LJ STAR
Precision in Process

Improving Critical Process Lighting for the Cosmetics Industry

CASE STUDY

Harsh production environments refer not just to the materials used on the processing floor; it can also be harsh on processing equipment.

One LJ Star customer, a global leader in personal care products, recognized that its 24-hour, tightly controlled processing applications required equipment that not only performed at a top level, but at times required customization beyond what was available off the shelf in order to meet its performance specs. That was the case with new LED lights and other process observation components provided to the customer by LJ Star.

LJ Star provides the entire range of process observation lights, cameras, sight glasses and sight flow indicators to processors in a wide variety of critical industries. All of its observation components build on each other's capabilities: lighting requires top performing sight glasses, and sight glasses require the best lights to be able to see into even the farthest areas of a large vessel.

This is especially true in cosmetics and similar industries where you're working with darker, less transparent fluids or confined process vessels with hard-to-see areas. Without the right illumination, you could be missing:

- ***Critical system blockage***
- ***Improperly mixed products***
- ***Corrosion or leakage***
- ***Unbalanced fluid levels***

This company, more than 100 years old, is a multinational personal care company that produces quality skin care, hair care, cosmetics and fragrance products.

As one of the oldest cosmetics companies in the world, it has garnered a substantial customer base, producing countless cosmetic products every day. Efficient, large batch operations allow the company to consistently fulfil its orders.

With large batch operations, engineers at its facilities utilize a large number of process vessels, from closed-top tanks to open-top kettles. In order to keep these systems running smoothly, the company required quality process observation equipment to meet the needs of their key operations.

"We have a lot of different processes where you need to pay close attention," said one of its manufacturing engineering managers. "Our customers expect the best, and that all starts with good manufacturing. We rely on sight glasses and powerful process lighting to keep our operations running smoothly."

The Demanding Process Observation Needs of Cosmetics Manufacturing

Process control is especially critical to the high-volume operations of cosmetics with its careful control of product chemistry and formulations. Any process problem along the way puts that batch and any work-in-process batches at risk.

Diagnosing the problem is difficult as well, since you need to identify the point the line deviated from defined process parameters. Process observation equipment comes into play not just in monitoring the line but also in troubleshooting when problems occur.

For instance, with wet ring operations, companies need sight glasses with proper lighting to monitor when they draw vacuum in their kettles. Since water is constantly circulating through the pumps, you must watch out for contamination and make sure that too much water doesn't get drawn into the pumps. While some water is acceptable, excessive water or particulate contamination could damage the pumps themselves. If too much product is also drawn through the vacuum, it could contaminate the next batch. Low-quality lighting makes it difficult to catch these problems in real-time, leading to unnecessary downtime and product loss.

Dealing with Harsh Environments

While process observation equipment is critical to any cosmetic company's operations, not just any sight glass or light will do. This is because cosmetics manufacturing creates very harsh environments. Any equipment would need to be able to handle a number of demanding components such as:

Powders and granulated products

High-heat emulsifiers

Water, oils, and other wet ingredients

Equipment would also need to be able to withstand the FDA-mandated high-pressure washdowns that are required to stay operational within the industry. Tank and kettle washdowns are one of the most demanding needs of the cosmetics industry, requiring you to construct your tanks out of heavy-duty materials. The same goes for any auxiliary equipment.

For this customer, tanks and kettles were also usually running for three-shift operations. Their vessels were used up to 20 hours a day in order to push each batch through.

Up against these harsh environmental conditions, engineers required specialty equipment that could provide quality process observation for their cosmetics manufacturing processes without breaking down or risking the integrity of their systems.

"We expect a lot out of our systems," said one of the customer's engineeres. "Our kettles are running around the clock to put out large batches of quality products, all while facing some of the harshest environments in the business. If we want to keep that up, our process observation equipment has to be top-notch."

Partnering with LJ Star

Knowing the difference that quality process observation equipment can make and the heavy requirements of their systems, this customer didn't just need another vendor – they needed a partner. In their search for a new processing partner, they came across LJ Star.

Engineers at its facility were especially drawn to LJ Star for its large catalog of products. With different operations spanning the entire field of cosmetics, this customer needed a one-stop-shop for not just lighting but all of its process observation applications.

After analyzing the customer's operations, LJ Star recommended a number of its process observation products, including:

- ***EX and LED lights***
- ***METAGLAS® MetaClamp® sight glasses***
- ***Traditional welded sight glasses***

LJ Star's equipment quickly helped engineers at the plant improve their ability to observe their manufacturing processes, allowing engineers to maintain its quality control levels.

Like with many companies and applications, the customer soon found that they needed a more tailored approach to process observation. That meant designing custom equipment to meet its unique needs, especially in regard to lighting. While LJ Star's off-the-shelf equipment models were effective in helping the company maintain their systems, there were additional enhancements their application required.

Needing More From Lighting

One of the most notable instances of how LJ Star continued to work with process engineers to find a custom solution involved its LED lighting challenges.

While the customer was attracted to the higher quality illumination of LED lights, the lights were having trouble performing in the company's harsh environments. No matter what they tried, engineers found that any LED lights that they used failed too early, leaving its systems vulnerable until they installed a replacement. Even though the LEDs offered superior viewing capabilities, the lack of long-term performance forced them to look for a change.

Knowing that the customer wished to keep some form of energy-efficient LED lighting if at all possible, LJ Star began to find a solution.

Heat was shown to be a problem, not just from the environment, but also from inside the light itself. Since the lumens output was pushed to the max, the energy required to create such a visually powerful light caused the LED light to heat up too much. With high temperatures hitting the LED lights at all angles, it was causing them to fail earlier on in their product life, even when operating within its rated external temperatures.

Once LJ Star learned this, they started to tweak its standard LED light. First, engineers modified the lights by actually lowering the output, which in turn lowered internal temperatures. However, the light's output was not lowered enough to cause a noticeable change in light quality. In this way, LJ Star was able to better optimize its LED lighting for the customer's individual operations, balancing the performance of the light and its product life.

Next, engineers at the facility wanted to test the theory that LEDs today are right for every application. Engineers tested the new modified LED light against traditional incandescent lighting and determined that even with the LED improvements, incandescent offered the best longevity and cost-performance for its processing floor.

> ***"Had LJ Star not worked with us to find a better solution, we may never have known that it was LED technology itself that was the problem and not a specific product," said the customer's manufacturing engineering manager. "Too often something doesn't work and you're left wondering why. Worse still, you may keep trying to make something fit, even though it never will. LJ Star didn't do that to us. They helped us find an answer on what was best for our systems based on a detailed quality analysis and several different product iterations. Had they not done that, we would have continued to waste time searching for new LED light solutions. You can't put a price on that peace of mind."***

A Partnership to Last

After working with LJ Star for years now, this customer continues to partner with the process observation expert for their ability to optimize systems for performance, cost-efficiency, and reliability.

"Overall, LJ Star is really just a pleasure to work with and a breath of fresh air in the industry," said the engineering manager. "We couldn't ask for anything more in a partner."

LJ Star continues to work with this customer by offering them unique solutions whenever a new challenge arises in this highly complex industry. With LJ Star's industry-grade process observation equipment and expert maintenance strategies, they are able to maintain effective and reliable system monitoring, allowing them to continue to be one of the world's leading manufacturers of cosmetics.

About LJ Star

LJ Star Incorporated provides an extensive line of process observation equipment – sight glasses, lights, sanitary fittings, and level gage instrumentation. Product lines include METAGLAS® Safety Windows, Lumiglas® Explosion Proof Lights and Cameras, the MetaClamp® Sanitary Sight Window, Visual Flow Indicators, Sight Ports, Sanitary Clamps, Magnetic Level Gages and Gage Glass. METAGLAS® is the #1 selling fused sight glass, proven in thousands of installations around the world. Unlike some other sight glasses, it meets stringent DIN 7079 and DIN 7080 quality standards, and it is approved for USP Type I use. For additional information, visit www.ljstar.com.