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## **Photon Engineering, LLC Announces FRED™ 5.50**

TUCSON, AZ., April 10, 2006 -- Photon Engineering, LLC announces Release 5.50 of its optical engineering software FRED 5.x series. FRED is an advanced optical engineering software program capable of simulating the propagation of light through virtually any optical/mechanical system. The FRED 5.50's release features enhanced and expanded CAD Export capability, Illumination Engineering Society (IES) output LM-63-2002, a new coherent field synthesis algorithm, global scripting variable immediate update capability, new raytrace report functionality, over 60 new script definitions, a new racetrack trimming curve type, smaller file sizes on CAD import and export, and over 15 other new or revised features including new thermal scripts, and new visualization and drawing attributes.

FRED's enhanced CAD export is user definable with the capability to output geometry in both surface and solid formats. Furthermore, the user can specify the accuracy of the exported geometry by entering specific tolerance and patch information to export the best file data for manufacturing purposes. The STEP export feature has been fully tested with Rhino®, Solidworks® and ProEngineer®.

FRED 5.50 features the capability to export IES photometric data in IES LM-63-2002 format. After raytracing any model, FRED can generate Type A, B or C photometric data with any number of user specified angle information.

The FRED scripting language has over 60 new script variable definitions for source arrays, IES output, position/orientation specifications and more. Via the global script variable dialog, users can now apply an immediate update of global scripting variables to all scripts defined as part of the FRED model.

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FRED's new coherent field synthesis capability can be used to help you create coherent fields, perform spatial filtering, and aperture clipping. The algorithm creates a set of coherent rays that simulates the specified field, and gives the user control over the size of the rays as well as the range of ray angles that are created.

FRED's new report functionality prints a table of ray/surface error messages. This table is useful when there are ray errors during the raytrace where listing the surfaces the errors occurred on is needed.

Photon Engineering, LLC is a privately held company based in Tucson, AZ, and was founded in 1997. Photon Engineering is committed to providing the highest quality optical engineering services and software to its customers. Photon Engineering has worked with over 100 customers world-wide on a very wide range of optics-related projects including light pipes, illumination systems, LCD projectors, space satellite systems, laser scanners, tactical optics, zoom lenses and more. For more information contact [sales@photonengr.com](mailto:sales@photonengr.com) or visit the company's Web site at [www.photonengr.com](http://www.photonengr.com).

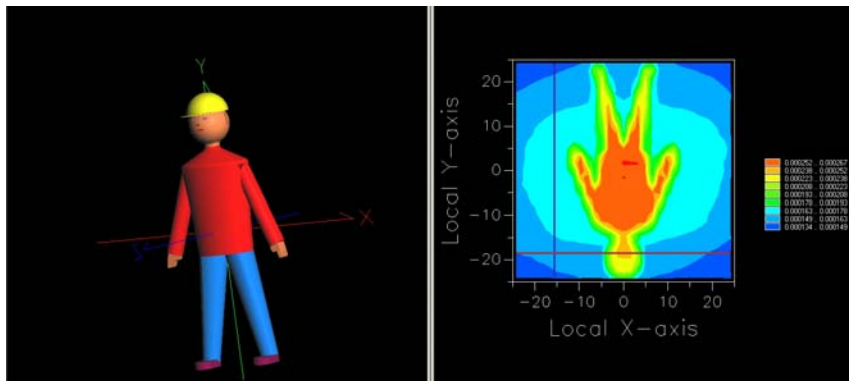


Figure 1 – With the new CAD capabilities and thermal global scripting FRED can now image extensive thermal models for imaging