



HPAAS FLARE

High-Pressure Air Assist System



BURNERS

FLARES

INCINERATORS

PARTS & SERVICE

HPAAS FLARE

High-Pressure Air Assist System

Without Air Assist



Smokeless Flare Solutions

To meet increasingly strict environmental regulations and to promote cleaner energy production at their facilities, many oil, gas, and petrochemical companies upgrade their existing smoking utility flares to provide smokeless flaring of hydrocarbon gases. These companies desire a more positive public profile and longer service life for their flare systems. In most cases, a smokeless flaring upgrade using flare technologies such as steam assist or low-pressure air assist may not be technically or economically feasible. The question is how to retrofit their smoking pipe flares economically and efficiently while minimizing the shutdown time involved with upgrading flare technology.

Enter the High-Pressure Air Assist System (HPAAS). HPAAS technology is the result of years of intensive research and development into solutions for retrofitting existing pipe flares with smokeless technology that was conducted by the world's largest oil company, Saudi Aramco. Saudi Aramco has successfully installed and operated this technology on dozens of flare systems in Saudi Arabia. Today, the patented HPAAS technology is available to the world market through an agreement between Saudi Aramco and Zeeco, Inc.



Without Air Assist

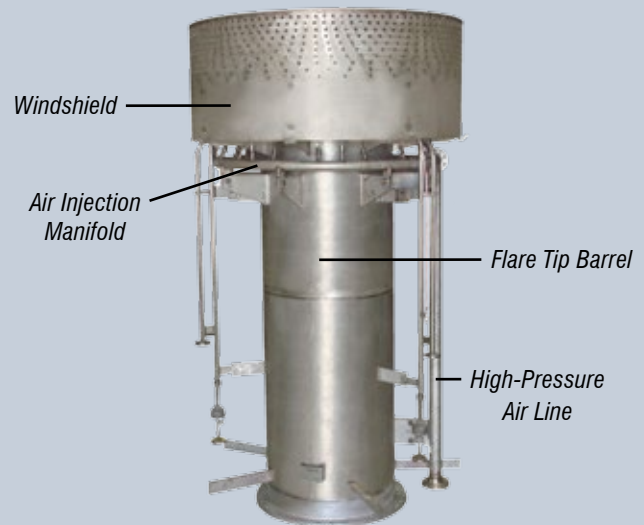


HPAAS Smokeless Flaring Technology

How HPAAS Works

HPAAS uses supersonic air injection nozzles to inspirate combustion air at a much higher efficiency than previous air assisted smokeless flaring technology. This combustion air produces smokeless flaring, lower radiation levels, and increased flare tip service life. Compressed air can be provided to the system through the existing plant air supply or from a dedicated air compressor.

The HPAAS flare tip includes a computer-modeled windshield that provides flame protection while allowing proper combustion airflow via a high-pressure air injection manifold on the flare tip outside of the high-heat zone. The air manifold is fitted with supersonic air nozzles specifically designed to provide maximum air injection while preventing flame pulldown on the flare tip.



Easy Retrofit

The flare system is one of the most important safety devices in hydrocarbon processing facilities. When a flare is taken out of service for maintenance, replacement, or a retrofit, the corresponding plant must also be shut down. Long plant shutdowns for flare system retrofits result in considerable amounts of lost production and revenue for the plant. Other flare retrofits such as low-pressure air assist designs are difficult, time consuming, and costly. The HPAAS flare tips bolt to the existing flare stack and allow for the small air supply line to mount easily to the flare stack with pipe support brackets.

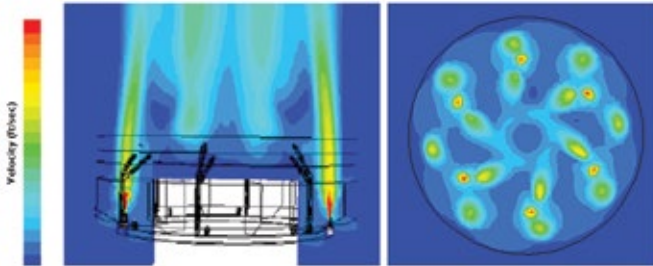
The HPAAS system can be easily retrofitted to an existing flare system in a quick, cost-effective manner, and normal shutdown time for a full HPAAS flare upgrade is typically three days or less. HPAAS systems have been most effective in areas where water for steam is scarce or expensive since the systems do not require steam injection for smoke suppression.



With Air Assist



CFD Technology



The chemical and hydrocarbon industry employs Computational Fluid Dynamics (CFD) as a proven modeling tool to aid in equipment design. Zeeco combines advanced CFD technology with our extensive experience in the design, fabrication and operation of combustion equipment to ensure optimal flare system performance.

HPAAS Success = A New Joint Venture

HPAAS technology is an ideal solution for a wide variety of applications. For the same reasons, it has been successful for Saudi Aramco and prompted the company to make the patented HPAAS technology available worldwide.

Aramco provided the HPAAS technology exclusively to Zeeco, Inc., the world leader in technology. Headquartered outside Tulsa, Oklahoma, USA, Zeeco specializes in combustion equipment, including flares, industrial burners, and incineration systems.

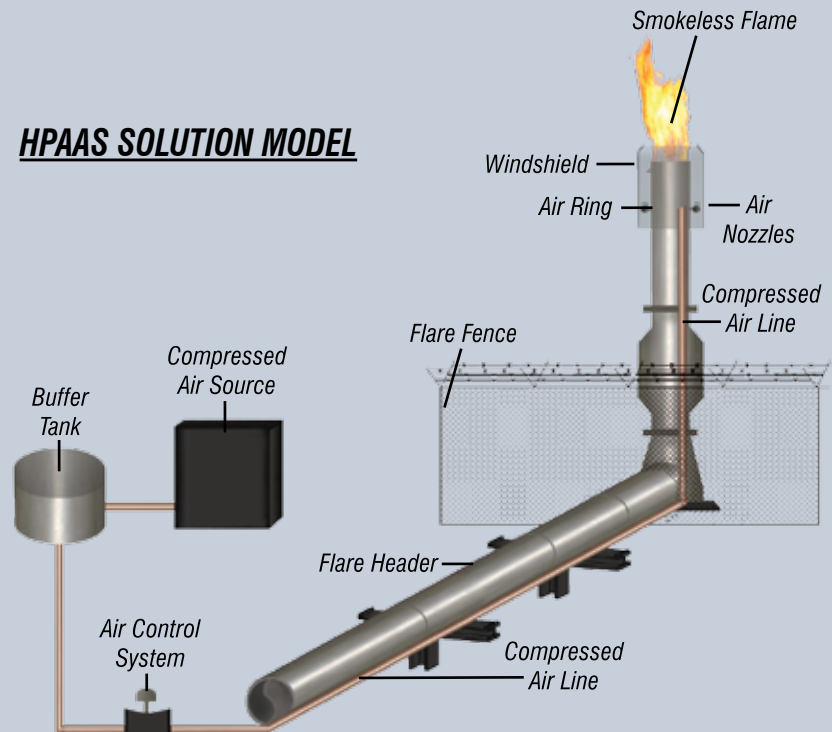
Why Choose Zeeco

Zeeco has provided combustion and environmental solutions around the world for more than 35 years. The cornerstone of our success is to provide customers with superior quality, on-time shipments and competitive pricing. Let Zeeco put our experience to work for you in the Middle East and around the globe by installing HPAAS technology to meet your flaring needs. Call today for more information on Zeeco's full line of flare products and replacement parts.

Advantages of HPAAS

- Easy retrofit to existing flares with minimal installation time
- Adaptable to a wide range of conditions
- No steam or service water required
- Robust design
- Low utility costs for operation

HPAAS SOLUTION MODEL





BURNERS



FLARES



THERMAL OXIDIZERS



PARTS & SERVICE



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