

INJECTION-MOLDED LENSES

Greenlight Optics simulation reduces manufacturing time

Optical functions are being incorporated into a rapidly increasing number of applications in a wide range of commercial, research and consumer markets. To enable the exploration and deployment of new applications, Greenlight Optics provides its clients with the design, development, prototyping and manufacturing of integrated optical systems, specializing in LED illumination, projection displays, imaging systems and instrumentation.

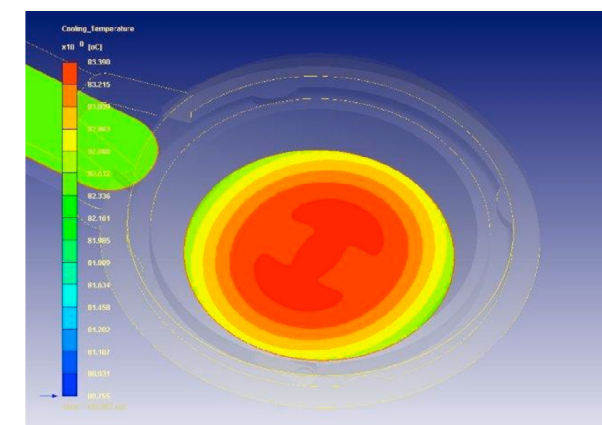
Based in Loveland, Ohio, company officials agreed in 2011 to collaborate with the Ohio Supercomputer Center on a demonstration project with the National Digital Engineering and Manufacturing Consortium, or NDEMC, an initiative of the U.S. Economic Development Administration and led by the Council on Competitiveness. OSC provides resources to 13 of the 20 board-approved NDEMC projects.

NDEMC's pilot project, The Midwest Project for SME-OEM Use of Modeling and Simulation is the first large-scale public-private partnership of the U.S. government, original equipment manufacturers, state and university computing centers, the State of Ohio, and other non-governmental organizations. The project provides education, training and access to computing resources to small- and medium-size businesses to develop modeling and simulation skills within their manufacturing workforce.

Initially, Greenlight Optics investigated the use of modeling, simulation and analysis to conduct thermal modeling of systems incorporating high-brightness LED light sources. While that particular application didn't result in any production-related achievements, the company's engineers quickly identified an even better candidate.

"Through the Ohio Supercomputer Center, we were able to model thermal properties involved in producing an injection-molded lens used for collimating LED light," said Michael O'Keefe, the managing partner of business for Greenlight Optics. "With the modeling software, we were able to accurately predict a problem with the lens and, subsequently, to reduce the manufacturing cycle time by 64 percent." This type of cycle time reduction while maintaining precision optical quality is a key part of Greenlight's strategy of developing and manufacturing new optical products in Ohio.

For their computational modeling needs, Greenlight Optics accessed Moldex3D software through the Polymer Portal, an online "one-stop resource" developed by PolymerOhio, Inc. and OSC as part of a project funded by the National Institute of Standards and Technology's Hollings Manufacturing Extension Partnership (NIST MEP). The portal bundles access to commercial software modeling and simulation services with training in computation and 3-D modeling.



Three-dimensional simulation of an injection-molded lens, showing cooling temperature gradients.

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Web site: <http://bit.ly/OSC-RR-Greenlight>