

## PROFESSORS USE SIMULATION SOFTWARE TO HELP SMALL TENNESSEE MANUFACTURER

**ABOUT ILIGHT TECHNOLOGIES.** iLight Technologies is a pioneer and leader in innovative LED illumination solutions that transform and energize corporate identities and architectural environments. LEDs are the fastest growing segment of the light industry today, bringing new options to the lighting world to replace older and less energy-efficient technologies. iLight's products blend the benefits of LEDs with patented application systems to produce lighting solutions with high brightness and a smooth even glow. The company is headquartered in Chicago, Illinois, and has manufacturing facilities in Cookeville, Tennessee, with 20 employees.

**THE CHALLENGE.** When iLight Technologies experienced some LED strips failing in the field, the company expressed an interest in determining the effects of solar exposure and reflection from a wall on a string of LED lights. The company reached out to the Tennessee Manufacturing Extension Partnership (TMEP), a NIST MEP affiliate, for assistance in conducting a project that modeled 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, TMEP utilizes its network of colleges, universities and technical schools to assist small businesses that could not otherwise afford the level of services needed. Through an agreement with Tennessee Tech University (TTU) in Cookeville, Tennessee, TMEP works to match TTU faculty resource expertise to business and industry needs. The program helps small manufacturers explore opportunities, address challenges, and take a chance on new ideas by leveraging the research and development services available through faculty projects.

Two faculty members from TTU's Electrical and Computer Engineering and Mechanical Engineering departments worked together on the project for iLight Technologies. The professors used simulation software to determine the effects of solar reflection, obtaining thermal distributions around a string of LEDs and circuit components embedded within polyurethane potting to find maximum temperatures in the vicinity of the LEDs. They introduced and analyzed several variables, including the composition of the wall material, the reflectivity of the wall, the distance of the string of lights from the wall, and the exposure angle of the sunlight. The research helped iLight Technologies better understand its product to retain and improve sales.

**"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 making improvements and developing new products."**

-Jim Cuppini, Chief Operations Officer

## RESULTS



Retained between **\$80,000** and \$110,000 in sales



Product impact of **\$15,000**

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