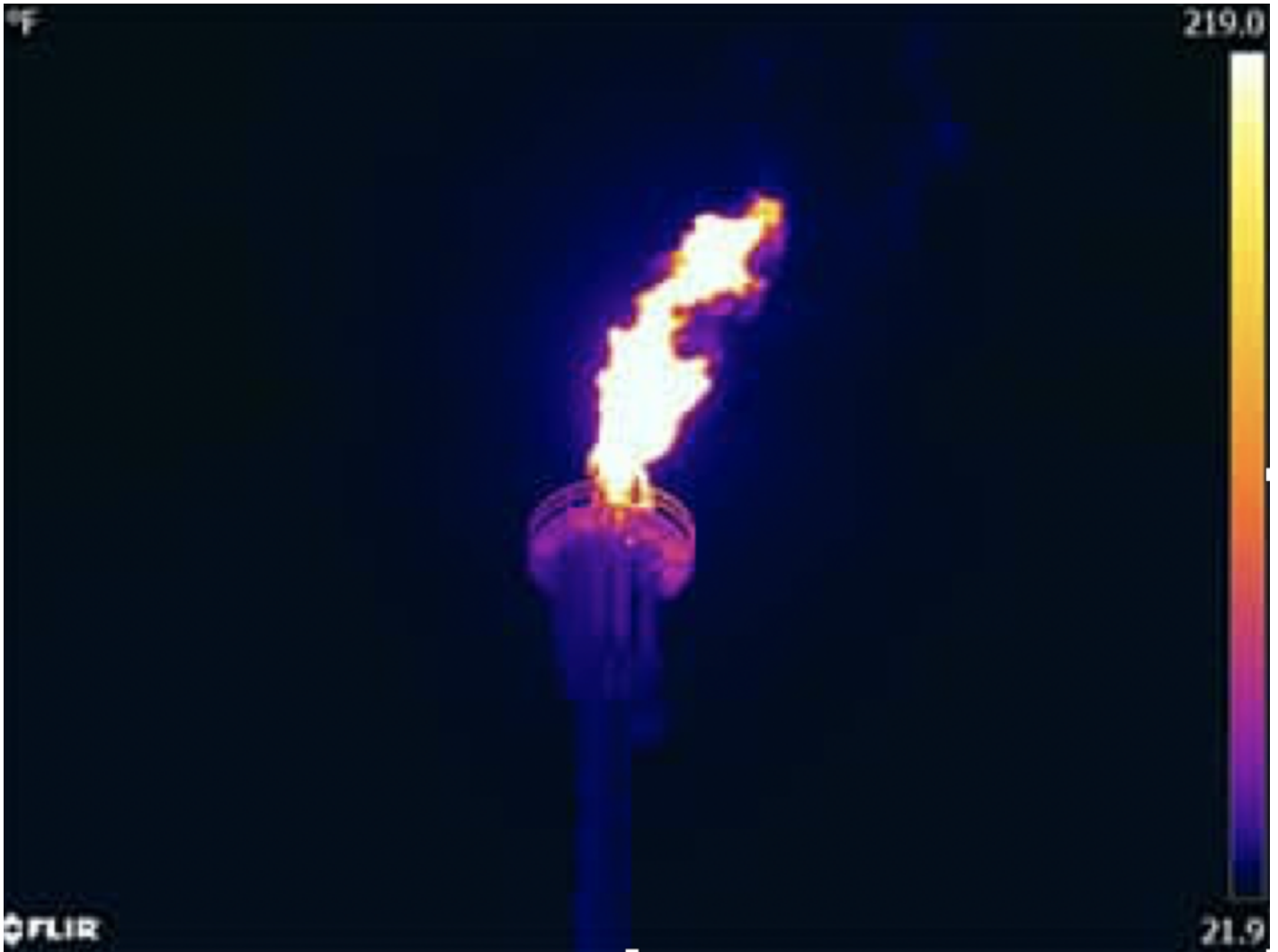


METHANE FROM FLARING TOOLKIT



Can I identify a flare with a performance issue: Alarm systems – Thermal Imaging Cameras

Can I identify a flare with a performance issue? > Can I identify a flare with a performance issue: Alarm systems – Thermal Imaging Cameras

Summary

There are a range of flare monitoring systems to detect and alarm if the flare is unlit. Each technology utilises a feature of the flare such as heat or light.

In some countries, to comply with environmental regulations it is essential to confirm that the main flare or pilot flare always remains lit.

Where a flare is unintentionally unlit the methane emissions are much higher than reported based upon flow rates.

Thermal Imaging systems use infra-red cameras to monitor the optical signature from the lit flare. Changes can be used to trigger visual and audible alarms. They are robust against adverse weather conditions and can be operated from ground level, minimising the need to access the flare for maintenance. Some systems also provide quantitative estimation of temperature.

Where cold flares are in operation (where emissions can vary between vented gas and combusted gas) the inclusion of alarm systems can help identify what operating state the system is in.

How it Works

Flame status can be determined by several means including monitoring heat, ionized gas, light or sound. To give constant feedback of pilot status one of the following systems will need to be used:

- Heat – Thermocouples
- Ionised Gas – Flame ionisation detection
- Light – IR or UV systems
- Sound – Acoustic systems

Whilst standards such as API 537 require the use of pilots in the flare, there are a large number of older facilities that operate without pilots.

For choosing properly the flame monitoring system, it is important know if it will supervise a pilot flame or a flare flame.

Technology	Individual pilot	Ground level Maintenance	Instantaneous response
Thermocouple	X	X	
Fiber Optic	X	X	X
Optical at grade		X	X
Acoustic	X		X
Flame ionization	X		X

Advantages

- ✓ Easy to install and maintain
- ✓ Operate from grade-level, no need to access the flare
- ✓ Quantitative output on heat can be useful for other maintenance requirements
- ✓ Some systems are designed to be intrinsically safe allowing them to be located in high hazard areas
- ✓ Some systems include capability for assessing combustion efficiency

Limitations

- ✗ Cannot always distinguish between pilot or main flare and therefore used primarily for monitoring the flare as a system, not just the pilot
- ✗ Requires adequate line-of-sight to the flare tip and

Go Deeper

- [Vendor website: FLIR](#)
- [Vendor website: Viper](#)
- [Vendor website: Williamson](#)

Case study

Case study to be added in the future

Can I identify a flare with a performance issue?



Can I identify a flare with a performance issue: Satellite monitoring – Wide area methane emissions monitoring



Can I identify a flare with a performance issue: Optical Gas Imaging



Can I identify a flare with a performance issue: Helicopter Optical Gas Imaging



Can I identify a flare with a performance issue: Point Sensors and Arrays



Can I identify a flare with a performance issue: Alarm systems – Image Processing