

OPEN ELEVATED FLARE



SAFE, ELEVATED COMBUSTION FOR ROUTINE VENTING AND EMERGENCY RELIEF

Waste gas vented at grade level puts personnel and equipment inside the radiant heat zone of the flame. A flare that cannot track flow from a quiet purge trickle to a full emergency relief event either smokes under normal conditions or fails when the plant needs it most.

CRA's Open Elevated Flare burns waste gas at the top of a dedicated stack, holding thermal radiation and combustion products above grade and away from site personnel. Waste gas travels up the stack to the tip, where an always-lit pilot maintains continuous ignition, and the tip is engineered as unassisted, air-assisted, or steam-assisted based on the gas composition, smokeless requirement, and flow range of the specific application. CRA designs the tip, stack, knockout drum, liquid seal, purge system, and ignition as one integrated system rather than a set of separately sourced components.

CRA has engineered elevated flare systems for oil and gas, refinery, petrochemical, and biogas service for over 30 years, designed to API 537, API 521 and international flare regulations, and built under the same ISO 9001 quality system that governs every CRA skid.



CRA ADVANTAGE

+ Proven Safety Performance (elevated design keeps heat and combustion products away from personnel and equipment)	+ Optimal Design & Performance + Accomodate Special Requirements
+ Handles Wide Flow Range (pilot flows through full emergency relief)	+ On-Time Delivery + Responsive & Organized Team
+ Proprietary Flare Systems (CFD-engineered tips and windshields for biogas and process duty)	+ Stringent Quality Management + Fast Turnaround
+ Long Life, Low Maintenance (rugged design and advanced flame stabilization)	+ Cost Effective Maintenance Packages + Long-Term CRA Support

APPLICATIONS

Supplied for routine venting and emergency relief across oil and gas, refinery, and petrochemical duty

- + Emergency Relief And Upset Conditions
- + Hydrocarbon Vent And Purge Gases
- + Low-BTU Gas Disposal
- + Acid Gas And Sour Gas Flaring
- + LNG And Petrochemical Flaring
- + Pipeline Blowdown Gas

CRA
7, Sector 140A
Noida, UP, 201304

Learn more at www.cra.energy

✉ contact@cra.energy

☎ 0120 415 6787 • +91 85060 09433



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WORKING & PERFORMANCE



ASSIST TYPE AND STACK HEIGHT SET BY GAS COMPOSITION AND SITE CONDITIONS

WORKING

- + Waste gas enters the stack base and rises through the riser to the tip, where an always-lit pilot maintains continuous ignition through every flow condition
- + Tip design, unassisted, air-assisted, or steam-assisted, is selected to match gas composition, smokeless requirement, and flow range
- + Stack height is set to keep thermal radiation at grade within safe limits, typically referenced against the 1,500 Btu/hr/ft² (4.73 kW/m²) API 521 emergency exposure limit^L
- + A knockout drum and liquid seal upstream of the stack remove entrained liquids and prevent flashback into the header
- + Structure type, self-supported, guyed, or derrick, is selected based on stack height, wind loading, and available site footprint

STRUCTURE OPTIONS

- + Self-Supported: Under 50 M Overall Height^L
- + Guyed: Up To 150 M Height Range^L
- + Derrick: Above 150-200+ M, Limited-Footprint Sites^L
- + Exit Velocity Limited To Mach 0.5 On Unassisted Tips^L
- + Always-Lit Pilot With Redundant Ignition

Structure type is a site layout decision, not a performance one. All three suit the same duty when sized correctly.^L

TYPICAL DESIGN & PERFORMANCE PARAMETERS

Assist configurations	Unassisted, air-assisted, steam-assisted
Pilot ignition	Always-lit, continuous
Applicable standards	API 537, API 521 (flare design); emissions per EPA 40 CFR 60.18
Structure types	Self-supported (<50 m), guyed (up to 150 m), derrick (>150-200 m) ^L
Stack exit velocity limit	Up to Mach 0.5 for unassisted/utility-type tips ^L
Thermal radiation basis	1,500 Btu/hr/ft ² (4.73 kW/m ²) at grade for emergency release, per API 521 ^L
Emergency relief coverage	Engineered for routine purge flow through full contingency relief load in a single system

Figures per CRA published product data; items marked with a superscript L are drawn from published industry literature.

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