



CLEAN COMBUSTION. CLEAR SOLUTIONS.™

SMOKELESS, SAFE,
ECONOMICAL SOLUTIONS



REFINING & PETROCHEMICAL
FLARES





THE WORLD'S MOST ADVANCED REFINING AND PROCESSING TECHNOLOGIES

John Zink Company, LLC, develops advanced pollution-control systems, fired equipment and next-generation technologies that serve industries across the globe. Our flares, process burners, duct

and boiler burners, thermal oxidizers, flare gas recovery and vapor control units are the most sophisticated, reliable systems in the world, helping businesses operate cleaner and more efficiently.



The strength of our JZ[®] and KALDAIR[®] product lines firmly establishes John Zink Company as a world leader in advanced flare systems for refining and petrochemical industries.

A NEW ERA IN CLEAN FLARING

John Zink Company engineers the world's most advanced flaring systems to help refineries, petrochemical and chemical plants, distribution facilities and other downstream operations minimize the environmental effects of flaring – and do it economically.

We call this advancement *clean flaring* for the technologies that power the two most recognized brands in flare systems – JZ® and KALDAIR®.

John Zink's flares set a new standard for clean, economical combustion by minimizing or eliminating smoke, noise, bright light, and other flaring effects that impact your business. Our flare experts engineer these systems from the operator's point of view, with a focus on safety, ease of operation, and proven performance. Because they're from John Zink Company, JZ and KALDAIR flares, accessories and replacement parts are designed to operate in the toughest environments, under the most severe conditions.

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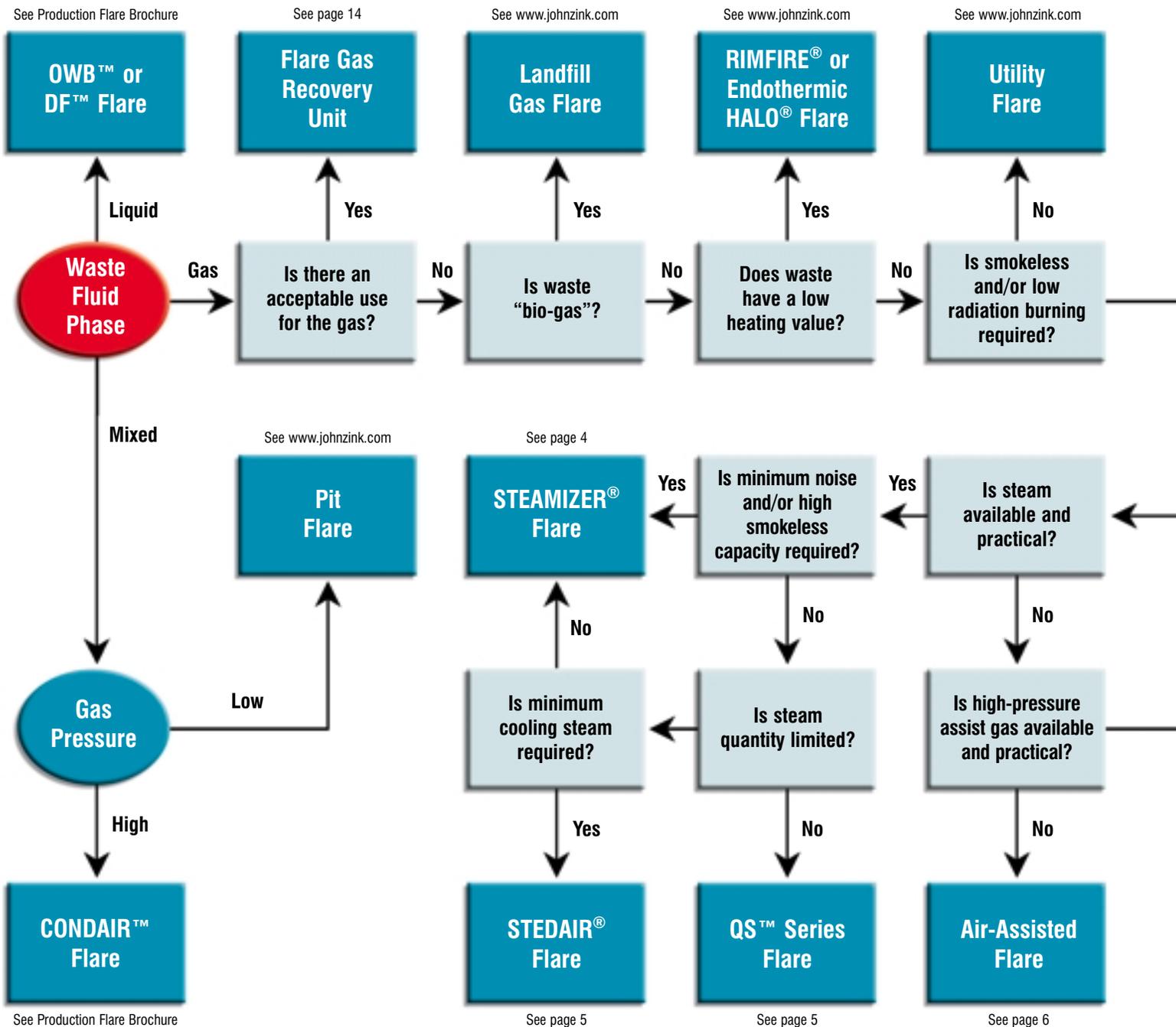
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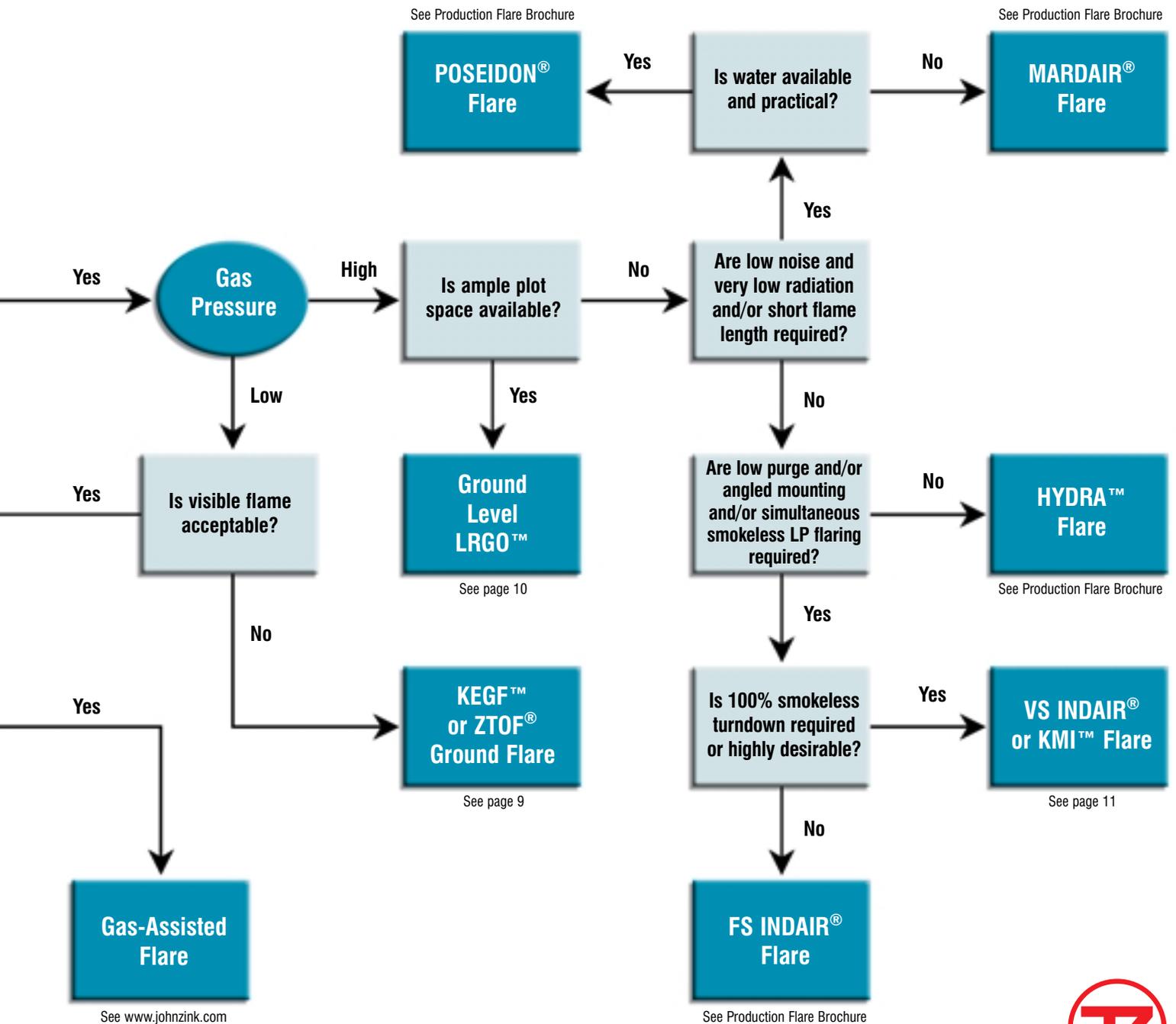


COMPREHENSIVE FLARE SOLUTIONS

Selecting a flare system with the features and technology most qualified to meet the demands of your application doesn't have to be

a challenge. The following guide will help you identify the flare best suited to achieve your environmental and economic goals.





STEAM-ASSISTED FLARES

SAFE. ECONOMICAL. SMOKELESS.

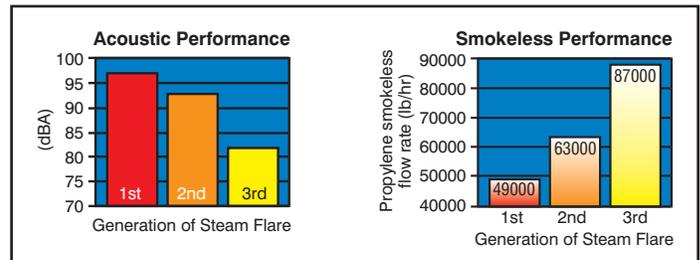
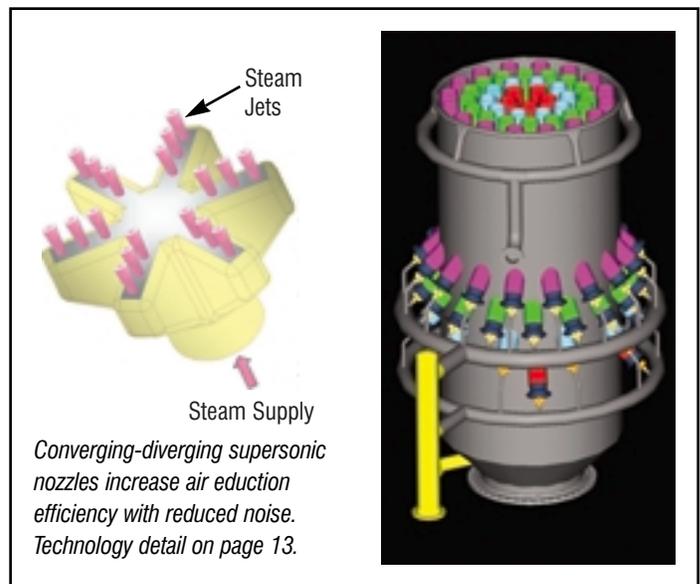
John Zink Company offers five steam-assisted flare systems to meet ever-tightening environmental regulations while extending run times and improving your profit margins. Our JZ STEAMIZER, SKEC, HALO and QS, and KALDAIR STEDAIR flare systems use advanced, simplified steam delivery and special noise control technologies to maximize smokeless performance efficiencies and reduce the impact of flaring.

As a result of extensive steam-assisted flare tests at our renowned Research and Development Test Center, John Zink developed its multiple-port supersonic nozzle technology to deliver the highest smokeless capacity of any single-point steam-assisted flare, and the Coanda steam-injection principle to fully penetrate the waste gas core. Each of our flares employs John Zink's proprietary Flame Similarity Method to accurately predict smokeless performance and conserve steam consumption. For more information about our clean flare technologies, see page 12.

STEAMIZER®

The STEAMIZER flare's ability to meet high-capacity smokeless burning requirements makes it the most in-demand flare tip in the world. The unique design induces large amounts of air into the core of some of the largest flare flames in the most difficult applications. The multiple port supersonic nozzle increases air eduction efficiency with reduced noise. A special muffler further reduces steam-injection noise. The STEAMIZER flare's smokeless performance, low sound profile and reduced steam utility requirements make it an industry standard in smokeless flaring.

FEATURES	BENEFITS
<ul style="list-style-type: none"> Ultra-high smokeless capacity Low noise design 	<ul style="list-style-type: none"> Minimizes environmental/community impact of flaring
<ul style="list-style-type: none"> Eliminates internal burning Reduces flame pull-down 	<ul style="list-style-type: none"> Extended tip life
<ul style="list-style-type: none"> Low steam/gas ratio for smokeless flaring 	<ul style="list-style-type: none"> Reduced utility costs
<ul style="list-style-type: none"> High turndown design Full-range flame stability 	<ul style="list-style-type: none"> Operational flexibility & reduced steam consumption Safe flaring operation
<ul style="list-style-type: none"> Numerous options available for design flexibility 	<ul style="list-style-type: none"> Customized design to meet your specific process design and operational requirements



The latest generation STEAMIZER flare provides superior smokeless performance in a low-noise design steam flare.

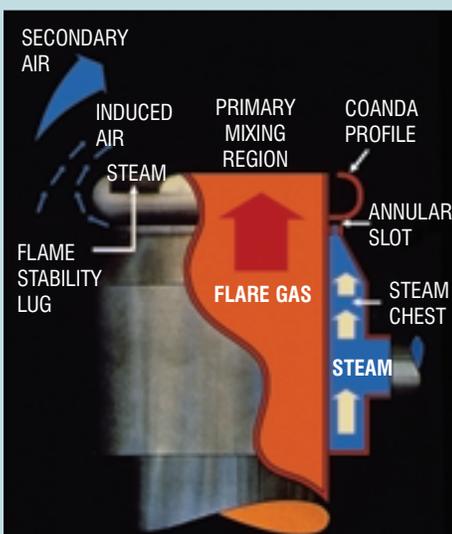
SKEC™, HALO®, QS™

John Zink's single and multi-point steam-assisted flare tips use cost-effective designs to deliver smokeless operation and efficient steam consumption to processing and refining facilities.

STEDAIR®

The rugged STEDAIR flare uses less steam than traditional steam-assisted flare systems and offers smokeless burning. The STEDAIR flare's rugged yet simple Coanda design mitigates tip damage due to low flow burnback and operation under steam-loss conditions. The STEDAIR muffler delivers quiet operation.

FEATURES	BENEFITS
<ul style="list-style-type: none"> Thick cast Coanda profiles utilized for steam injection 	<ul style="list-style-type: none"> Extended tip life
<ul style="list-style-type: none"> Low steam/gas ratio for smokeless flaring No cooling steam required 	<ul style="list-style-type: none"> Reduced utility costs
<ul style="list-style-type: none"> Low noise design 	<ul style="list-style-type: none"> Minimizes environmental/community impact of flaring
<ul style="list-style-type: none"> External steam injection 	<ul style="list-style-type: none"> Prevents internal ice buildup in freezing climates



STEDAIR SCHEMATIC

Steam ejected from the annular steam chamber follows the curve of the Coanda profile, mixing efficiently with the gas stream. Technology detail on page 13.



SKEC FLARE

Lowest steam-to-hydrocarbon ratio of any multi-point flare available.



John Zink's demountable derrick structures allow multiple flares to be installed on a common structure. The demountable design allows the individual flare tips to be lowered to grade while the other flares remain safely in service.



AIR-ASSISTED FLARES

ENERGY-EFFICIENT. LOW NOISE. LONG SERVICE LIFE.

Processing and refining facilities that require smokeless flares in remote locations or where steam is not available use John Zink's state-of-the-art, air-assisted flare systems for cost-effective, clean flaring. The JZ LHLB, JZ LH, KALDAIR AZDAIR, and the JZ LS and LHTS air-assisted flare systems deliver smokeless performance with less radiation and noise than steam-assisted flares.

These long-lasting flares use a range of mixing head designs to optimize air-to-gas mixing and eliminate steam-energy costs. Any one of John Zink's air-assisted flares is an excellent first-stage flare for use in multi-flare arrays designed to meet higher capacity needs. And, each air-assisted flare employs John Zink's proprietary Flame Similarity Method to accurately predict smokeless performance and conserve air consumption. For more information about our clean-flare technologies, see page 12.

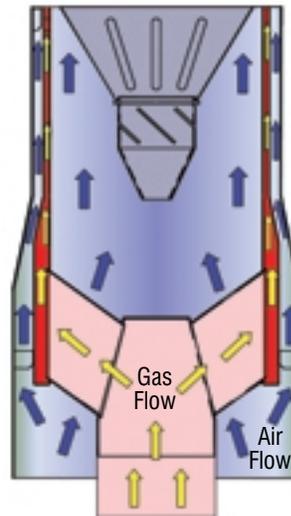
LHLB™ PATENTED*

The smokeless LHLB air-assisted flare system extends flare tip life while it minimizes the cost to dispose of difficult-to-burn gases. The LHLB flare's annular swirl design mitigates the internal burning associated with the operation of large air-assisted flares at turndown while providing complete ignition of waste gases at high exit velocities. The low-maintenance, simple tip design has no moving parts, eliminating the potential freezing issues in cold climates associated with steam and steam-flow controls.

The annular swirl design of the LHLB flare prevents internal burning at low gas flow rates.



FEATURES	BENEFITS
<ul style="list-style-type: none"> • Annular design eliminates internal burning at low gas flow rates 	<ul style="list-style-type: none"> • Extended tip life
<ul style="list-style-type: none"> • High smokeless capacity design • Low noise design 	<ul style="list-style-type: none"> • Minimizes environmental/community impact of flaring
<ul style="list-style-type: none"> • High turndown design 	<ul style="list-style-type: none"> • Reduced operating cost (energy cost)
<ul style="list-style-type: none"> • Minimal air flow required for standby operation 	
<ul style="list-style-type: none"> • Low maintenance design 	<ul style="list-style-type: none"> • Reduced operating and maintenance costs



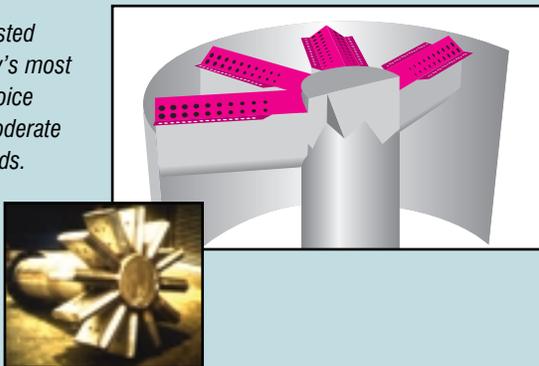
The unique annular LHLB flare design is the optimum design for high capacity air-assisted flares.

LH™

The LH air-assisted flare is the most economical choice for small-to-moderate smokeless burning needs. The LH air-assisted flare tip lasts longer than traditional air flares and creates clean, upright flames with low radiation levels. The LH flare is ideal for application in systems with small-to-medium gas flow and also where high pressure is available.

FEATURES	BENEFITS
<ul style="list-style-type: none"> Continuous air flow prevents overheating of flare tip 	<ul style="list-style-type: none"> Extended tip life
<ul style="list-style-type: none"> Efficient gas/air mixing for smokeless operation 	<ul style="list-style-type: none"> Low horsepower requirements
<ul style="list-style-type: none"> High turndown design 	<ul style="list-style-type: none"> Reduced operating cost (energy cost)
<ul style="list-style-type: none"> Minimal air flow required for standby operation 	
<ul style="list-style-type: none"> Low maintenance design 	<ul style="list-style-type: none"> Reduced operating and maintenance costs

The LH air-assisted flare is industry's most economical choice for small-to-moderate smokeless needs.



LHTS™, LS™

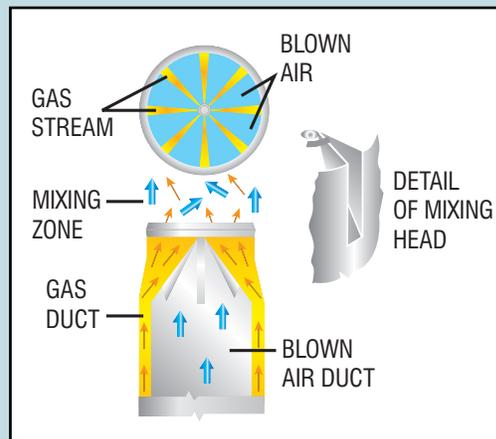
The economical LHTS and LS flare designs meet low-to-moderate smokeless requirements for low-pressure flare systems while still enabling large emergency relief rates.

AZDAIR™

The AZDAIR flare delivers safe, smokeless operation in virtually all conditions - from maximum to minimum purge flow - without steam or support fuels. An efficient mixing head maximizes the system's gas-to-air interface. As a result, the AZDAIR flare creates a vertical, stiff, turbulent flame for a high degree of operating control.

FEATURES	BENEFITS
<ul style="list-style-type: none"> Efficient mixing head design maximizes gas-to-air interface 	<ul style="list-style-type: none"> Reduced horsepower requirements for smokeless operation
<ul style="list-style-type: none"> Mixing head design eliminates internal burning 	<ul style="list-style-type: none"> Extended tip life
<ul style="list-style-type: none"> High turndown design 	<ul style="list-style-type: none"> Reduced operating cost (energy cost)
<ul style="list-style-type: none"> Minimal air flow required for standby operation 	

During normal operation of the AZDAIR flare, the fan operates at reduced capacity to conserve energy.



Relief gas moves up the AZDAIR flare's annular duct and is mixed turbulently with air blown up the flare's central duct.





ENCLOSED FLARES

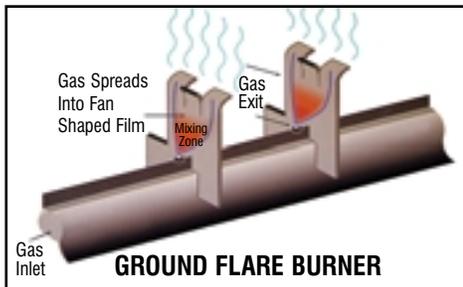
ZERO SMOKE. LOW NOISE. NO RADIATION.

Our JZ and KALDAIR enclosed flare systems combust waste gases cleanly and efficiently by eliminating the smoke and minimizing the noise and visible flame from conventional flaring. The KALDAIR Enclosed Ground Flare (KEGF) and JZ Thermal Oxidizer Flare (ZTOF) enclosed flares are customized to operator specifications and enhance overall system performance.

Many of our enclosed flare systems use a fin plate burner to help control emissions where they form. The inclined, slatted design of our fluidic wind fence delivers an even distribution of air across the

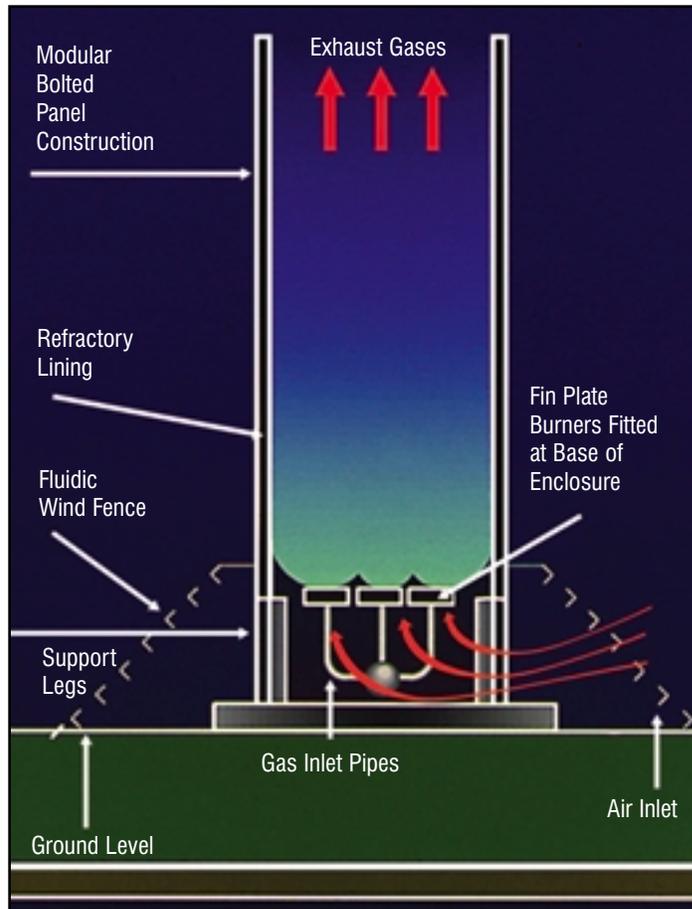
length and width of the flare enclosure. As a result, the fin plate burners achieve superior combustion efficiency with minimum noise. The ceramic blanket refractory lining eliminates cure time for easy installation. This durable lining resists thermal shock and spalling, so the enclosure stays maintenance-free for extended periods. And, each of our flares employs John Zink's proprietary Flame Similarity Method to accurately predict smokeless performance, and conserve air and steam consumption. For more information about our clean-flare technologies, see page 12.

Fin plate burner principle of operation.



The thin, "tear drop-shaped" gas distribution manifold of the fin plate burner provides a large open area for combustion air entrainment.

Each fin plate burner contains many individual fins to spread the flare gas into a thin film and optimize the gas/air mixing area.

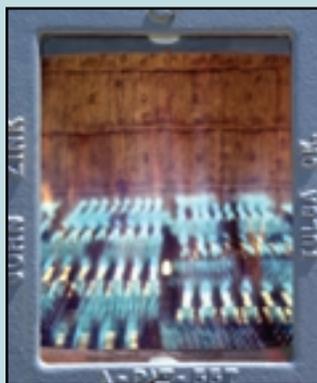


The unique fluidic wind fence that surrounds the KEGF flare ensures an even air flow distribution across the entire burner cross-sectional area.

KEGF™

The KEGF enclosed flare delivers smokeless flaring and concealed flames without steam or air assist. Its high-performance fin plate burners combust most every unsaturated gas and control emissions by reducing the flame temperature. The aerodynamic design of the flare's fluidic wind fence eliminates hot spots caused by wind turbulence. Engineered to achieve high turndown ratio, the KALDAIR KEGF flare minimizes staging requirements. The flare's unique, modular concept reduces site installation time and construction costs.

FEATURES	BENEFITS
<ul style="list-style-type: none"> Smokeless flaring of low-pressure gases without steam, air or other assist medium. 	<ul style="list-style-type: none"> Reduced equipment costs, operating costs and maintenance costs
<ul style="list-style-type: none"> Operates with concealed flame 	<ul style="list-style-type: none"> Minimizes environmental impact of conventional flares
<ul style="list-style-type: none"> High combustion efficiency 	<ul style="list-style-type: none"> Reduced air emissions from combustion
<ul style="list-style-type: none"> Efficient aerodynamic design 	<ul style="list-style-type: none"> Provides a cost-effective, non-assisted design
<ul style="list-style-type: none"> Minimal noise and radiation 	<ul style="list-style-type: none"> Safe flaring at locations within the plant
<ul style="list-style-type: none"> Quick and simple installation 	<ul style="list-style-type: none"> Reduced installation costs



The fin plate burner provides unassisted, highly efficient, smokeless flaring of highly unsaturated hydrocarbons such as ethylene and propylene.



The natural draft design of the KEGF flare provides non-assisted, smokeless, non-visible flaring in a cost-effective enclosure design.

ZTOF® PATENTED*

The ZTOF flare is a natural-draft, staged-burner system that offers maximum smokeless combustion using air, steam or gas assist. The ZTOF flare provides cost-effective performance with high turndown ratio without burner adjustments or flare modifications. The proven enclosed-flare technology demonstrates efficient waste gas destruction capacities in excess of 100 metric ton/hr for a variety of applications.

FEATURES	BENEFITS
<ul style="list-style-type: none"> Smokeless operation of any hydrocarbon gas Operates with concealed flame 	<ul style="list-style-type: none"> Minimizes environmental impact of conventional flares
<ul style="list-style-type: none"> High turndown ratio 	<ul style="list-style-type: none"> Optimal operational flexibility
<ul style="list-style-type: none"> Staging system controls gas and steam flow to burners 	<ul style="list-style-type: none"> Minimizes steam usage
<ul style="list-style-type: none"> Wind fence shields noise and radiation and directs air flow 	<ul style="list-style-type: none"> Safe flaring at locations within the plant
<ul style="list-style-type: none"> Unequalled performance and maintenance record 	<ul style="list-style-type: none"> Can be selected with confidence for any enclosed ground flare application



The ZTOF flare design has been used to provide up to 200 ton/hr enclosed flare capacity in a dual unit enclosure design.





High-Pressure Flares

Innovative Design. Low Radiation. Smokeless.

The JZ LRGO and KALDAIR MULTIPOINT INDAIR (KMI) flare systems provide unlimited turndown with low energy consumption pilots - making them the processing and refining industries' high-pressure flare choice for many years. Available in elevated or ground-mounted configurations, the neighborhood-friendly systems create short, smokeless flames with no gas, air or steam assist. A radiation fence is available to control the heat and flame

visibility from ground-mounted systems. John Zink's high-pressure systems safely deliver the highest smokeless capacities of any flare from an unlimited number of burners. And, each of our flares employs John Zink's proprietary Flame Similarity Method to accurately predict smokeless performance, and conserve air and steam consumption. For more information about our clean-flare technologies, see page 12.

LRGO™ PATENTED*

The LRGO multi-point flare system uses the energy in flared gas to achieve clean, economical combustion in high-pressure applications without steam or gas assist. The LRGO flare is proven to operate in excess of 10 years with minimal maintenance. This state-of-the-art flare induces air to a number of burning points for maximum smokeless combustion and unlimited turndown. A ground-mounted configuration is easily concealed with a radiation fence. The LRGO flare's specific burner spacing provides maximum cross-lighting across the staged system.



The LRGO multi-burner flare system can be provided with radiation fences that completely shield the flame visibility and radiation at grade.

FEATURES	BENEFITS
<ul style="list-style-type: none"> High smokeless capacity without steam, air or other assist medium 	<ul style="list-style-type: none"> Minimizes environmental impact and reduces utility requirements for smokeless flaring
<ul style="list-style-type: none"> Radiation fence to control heat, flame visibility and combustion air distribution 	<ul style="list-style-type: none"> Safe flaring at locations within the plant
<ul style="list-style-type: none"> Short flame length 	<ul style="list-style-type: none"> Low visibility flare design
<ul style="list-style-type: none"> Optimal burner spacing ensures cross-lighting to minimize the number of pilots required 	<ul style="list-style-type: none"> Safe, stable burner ignition with minimal pilot fuel consumption
<ul style="list-style-type: none"> Ground mounted or elevated design 	<ul style="list-style-type: none"> Customized to meet specific performance and plot area requirements
<ul style="list-style-type: none"> Rugged burner and radiation fence design 	<ul style="list-style-type: none"> Extended service life
<ul style="list-style-type: none"> Low maintenance design 	<ul style="list-style-type: none"> Reduced operating and maintenance costs

The LRGO flare is provided with staging systems to ensure that short, smokeless flames are maintained over the full operating range of the flare.



KALDAIR MULTIPOINT INDAIR™ (KMI™)

Backed by more than 400 successful INDAIR flare tip installations worldwide, oil and gas processors depend on the 100% smokeless, low-radiation KALDAIR MULTIPOINT INDAIR (KMI) flare design for high-pressure flare applications. The KMI flare uses the Coanda principle to entrain and pre-mix large quantities of air into the flame, creating a low-radiation, smokeless flare. The variable slot design provides infinite smokeless turndown and high capacities without a need for elaborate, staged, multi-flare designs. The high-turndown variable slot tip prevents harmful flame lick between adjacent nozzles and greatly reduces the purge gas rate required to prevent internal burning. The KMI flare uses multiple, small diameter INDAIR nozzles mounted on a common flare manifold. The KMI flare's cast stainless steel, tulip-shaped Coanda nozzle extends tip life. For more information on the Coanda design principle, see page 13.



1st Stage



2nd Stage

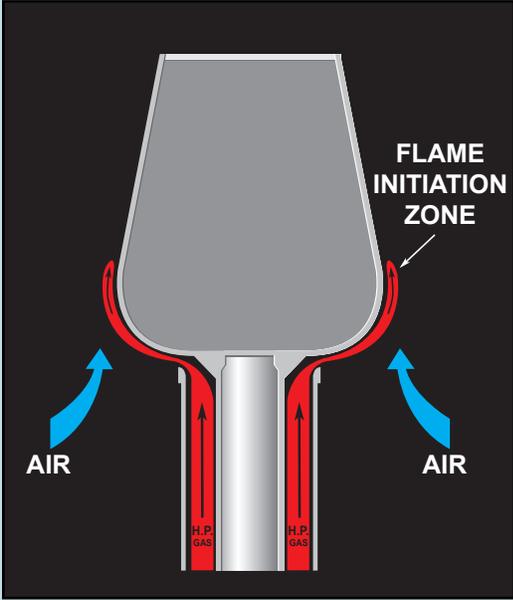
The multi-arm variable slot KMI flare tip allows multiple setpoints to be used on the spring-loading mechanisms. This provides a two-stage HP flare design without the use of staging valves.

FEATURES	BENEFITS
<ul style="list-style-type: none"> Variable slot design provides infinite turndown 	<ul style="list-style-type: none"> 100% smokeless operation without expensive staging systems
<ul style="list-style-type: none"> No flame lick at low gas flow rates 	<ul style="list-style-type: none"> Long flare tip life
<ul style="list-style-type: none"> Rugged cast stainless steel Coanda nozzles 	
<ul style="list-style-type: none"> Ideal for angled boom mounting 	<ul style="list-style-type: none"> Shorter boom length required to meet radiation requirements
<ul style="list-style-type: none"> Low purge gas requirements 	<ul style="list-style-type: none"> Reduced operating cost (energy cost)
<ul style="list-style-type: none"> Reliable ignition 	<ul style="list-style-type: none"> Safe flaring operation
<ul style="list-style-type: none"> High liquid handling capability 	<ul style="list-style-type: none"> Prevents dangerous flaming rain
<ul style="list-style-type: none"> Multi-stage design provides high turndown without the need for staging valves 	<ul style="list-style-type: none"> Reduced equipment and maintenance costs

The KMI flare utilizes multiple cast variable slot Coanda nozzles to provide 100% smokeless flaring in a rugged and durable flare tip design.



Flare gas exiting the INDAIR flare tip entrains and turbulently mixes 20 times its volume of air as it travels around the tulip-shaped Coanda profile.



THE WORLD'S MOST ADVANCED FLARE TECHNOLOGY FROM JOHN ZINK COMPANY

John Zink's advanced flare technologies raise the bar on clean, efficient combustion and deliver the outstanding performance our customers expect. Through the renowned John Zink Research and Development Test Center, we employ empirical and proprietary

design principles, sophisticated visualization tools, computerized modeling and full-scale testing to develop next-generation flare systems that can be put to work today.

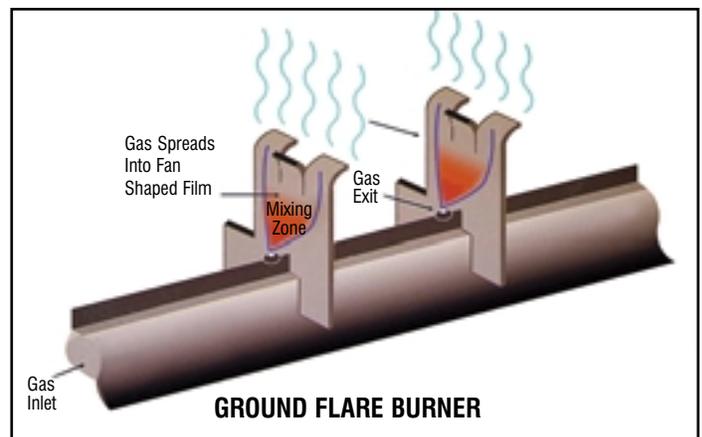
FLAME SIMILARITY METHOD DELIVERS INDUSTRY'S MOST ACCURATE SMOKELESS PERFORMANCE PREDICTIONS

John Zink developed the Flame Similarity Method (FSM) to quantitatively calculate whether a flame will smoke. The FSM relates the fundamental measures of the momentum of the air, steam and flared gas at the base of the flare tip to the smokeless capacity.

The series of equations accurately predicts the smokeless performance of any flare, as long as the mass flow rates and momentum of the various gas constituents can be accurately determined.

THE FIN PLATE BURNER DELIVERS SUPERIOR COMBUSTION EFFICIENCY WITHOUT STEAM OR AIR ASSIST

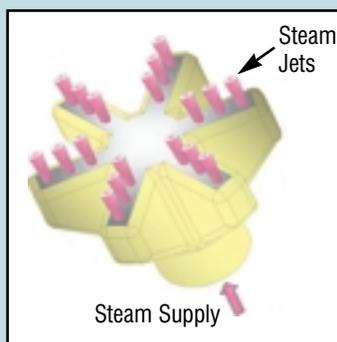
John Zink's fin plate burner uses the industry's most advanced technology to stop emissions where they form, resulting in ultra-efficient, clean combustion. The burner's fin shape acts as a flame stabilizer and enhances uniform combustion while the aerofoil-shape of its gas manifolds assists the entrainment of air. The overall effect is a matrix-style burner that produces an excellent flame with a wide turndown ratio.



1. The fin plate burner distributes the gas through a matrix of small holes adjacent to a shaped plate or fin.
2. As the gas exits the hole, it impinges on the plate and forms a thin film.
3. Air mixes effectively with the film to promote high-performance combustion.

SUPERSONIC NOZZLE TECHNOLOGY MINIMIZES SMOKE AND REDUCES NOISE

The multiple port supersonic nozzle produces the highest smokeless capacity of any single-point steam-assisted flare in the industry. The innovative design incorporates several smoke suppression strategies: increased perimeter, higher momentum, more combustion air, greater turbulence for mixing, dilution and chemical interaction by steam, and molding the flame to resist wind effects. The result is increased air eduction efficiency with reduced noise.

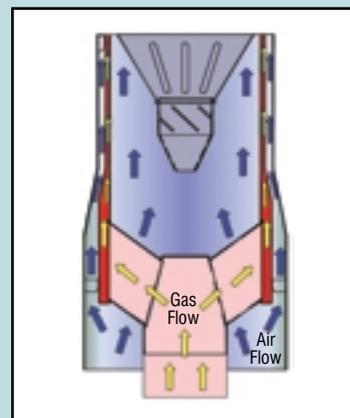


The JZ supersonic steam nozzle is used to produce a high-efficiency, low-noise, steam-assisted flare design.

ANNULAR FLARE DESIGN PROVIDES SUPERIOR TIP LIFE FOR LARGE AIR FLARES

To understand and eliminate internal burning in air-assisted flare tips, John Zink Company performed an extensive study on the effects of wind during low flow rates. As a result, John Zink developed the patented annular flare tip. Waste gas exits the burner in one or more narrow annular jets, each surrounded by assist air. The annular flare design maximizes the perimeter area and extends tip life by minimizing internal burning.

The annular air-assisted flare provides a high smokeless capacity flare that is not susceptible to the internal burning problems that are common in many large diameter air-assisted flares.

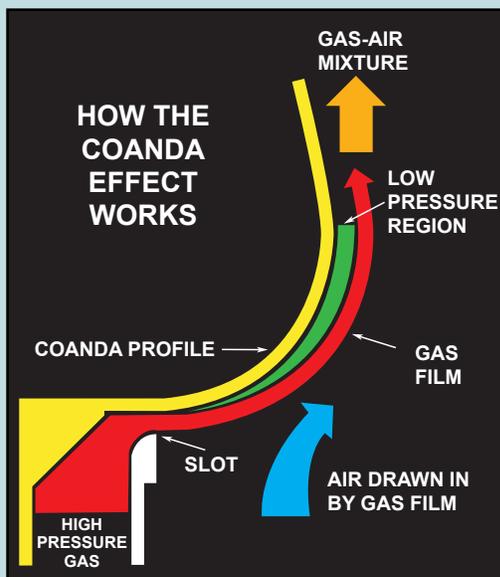


THE COANDA EFFECT TAKES FLARE-GAS COMBUSTION TO A WHOLE NEW LEVEL

The gas-adhesion principle known as the Coanda Effect dramatically enhances the combustion process. John Zink applies the Coanda Effect to its flare tip designs to harness the natural energy in relief gases, which eliminates the need for outside assist mediums.

Principles of Operation

1. Entraines and pre-mixes air into the hydrocarbon gas stream.
2. Ejects high-pressure gas radially outward from the annular slot at the base of the proprietary tulip-shaped flare tip.
3. Adheres gas to the Coanda profile and is diverted through 90 degrees.
4. Flame ignites just above the maximum diameter of the tulip for reliable ignition of the gas by external pilots. A protective film of hydrocarbon gas insulates the Coanda profile to prevent the flare tip from overheating.

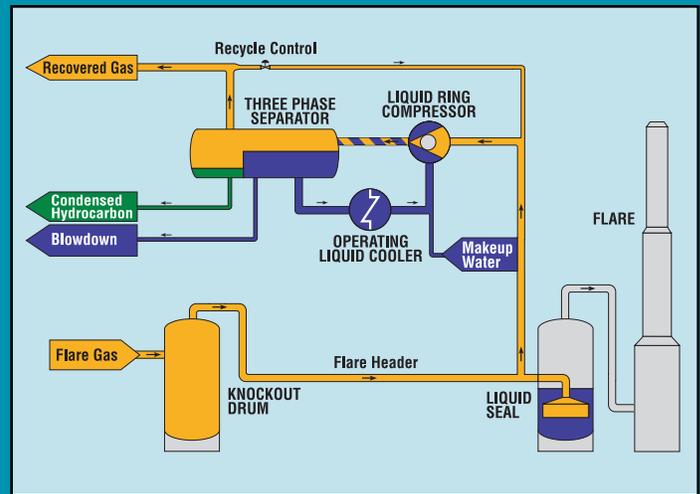


FLARE GAS RECOVERY

JZ® Flare Gas Recovery units are a smart solution to dramatically reduce flare emissions while recovering spent gas as fuel, feedstock or product.

As a world leader in flare and recovery technologies, John Zink is the choice supplier to integrate a flare gas recovery unit with your flare system.

- Rapid return on investment
- Eliminates emissions, visible flame and odors
- Reduces overall plant emissions
- Requires minimal maintenance



ACCESSORIES WITH A FLARE TO OPTIMIZE

The experts at John Zink Company know a single flare failure can bring about a sudden, expensive halt to your operations. The costs can add up quickly: unexpected repairs, unforeseen expenditures, environmental fines and lost production. John Zink Company's energy-efficient flare pilots, pilot monitors and control systems keep your JZ and KALDAIR flare systems operating at peak performance.

ENERGY-EFFICIENT PILOTS

John Zink's energy-efficient pilots are engineered to stay lit in extreme wind and rain and eliminate re-ignition delays.

EEP-500™

The EEP-500 pilot is dependable, affordable and completely adaptable to your current operations. Installed on hundreds of flares worldwide, the long-lasting pilot uses John Zink's advanced windshield design to ensure excellent ignition stability – even in sub-zero climates. The EEP-500 pilot consumes less natural gas than conventional pilots, saving thousands of dollars in fuel per year, per pilot.

WINDPROOF™ PATENTED*

The patented WINDPROOF flare pilot uses John Zink's advanced windshield design to withstand the most severe winds and rain with outstanding performance. Det Norske Veritas, the world's most widely respected product verification and certification company, witnessed and verified that the WINDPROOF flare pilot remains lit under test conditions that exceeded 160 mph winds and 30 inch/hr of rainfall. WINDPROOF flare pilot delivers exceptional fuel efficiency and fuel flexibility with ultra-low maintenance.



Patented WINDPROOF flare pilot.

RELIABLE PILOT MONITORS

Each of John Zink's pilot monitors is designed to ensure your flare pilot stays safely lit in remote and hard-to-access locations during the most intense wind, rain and snow.

SOUNDPROOF[®] PATENTED*

The high-fidelity SOUNDPROOF flare pilot monitor uses an acoustic sensor to provide rapid, continuous and reliable pilot verification, even under the most intense weather conditions. SOUNDPROOF pilot monitor listens for the unique frequency generated by each pilot flame, then indicates the pilot flame status on a signal processor. The flame status is also registered by contacts, which can be used for remote monitoring.



SOUNDPROOF acoustic pilot monitoring system.

KEP-100™

The KEP-100 flare pilot monitor and control system uses a DC signal for continuous flame monitoring. The system uses flame ionization to automatically detect and re-ignite the pilot flame in less than 30 seconds. The KEP-100 remote control panel may be positioned up to 1,000 feet from the flare for easy, at-grade maintenance during operation.

PILOTEYE 2000™

The PILOTEYE 2000 pilot monitor uses infrared technology to provide fast, reliable pilot verification at grade. The PILOTEYE 2000 pilot monitor's dual wavelength technology is 40 times more sensitive than single wavelength detectors for reliable flame verification in adverse weather. The user-friendly interface can be customized to suit your specific monitoring and troubleshooting needs.



PILOTEYE 2000 infrared pilot monitor.

ZOOM™

The ZOOM monitor observes your flare for smoke and instantly adjusts steam levels to return the flare to smokeless operation. The savings from reduced steam consumption pays for the ZOOM system within months.

IGNITION CONTROL SYSTEMS

FLAME FRONT GENERATORS

Based on extensive flare experience, John Zink's flame front generators provide reliable, remote ignition of flare pilots. A local alarm light and contacts for remote customer alarm systems are included. Automatic or manual operation is available.

ZEUS™

The ZEUS electric ignition device uses an air-cooled sparking tip to produce a high-energy discharge that instantly ignites the pilot. The ZEUS system monitors the EEP-500 pilot with solid-state electronics and controls that can be located up to 1,500 feet from the pilot.

KEP-100™

The KEP-100 ignition system delivers a reliable spark within the pilot nozzle for instantaneous ignition. The KEP-100 remote control panel may be positioned up to 1,000 feet from the flare for easy access.



KEP-100 automatic electronic pilot ignition control system.

OTHER ACCESSORIES

John Zink offers a complete range of control systems to keep flares operating at maximum performance with long life and even longer maintenance intervals. Retractable thermocouples, steam controls, blower controls for air-assisted systems and explosion-prevention systems are available for virtually every application.





A TRADITION OF EXCELLENCE AND INGENUITY

EXPERIENCE

In virtually every nation, across virtually every market, John Zink Company offers a breadth and depth of combustion skill, science and synergy that serve our customers long into the future. We are committed to providing the highest level of excellence in our systems and service through quality, performance and customer satisfaction.

RESOURCES

With more than 300 engineers and technical experts, John Zink Company is recognized as the authority on combustion science and clean-air innovation. Our resources include cutting-edge research and development, industrial-scale testing, world-class manufacturing and around-the-clock service and support.

TECHNOLOGY

John Zink's range of capabilities is unmatched in the industry and provides a strong foundation for exploring the next generation of clean, economical combustion. Advanced problem solving is a hallmark of John Zink Company and has earned us a reputation for taking on the toughest challenges. Our Research and Development Test Center is the nerve center for exploring new technologies that address cleaner, more efficient combustion. Here, John Zink designs and tests JZ and KALDAIR flare performance for the world's largest oil and gas production operations.



John Zink and its many brands of advanced combustion and pollution-control systems lead global industry with a vast base of successfully operating systems.

STATE-OF-THE-ART FLARE TEST FACILITY

At John Zink's Research and Development Test Center, our team of engineers tests combustion equipment under actual and simulated industrial-scale conditions to demonstrate system performance and collect critical data used to optimize real-life operation.

John Zink offers unparalleled capabilities for testing equipment under a broad range of operating conditions. Our state-of-the-art

computer networks and proprietary software enable advanced problem solving, remote test control and monitoring, and real-time data trending to characterize product design and record emissions and combustion performance.



John Zink Company's Research and Development Test Center is located on the campus of the company's world headquarters in Tulsa, Oklahoma.

JOHN ZINK COMPANY - YOUR FLARE PARTNER

The flare-system decisions you make today will impact your operation and cost of doing business for years to come. Don't settle

for less than the best. Call John Zink Company for all your JZ and KALDAIR flare systems and technologies.





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* QS is covered by CA Patent Number 1227410.

* LHLB is covered by one or more of the following Patents: U.S. Patent Number 5810575, 5846068. CA Patent Number 2226809.

* SKEC, LRGO and ZTOF are covered by U.S. Patent Number 4652232 and CA Patent Number 1233107.

* WindProof is covered by U.S. Patent Number 6702572 B2. Patents Pending in CA, CN, EPC, ES, SE, CH, GB, JP, KR, TR.

* SoundProof is covered by one or more of the following Patents: U.S. Patent Number 5813849, CA Patent Number 2212403, EPC Patent Number 935098, DE Patent Number 69810072.7 and AU Patent Number 745552. Patents Pending in AU, JP, KR, KW, SA, VE.

