MICROPACK

where detection means protection

Engineering & Consultancy

True Flame Detection Technology
Hazard detection solutions for the oil industry.

Technologically advanced features, unrivalled in the marketplace.
MICROPACK are globally recognised specialists in Fire and Gas detection engineering and consultancy, working throughout the UK and abroad.

We offer solutions...

■ Solutions for the high hazard industries
■ Over 25 years experience, with local support in major countries
■ A long standing reputation as experts in hazard detection
■ Market leader in Fire and Gas Mapping Studies
■ Experts in CFD - Computational Fluid Dynamics
■ Fire and Gas Detection Training
■ On-site service and maintenance
■ Commissioning Services
■ Installation and Supervision
■ 24/7 Customer Support
■ Availability/Reliability Studies
■ Maintenance Optimisation
■ EPIC Services
■ Project Management

For over 25 years, MICROPACK has been actively working with the oil & gas industry and today are recognised as specialists in Fire & Gas hazard detection technologies. Early 1980’s: In the early eighties MICROPACK was involved in offshore process control and safety systems. This encompassed development, commissioning and support services to major clients and installations such as the Chevron Ninian field.

Late 1980’s: In the late eighties, MICROPACK pioneered the field in optical fire and gas detection technologies. As a result MICROPACK has been involved in the development of many of the leading detection technologies available on the market today.

MICROPACK is also experienced in fire research work and the effects of offshore environmental conditions on optical detection methods. This work is what led to MICROPACK’s development of a range of fire and gas mapping tools to measure the performance of fire and gas detection systems. We are considered a market leader in this field.

This experience led MICROPACK to apply its unique specialist knowledge and expertise in its own range of products, including the Visual Flame Detection System. MICROPACK’s Visual Flame Detection System has been installed and successfully operated globally for over 15 years.
MICROPACK Fire & Gas Engineering Services

Fire and Gas Detection systems are of paramount importance to protect plant, product, reputation and personnel. Micropack specialise in the provision and implementation of high integrity Fire and Gas Detection systems to significantly reduce the risk of incidents and false alarms.

Turnkey Solutions
Micropack’s expertise in Fire and Gas detection can provide engineering contractors and end-users with complete turnkey solutions. We have the capability to provide the complete package, from front-end engineering design, through to commissioning and often, more significantly, operation. With our industry wide experience we have found this input can be invaluable during start-up and operation of an installation.

EPIC Services A to Ω
The full extent of our capabilities are shown below:

- System design
- Layout drawings
- Loop drawings
- Workpacks
- Cause & Effects
- Control Integration
- Installation
- Commissioning
- Documentation
- As Built drawings

Fire and Gas Training
At MICROPACK HQ we have a dedicated Fire and Gas test centre with a wide range of detectors setup to simulate a real live industrial installation. We carry out a range in depth training courses covering the design and implementation of F&G detection systems, to the correct maintenance procedures required to maintain a healthy system.

Maintenance Optimisation
Micropack can provide 24 hour customer support for all F&G equipment including on-site service and maintenance globally. In our operations role we can carry out maintenance optimisation studies or availability reviews to ensure the F&G system is meeting the defined performance standard and also to reduce any spurious alarms and unwanted shutdowns.

Sangachal Terminal where Micropack are currently upgrading the entire flame detection system. The full EPIC process is being handled by the Micropack Engineering & Consultancy teams.
Technologically advanced mapping software

The MICROPACK Fire and Gas Detection Mapping software is comprised of Flame Detection Assessment (FDA), Gas Detection Assessment (GDA) and Heat Detection Assessment (HDA). These three packages are able to verify F&G equipment arrangements from initial design stages through to construction and installation, or existing facilities.

Fire and gas detection systems should play a crucial role in loss prevention on many sites. Formal safety assessments such as quantified risk assessments often assume that fire and gas detection systems will reduce risks, yet their design is often a matter of “black art”; it is often difficult to quantify the parameters involved and there is little guidance to define required performance or to relate achieved performance to safety requirements.

Modern fire and gas detection designs tend to be towards hazard based approach featuring recognised and quantified hazards, for example ranging from highly sensitive items such as hydrocarbon gas compressors through to lower risk items such as produced water vessels.

Using highly developed assessment methods together with custom software the flame detection assessment, gas detection assessment and heat detection assessment packages are able to review and assess arrangements from initial designs through construction and onto existing installation.

The assessments are used to optimise and validate designs and maybe used in formal safety studies.

Figure 1: Flame Detection Grademap and Assessment

Fire and Gas Mapping

A typical PDMS Model which can be loaded into FDA or GDA and mapped, utilising the correct detection technology.
Superior Flame Detection with Colour Video

The Micropack flame detection range are the safest and most advanced flame detectors on the market today, and their track record on the numerous facilities where they are installed has proven the technology to be robust, even in the harshest of environments.

- Designed to detect a hydrocarbon pool fire (.09m², 1ft²) at ranges of:
  - FDS301 up to 44m (144ft)
  - FDS300 up to 60m (200ft)

- and with a Field of View of:
  - FDS301 - 90° Horizontal
  - FDS300 - 110° Horizontal

- Unrivalled false alarm immunity to typical stimuli found in industrial environments

- Sensitivity is not affected by water on the optics, and are not blinded by contamination typically found in offshore environments.

- Unsurpassed Detection Range and Field of View reducing detector count and saving on installation costs.

- FS301 Flame Simulator is capable of function testing the FDS300 and FDS301 from a distance of 8m, therefore reducing maintenance costs.
Advanced Visual Flame Detection for High Hazard Applications ...

**Offshore Drilling and Production Platforms**
- Not affected by ice and water on the lens.
- Does not require shelter or shielding from the rain.
- Does not alarm to flare reflections from the process relief flare.
- Not affected by sunlight and hot objects in the field of view of the detector.

**Gasoline Transport Loading Terminals**
- Provides additional video surveillance capability for distant monitoring of unmanned remote terminals.

**FPSO’s**
- Due to the close proximity of the process relief flare to the topside production modules and decks, IR based flame detectors will constantly false alarm to the flare reflections. Our Vision Based Flame Detection technology was specifically developed to address this challenge.

**Pipeline Pumping Stations**
- Not affected by hot machinery and CO2 exhaust gases from turbine driven pumps and compressors.
- Remote monitoring of the entire pipeline network can be accomplished using the CCTV video capability of the system.

**Aircraft Hangers**
- Will not false alarm to arc welding, X-rays or sunlight.
- Will not reduce its sensitivity when exposed to sunlight when hangar doors are opened.
- Provides remote video signal to guard station or security centre for increased security surveillance.

**Refineries**
- Undiminished fire response in the presence of hot process, flares and fired processes.
- Video surveillance capability for remote pump pads and pilot buildings.

**PetroChemical Plants**
- Reductions in plant operating personnel demand that automatic response to fire conditions be immediate and fire responders have the most accurate information in order to combat fires. The CCTV function of Vision Based Flame Detection provides a real time live picture back in the control room, where operators can safely guide and advise personnel fighting the fire.

**Road Traffic Tunnels**
- No false alarms to headlights, flashing lights, hot engines. Not affected by bright sunlight at tunnel entrances.
- Remote video capability can supplement existing road traffic surveillance camera network.
**Temperature Range**
Operating: -60°C to + 85°C | 76°F to +185°F
Storage: -60°C to + 85°C | 76°F to +185°F
Humidity: FDS301 0 to 95% RH | FDS300 0 to 90% RH

**Operating Voltage**
24VDC Nominal
18V to 32V Maximum
FDS301 - 6 watts minimum (no heater),
10 watts typical, 15 watts maximum (with heater)
FDS300 - 6 watts maximum

**Response Time**
7 seconds Approx.

**Flame Sensitivity**
FDS300 - n-Heptane: Pan Fire
0.1m² (1sqft) pan @ 60m (200 feet)
FDS301 - n-Heptane: Pan Fire
0.1m² (1sqft) pan @ 44m (144 feet)

**Outputs**
FDS301:
Relay contacts - alarm and fault
Current source 4-20mA
RS485, HART (Consult Factory)
Live colour video – PAL and NTSC
FDS300:
Relay contacts - alarm and fault
Current source 4-20mA

**Hazardous Area Certification**
ATEX: II 2 G Ex d IIC T4 (FM07ATEX0033)
Factory Mutual: 3260 (3029978)
IEC 61508: SIL 2 (MP 080203 C001)*
IECEx FME 07.0002
Class 1 DIV 1 GROUPS B,C,D,T4
Class 1 Zone 1 AEx/Ex d IIC T4
*FDS301 only.

**Ingress Protection**
IP66
NEMA4X

**Fire Service Listing**
FM 3260

**European Directives**
CE Certified

**Enclosure**
Dimensions: 100 Diameter x 200 Length Overall (mm)
Material : LM25 (Red epoxy), 316L stainless steel
Entries : 1 – M25, ¾"NPT (Variants on Request)
Weight : 2.5kg (LM25) or 6kg (316L)

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For over 20 years, MICROPACK has been actively working with the oil & gas industry, and today is recognised as experts in hazard detection technologies.

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**Represented by:**