STOUCHLIGHTING®
LED LIGHTING SOLUTIONS

Vapor Tight Lighting

E-Guide

www.stouchlighting.com

Definition

What is a Vapor Tight Light Fixture?

Vapor Tight Light fixtures are sealed and gasketed luminaires that provide general illumination for indoor and outdoor environments where exposure to water, humidity, and dust is likely to occur. Commonly referred to as "Wet Location" fixtures as well, vapor light lighting comes in a variety of sizes and shapes, however they are most commonly found in 2ft to 8ft lengths, with conventional fixtures containing 1 to 3 fluorescent lamps per fixture. These luminaires are usually mounted on ceilings, soffits, walls, or in any other commercial and industrial building or facility where exposure to water or dust is a concern.

Below are a few image examples of Fluorescent Vapor Tight Lighting:

Download Our Lighting Comparison E-Book

Definition

There are several levels of what constitutes a "Vaportight" fixture, consisting mostly of certifications by independent industry organizations. These organizations, such as NEMA, NSF, provide various levels of certification that enable the buyer to determine if a specific fixtures is appropriate for their building or facility, such as "Ingress Protection Rating". For example, a Food Processing plant has very stringent requirements in regards to the conditions that a light fixtures must withstand, compared to a shopping center looking for canopy lighting solutions where indirect exposure to rain and moderately cold temperatures is the only concern.

Below are a few image examples of Fluorescent Vapor Tight Lighting:

Most existing vapor tight fixtures utilize Fluorescent lamps such as **T12, T8, or T5**. Take a look at our **Fluorescent Lighting Application page** to learn more about Fluorescent lighting.

Here are some posts about the differences in conventional lighting compared to LED

- LED versus Fluorescent
- LED versus HID
- LED versus Metal Halide Lights
- LED Versus High Pressure Sodium and Low Pressure Sodium

Common Issues

There are several issues that owners of fluorescent vapor tight fixtures endure. Although the cost of the lamps themselves is very low, maintenance and performance issues often arise over time. Fluorescent lighting is designed to operate for a certain amount of time, each time it is turned on, and thus fluorescent tubes tend to have shorter lifetimes. The more frequently they are activated, the shorter the lifetime of the lamp. Fluorescent lamps are also susceptible to temperature fluctuations and under-perform in colder temperatures or wet/humid environments, which are common locations for vapor tight fixtures.

Energy Costs

It is common for Vapor tight light fixtures to utilize between 1 to 4 lamps per fixture. This means they may require approximately 160 watts to 40 watts for 4ft fixtures and 192 watts for 8ft fixtures. A facility utilizing (100) fluorescent wet location fixtures can easily cost over $7,000 per year in electricity costs alone.

Maintenance Costs

For fluorescent Vapor tight fixtures, lighting maintenance is very dependent on the operational use of the lamps and fixtures. When operated in cold and wet environments, or operating in a scenario where the lamps are turned on and off frequently, lamp life and performance can degrade drastically in a short period of time. Every time a fluorescent lamp is tuned on, it degrades the cathodes (the fluorescent lamp ignition system), resulting in a shorter operational life of the lamp. Lifetimes range from 10,000 to 30,000 hours for typical fluorescent tube, and it can easily cost up to $24,000 over the course of 3 years to maintain the lighting in a space utilizing (100) fluorescent vapor tight fixtures.

Lighting Performance

The performance of fluorescent lights can vary based on the **TYPE** of lamp (T12 Bulb, T8 Bulb, T5 Bulb, etc). **CCT** and **CRI** can also vary depending on the manufacturers of these lamps. Ultimately the performance of a fluorescent light fixture degrades significantly over time, and considering that most fluorescent lamps operate in multi-lamp fixtures, what you are left with is an lighting fixture whose performance is dependent on how it is operated in individual locations, and the ability of individual component (the lamps and ballasts within the actual fixture) to maintain their peak performance. If a single lamp ceases to function properly within a multi-lamp fixture, the performance of the whole fixture is negatively affected.

Benefits of LED

What are the benefits of LED Vapor Tight Light Fixtures?

LED Vapor Tight Lights, also described as Enclosed and Gasketed Fixtures, and Wet Location Fixtures, provide a range of benefits over conventional fluorescent Vapor Tight lighting. As we discussed previously, the way LED's operate provides inherent advantages over fixtures that utilize fluorescent lamps. The quality of LED Wet Location fixtures has increased dramatically over the past few years and as a result, LED Wet Location Fixtures are adaptable to a wide range of wet, humid and dusty lighting enviroments. This adaptability is a key benefit of Enclosed and Gasketed LED Fixtures. Often the biggest question when it comes to LED Vapor Tight Lighting is whether to utilize a LED tube within an existing fixture, or to install a new LED Vapor Tight fixture. Ultimately that decision is driven by the customer, and their expectations and constraints as they pertain to budget and desired performance.

LED Vapor Tight Fixture Example:

Benefits of LED

The three most common benefits of LED Vapor Tight Lighting.

Energy Savings

The wattage of a 4ft LED Vapor Tight Light Fixture typically ranges from 12 watts to 55 watts, resulting in a **40%-60% percent reduction** in energy consumption. The LED Fixture wattage range is so dramatic due to the need to adapt to the many different applications of vapor tight lighting. Since it is common for fluorescent wet location fixtures to utilize between 1 to 4 lamps per fixture, by using LED Vapor Tight Lights in these applications, it is possible to save over **$5,000 per year** in electrical costs for a building or facility with (100) fluorescent vapor tight fixtures.

Maintenance Cost Reduction

As mentioned previously, the way LEDs **GENERATE** light and progress through their functional life results in a much longer operating life compared to conventional fluorescent light fixtures. Another advantage realized from LED Vapor Tight Lights is that they are not negatively affected by cycling (turning on and off), so they are more reliable in scenarios where lighting may be turned on and off frequently. Additionally, Light Emitting Diodes function extremely well in cold environments, and would not be subject to the negative effects on product lifetime experienced by fluorescent lamps in similar applications.

Lighting Performance

Moving on to the way LED Fixtures **DISTRIBUTE** light. As a result of the Multi-Point design, LED Vapor Tight Fixtures often provide a very EVENLY distributed light pattern. The result, in regards to **LED vs Fluorescent**, is a more even foot candle distribution from the LED conversion. In addition to the even distribution of light, LEDs are available in a range of **Correlated Color Temperatures** and as a result provide a range of options to increase the visual perception of "brightness". This aspect is crucial in manufacturing or food processing facilities where employees need high performance task lighting, and for outdoor retail applications where tenants and companies want to ensure that their products and branding are clearly visible.

Next Steps

What are the next steps to improve my Vapor Tight Lighting Application?

The first step is to speak with a LED lighting solutions provider or LED Lighting Company that is **manufacturer neutral.** Why this approach as opposed to the company you may have used for the past several years? Unless that company has a focus on providing LED Light Fixtures and Lamps, it is unlikely that it will have the performance focused mentality that is required to obtain the desired results of a **LED retrofit project** for your wet location applications.

A crucial step in any LED project is understanding that **LED Lighting is NOT a commodity**.

Prior decades consisted of building facility managers and owners evaluating conventional fixture options purely on cost, assuming that all of the industrial light fixtures, commercial lighting fixtures, warehouse lighting fixtures, and food processing light fixtures options in consideration were equal in quality. This is not case with LED Vapor Tight Fixture options.

A solution focused supplier should ask you about your project objectives.

Do you have...

- **Budget constraints?**
- **Return On Investment Criteria?**
- **Energy reduction targets?**
- **Lighting performance requirements?**

The appropriate partner will want to get an understanding of your desired **OUTCOME**, **NOT** just what specific products they can sell you. Not all LED Vapor-Tight fixtures are created equal. There are different levels of value from different manufacturers for different applications, and by working with a company that has the product expertise to recommend a solution that meets your project priorities, you will ultimately achieve the best results.