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Consequences for standard light at color and print matching

The ban of fluorescent lamps

In February, the EU Commission published new guidelines that further restrict the continued use and sale of mercury-containing lamps and will soon ban them altogether. No mercury-containing lamps may be placed on the market and existing ones must be replaced with suitable mercury-free alternatives. A changeover is possible due to a transition period.

The ban on fluorescent lamps is leading to a change in color and print matching. An alternative LED-based solution is already on the market that overcomes both the toxic nature of fluorescent tubes and the limitations of conventional LED-based approaches.

RoHS (= Restriction of Hazardous Substances) is a directive of the European Union concerning electrical and electronic equipment and their manufacture. The directives serve to restrict the use of hazardous and harmful substances in electrical and electronic equipment. Products placed in the market after July 1, 2006 must be RoHS compliant. The purpose of these directives is to address the environmental aspects of disposal and recycling, and the health risks associated with exposure to hazardous substances.

An exemption for the use of mercury in double-capped linear fluorescent lamps for general lighting purposes exists until August 24, 2023. After this date fluorescent lamps containing mercury may no longer be placed in the market. Fluorescent lamps for general lighting are ceiling lights and shelf lighting.

The exemption for the use of mercury in other specialty lamps, which includes JUST Normlicht fluorescent lamps, expires on February 24, 2025. However, due to the rapid decline in the financial viability of manufacturing these lamps, the de facto end of their availability may be much soon than this date. Particularly in industries where the need for high-quality lighting is indispensable in color matching and quality testing, the ban will accelerate the change in lighting technology.

The Digital Light System as a successful alternative

For the company JUST Normlicht, these guidelines and the associated change in technology are not a surprise. JUST has long offered an alternative LED-based solution, which customers increasingly prefer in various application areas. The company, well-known as a manufacturer of equipment for the standardized visual inspection of colors and surfaces, has LED-based solutions that include CIE D50, D65, and UV-A. Outwardly these appear only slightly different from their mercury-containing predecessors. Inside, the underlying LED technology supports products revolutionizing color matching.

Until now, it has not been possible to produce a homogeneous and permanently stable light that meets the CIE requirements for standard illuminants D50 and D65 using light-emitting diodes alone. Colored LEDs are unable to emit uniform, stable light over the long term, and this is exacerbated by the fluctuating quality of LED production. Through a patented, multi-stage calibration process and the selection of the best LEDs and LED drivers designed precisely for the requirements, JUST Normlicht has succeeded in developing an LED-based luminaire that produces a uniform light spectrum for years to come - the Digital Light System (DLS).

JUST Normlicht's DLS solutions can simulate the spectral distribution of standardized D50 and D65 so precisely that the specifications

for visual color assessment according to ISO 3664 and ISO 3668 are not only met, but even substantially exceeded. The combination of multiple-colored LEDs produces an even more harmonious and complete light spectrum than conventional fluorescent lamps. The result is a natural and reproducible standard illuminant D50 and D65 for years to come, without environmentally harmful mercury, and without changes in light color temperature or quality fluctuations between production batches. It is also possible to deactivate the UV component required by the current ISO standard, if necessary. This means that users have an appropriate solution, especially during the transition period from the changeover from the old ISO 3664:2000 to the new ISO 3664:2009 standard.

The directive of the EU Commission and the specifications of the International Standardization Organization (ISO) fulfill the intention of representing the interests of the EU and society; in this case, the ban on mercury-contaminated fluorescent lamps to protect general health and the environment from harmful pollutants. With the DLS solution, both the goals of society and the technological needs of companies are met.

Periodic tube replacement and warm-up phase are eliminated

An important advantage of the DLS solution is, above all, the elimination of regular tube replacements for viewing booths with conventional lamps, mandatory after 2,500 operating hours or after 2 years (whichever comes first). The elimination of tube replacements also eliminates expensive replacement lamp sets and the time wasted on changing them. The Digital Light System provides worry-free proofing and matching for more than 50,000 hours of operation with stable lighting conditions throughout the entire operating life. In addition, the innovative technology of JUST Normlicht promises a uniform, as well as glare- and reflection-free illumination through asymmetrical light distribution using diffusers and Fresnel lenses.

Color Matching and viewing booths with conventional fluorescent lamps required a certain warm-up period after switching on, prior to use. This interferes with the workflow. During the warm-up phase, power consumption is low, but in the case of several viewing booths, combined with the waiting time, and rapidly rising energy prices, the burden is significant. These negative impacts are avoided by switching to DLS-based alternatives. These luminaires have no warm-up phase after switching on. Thus, color appraisals can be started immediately.

Already today, more than 50 % of the luminaires sold by JUST Normlicht are LED-based - and the trend is growing rapidly.

An upgrade that ensures excellent matching conditions based on Just LED technology. Both are achieved by simply replacing the light element of existing viewing stations.

Trend-setting Digital Light System technology that revolutionizes color matching.

Trouble-free technology, change for new investment, retrofit or upgrade

Companies that want to change to JUST Normlicht DLS-based products don't need to purchase an entirely new color inspection station. JUST Normlicht can retrofit existing stations with a DLS upgrade luminaires. This not only saves resources, but also costs, because the DLS Upgrade systems are less expensive than a completely new LED-based station. Customers who have a color inspection station from another manufacturer are also not forced to buy a new station. JUST Normlicht's Digital Light Systems are available as upgrades for third-party color inspection stations as well.

In March 2022 a well-known technology company retrofitted all their GTI luminaires and viewing stations with JUST Normlicht DLS upgrades, demonstrating the flexible, scalable nature of the products. JUST Normlicht thus enables LED-based color matching for a wide range of users. No matter if a new acquisition, retrofit, or upgrade - JUST Normlicht promises with its innovative LED technology a reliable color inspection for all surfaces - plastics, lacquer, paper, ceramics, textiles, metals, powders, and all kinds of colored and fluorescent materials, for virtually any industry or application.