Many industries use flare stacks to burn off unwanted waste gas byproducts or flammable gasses released by pressure relief valves during unplanned over-pressuring of plant equipment.

Applications include oil and gas drilling operations, oil refineries, chemical process plants, gas distribution infrastructure, and landfills. Often regulations require monitoring of a stack’s flame, or the pilot flame that ignites the gasses, to avoid the emission of unburned hydrocarbons into the atmosphere.

**System Solution**

Thermal imaging cameras are an ideal monitoring tool, since they provide constant automated remote monitoring in virtually any weather. In addition, thermal imaging cameras avoid many of the technical and costly problems associated with other technologies such as ultraviolet (UV) flame detectors, flame ionization spectrometers, thermocouples, and pyrometers.

FLIR Thermal Imaging cameras distinguish between the heat signature of the flare stack and the surrounding environment (typically, the sky or clouds). The cameras can be positioned to monitor not only the stack flame but also the igniter flame. Its calibration and spectral response allows it to obtain a clear image and measure temperature of the flare stack or pilot flame. Even flares invisible to the naked eye are clearly evident on a thermal image.

An additional option from Viper is UAV inspection. The use of drones proves to be especially beneficial for hard-to-reach locations, such as flare stacks. A drone or UAV equipped with a thermal imaging camera can quickly and safely locate problem spots or inefficiencies. Images and video are collected quickly, and issues can be addressed.

www.viper-drones.com
Typical Installation
A FLIR thermal imaging camera is mounted on a structure in weather-resistant housing to obtain a clear field of view (FOV) of the stack flame. The camera is integrated with the ViperVision software to directly communicate with most industrial platform controllers. The software will analyze and compare the data against predefined parameters and will trigger an alarm if warranted. These parameters can be adjusted based on the specific application needs.

Aerial Inspection
A drone or UAV equipped with thermal imaging or optical gas imaging can quickly and safely locate problem spots or inefficiencies. High resolution images and video can be collected quickly — providing safer and faster inspections by minimizing the use of cranes, scaffolding and helicopters.

Key Benefits
• Instant notification alarm for loss of combustion
• Constant monitoring - day or night and in any weather
• Provides quantitative temperature readout and remote visual monitoring for plant management
• Reliable and rugged system designed for harsh environments
• Easy integration into existing plant control system