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Guide for Application of Flame Detection

National Electrical Manufacturers Association

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Foreword

This application guide was developed by NEMA's Fire, Life Safety, Security, and Emergency Communications Group (NEMA 3SB). Content is obtained by industry subject matter experts and leading manufacturers of flame-detection systems and devices.

About NEMA 3SB
The objective of NEMA 3SB is to serve as the primary source of technical, training, and educational materials essential for the specification, application, and manufacture of reliable life safety products, as well as their installation, performance, and inspection.

NEMA 3SB currently represents 21 manufacturers in support of the automatic fire detection and alarm industry and the health care communications industry. Fire-detection and alarm products include life safety/fire alarm systems and devices that provide early warning of an impending or actual fire or gaseous hazard. The products detect, notify, and initiate control functions in case of hazard to life or property. For more information on life safety, go to www.lifefiresafety.org.

About the National Electrical Manufacturers Association (NEMA)
Founded in 1926 and headquartered near Washington, D.C., NEMA represents nearly 400 member companies that manufacture products used in the generation, transmission and distribution, control, and end use of electricity. These products are used in utility, industrial, commercial, institutional, and residential applications. The association's Medical Imaging & Technology Alliance (MITA) Division represents manufacturers of cutting-edge medical diagnostic imaging equipment, including MRI, CT, x-ray, and ultrasound products. Worldwide sales of NEMA-scope products exceed $140 billion. In addition to its headquarters in Rosslyn, Virginia, NEMA has offices in Beijing and Mexico City.

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Senior Technical Director, Operations
National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

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GENERAL

1.1 SCOPE

This Flame Detection Application Guide is designed to provide information concerning the proper use of flame-detection systems. It covers the major technologies used for flame detection, application, selection, installation, and testing. These systems are used in conjunction with fire alarm and fire suppression systems that align with applicable NFPA codes and standards.

1.2 PURPOSE

This guide will be of value for fire life safety individuals who design, install, and service flame-detection systems, as well as plan reviewers and code enforcement agencies.

This document is based on industry expertise and many years of experience. It is intended for use only as a technical guide. Applicable codes and standards, as well as directives of the authorities having jurisdiction (AHJs) must be followed.

Offshore oil and gas platforms, like the one depicted above, are one of the largest market segments for optical flame detectors.

1.3 ABBREVIATIONS AND DEFINITIONS

The following abbreviations and definitions appear in NEMA SB 23-2016:

Abbreviation	Description
AHJ	Authority having jurisdiction
ANSI	American National Standards Institute, Inc.
ANSI FM 3260	Factory Mutual Standard for Flame Detection
CCTV	Closed-circuit television
CMOS	Complementary metal oxide semiconductor
COPM	Continuous optical path monitoring
CO_2	Carbon dioxide