SIEMENS
Ingenuity for life

Simcenter FLOEFD LED module

Achieving highly accurate thermal simulation of luminaires

Benefits

- Predict accurate operational light output (hot lumens) and temperature for your LEDs
- Achieve highly accurate radiation simulation using an advanced Monte Carlo radiation model with spectral absorption, reflection, refraction and scattering characteristics
- Enable LEDs to operate within the limits of the vendor's specs and avoid reliability issues and warranty recall costs
- Facilitate transient film condensation/ icing simulation
- Enable import of detailed thermal and photometric models from Simcenter T3STER and Simcenter TERALED
- Specify forward current for LEDs and Simcenter FLOEFD, enabling users to calculate the correct thermal heating power, and, hence, the correct operating temperature

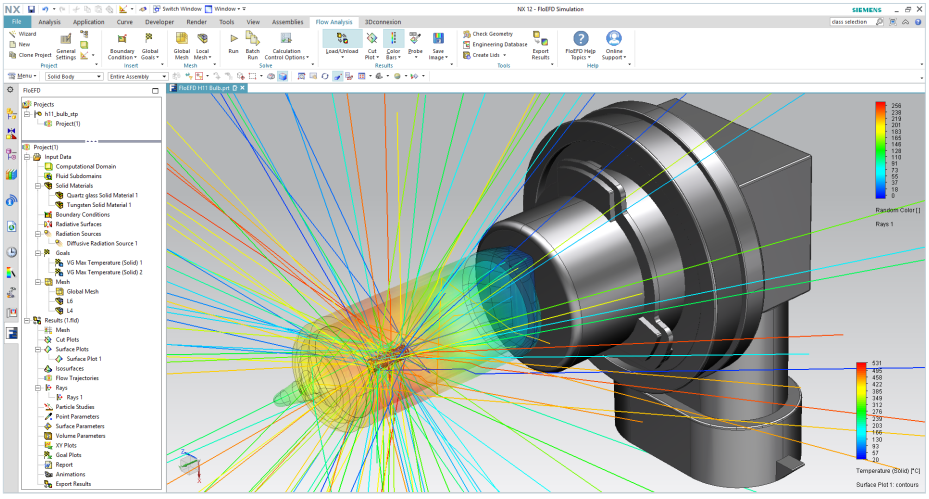
Summary

Simcenter™ FLOEFD™ software is a frontloading computational fluid dynamics (CFD) software that is designed to work with computer-aided design (CAD) so you can simulate fluid flow and heat transfer using 3D CAD models without creating data translations or copies. It has been used for 30 years to pioneer thermal characterization and analysis of integrated circuits (ICs) and light-emitting diodes (LEDs).

The Simcenter FLOEFD LED module provides an important set of analysis capabilities for lighting engineers and designers.

Correct prediction of temperature and condensation/icing

- Monte Carlo radiation model for simulating absorption and scattering of radiation in semi-transparent solids such as glass as well as considering effects such as refraction, specular reflection and wavelength dependency (spectrum properties of the radiation)
- Condensation model capable of simulating film condensation, evaporation and icing/de-icing and a water absorption model that enables solids to absorb humidity and release it



Simcenter FLOEFD LED module

again in the right environmental conditions

A combined thermal and photometric model for LEDs

- Import RC-ladder compact thermal models created by Siemens Digital Industries Software's Simcenter T3STER™ hardware with optical data from Simcenter TERALED™ hardware
- Starter pack of LEDs for popular lighting applications: Cree XT-E, Osram Golden Dragon, Seoul P4 and Philips Luxeon Rebel
- Import your own LED models into the Simcenter FLOEFD engineering database

Lumen output from your design (hot lumens)

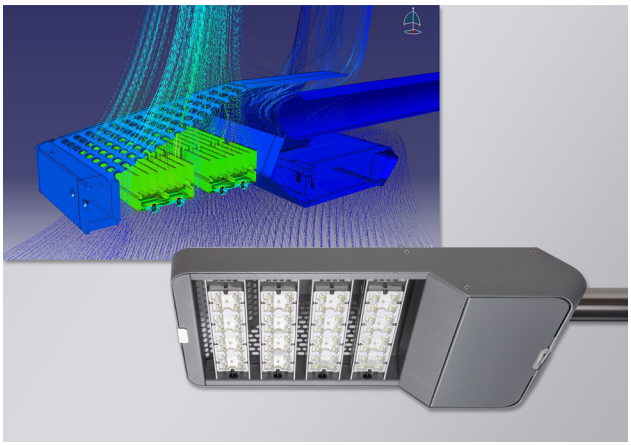
- Calculate the light output (lumen) of the LEDs to see if these meet design goals for light output and uniformity

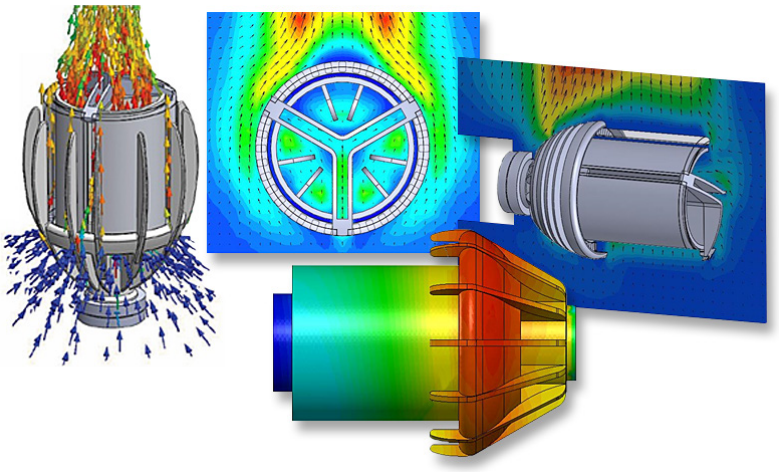
What-if testing makes it easy

One of the most powerful features of Simcenter FLOEFD is the ease with which you can conduct what-if analyses. Using Simcenter FLOEFD makes it simple to modify your models and analyze design variations: First, create your base model and analyze it. Then create multiple variations of your design by modifying the solid model without having to reapply material properties, etc. Using its parametric study and design comparison functionality, you can easily compare the results among the various options to choose your best possible design.

When you are satisfied with your design, publish your report with the touch of a button. You can even publish a fully interactive 3D dynamic plot and share it with colleagues or customers.

Simcenter FLOEFD is embedded in CATIA V5 software, PTC Creo software, Siemens' NX™ software and Solid Edge® software for use by design engineers. The Simcenter FLOEFD user interface and help are available in Japanese, Chinese, French, Korean, Russian and German. By providing a deeper understanding of design performance earlier in the product creation process, Simcenter FLOEFD reduces risk, design rework and time and enables a right-first-time design, speeding up the start of volume manufacturing.





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