# Explosion Proof Lighting in the Industrial Workplace: Quality Is the Goal (Part I)

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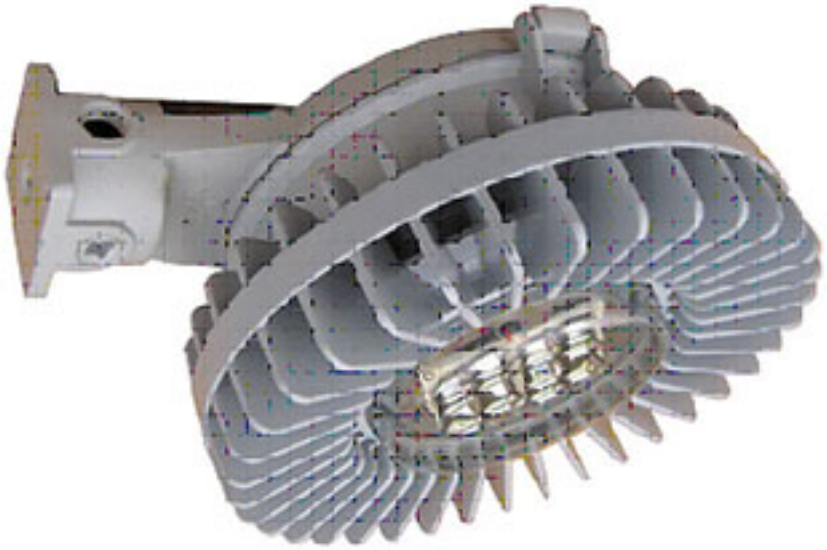


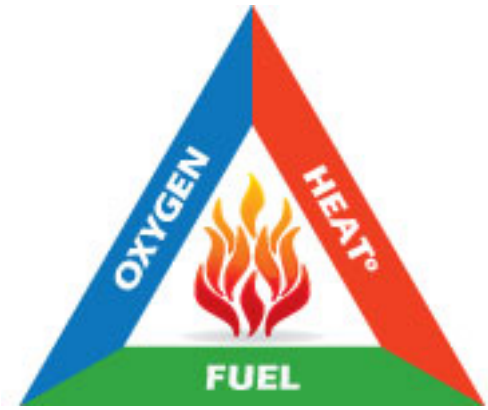
Explosion Proof LED Light Fixture

Industrial lighting systems although performing the same basic role as lighting in any other setting by providing illumination in areas where available light is inadequate, must also address a host of factors that never come into play in common non commercial/industrial settings. Industrial processing and manufacturing facilities in particular present some of the most challenging operating environments due in large part to the materials handled and the byproducts produced.

Whether the facility is involved in the processing of inherently hazardous petrochemicals or relatively benign foodstuffs such as grain and sugar, there exists great potential for accidental ignitions of flammable or explosive materials.

In the case of petrochemical processing, the danger of ignition is fairly obvious. Petrochemicals represent a large group of highly volatile and flammable compounds which can be easily ignited when exposed to sparks or open flame. These petrochemicals can be in liquid or gaseous forms, but in either case represent an extreme fire or explosion danger to those who must work within close proximity to them. An atmosphere saturated with gasoline or solvent vapors for example can literally turn an enclosed area into a potential bomb capable of releasing enough force to destroy the entire building.

The primary factor in preventing ignition in such facilities lies in removing or isolating potential ignition sources. Potential ignition sources are represented by anything which has the ability to produce sparks, flame, or otherwise is capable of producing enough heat to ignite any flammable materials which may be present. The elements needed for combustion are represented by what is commonly modeled as the “fire triangle”.




This triangle has three sides which represent fuel, oxygen, and heat. Remove one side of the triangle and combustion cannot take place. In an industrial environment it is not practical to remove fuel since this is commonly represented by the very materials being processed. Likewise, oxygen represents the ambient atmosphere, and it too cannot be easily removed from the triangle. This leaves heat as the only practical part of the triangle which can be addressed.

In order to remove or isolate sources of potential inadvertent ignition it is first necessary to identify those sources. In an industrial setting, the primary sources of potential ignition are electrical in nature. Electrical sources of potential ignition are numerous and are for all intents impossible to remove from the industrial process. Machinery, equipment, electrical outlets, switches and controls, communications, and lighting are all necessary aspects of the industrial work environment which are powered by electricity, and all represent potential sources of ignition due to their potential for creating heat, sparks, and even open flame.

Of all the potential sources of electrically caused ignitions, lighting is perhaps the most pervasive and commonly encountered. No matter the facility, lighting will play an important role in operations which typically cannot be excluded from the work area. Depending on the size of the facility, the number of light fixtures can easily range into the hundreds, with each and every one representing a potential source of ignition. In order to protect against this potential for ignition, lighting used in locations considered hazardous due to the presence of flammable or explosive materials must be specially designed and certified for use in these areas. Additionally, locations that are deemed hazardous are required by federal and local regulations to utilize electrical equipment designed specifically for these types of areas. This type of lighting falls into the categories of “Explosion Proof” and “Intrinsically Safe,” and plays a critical role in protecting the industrial workplace against catastrophic accidents.

*Larson Electronics’ Magnalight has been manufacturing and supplying high grade lighting solutions including explosion proof and intrinsically safe lighting systems to the industrial and commercial sectors for over 40 years. Magnalight maintains a steady commitment to providing the latest in high quality lighting technology and has serviced federal, state and local governments throughout the United States and Europe as well as the US Secret Service, US State Department and US Military.*

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