



LNG Facility Application Guide

X3300 Protect•ir Multi-spectrum IR Flame Detector

This paper will review the advantages and benefits the model X3300 Protect•ir multi-spectrum infrared (IR) flame detector offers for the Liquefied Natural Gas (LNG) application.

The X3300 was designed specifically for installation in applications that have normally high levels of background IR radiation, yet still require fast fire detection. The X3300 is ideal for the protection of outdoor/indoor cryogenic liquefaction, storage, and vaporization applications, or any application that has background infrared presence from turbine engines, motors, compressors, furnaces, and high levels of airborne contaminants.

LNG facility fires typically include LNG or methane fires caused by pipe, valve, pump, or vaporizer leaks. Nearby ignition sources may include turbine compressors, electric motors, or gas burners. Some applications require a flame detector that can respond in milliseconds, and some require a flame detector that can respond to a limited intensity fire likely to not generate a significant radiant energy change upon ignition.

Most optical IR flame detectors available today process fire signals using a standard measurement of IR energy threshold and flicker rate, or simple ratio measurements. This precludes their use in most LNG applications, since constant or intermittent IR background radiation is a common occurrence and will cause these detectors to become desensitized, or even incapable of detecting the fire. The X3300 Protect•ir's patented sensor sensitivity wave lengths and processing algorithms guarantee fire detection regardless of the normal background level of IR radiation within the area. The advanced signal processing algorithms of the X3300 provides a detector that can detect more fire types faster, and at substantially longer distances, than any detector available on the market today.

The X3300 is capable of responding to a 1m. methane plume fire in under 0.5 seconds at 50 feet, and 1x1 foot methanol pan fire out to 150 feet distance. In addition, a variety of other flammable liquid and gas fires can be detected by X3300 at ranges unequaled by any other technology.

Without a built-in test of the flame detector's optical integrity, it would be impossible for the user to always know that detection capabilities are not compromised by possible settling of blinding compounds on the detector optical surface. The X3300 offers an important advantage in the paint line application due to the design of the optics test system. By using a calibrated optical integrity test, the device is able to differentiate between sensitivity loss due to optical contamination, or a general fault or failure. The X3300 provides different current signal output levels to differentiate these fault conditions. The X3300 air shield should always be used within paint line applications, and offers the industries best performing airshield assembly available. The long-term maintenance benefit of a properly designed air shield accessory is that the device essentially pays for itself many times over due to reduced cleaning and maintenance costs. Clean, compressed instrument air is all that's required to ensure proper airshield operation and complete detector optics protection. In addition, laser-aiming devices and test equipment are available to further confirm proper detector operation.

Reliable, high performance fire detection without nuisance alarms is a requirement of LNG facility fire detection systems. The X3300 Protect•ir offers a new level of detection for this application.