White Paper

Crafted for Success:

Six Vital Questions for Brewery Sight Glass Lighting

The business of craft brewing combines the science of fermentation with the artistry of mixing unusual ingredients and techniques to create new products. Beyond that, however, it also requires clear analysis of the pros and cons of a wide range of business management decisions, such as the type of lighting used to illuminate the interiors of process vessels. For a long time, halogen lamps were the standard choice for vessel sight glass lighting, but a new generation of LED luminaires is growing in popularity for this application. Answering the following questions may help you decide if the timing is right for your operation to make the switch from halogens to LEDs.

1. Does your halogen lighting make it easy to verify the effectiveness of your vessel cleaning process?

A typical 100W halogen light produces about 500 lumens, which can limit visibility within the tank or other vessel. Without sufficient illumination, it can be difficult to confirm that the cleaning process, whether manual or automated, has done its job effectively and that the cleaning solution is thoroughly rinsed out. An improperly cleaned vessel can quickly lead to costly cross-batch contamination problems and unsellable products. LED luminaires can provide twice the light output of halogens or more, simplifying confirming the effectiveness of the cleaning process. LEDs can also be "tuned" to produce cool (bluish) white light that is more effective than warm (reddish) white light for viewing the interior of stainless steel vessels because more of the light produced is reflected rather than absorbed.

2. How much are your current halogen sight glass lights costing you?

Multiple considerations must be factored into the cost of using halogens, perhaps the least of which is the initial cost of the bulbs themselves. Consider also the frequency with which they fail and the labor cost associated with replacing them. Halogen bulbs are notoriously inefficient with regard to the amount of visible light produced vs. the amount of electricity consumed, producing just 10 lumens per watt of electricity. The output of a typical halogen bulb is 15 percent light and 85 percent heat, with the heat coming from the infrared light the bulb produces, which can't be seen by the naked eye. Unlike halogens, LED luminaires produce 55.6 lumens per watt of electricity consumed with little or no heat (eliminating the risk of affecting the product in the vessel), offer extremely long life, and are vibration and impact resistant. In contrast with halogen lights, which have fragile filaments, LED lights typically offer dramatically longer lifetimes. This exceptionally long lifetime means lower maintenance costs and fewer process interruptions.

3. Does the lighting you're using have an impact on the perceived color of your beer?

The yellowish light that halogens produce can be problematic if you need to check the beer's color to make process adjustments at various points. Their 2800K color temperature also approximates dusk and can cause eye fatigue. Some LED luminaires produce a white light with a cool color temperature that is optimal for illuminating stainless steel vessels like boil/brew kettles, mash tuns/fermentation tanks, conical fermenters, and brite/lagering tanks. The LumiStar1000™ luminaire made by L.J. Star produces bluish white light with a color temperature of 5500K, optimized for the craft brewing business.

Figure 1: The color of light an LED luminaire produces (left) vs. a halogen sight glass light (right).

4. How difficult are your halogen lights to keep clean?

Halogen bulbs are installed in a wide range of fixtures, which may or may not be optimized for food and beverage production applications, complicating the cleaning process. The designers of the LumiStar1000 LED luminaire drew on the experience gained in designing the lighting for the large tanks used in large commercial breweries, then optimized the LumiStar1000 for the requirements of the craft brewer. Its wash-down-safe, crevice-free design is constructed of food-grade stainless steel. It is dust and waterjet tight to NEMA 4 and 4X and IP 65 to DIN EN 60529/DIN VDE 0470 Part 1 standards.

5. How much control do your halogen lights offer you?

Halogen lights typically offer just on and off operating modes and changing modes requires climbing to the top of the vessel to access a manual switch located on the light itself, exposing maintenance personnel to the risk of injury. However, today's craft breweries are becoming increasingly automated, with many operators preferring remote control, such as when they pair the light with a video camera. The light manufacturer may offer a remote switching module or timing module that allows both manual and remote operation. Such modules are usually installed at some distance from the vessel, mounted on the wall or inside a control cabinet. Because they already contain electronic components, LED luminaires allow taking remote operation still further, with luminaire makers offering programmable computerized control, such as timed operation. For example, LumiStar1000 luminaires offer a smart design with three modes of operation: momentary, short timed and long timed. Factory-programmable options include timer duration, initial brightness, and LED on at power up.

6. Does your target customer care about your operation's energy efficiency?

Many factors go into a craft beer customer's buying decisions, including the reputation of the brewer regarding following "green" and environmentally sustainable operating practices. LED luminaires provide optimal illumination while consuming just one-tenth of the energy of a conventional halogen light. Lowering your brewery's carbon footprint by switching to LED luminaires is another way to reinforce the message that you're serious about your operation's impact on the environment.

To learn more about how to choose the best lighting options for your brewing vessel applications, download L.J. Star's free informative handbook, Understanding and Specifying Sight Glass Lighting.

About L.J. Star

L.J. Star Incorporated provides an extensive line of process observation equipment: sight glasses, lights, sanitary fittings, and level gage instrumentation. Product lines include Metaglas® Safety Sight Windows, Lumiglas® Explosion Proof Lights and Cameras, Visual Flow Indicators, Sight Ports, Sanitary Clamps, Magnetic Level Gages and Gage Glass. For additional information, contact L.J. Star Incorporated, P.O. Box 1116, Twinsburg, OH 44087. Phone: 330-405-3040. Fax: 330-405-3070. Email: getmoreinfo@ljstar.com. Website: www.ljstar.com.