LED Retrofit Kits In Hazardous Locations

LED RETROFIT KITS IN HAZARDOUS LOCATIONS

LED technology has revolutionized the lighting industry, bringing unprecedented energy efficiency to residential, commercial and industrial buildings. One way to achieve LED's promise of energy efficiency is to install LED retrofit kits. These kits offer simple field installation and will help a facility save 40% or more in energy costs when compared with the traditional light sources they replace, such as incandescent, halogen, and high intensity discharge (HID), while reducing maintenance and carbon emissions. As widely used as LED retrofit kits have become, in one area they are a source of potential danger: hazardous locations. Emerson would like to address the facts and falsehoods surrounding the use of LED retrofit kits in hazardous locations.

WHAT IS AN LED RETROFIT KIT?

In its most basic form, a retrofit kit simply modifies an HID, fluorescent or incandescent lighting fixture into an LED fixture. This kit can consist of a lamp or an LED array with a heat sink. As a lighting solution in a non-hazardous location, a kit gives facility managers the fastest, most cost effective means of replacing outdated lighting sources with the efficiency and performance of LEDs. When installed and used in accordance with the manufacturer's instructions, the kits will not adversely affect the operation of the complete unit.

Which brings us to hazardous locations. There is no LED retrofit kit currently certified for use in Appleton hazardous location fixtures. Installing an LED retrofit kit on an Appleton hazardous location fixture will void the UL certification.

Consider the recent case of a refinery that retrofit a series of Appleton® incandescent V51 fixtures with "UL approved" LED lamps. After installing the retrofit lamps in the fixtures, the plant's energy and maintenance costs are reduced. But did it assure a safe operating environment? The answer is "no" since the retrofit lamps did not comply with the UL certification guidelines for hazardous location fixtures.

For more information:
www.masteringled.com

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UNDERSTANDING UL 1598C STANDARD FOR LED RETROFIT KITS

In 2010, UL added a standard (UL1598C) to allow for the retrofitting of existing fixtures with newer and more energy efficient LED products. Retrofitting an installed luminaire with an appropriate UL Certified Retrofit Kit in an ordinary location does not impact the original luminaire's UL Listing. According to the standard, retrofit kits are supplied with a new product label that insures that a modified product is identified with correct information and identified as a modified, UL approved, LED product.

The UL1598C standard applies to ordinary locations only. To be approved for use in a hazardous location, a retrofit kit must be tested for compliance to UL844, Standard for Luminaires for Use in Hazardous (Classified) Locations, and certified for use with a specific manufacturer and luminaire model. Included in this certification will be the established hazardous location temperature codes (T Codes), which are critical to verifying product suitability for a particular hazardous location environment. These retrofit kits will also be supplied with new labels, citing the specific manufacturer and model that they are certified for, and the T Codes for specific gas and dust classifications.

UL maintains a comprehensive on-line database (at: http://iq.ul.com/ssl) that allows visitors to search for UL-certified luminaire retrofit kits. Searches can be conducted based on various luminaire features, such as electrical ratings, install location (e.g., dry, damp, etc.), and whether the luminaire is dimmable.

Figure 1, to the left, shows the UL Online Certification Directory Search. Currently, the database lists over 700 companies offering UL-certified luminaire retrofit kits, with each company providing detailed information about available retrofit kits and their intended applications.

Figure 1. UL Database

"As Solid State and LED technology continue to progress, many manufactures are looking for ways to install LED components in existing built-environment luminaires. As many of these kits require modification to the existing luminaire, and potentially create risk of fire and shock, UL has created a program for LED Retrofit kits. The newest LED Retrofit kit requirements were published December 31, 2010 as Subject 1598C Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits."

— Underwriters Laboratories

Notice the category name column in Figure 2, to the left, from a keyword search on luminaire retrofit kits. These category names do not include “for use in hazardous locations,” and are therefore not acceptable for use in hazardous applications.

In Figure 3 we see the only three companies that have an LED retrofit solution approved for hazardous locations: Energy Focus Inc, Global Tech LED LLC, and Marine Industrial Lighting Systems LTD. However, none of these retrofit kits are approved for use in Appleton fixtures. In the Category Name it clearly denotes ”for use in hazardous locations.” Also, in the Link to File the “IFUL” indicates the kit is for hazardous locations.

CHECKING HAZARDOUS LOCATION APPROVAL

How can you verify retrofit kit compatibility with a given manufacturer’s luminaire?

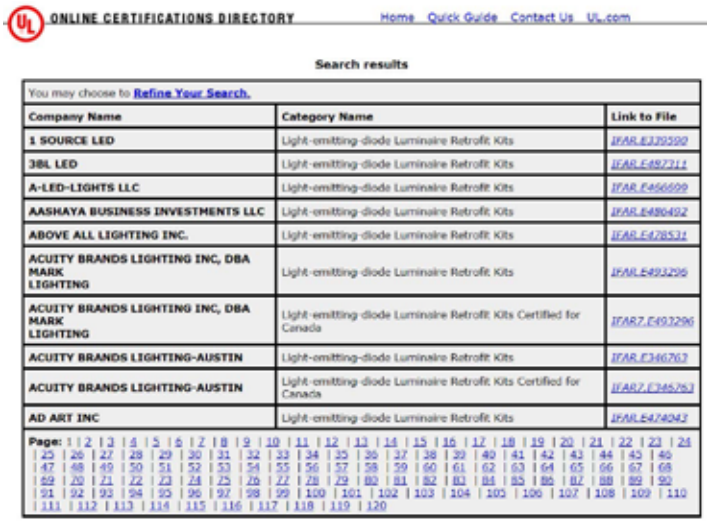
The easiest way to verify that a retrofit kit is suitable for hazardous locations is to conduct a search on the UL On-Line Certification Directory. If the retrofit kit is marked in accordance with the new UL Enhanced Mark requirements it will contain the UL File Number. If the UL marking does not include the File Number, it will be necessary to search through the manufacturers name or catalog number, or obtain the File Number directly from the manufacturer of the retrofit kit.

To our knowledge, at this time there are no other Certification Agencies that offer similar listings for LED retrofit kits. The standard under which the retrofit kit has been evaluated will be identified on the label. If it is for use with Class/Division rated luminaires then the standard should be ANSI/UL 844 for Electric Luminaires for Use in Hazardous Locations. Or, if the retrofit kit is for use with Class-Zone rated luminaires, then the standard should be ANSI/UL 60079 series for Explosive Atmospheres. Finally, you must verify that the retrofit kit is certified for use in the specific luminaire being retrofitted.

EMERSON IS MONITORING THE SITUATION

Emerson actively monitors all of the variables that affect our products. We will continue to keep you informed of code changes and our responses to it. In the meantime, we encourage you to contact your Emerson representative with questions or comments.

Figure 2. UL Database Search Results Without Hazardous Location Kits



ONLINE CERTIFICATIONS DIRECTORY Home Quick Guide Contact Us UL.com

Search results

You may choose to Refine Your Search.

Company Name	Category Name	Link to File
1 SOURCE LED	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E370590
3BL LED	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E487211
A-LED-LIGHTS LLC	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E466699
AASHAYA BUSINESS INVESTMENTS LLC	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E480402
ABOVE ALL LIGHTING INC.	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E478531
ACUITY BRANDS LIGHTING INC, DBA MARK LIGHTING	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E493296
ACUITY BRANDS LIGHTING INC, DBA MARK LIGHTING	Light-emitting-diode Luminaire Retrofit Kits Certified for Canada	IFAR7.E493296
ACUITY BRANDS LIGHTING-AUSTIN	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E346763
ACUITY BRANDS LIGHTING-AUSTIN	Light-emitting-diode Luminaire Retrofit Kits Certified for Canada	IFAR7.E345763
AD ART INC	Light-emitting-diode Luminaire Retrofit Kits	IFAR.E474043

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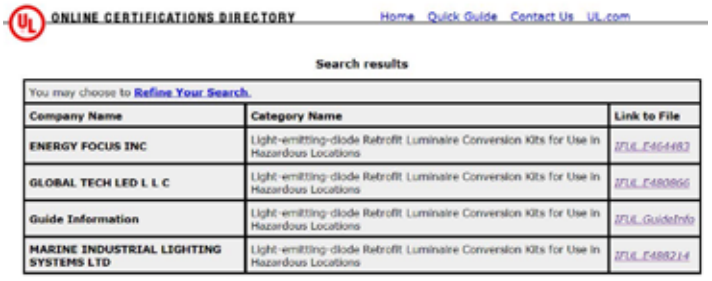
Figure 3. UL Database Search Results With Hazardous Location Kits



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Search results

You may choose to Refine Your Search.

Company Name	Category Name	Link to File
ENERGY FOCUS INC	Light-emitting-diode Retrofit Luminaire Conversion Kits for Use in Hazardous Locations	IFUL.E464483
GLOBAL TECH LED L L C	Light-emitting-diode Retrofit Luminaire Conversion Kits for Use in Hazardous Locations	IFUL.E480866
Guide Information	Light-emitting-diode Retrofit Luminaire Conversion Kits for Use in Hazardous Locations	IFUL.GuideInfo
MARINE INDUSTRIAL LIGHTING SYSTEMS LTD	Light-emitting-diode Retrofit Luminaire Conversion Kits for Use in Hazardous Locations	IFUL.E488214

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