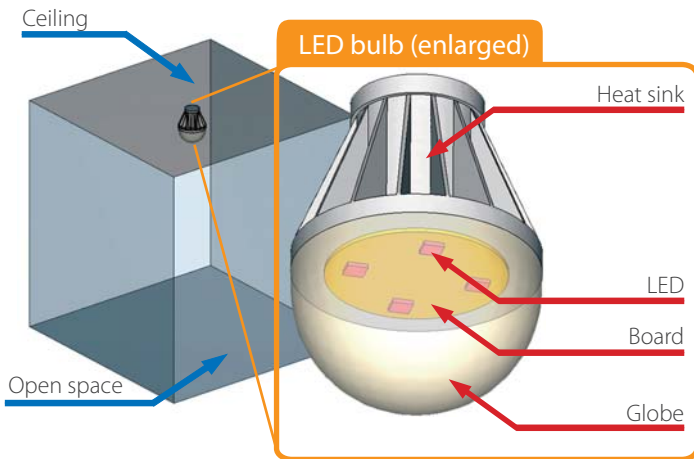


Thermal Fluid Analysis on LED Bulb

SC/Tetra Function

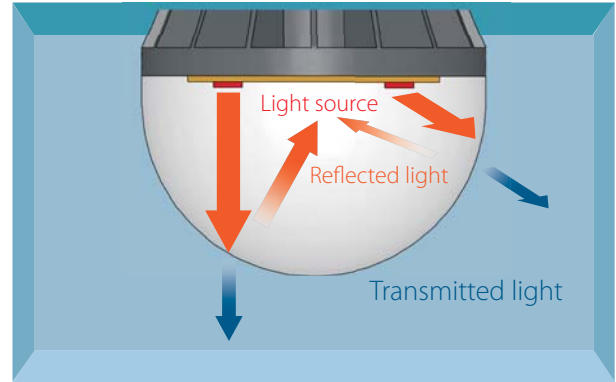
Investigating the Thermal Effect of Bulb Cover Transmittance using SC/Tetra

Details of Analysis Model



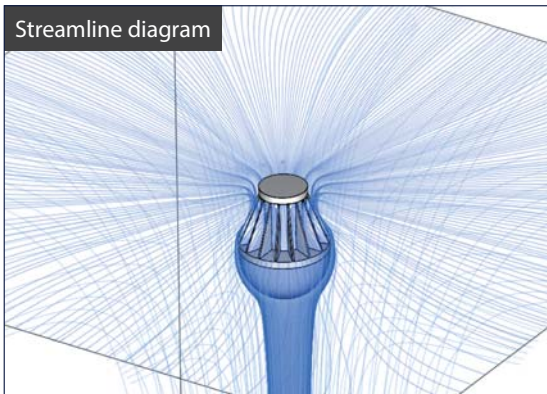
Effect of Bulb Cover Transmittance

Once emitted from the light source, light is transmitted and reflected. The latter is partially absorbed as heat within the globe, hence changing the temperature of the various bulb components. The surface temperature distribution changes depending on the degree of transmittance.

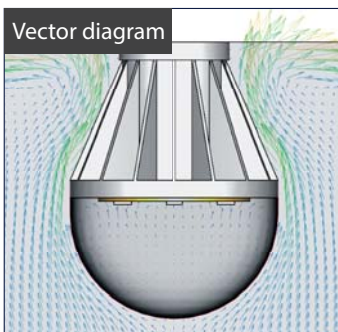


Visualizing the Flow

Streamline diagram



Vector diagram



Displaying the streamline

SC/Tetra depicts the flow path in 3D, allowing users to examine details, such as whether there is air in the gaps between fins.

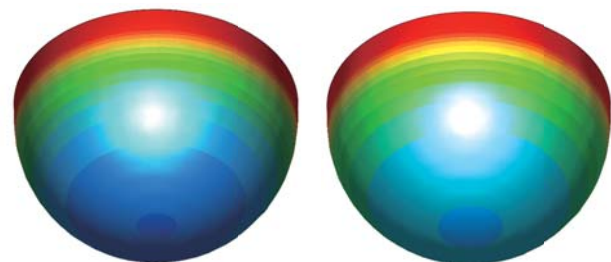
Displaying the vectors

Flow speed is displayed as vectors with a color distribution from blue to red and arrows in different sizes. The arrows indicate directions. This output is often used as a cross section diagram of the target.

How Surface Temp. Distribution Changes by Different Transmittance

Transmittance: 1.0

Transmittance: 0.8



Globe surface temperature changes by approx. 3 degrees

Notes

There is a growing demand for LED light bulbs because of their energy efficiency, small size, and long-lasting brightness. LED bulbs can also be adjusted to change color temperature and stretch the width of the beam to create innovative lighting effects. CFD simulation allows better understanding of the physical phenomena, bringing a great advantage to designers in the development of such highly competitive products with superior qualities.