

Pillard firing equipment for Sulphur Recovery Units



Supplying high performance combustion solutions for Sulphur Recovery Units

- Claus reaction furnace burners
- Tail gas incinerator burners
- BMS/local control panels Ignitors/Flame detectors
- In-Line/Re-Heating/RGG burners
- Valve trains

Pillard SULFLAM® a Claus burner for Sulphur Recovery Units

PILLARD SULFLAM® CLAUS BURNERS

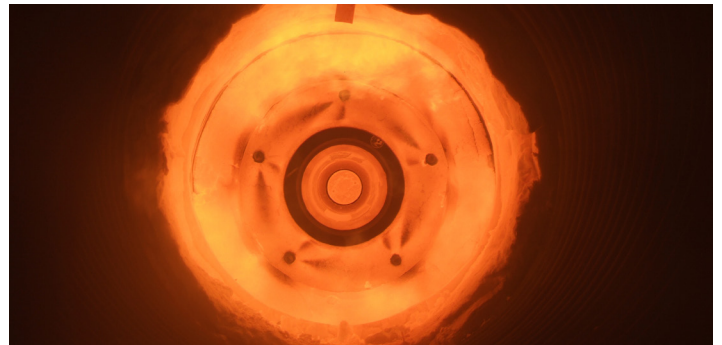
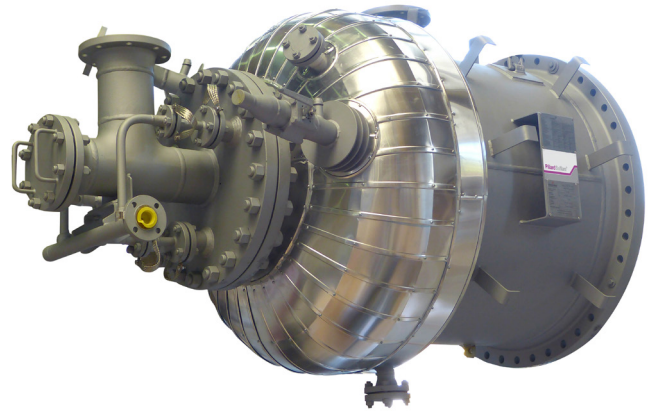
The efficiency of Claus reaction $2\text{H}_2\text{S} + \text{SO}_2 \rightleftharpoons 2\text{H}_2\text{O} + 3/2\text{S}_2$ taking place in the reaction furnace of sulphur recovery units depends on the capability of the Claus burner to achieve a good mixing of the combustion gases in the post flame zone at high temperature. Fives uses CFD modelling to optimize each burner design in order to ensure the highest efficiency and reliability of the Claus unit.

Pillard SULFLAM®'s double impulse/high intensity Claus burners are key process tools for Sulphur Recovery Units, ensuring:

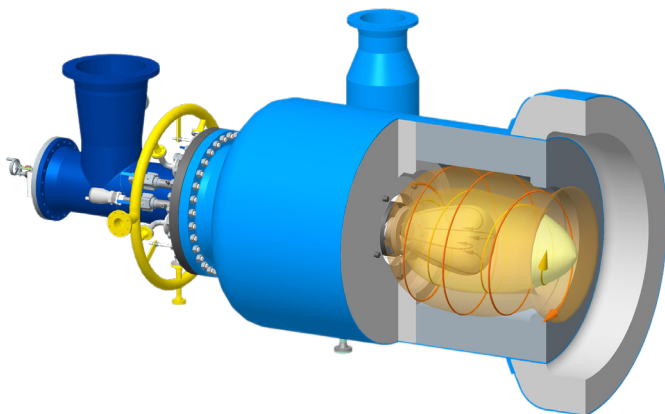
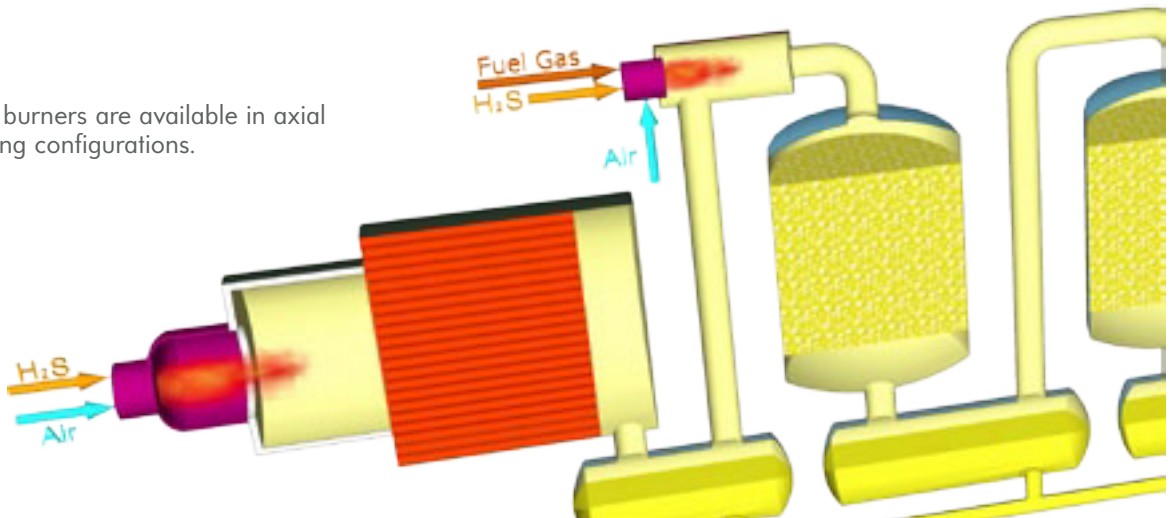
- High intensity compact flames
- Excellent mixing
- High flame stability even with lean acid gas stream
- High turn-down ratio with low acid gas pressure
- Efficient processing with very lean acid gas using conventional Claus and associated tail gas units

Leading to:

- High sulphur quality
- Increased S₂ conversion efficiency
- Reduced downstream pollutants levels i.e. BTX...
- Better catalyst lifetime when using co-firing technique
- Improved refractory lifetime



Pillard SULFLAM® burners are available in axial and tangential firing configurations.



Pillard SULFLAM® burner features a double stream acid gas tip allowing a two stage mix matching the different phases of the kinetic reaction occurring in the Claus furnace

50 years experience supplying high performance combustion solutions for Sulphur Recovery Units

IN-LINE / RE-HEATING / RGG BURNERS

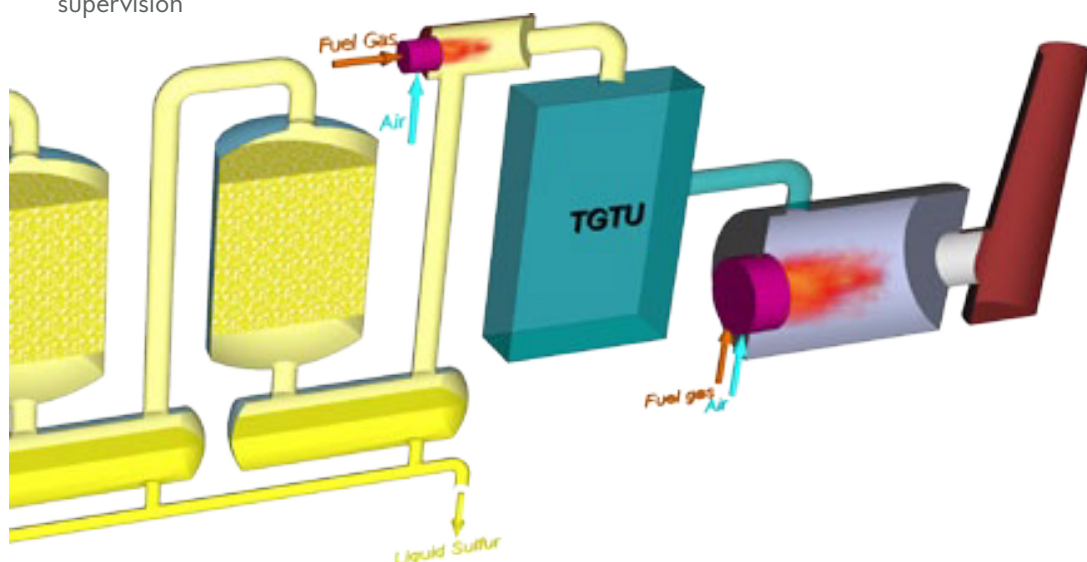
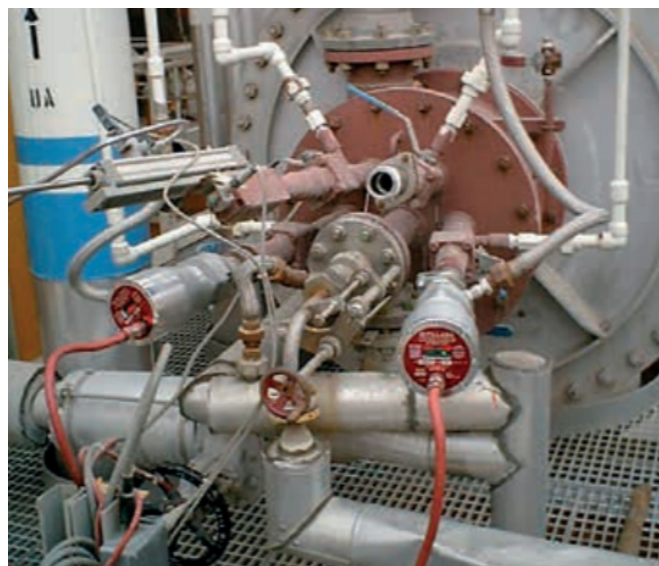
Such burners produce hot gases dedicated to re-heat the stream of process gas and can operate up to a large sub-stoichiometric air ratio.

The lack of combustion air ensures:

- No oxygen break-through to the catalytic section
- Production of reducing gas (H_2 and CO which will form $H_2 + CO_2$ in presence of H_2O) used to convert heavy sulphur compounds into H_2S in the downstream catalytic section

Fives' In-line / Re-heating / RGG burners are custom designed to:

- Provide high intensity compact flames to fit small combustion
- Operate in sub-stoichiometric conditions while ensuring a stable
- Burn fuel gas at low combustion air ratio without soot formation
- Ensure automated start-up and reliable flame supervision



TAIL GAS INCINERATOR BURNER

The thermal oxidation of residual pollutants contained in the tail gas of a Sulfur Recovery Unit requires:

- Temperature for thermal oxidation generally $\geq 800^{\circ}C$
- Residual oxygen content at incinerator outlet between 2% to 3%
- Residence time of around 1 second
- Efficient mixing

Fives's incineration burners are derived from hundreds GRC type burners installed worldwide, ensuring:

- Efficient conversion of the combustion air pressure into velocity, providing optimised mixing in the combustion chamber
- Operation in a wide range of excess air, contributing to the necessary residual oxygen at incinerator outlet
- High turn-down ratio, enabling control of the incineration temperature
- Flame shape control, ensuring no flame impingement on the refractory lining and thus increased refractory lifetime



Ultimate efficiency guaranteed for Pillard firing equipment of Sulphur Recovery Unit with a comprehensive range of flame scanner and igniters

PILLARD DARKSCAN™

Committed to safer Sulphur Recovery Unit burners, Fives conceived **Pillard Darkscan™** for permanent and precise detection of flame presence when acid gas and multi-fuel combustion:

- Self-checking device for the best SRU burners functioning
- Compact design integrating both the control electronics and the flame scanner sight
- Flame level display directly on the detector
- Innovative IR remote control for easier and quick installation and configuration



PILLARD PACKLIGHT™

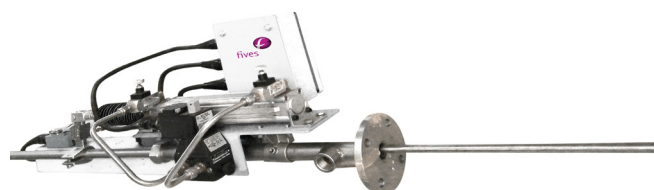
As an igniter and pilot, **Pillard Packlight™** based on natural gas and propane is suitable to any type of burners:

- Compliance with IP65 and ATEX standards
- Self-checking flame device with ionisation principle
- Flame level display on the detector
- Compact design for easy replacement and corrective action

PILLARD POWERPACK™

Designed for fuel gas, blast furnace and heavy oil burner, **Pillard Powerpack™** is a high energy ignition for industrial burners:

- Compliance with IP65 and ATEX standards
- High-power sparks - 12 joules per spark
- Adaptation to the most difficult fuel and environmental conditions



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CONTACT

fpi.sales@fivesgroup.com
T +33 (0)4 91 80 90 21

Fives Pillard
Marseille - France
www.fivesgroup.com


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