

Switching on to Phoenix

Adam Plowman, Business Development Manager at Phoenix Products Company highlights how a unique bulk handling operation is trialling LED lighting

St James Stevedoring Partners is an innovator in the bulk handling industry. It operates the state-of-the-art St James Stevedoring (SJS) operation along the lower Mississippi River serving ocean going vessels and river barges and transloading millions of tons of dry bulk commodities. To maximize efficiency, flexibility and value to their customers, SJS utilises ten mobile harbour crane barges in their mid-stream operation.

Striving to continuously evolve, SJS is fully committed to incorporating high-quality technological solutions to continuously improve. Lighting efficiency has emerged as a key objective. With the goals of innovation, efficiency, and safety in mind, SJS began working with Phoenix Products Company, a lighting manufacturer located in Milwaukee, Wisconsin, to outfit its Terex Gottwald Model 8 mobile harbour cranes with LED floodlights. The companies collaborated to understand the challenges of lighting a barge-based bulk handling crane and ultimately chose ModCom Hi 300W LED floodlights with a customised optical arrangement to replace the existing 1000W metal halide floodlights. The new fixtures were installed in September of 2013.

To fully analyse this new option, SJS wanted to directly compare the lighting on two crane

barges one retrofitted with LED fixtures and one with existing traditional lighting. The KevinD barge was used as the reference for their existing lighting technology, and the C.J.L. barge was chosen for the retrofit. It is now among the first mobile harbour cranes to have the main production and boom lighting converted fully to LED.

LED STABILITY YIELDS OPERATIONAL PROGRESS

Many lighting challenges result from the high-vibration environment on port equipment. The constant, rapid movement of cranes has always posed a threat to traditional lighting fixtures, making maintenance a significant expense. And, for a bulk terminal that faces the demands that SJS experiences daily, consistency and productivity are imperative. The cranes are operating 22 to 24 hours per day, seven days a week leaving no time for unscheduled maintenance. Since replacing a broken lamp involves laying the crane out on the deck of the barge and keeping it out of service for up to two hours, losses can reach several thousand dollars during this downtime.

Whether it is to replace a broken lamp or repair a fixture, sending someone to perform maintenance on port equipment is time consuming, expensive and dangerous. Because LED lighting is solid-state technology, there are no moving parts, fragile filaments, or breakable glass. Quality LEDs are also typically rated for 50,000 hours. For a fixture that is illuminated for 12 hours every day, that equates to over 11 years of usable life. Since the LED fixtures were installed on the C.J.L., no replacements or repairs have been required. SJS looks forward to many more years of maintenance-free lighting.

LIGHTING BOOSTS PRODUCTIVITY, ENHANCES SAFETY

Safety on the deck of the barge was SJS's number one consideration when teaming up with Phoenix to outfit the cranes with LED fixtures. The technology has greatly increased the safety at night on the C.J.L. by eliminating periods of darkness while traditional lighting fixtures are warming up following an operational shutdown. Not only do safety vests shine brighter under LED lights, but, in the event of an emergency situation, LED fixtures can be turned on quickly so assistance can be safely and immediately rendered.

Because of the "instant-on" feature of LED technology,



SJS crews are more comfortable with turning off the main crane generator and switching to auxiliary generators to preserve fuel. Traditional lighting requires up to a 15 minute warm-up period following a power interruption. Conversely, LED fixtures reach full brightness in less than a second. For a facility like SJS, the elimination of warm-up time increases productivity by an average of five to seven cycles for every shutdown during night operations.



LIGHT QUALITY MIMICS NATURE

Light levels were measured on various points of the C.J.L. barge in comparison to the KevinD. While cranes were in working position above the hold, levels indicated up to 46 percent more light measured at selected points on the barge and vessel



due to the well-controlled, directional nature of LED technology.

It was reported by operators that the C.J.L. barge now experiences significantly fewer shadows due to the specified LED optical package. Crane operators also commented that the operational light on the C.J.L. is brighter than with traditional lighting and looks more like natural daylight. When considering a 61 yard bucket holds about 45 tons of bulk material, the precision of the operation is vital in staying efficient, safe, and competitive. The light quality with LED has provided a huge improvement for working conditions in all circumstances including extreme weather like rain or fog.

LEDS HELP ENVIRONMENT, REDUCE ENERGY USE

Once all boom and tower lights were replaced on the C.J.L. with ModCom Hi fixtures, floodlighting power consumption was reduced by 5.6 kW equating to more than a 70 percent reduction. Combined with the reduction in waste lamps and ballasts, the conversion provides a variety of environmental benefits.

Because of the attention that SJS gives to the details of its operations and environmental accountability, the company is a leader in the bulk handling industry. SJS's success and dedication to improvement has led other facilities to follow in similar footsteps. On the topic of LED lighting, Jerry Ryan, Director of Operations at SJS said, "This step was consistent with the culture of our business and our willingness to embrace innovative changes so we can optimise the usage of our assets."

Bulk terminals have the opportunity to improve their bottom line by incorporating LED technology into their operations. The sooner facilities consider the improved options available, the sooner they can realise the benefits of safety, reduced maintenance, environmental stewardship and cost savings that SJS is experiencing today.