

E²T**E²TECHNOLOGY CORPORATION**

INFRARED FLARE STACK DETECTION SYSTEMS

PILOT FLAME, FLARED GAS AND SMOKE MONITORS



PILOTS AND FLARES

Continuous monitoring of pilot flames and flared gases is critical to ensure that the gases will be ignited and to confirm compliance with government-set flaring time limits. Thermocouple failure, flame movement, varying luminosity and adverse climatic conditions are just a few of the obstacles which have to be overcome to gain long-term reliability without false alarms.

SMOKE

Continuous monitoring of the flare stack for excessive smoke is critical to ensure complete combustion. To meet safety and environmental requirements, upset conditions require immediate adjustments of steam. Real-time automatic injection control replaces excessive steam consumption with significant cost savings.



SAFETY AND ENVIRONMENTAL PROTECTION



ATMOSPHERIC SIGNAL CORRECTION



SUPERB SIGHT-THROUGH OPTICS



SINGLE MODULE INSTRUMENT



CSA AND CENELEC CERTIFICATION



STACK MONITORS

E²TECHNOLOGY CORPORATION applies sophisticated infrared technology and advanced modular housing design to the solution of your flare stack monitoring requirements.

E²TECHNOLOGY has designed the QUASAR family of three detection systems for continuous duty monitoring of pilot flame (PM), flared gases (FM) and smoke particulate (SM) from flare stacks. The sight-through optical system and choices of fields of view allow the QUASAR to be positioned as far as $\frac{1}{4}$ mile (400 m) from the flare stack. Each of the three systems is complete with a removable camera module, dual outputs, explosion-proof housing, internal heater and cooling cavity and precision alignment vernier swivel mount.

WE MAKE INFRARED WORK FOR YOU

SELECT AND INSTALL MONITORS

Selection Criteria

Over 350 refineries, gas plants and petrochemical companies with over 1100 installations world-wide have looked to E²TECHNOLOGY for accurate infrared (IR) temperature data. When you install E²T QUASAR Flare Stack Monitors for infrared solutions you are investing in proven experience, superior performance and cost savings.

PROVEN EXPERIENCE

For a quarter of a century the energy industry has used E²T pyrometers in sulphur reaction furnaces, spent acid plants, CO boilers, sulphur burners and on tubes in high temperature reformers. *E²T listens when industry speaks* and when clients asked us whether we could manufacture better Pilot Flame, Flared Gas and Smoke Monitors we accepted the challenge.

SUPERIOR PERFORMANCE



Industry wanted a simple but rugged one-piece monitor.

No more two-piece optical camera and separate amplification circuitry.

E²T builds a single complete electro-optical IR module.

Industry wanted a manufacturer who would build IR pyrometer and amplification circuitry.

No more adapting a generic IR thermometer from another source.

E²T designs and builds the entire system.



Industry wanted an Explosion-proof Housing as standard.

No more additions of X or Z purges.

E²T delivers their IR module in a CSA and CENELEC Explosion-proof Housing.

Industry wanted better optics.

No more 1000 feet (300 m) limit.

E²T lengthens the range to 1300 feet (400 m) or more depending upon the flame size.



Industry wanted to detect invisible hydrogen flame.

Not just orange hydrocarbons.

E²T includes the only IR filtered detector sensitive to hydrogen.

Industry wanted Pilot, Flared Gas and Smoke Monitors for all weather conditions.

Not just sunny days.

E²T provides an automatic gain control for adverse weather conditions.



Industry wanted to buy monitors directly from the manufacturer.

Not just through an OEM intermediary.

E²T sells direct.

E²T LISTENS WHEN INDUSTRY SPEAKS!

COST SAVINGS

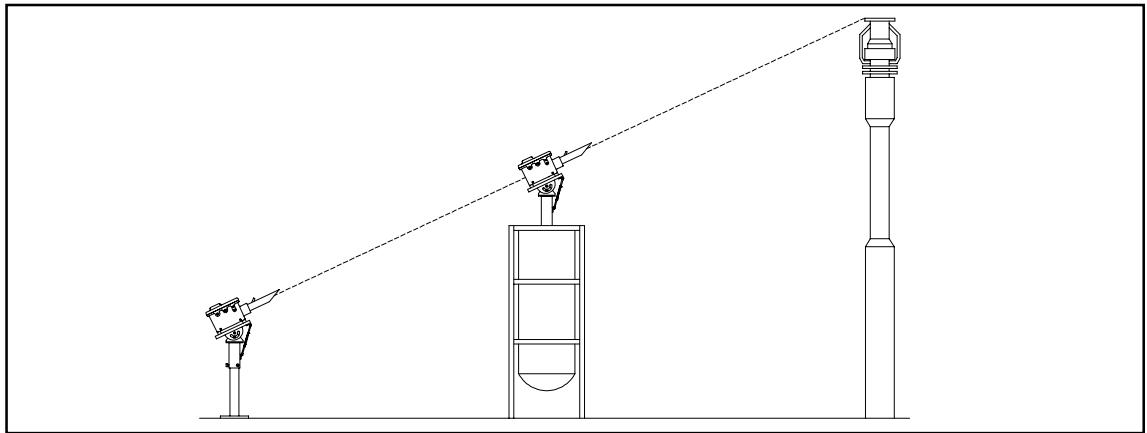
Industry required new well-designed monitors at reasonable prices. Rather than increasing prices above those currently set for older existing monitors, E²T lowered prices. Simplicity, a new design, manufacturing the complete system and selling direct all contribute to lower cost. Well-designed superior performing instruments do not need to cost more, especially if *you listen when industry speaks*.

THAT MEET YOUR REQUIREMENTS

Installation Principles

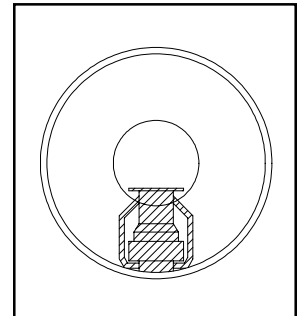
DISTANCE TO STACK

When installed at ground level, the QUASAR Pilot, Flare and Smoke Monitors should be located at a distance from the base of the flare stack equal to 1.0-3.0 times the stack height. These monitors could also be mounted on a building or a vibration-free vessel. This would allow a location closer to the stack yet maintaining the acceptable angle.



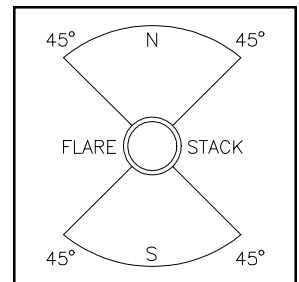
FIELD OF VIEW

To monitor the maximum number of pilots with one instrument and to monitor flared gas, the field of view should include the entire top of the flare stack. The standard field of view from monitor to top of flare stack is 75:1. To monitor smoke particulate, the field of view is even larger, 60:1. For applications requiring closer installations (such as off-shore flares), 37.5:1 is available. For distances exceeding 1,000 feet (300 m), 150:1 is required.



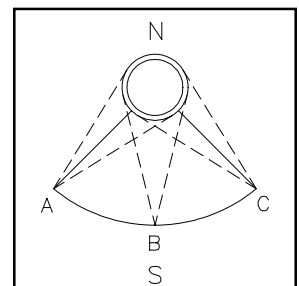
GEOGRAPHICAL LOCATION

For installation in the northern hemisphere it is recommended that each monitor be located true south of the flare stack within $\pm 45^\circ$. In the southern hemisphere the monitor should be located true north of the stack within $\pm 45^\circ$. If an instrument must be installed in the opposite direction ensure the monitor does not receive direct solar radiation during any time of the year.



DIRECTION OF WIND

Do not install a monitor at a location where the prevailing winds blow directly away from the instrument toward the stack. This will make it quite difficult to view the flame and smoke. For example, in the sketch when the wind is blowing true north, location "B" is not recommended. Locations "A" and "C" are preferred for they allow the flames and smoke to be seen when blown directly north of the flare stack.



QUASAR SPECIFICATIONS

General Specifications of the QUASAR 8100

Flame Type	Designed for flames of any intensity
Working Distance	0-1320 ft (0-400 m)
Response Time	100 mS
Delay	2 secs to 2 min (Std)
Sensitivity Adjustment	0-1 VDC
Climatic Compensation	Automatic Gain Control
Focusing and Sighting	Sight-through visual aiming
Mounting	Adjustable pedestal with 360° swivel mount -45 to +45° vertical
Power Requirements	115 VAC \pm 10%, 115 watts, 50-60 Hz 230 VAC \pm 10%, 115 watts, 50-60 Hz \pm 24 VDC
Explosion-Proof Certification	CSA: Class 1, Division 1, Groups C and D; Class 1, Division 2, Groups A-D CENELEC: EExd IIB T4
Ambient Limits	40-125°F (4-52°C) or -40-212°F (-40-100°C) with internal heater and cooling (higher temperatures upon request)
Dimensions	10.5 x 12.5 x 8.5 in (27 x 32 x 32 cm)
Weight	48 lbs (22 kg)

Special Specifications of the QUASAR Models

Pilot Monitor (PM)

- Multi-wavelength infrared thermometer sensitive to all flame including Hydrogen
- Field of View = $\frac{\text{Distance}}{75}$
- 4 and 20 mA Output Signal
- Alarm Setpoint Mechanical Relay
- Green and Red Status Lights

Flare Monitor (FM)

- Multi-wavelength infrared thermometer sensitive to all flame including Hydrogen
- Field of View = $\frac{\text{Distance}}{37.5}$
- 4 and 20 mA Output Signal
- Alarm Setpoint Mechanical Relay
- Green and Red Status Lights

Smoke Monitor (SM)

- Two wavelength infrared thermometer sensitive to Carbon
- Field of View = $\frac{\text{Distance}}{60}$
- 4 - 20 mA Linear Output Signal
- Alarm Setpoint Mechanical Relay
- Green and Red Status Lights



E²T

E²TECHNOLOGY CORPORATION

4475 Dupont Court #9, Ventura, CA 93003 USA

PHONE: 805 644-9544 / FAX: 805 644-9584

WEB: <http://www.e2t.com> E-MAIL: sales@e2t.com