



**HELLENIC GAS
TRANSMISSION
SYSTEM OPERATOR**

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**TECHNICAL JOB
SPECIFICATION**

OA-4

REVISION 1

DATE 22/09/2011

LIQUEFIED NATURAL GAS PLANTS

**GENERAL SPECIFICATION FOR FIRE
DETECTORS**

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QUALITY ASSURANCE PAGE

CHANGES LOG

- Changes in para 1.4
- Changes in para 1.5
- Changes in para 2.1

REVISIONS LOG

Rev. No	Rev. Date	REASON FOR CHANGE	Made By	Approved By
1	22-09-2011	INTERNAL DESFA COMMENTS	PQ DPT	VG
0	03-06-2011	FIRST ISSUE	PQ DPT	VG

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REFERENCE DOCUMENTS

ELOT EN 60079-26

[Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga]

EU DIRECTIVES

LVD 2006/95/EC

[Harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits]

EMC 2004/108/EC

[Approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC EMC]

ATEX 94/9/EC

[Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres]

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1.0 GENERAL

1.1 The fire detectors are required for continuous operation at Revithoussa LNG Terminal, Greece. The operator is DESFA.

1.2 ENVIRONMENTAL CONDITIONS (FIELD)

Maximum Temperature in Shade	47°C
Maximum Temperature in Sun	60°C
Minimum Temperature in Shade	-5°C
Humidity	Up to 99% at Low Temperature

The atmosphere is dusty, humid, saliferous marine environment.

1.3 Carbon and ferritic alloy steel surfaces shall be protected to suit a marine environment.

1.4 ELECTRICAL AREA CLASSIFICATION

1 Field equipment will be located in a hazardous area, classified as Zone 1 Gas Group IIB, Temperature Class T3 in accordance with **ELOT EN 60079-26**. All equipment shall be certified and a certificate included in Vendor's bid.
All field equipment shall have cable entry threaded N.P.T.

1.5 ELECTRICAL POWER SUPPLIES

1 230Volt AC uninterrupted Power Supply (+10V). 50 Hz (± 1.5 Hz) harmonic distortion to be no greater than 5% at 50 Hz.

2.0 DESIGN

2.1 MANUAL ACTIVATION CONTROL (MAC)

1 MAC body shall be made of stainless steel for outdoor and glass reinforced polyester for indoor.
Manual break glass units shall be mounted around the protected area and on walk ways.

The output of these manual break glass units shall be a switch with the following action:

- i) contact open when operating normally
- ii) contact to closed when alarm is raised.

1 The units shall be weatherproof to IP65 and shall be suitable for installation in hazardous area specified in para. 1.4.
The last unit in any circuit shall be fitted with an end of line resistor for fault monitoring purposes.

2.2 FLAME DETECTORS

The flame detectors shall be capable of detecting ultra – violet radiation in the wave length range of 1850 to 2450 angstrom units from LNG, propane or butane flame.

The detector shall be sensitive of detecting a LNG flame size of 0.18m² from a distance of 50 meters.

The flame detectors shall have built in optical integrity checking feature. The detector shall provide output in the event of a fire or a fault condition arising.

Design of the Detector / Controllers can be either of the following types:

- i) Design of the Detector / Controller integrated unit for field mounting requiring a power supply and having two output contacts for connection to the Remote Fire Alarm Module of the Fire Panel. One contact is closed on Flame Detected and one contact is opened for fault or malfunction of the internal circuitry.
- ii) Detector field mounted containing UV source and a remote UV Detector Module which is part of the Fire and Gas Panel.

Note type i) should be used if distance between detector and Fire Panel is greater than 300 meters.

2.3 LNG SPILL DETECTORS

The LNG spill detector shall comprise of continuous strip cold detectors for LNG spill detection.

LNG spill detectors shall be suitable for the hazardous area as specified in para.1 and shall be set to operate at -70°C. The sensor shall be connected to the junction box by a suitable length of 316SS tube.

LNG spill detector output shall be a contact that is normally open and closed when LNG spill is detected, contact rating 0.2 AMP at 50 VDC.

2.4 CONTROL ROOM EQUIPMENT

The Fire Panel located in the control room shall contain the following modules for interfacing with Detectors specified above.

- 1) Fire Alarm module which connects to Detectors having contacts located in the field.
 - i.e. Manual Break Glass units
 - Type I UV detectors
 - LNG spill detectors

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- 2) UV Detector Control / Alarm Modules for connection to Type ii u/v detectors.

FIRE ALARM MODULE

Monitors field devices for their status, the module shall have outputs for main and repeat communication together with outputs for executive functions. The system shall have a self test feature and front of panel indication of fire fault and inhibition. The front of panel shall also have inhibit and reset switches / pushbuttons.

UV DETECTOR CONTROLLER MODULE

Continuously monitors and checks the optical path and electronic circuitry between MODULE and DETECTOR. Display, Alarms and pushbuttons shall be the same as for Fire Alarm Module.