Lantech Communication Global, Inc.

Pioneering Industrial and IP Networks

White Paper

UL C1D2 & DNV

2011, Lantech communication Global, Inc. All rights Reserved.
The revise authority rights of product specifications belong to Lantech communications Global Inc.
www.lactechcom.tw; www.lactechcom.com; wwwlantech.eu; www.lantech.kr

Typical Oil, Gas & Mining applications that require UL Class I Division II certification:

Nowadays Industrial Ethernet switches and Industrial Ethernet based devices are more suitable for their environments and applications; they are designed to meet the riggers of the task at hand which in some cases includes a harsh environment like Oil, Gas and Mining industry.

Some of the facilities that would utilize equipment that would fall into this application environment would be Oil Refineries, Oil Platforms and Petro-Chemical Plants these types of facilities would have a need to install Industrial Ethernet based switches and devices for process control and monitoring. These types of facilities require devices that are certified to meet the harsh environments they produce.

For example, in the Petro-Chemical industry, controlling and monitoring site conditions and dynamic changes in those conditions are mission critical. The devices and more importantly the network which is made up of Ethernet switches, Media Convertors, Routers, Gateways and Fiber Optic cables are combined to allow these devices to communicate these changes; the combined devices and components must be of a mission critical nature as well and it must be able to withstand the rigorous challenges of its surroundings. Thus the need and the absolute promise of the "UL Class I Division II" certification of the network equipment or the Industrial Ethernet based switches and devices. At this level of severity, the risk for loss of life and property is at its highest and this certified equipment provides reliable, secure and rapid data transmission, so that the administrators controlling and monitoring the plant's activities can detect any abnormal situations quickly enough for them to take the necessary actions to prevent an accident or a disaster.

In order to overcome these hazardous environments, the relative device should pass a variety of testing and certification. These devices face some pretty tough conditions. While striving to maintain high safety standards and efficient operating costs, companies demand rugged protection for the critical equipment that controls power generation and distribution. These test and certifications including the extreme temperature, IP rating and three kinds of stability test (free-fall, vibration, shock), with a certain degree of resistance to shock, vibration-resistant properties that ensure the normal functionality under harsh environments. With "UL Class I Division II" approval, Ethernet switch and devices can be deployed in hazardous or explosive condition without increasing the risk of explosion or accelerating the damage if an accident occurs.

2011, Lantech communication Global, Inc. All rights Reserved.
The revise authority rights of product specifications belong to Lantech communications Global Inc.
www.lactechcom.tw; www.lactechcom.com; wwwlantech.eu; www.lantech.kr

UL Class I Division II & DNV

Several harsh environment certifications have been established by third party testing agencies, one such certification is “UL Class I Division II” this is one of the most widely used by the most trusted names of the testing agencies. Underwriters Laboratories (UL) is one of the testing agencies that certifies these types of systems as safe for use in the highest level of hazardous locations; these types of locations would include but not be limited to potentially explosive location or location where all electronic circuits and / or devices must be intrinsically safe. An Intrinsically Safe Circuit is "A circuit in which any spark or thermal effect is ***incapable of causing ignition*** of a mixture of flammable or combustible material in air under prescribed test conditions." (See UL 913)

DNV Certification for Maritime Oil & Gas

Another such testing agency similar to UL is DNV (Det Norske Veritas), DNV is a classification society organized as a foundation, with the objective of *"Safeguarding life, property, and the maritime environment*". DNV’s approval process entails verification of a set of requirements and processes; these requirements and processes encompass the design, construction, and operation of devices used on-board ships and offshore units. DNV has four levels-A, B, C, and D of classification of their tests. These would range from the most basic to the most critical and separate tests are conducted for other types of conditions (temperature, humidity, vibration, etc.). The use of Ethernet based devices combined with a fiber optic back bone make it much easier for the control center to coordinate and control data from many different systems over a common communication platform. Any such network in use aboard a offshore platform or maritime vessel, would be subject to have passed the DNV’s strict testing procedures and processes; this would include all the Ethernet based devices proving the worthiness in the Maritime Oil & Gas Industry. Being one of the world's leading classification societies, DNV’s certification are recognized globally as an indication that a product is fit for use in the well-defined classes of marine environments and applications.

2011, Lantech communication Global, Inc. All rights Reserved.
The revise authority rights of product specifications belong to Lantech communications Global Inc.
www.lactechcom.tw; www.lactechcom.com; wwwlantech.eu; www.lantech.kr

Typical DNV Applications:

Ethernet devices can be used to solve communications problems for a number of marine applications. The utilization of Ethernet network aboard maritime vessels will benefit all types of vessels from battleships and ocean liners; which when fully manned could be home to several thousand soldiers or passengers. Energy related applications, such as offshore drilling platforms, tide-power generation systems, and offshore windmill farms, could also benefit from using Ethernet.

For example, offshore platforms are common DNV application. Generally, it is necessary to set up a sophisticated automated monitoring system to ensure that all systems work properly. The deployment of an IP network for the monitoring and control system makes it easier to establish a platform-wide system that connects all the monitoring and controls systems onto one common network platform. All the communication and monitoring devices used on an offshore platform including the Industrial Ethernet based switches and devices must be capable of withstanding critical ocean environments, including the effects of moisture, vibration, shock, and temperature extremes.

Product Design for UL Class I Division II &DNV

Ethernet switches and devices that pass “UL Class I Division II” testing or the requirements’ of the DNV need to be able to withstand inclement weather, environmental and equipment generated temperatures, shock and vibrations, dust and dust particulates. Here are some of the details with regards to the above mentioned requirements for certification; all these devices must be designed to demonstrate to the testing agencies that they meet or exceed these requirements while maintaining an optimal operating standard: These requirements include but are not limited to intrinsically safe operations, extreme storage temperatures, Wide operating temperature ranging from -40°C to 75°C, Vibration and shock tests (free fall, mounting surface vibrations, etc.), IP-54 or IP-67 grade for absolute-protection for dust-proof and water-resistant enclosures.

Summary

As mentioned in the previous section, UL “Class I Division II” safety certification makes that switch or device with this certification your best choice for intrinsically safe operating areas or environments.

DNV certification will ensure that the switches and devices have met the requirements’ of design, constructions and rigorous testing to be certified for maritime use in all maritime vessels or offshore platforms.

2011, Lantech communication Global, Inc. All rights Reserved.
The revise authority rights of product specifications belong to Lantech communications Global Inc.
www.lactechcom.tw; www.lactechcom.com; wwwlantech.eu; www.lantech.kr

Lantech Product passing UL Class I Division II			
Model Name	Description	Model Name	Description
 **IES-0005T**	5 10/100TX Slim Type Industrial Switch (Relay Contact with Alarm System)	 **IGS-0008T**	8 10/100/1000T Industrial Switch
 **IES-0008T**	8 10/100TX Slim Type Industrial Switch	 **IGC-0101GB**	1 10/100/1000T to Mini-GBIC Industrial Switch Converter
 **IEC-0101FT**	1 10/100TX to 100M-FX Slim Type Converter	 **IGS-2206C**	6-Port 10/100/1000T + 2-Port 10/100/1000T/Dual Speed SFP Combo w/X-Ring Managed Industrial Switch
 **IES-2208F**	8 10/100TX + 2 100FX w/ Pro-Ring Managed Industrial Switch	 **IGS-2404-E**	4 10/100/1000T + 4 100/1000 Dual Speed SFP Pro-Ring Managed Industrial Switch
 **IES-2307C**	7-Port 10/100TX + 3-Port 10/100/1000T with 100/1000M SFP Combo Industrial Managed Switch with DIDO	 **IPES-0008-4**	8 10/100TX with 4 PoE Injectors 24~48VDC Industrial Switch
 **IES-2216C**	16 10/100TX + 2 10/100/1000T/Dual Speed SFP Combo w/Pro-Ring Managed Industrial Switch		

2011, Lantech communication Global, Inc. All rights Reserved.
The revise authority rights of product specifications belong to Lantech communications Global Inc.
www.lactechcom.tw; www.lactechcom.com; wwwlantech.eu; www.lantech.kr