

# LucidShape Application: The Value of Photorealistic Simulation

## Overview

An automotive lighting engineer developed a side turn lamp. The optical system was not homogeneously illuminated, although the required ECE regulations were met.

## The Challenge

There were artifacts in the side lamp's lit appearance that could have been predicted with photorealistic simulations during product development, including the ability to:

- Start from any development model with current geometric state and material properties
- Get fast results or high definition, and allow customization of speed and results
- Freely choose camera settings for single images and panorama scans to compare to real images

## The Solution

The LucidShape® Visualize Module generated fast lit appearance results and high-definition photorealistic images from any setup. It enabled the lighting engineer to:

- Add visualization to any existing LucidShape model with only a few steps
- Run very fast ray tracing (both forward and backward)
- Use custom luminance camera settings to model real laboratory camera setups for comparison
- Predict the correct luminance and implement improvements before prototyping
- Add an optional environment light source for natural 360° ambiance and photorealistic images

For more information, please contact Synopsys' Optical Solutions Group at (626) 795-9101, visit [synopsys.com/optical-solutions/lucidshape](https://www.synopsys.com/optical-solutions/lucidshape), or send an e-mail to [lucidshapeinfo@synopsys.com](mailto:lucidshapeinfo@synopsys.com).



Figure 1: Wireframe and photorealistic image of a side mirror with LucidShape's Visualize Module



Figure 2: Photo of the manufactured side mirror. Courtesy of SMR Automotive Australia Pty Ltd.