Announcement

Explosion-Proof LED Lighting
Global Market Forecast
2019-2029

LED-Based Luminaires (Fittings with Lamps) Used in Explosion-Proof Lighting

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List of Competitors (over 70)
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Report Description

This is the ElectroniCast analysis and forecast of global market consumption of LED-based luminaires (light fixture with lamp/light source) used in explosion-proof lighting.

This market forecast of the American, European/Middle Eastern and African (EMEA), and Asia Pacific (APAC) regional consumption is presented for selected LED-based lamps in selected applications, which require explosion-proof lighting solutions.

For the purposes of this study, ElectroniCast defines explosion-proof lighting luminaires, which are certified in accordance with and compliant to International regulative and safety standard bodies for use in areas where flammable petrochemical vapors and/or pulverized dust exist or have the potential to exist.

The information is presented in easy-to-follow illustrations and text. The LED explosion-proof lighting market environment is discussed. LED lighting technology overviews, trends and analysis are presented. List and website addresses of over 70-competitors in the Explosion-Proof LED Luminaire marketplace.

Working environments that contain explosive gases or dust are extremely volatile environments. All it takes is a single spark to cause an explosion. A variety of lights are available that are considered explosion proof lighting because they prevent any possible ignition sources from being exposed to the air.

Lights are a common cause of explosion ignition. Low energy light fittings can help to prevent explosions because they do not produce enough energy to ignite source materials. This intrinsically safe equipment, though, can...
sometimes provide low quality lighting.
In the process of this market research project, in addition to interviewing existing customers and potential customers of LED-based explosion-proof lighting, ElectroniCast Consultants also studied lighting manufactures with various ranges of hazardous area lighting products, which are suited to use in high-risk areas. The lighting fixtures are designed for situations where explosive gases and dusts are found, providing suitable lighting without enabling a risk of explosion.

The light emitting diode (LED) market, despite exciting innovative devices driven by technological advances and ecological/energy-saving concerns, still face challenges in overcoming performance/price limitations and in attracting widespread consumption.

This report, by ElectroniCast Consultants, provides the research findings of our study of the global consumption of Light Emitting Diode Fixtures and Lamps, which are Explosion-Proof Lighting applications.

**LED Level Quantified in the ElectroniCast Study**

Below, are five levels (or “food chain”) pertaining to the LED marketplace. For the purposes of this ElectroniCast study, we quantify and provide a market forecast for **Level 5**.

- Level 1 - The bare chip or die
- Level 2 - The packaged LED chip
- Level 3 – LED array, optics, boards (PCB), heat sink, driver, other components
- Level 4 – Lamp/Light source

**Level 5 – Luminaires (light fixture, initial lamp/light source, inclusive fittings/brackets)**

The following regions are quantified in this study report:

- America (North, Central and South America)
- EMEA (Europe, Middle East and Africa)
- APAC (Asia Pacific)

**10-Year Market Forecast**

This report provides the market review and forecast (2019-2029) by the following functions:

- Consumption Value (US$)
- Quantity (number/units) – (Million)
- Average Selling Prices ($, each)
During the market research process, ElectroniCast analysts perform interviews with authoritative and representative individuals in the LED and lighting industry, plus – R&D and industrial/factory/manufacturing, from the standpoint of both suppliers and users of explosion-proof and other harsh environment LED lighting products.

**Market Forecast Product Categories**  This market forecast of the worldwide consumption is presented for four (4) major luminaire-type categories, as shown below:

- Spot, Flood and General-Area
- Linear: Tube and String/Strip
- Small portable-type: Flash lights, wearable headlamp
- Specialty, Panel and Miscellaneous

**Market Forecast Sub-Application Categories**  This market forecast of the worldwide consumption for LED Luminaires used in explosive-proof lighting is presented for four (4) major end-user group (sub-application) categories, as shown below:

- Power Plants, Pumping Stations, Substations
- Military Bases, Airports, Other Transportation Facilities
- Gas (service) Stations, Paint-Spray Booths, Other Commercial/Industrial, Other/Non-Specific
- Oil Fields, Oil Refineries, Offshore Oil Platforms, Oil Tanks, Tunnels, Wharf, Mining and Other Similar

**Market Dynamics**  The study process by ElectroniCast Consultants takes into account the following points:

- Standards (including general regulations & standards, environmental issues, etc.)
- Policies and schemes for promoting the penetration of LED lighting
- Industry trends in LED lighting fixtures
- Distribution/Sales Channel
- Competitive environment is considered / Intellectual property and patents

Since the light output of individual light-emitting diodes (LEDs) is small compared to incandescent and compact fluorescent lamps, multiple diodes are often used together. With continuing improvement of diode technology and packaging technology (for example: Remote Phosphor), high power LEDs with higher lumen output is enabling the replacement of other lamp technology with LED lamps.
Luminaires are lighting fixtures complete with the light source or lamp, the reflector for directing the light, an aperture (with or without a lens), the outer shell or housing for lamp alignment and protection, an electrical ballast (if required), and connection to a power source, and usually a socket to hold the lamp and allow for its replacement. Explosion-proof LED lighting solutions are designed to be extremely resistant to dust, humidity, chemicals, mechanical forces and extreme environmental temperatures.

Explosion-proof LED lighting solutions offer improved vision and safety in industrial areas where the danger of explosion is higher due to the nature of the activity. Explosion-proof products are used on a large scale in mines, oil fields and also in various industrial and commercial, military, and other applications where highly inflammable and explosive substances are present.

The risk of explosion in some work environments requires the need to use specific solutions. Specially designed explosion proof LED lighting provides is often underestimated. Mixtures of gas, air or dust can actually cause life-threatening explosions and cause extensive harm to your employees and the plant. The incorrect assumption is often made that the danger of explosion is more or less exclusive to the chemical industry. Dust from timber, animal feed, food-stuffs or plastics can also cause an explosion. Unsafe lighting is one of the most common potential sources of ignition.

Sample list of typical applications:

- Petroleum refineries and gasoline storage areas
- Aircraft hangars and fuel servicing areas
- Grain elevators, flour and feed mills
- Producers of chemicals, plastics, medicines and fireworks
- Coal preparation plants
- Textile mills, cotton gins; Saw mills and lumber yards
- Motion picture sets
- Many Others

**Market Research Methodology**

Market analysis and technology forecasting are complex tasks. Any predictions of the shape and trends of technology and economic movement start from the notion that the germ of what will be important tomorrow is present, although smaller or larger or in a different form, in our environment today. However, taking as a basis for a prediction the assumptions of current, conventional belief creates a set of preconceived notions that can lead to serious mistakes. ElectroniCast, instead, looks to the basic driving forces.

**Information Base**

This study is based on analysis of information obtained continually over the past several years, but updated through the beginning of November 2019. During this period, ElectroniCast analysts performed interviews with authoritative and representative individuals in the LED manufacturing (materials, integrated
circuits/circuit boards, packaging, devices, connectors/pins/end-caps, plastic, aluminum and glass manufacturers, associated parts/pieces, fittings/fixtures) and military/aerospace, harsh environment concerns, painting (paint spray booths), oil/gas and mining, power generation/nuclear, industrial/manufacturing, mass transit authorities, transportation/infrastructure, R&D, gas stations/service stations (lighting distributors), government, and other. The interviews were conducted principally with:

- Engineers, marketing personnel and management at manufacturers of LEDs (chips, components, lamps and fixtures) as well as other technologies
- Design group leaders, engineers, marketing personnel and market planners at major users and potential users of LEDs
- Other industry experts, including those focused on standards activities, trade associations, and investments

The interviews covered issues of technology, R&D support, pricing, contract size, reliability, documentation, installation/maintenance crafts, standards, supplier competition and other topics. Customers and distributors were interviewed, to obtain their estimates of quantities received and average prices paid. Customer estimates of historical and expected near term future growth of their application are obtained. Their views of use of new technology products were obtained.

The analyst then considered customer expectations of near-term growth in their application, plus forecasted economic payback of investment, technology trends and changes in government regulations and funding/tax-break legislation/rules in each geographical region, to derive estimated growth rates of quantity and price of each product subset in each application. These forecasted growth rates are combined with the estimated baseline data to obtain the long-range forecasts at the lowest detailed level of each product and application.

A full review of published information (secondary research) was also performed to supplement information obtained through primary research (interviews). The following sources were reviewed:

- Professional technical journals and papers
- Trade press articles
- Technical conference proceedings
- Product literature
- Company profile and financial information
- Additional information based on previous ElectroniCast market studies
- Personal knowledge of the research team

In analyzing and forecasting the complexities of worldwide markets for light emitting diode products, it is essential that the market research team have a good and a deep understanding of the technology and of the industry. ElectroniCast consultants who participated in this report were qualified.
**Bottom-up Methodology**

ElectroniCast forecasts, as illustrated in the forecast data structure, are developed initially at the lowest detail level, then summed to successively higher levels. The background market research focuses on the amount of each type of product used in each application in the base year (this year: 2019), and the prices paid at the first transaction from the manufacturer. This forms the base year data.

ElectroniCast analysts then forecast the growth rates in component quantity use in each application, along with price trends, based on competitive, economic and technology forecast trends, and apply these to derive long term forecasts at the lowest application levels. The usage growth rate forecasts depend heavily on analysis of overall end user trends toward equipment usage and economic payback.

**About ElectroniCast**

ElectroniCast, founded in 1981, specializes in forecasting technology and global market trends in optical fiber communication components and devices, as well providing market data on light emitting diodes used in lighting.

As an independent consultancy we offer multi-client and custom market research studies to the world's leading companies based on comprehensive, in-depth analysis of quantitative and qualitative factors. This includes technology forecasting, markets and applications forecasting, strategic planning, competitive analysis, customer-satisfaction surveys and marketing/sales consultation. ElectroniCast, founded as a technology-based independent consulting firm, meets the information needs of the investment community, industry planners and related suppliers.

**Proprietary Statement**

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ElectroniCast, in addition to multiple-client programs, conducts proprietary custom studies for single clients in all areas of management planning and interest. Other independent consultants, therefore, are considered directly competitive. ElectroniCast proprietary information may not be provided to such consultants without written permission from ElectroniCast Consultants.
Table of Contents

1. Executive Summary
   1.1 Global Overview

1.2 Barriers to Growth in the United States Military/Government Sector

2. LED-based Luminaire in Explosion Proof Lighting Market Forecast by Product Type
   2.1 Overview

2.2 Spot, Flood and General-Area LED Luminaire
   2.3 Linear Tube, String/Strip LED Luminaire

2.4 LED-based Flashlights and Wearable Headlamps (Luminaires)
   2.5 LED-based Specialty, Panel and Miscellaneous Luminaires

3. LED-based Luminaire in Explosion Proof Lighting Market Forecast by Application
   Oil Fields, Oil Refineries, Offshore Oil Platforms, Oil Tanks, Tunnels, Wharf, Mining and Other Similar
   Power Plants, Pumping Stations, Substations
   Military Bases, Airports, Other Transportation Facilities
   Gas Stations, Paint-Spray Booths, Other Commercial/Industrial, Other/Non-Specific

4. ElectroniCast Market Research Methodology
5. ElectroniCast Market Forecast Data Base Explanation

List of Tables

1.1.1 Selected Competitors: Explosion-Proof Lighting (over 70 companies listed)
1.1.2 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region ($Million)
1.1.3 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Application ($Million)
1.1.4 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Product Type ($Million)
1.1.5 ANSI/NFPA Areas Description
1.1.6 Typical Luminous Efficiencies for Traditional and LED Sources
2.1.1 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Product Type ($Million)
2.1.2 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Product Type (Qty, Million)
2.1.3 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region ($Million)
2.1.4 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region (Qty)
2.2.1 Spot, Flood, General-Area LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region ($Million)
2.2.2 Spot, Flood, General-Area LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region (Qty)
2.2.3 Spot, Flood, General-Area LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region (ASP $)
2.3.1 Linear Tube LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region ($Million)
2.3.2 Linear Tube LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region (Qty)
2.3.3 Linear Tube LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region (ASP $)
2.3.4 Calculation of the Cost of Manufacturing Facility Downtime
2.3.5 Comparison of Lighting Technologies
2.3.6 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region ($Million)
2.3.7 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Region (Quantity)
2.3.8 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Application (ASP $)
2.3.9 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Application ($Million)
2.3.10 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Application (Quantity)
2.3.11 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Application (ASP $)
2.3.12 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Application ($Million)
2.3.13 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Application (Quantity)
2.3.14 LED Luminaire in Explosion Proof Lighting Global Consumption Forecast, By Application (ASP $)
2.3.15 List of Countries in the APAC Region

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List of Figures

1.1.1 Product Life Cycle (PLC)
1.1.2 Paint Booth Lighting
1.1.3 Explosion Proof LED Drop-Light/Trouble Light
1.1.4 Explosion Proof LED Signal/Warning Lights
1.1.5 Explosion Proof LED Lighting
1.1.6 LED Lamp/Fixture for Industrial and Hazardous Environments
2.1.1 Hazardous Location Lighting (Class 1, Division 2) 300 Watts - 60 LEDS - Tripod Mount
2.2.1 General Service LED-based Lamp (A-Style Bulb Category)
2.2.2 Flame-Proof Explosion- Proof Luminaries
2.2.3 Low Profile General Area Lamp
2.2.4 LED Explosion Proof General-Area Light
2.2.5 LED Explosion Proof Gas Station Lights
2.3.1 LED-Based Linear Tube Lamp DIP Technology with Metal End-Caps (T8 Tube)
2.3.2 LED-Based Linear Tube Lamp SMD Technology with Metal End-Caps (T8 Tube)
2.3.3 LED-Based Linear Lamp Chip-on-Board (COB) Technology (Linear Lamp)
2.3.4 LED Linear Tubes in Explosion-Proof Fixtures
2.3.5 Portable Explosion Proof LED Linear Tube Lighting
2.4.1 Performance Intrinsic Helmet Light
2.4.2 Explosion Proof LED Flashlight
2.4.3 Explosion Proof LED Flashlight
2.4.4 Cordless, Water-Proof, Explosion-Proof Miners Headlamp
2.4.5 Street With No Illumination
2.4.6 Street Illuminated with HID Flashlight
2.4.7 Chromaticity Limits for NVIS Colors, NVIS White and NVIS Blue
2.4.8 NVIS Response Curves
2.4.9 NVIS Colors Allowed in a “Class A” Cockpit
2.4.10 NVIS Colors: Type I Class B
2.4.11 NVIS Green A Flip Filter Hood for Flashlight
2.5.1 Flood Light – Specialty Lighting
2.5.2 Mine Explosion Proof Outdoor Light
2.5.3 LED Luminaire for Hazardous Areas
2.5.4 LED Luminaire for Mining and Heavy Industrial Applications
3.1 Spray-Paint Booths/Facilities
3.2 Number of Nuclear Reactors – Worldwide
3.3 LED Lighting Fixture – Power Plant Installation
3.4 Explosion Proof LED Lighting for Oil Drilling Rigs, Oil, Gas Production Platforms
3.5 Explosion Proof LED Lighting in a Tunnel
3.6 18W 36W LED Explosion Proof Lamp
3.7 Explosion Proof Enclosure
3.8 Factory-sealed LED Luminaire
3.9 Explosion Proof LED Light for Offshore Structures
3.10 LED-Based Explosion Proof Main Marine Lantern
3.11 Offshore Platform
4.1 ElectroniCast Market Research & Forecasting Methodology

Addendum
Excel – ElectroniCast Global Market Forecast Worksheets and Competitor List/Websites