

## USING SIMULATION MODELING TO INCREASE SALES

**ABOUT ILIGHT TECHNOLOGIES.** iLight Technologies, Inc., headquartered in Chicago, Illinois with manufacturing facilities in Cookeville, Tennessee, is a pioneer and leader in innovative LED illumination solutions that transform, excite, and energize corporate identities and architectural environments worldwide. LEDs are the fastest growing segment of the light industry today, and in five to ten years promise to bring the lighting world various new options to replace older and less energy-efficient technologies. iLight's products blend the benefits of LEDs with patented application systems that create lighting products that have high brightness with a smooth even glow. The company employs approximately 20 people.

**THE CHALLENGE.** Due to some LED strips failing in the field, iLight expressed an interest in determining the effects of solar exposure and reflection from a wall on a string of LED lights. The project included modeling the thermal output of an encapsulated array of LED lights.

**MEP CENTER'S ROLE.** As a program of the University of Tennessee Center for Industrial Services (UT CIS), TMEP (a NIST MEP affiliate) utilizes its network of colleges, universities and technical schools to connect small businesses that could not otherwise afford the level of services needed to explore opportunities, address challenges or take a chance on a new idea to engineering, with the research and development services available through faculty projects. Through an agreement with Tennessee Tech University (TTU), TMEP works with TTU to match faculty resource expertise and provide assistance to business and industry. Two faculty members from the Electrical and Computer Engineering and the Mechanical Engineering Departments worked together on this project. The professors used simulation software to determine the effects of solar reflection. Thermal distributions around a string of LEDs and circuit components embedded within polyurethane potting were obtained to find maximum temperatures in the vicinity of the LEDs. Several variables were introduced and analyzed including but not limited to the composition of the wall material, the reflectivity of the wall, distance of the string of lights from the wall and exposure angle of the sunlight.

**"iLight truly appreciates and supports the program, it has been a great resource, especially in defined areas that need special research and abilities. By conferring with the University professors they are able to take our issue and run scenarios which greatly assist iLight in improvements and development of new products."**

-Jim Cuppini, Chief Operations Officer

## RESULTS



**\$190,000** increased/retained sales



**\$15,000** in new products

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