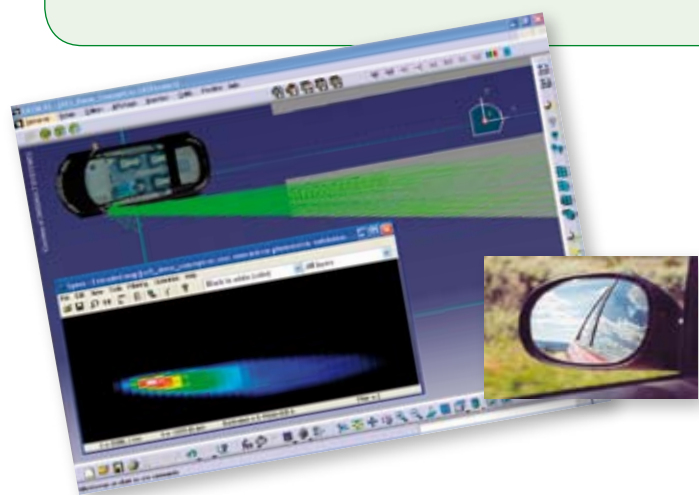
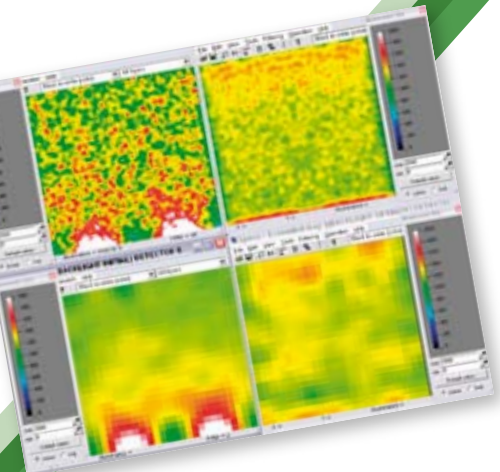
intensity (W/sr)
 r, spectrometer



! FROM MEASUREMENT TO SIMULATION

BENCH: acquire our static optical bench to obtain very accurate input data or we can also provide you customized measurements...

SQUALE: Capture surface and color appearance in situ and transfer them immediately into your virtual prototypes...



METHODOLOGY

SPEOS technology's **LIGHT MODELING capabilities** are based on advanced high speed Monte-Carlo non-sequential light propagation. Light can be split into reflected, refracted, diffracted and scattered components. Its propagation takes into account the optical properties of all surfaces, materials and sources emission. Results can be used to verify the compliance with International Standards and customer specification. Virtual Photometric Laboratory (VP Lab) provides a range of tools (cross section, contrast, iso-curves, spectral and chromaticity coordinates...) for analysis. Moreover, sensor simulation allows you to treat illuminance (lux), irradiance(W/m²), intensity (cd), radiant intensity (cd/sr), luminance(cd/m²) and radiance(W/m².sr).

BENEFITS OF LIGHT MODELING

- Understand how light works in your system thanks to in-depth photometric analysis.
- Model, simulate, analyze, and optimize luminous flux in any object or future product.
- Accurately predict stray light, hot-spots, uniformity, and study intensity, luminance (cd/square meter), illuminance (lux, foot-candles...).
- Take into account real measured optical properties of materials, surfaces, chosen from our on-line libraries.
- Benefit from the precision and reliability of proven scientific software combined with the industry-focused, practical features of a CAD tool.
- Check that your system complies with international photometric and colorimetric standards including Eulumdat, IES, SAE, ECE, ITE and Avionic MIL
- Unique modeling method able to simulate more than 10 Million 3D Textures in less than 1 hour.

SERVICES & CONSULTING

Expertise

Expertise allows you to optimize your lighting and optical projects with SPEOS Technology implemented by sending OPTIS engineers to your site.

Measurement campaign

OPTIS has developed and acquired measuring tools to characterize light sources and material-light interaction (BRDF, BSDF, emittance, intensity and luminance of lamps, spectrum of sources).

Audit

Optimize your product development process by analyzing with us where and how the SPEOS Light Modeling technology can be deployed.