

- raadman -  
Burner

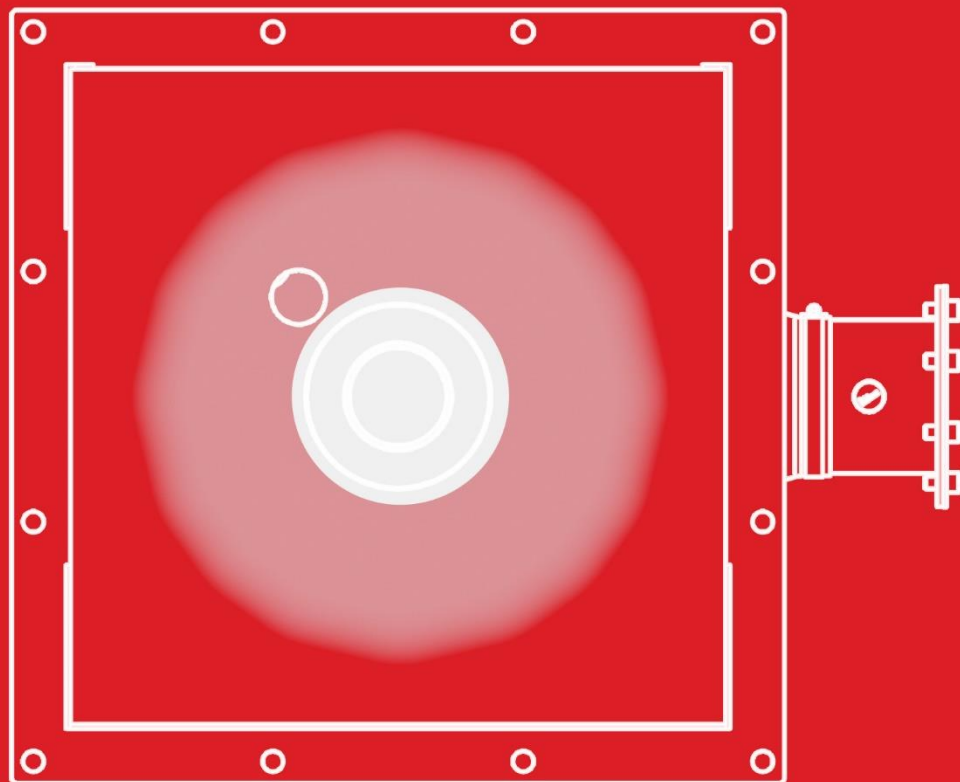


**RShine Series Burner**

Last Update

**February 2025**

## RShine Series



**Capacity Range: 100 kW to 1000 kW**

**Fuels: Hydrogen, Natural Gas**

**Design Standards: API 535**

**Advantages: Optimal design, Round Flat  
Flame, low sound emission, ease of instal-  
lation and maintenance**

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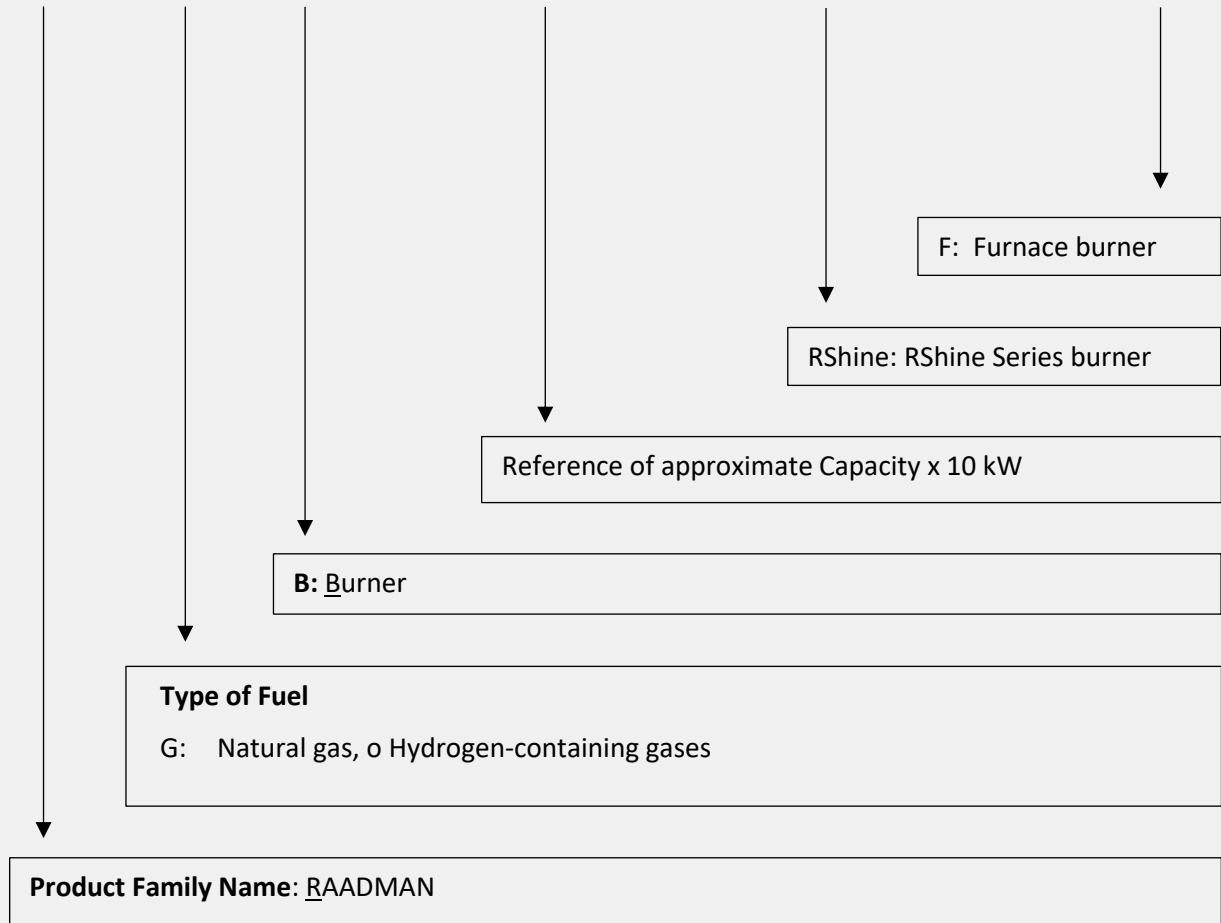


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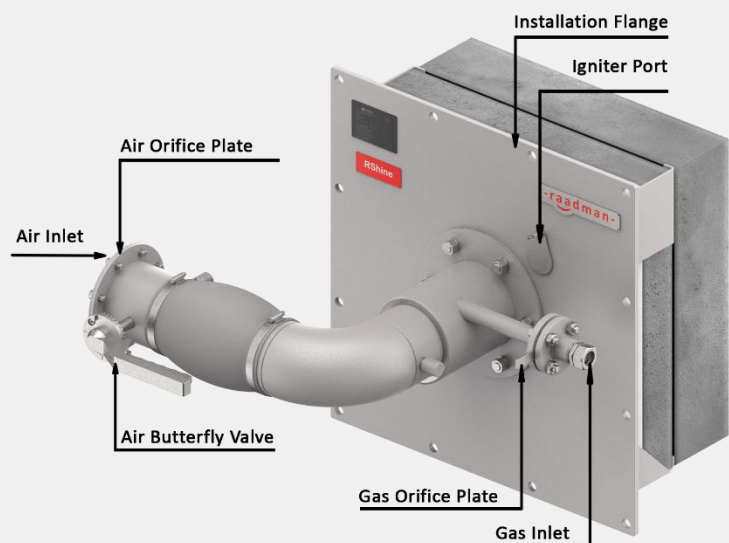
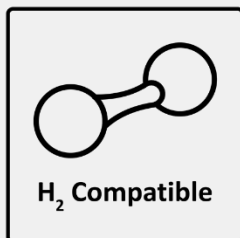
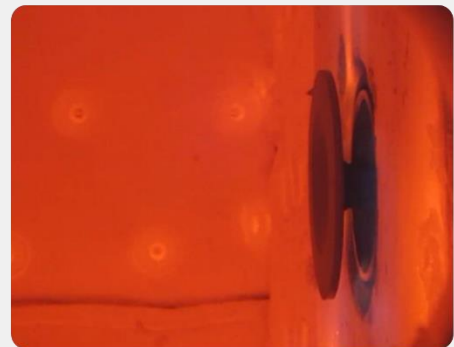
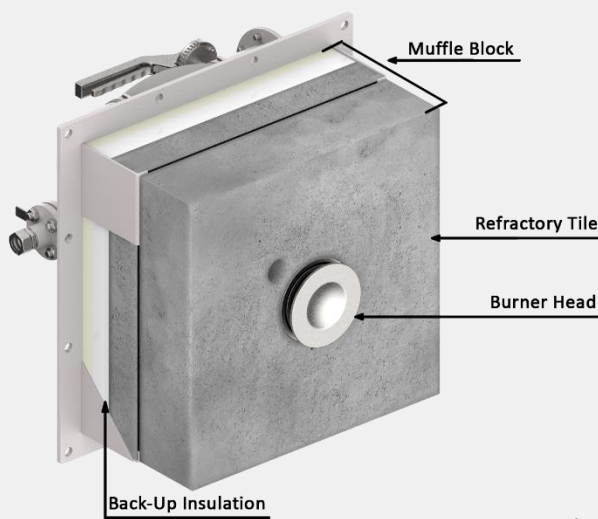
# raadman RShine Series Burner

Radiant wall burners are an advanced type of industrial burner specifically designed for use in reformer furnaces. Their innovative design generates a flat flame, enabling efficient heat transfer through radiation rather than direct flame contact with the furnace tubes. These burners are mounted on the furnace walls, where they heat the walls to radiate thermal energy to the tubes containing feedstock within the reformer. The heat of this process supplies the necessary energy for chemical reactions. The optimized design of these burners plays a crucial role in heat transfer via the tubes, ensuring homogeneous temperature in furnace, and reducing pollutants such as nitrogen oxides (NOx) and carbon monoxide (CO), while effectively enhancing combustion efficiency.

Raadman radiant wall burners have been manufactured with capacities of up to 1 MW, and due to industry demands, multiple units are often integrated into a single furnace. Additionally, raadman radiant wall burners are capable of operating with up to 70% hydrogen as fuel.

Key applications of RShine series include:

- Reformer furnaces for hydrogen and carbon monoxide production
- Cracking furnaces for ethylene production

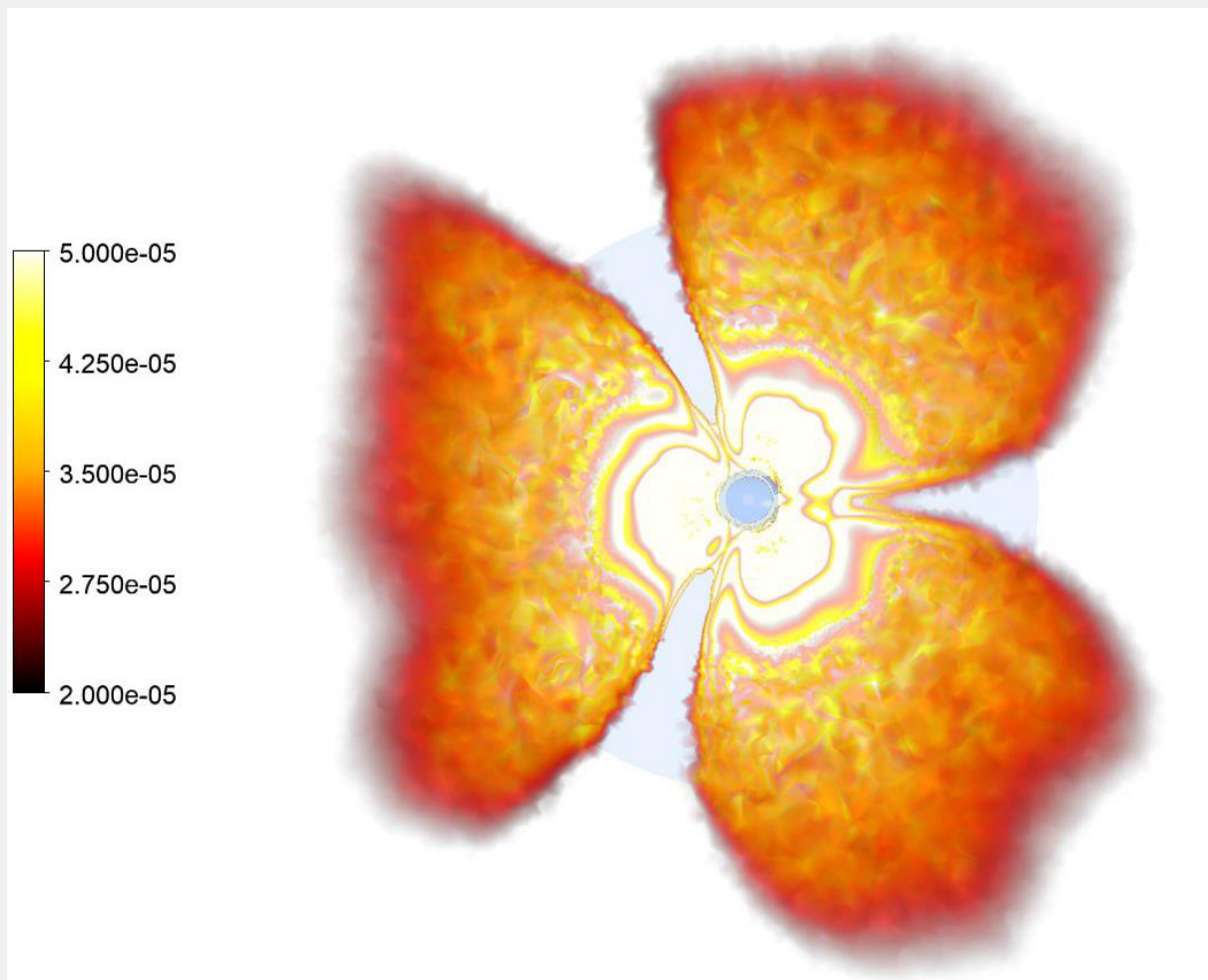


## CFD Experts in R&D Department

At Raadman’s Research and Development (R&D) department, the design and production process of burners is carried out with high precision and in accordance with the latest international standards. Before production, each burner undergoes advanced simulations and is precisely analyzed in terms of fluid flow and combustion processes.

By using the cutting-edge computational technologies and advanced engineering techniques, each design is optimized to maximize combustion efficiency while minimizing emissions of NOx and CO. This innovative approach guarantees the superior quality, safety, and efficiency of raadman’s products.

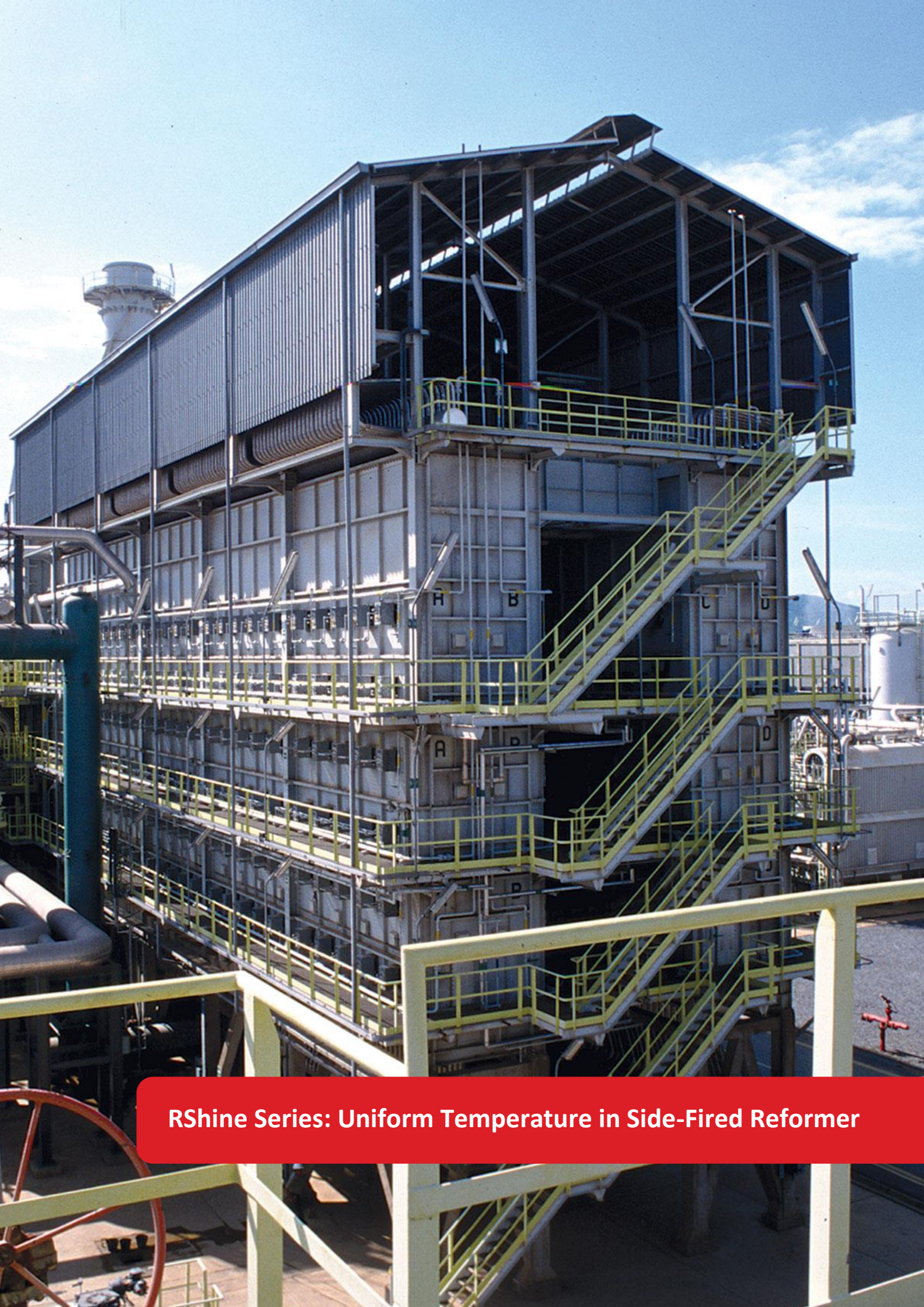
CFD is a fundamental tool in the development of raadman RShine series burners, playing a crucial role in refining their design and performance. These burners incorporate multiple design parameters that directly influence their efficiency. These parameters include the diffuser dimensions, the distance between the burner and the furnace wall, and the uniform distribution of air, all of which contribute to a stable and symmetrical flame. Each of these factors plays a crucial role in optimizing burner operation, minimizing emissions, and maximizing combustion efficiency.



## raadman RShine Series Features

RShine series burners offer the following features:

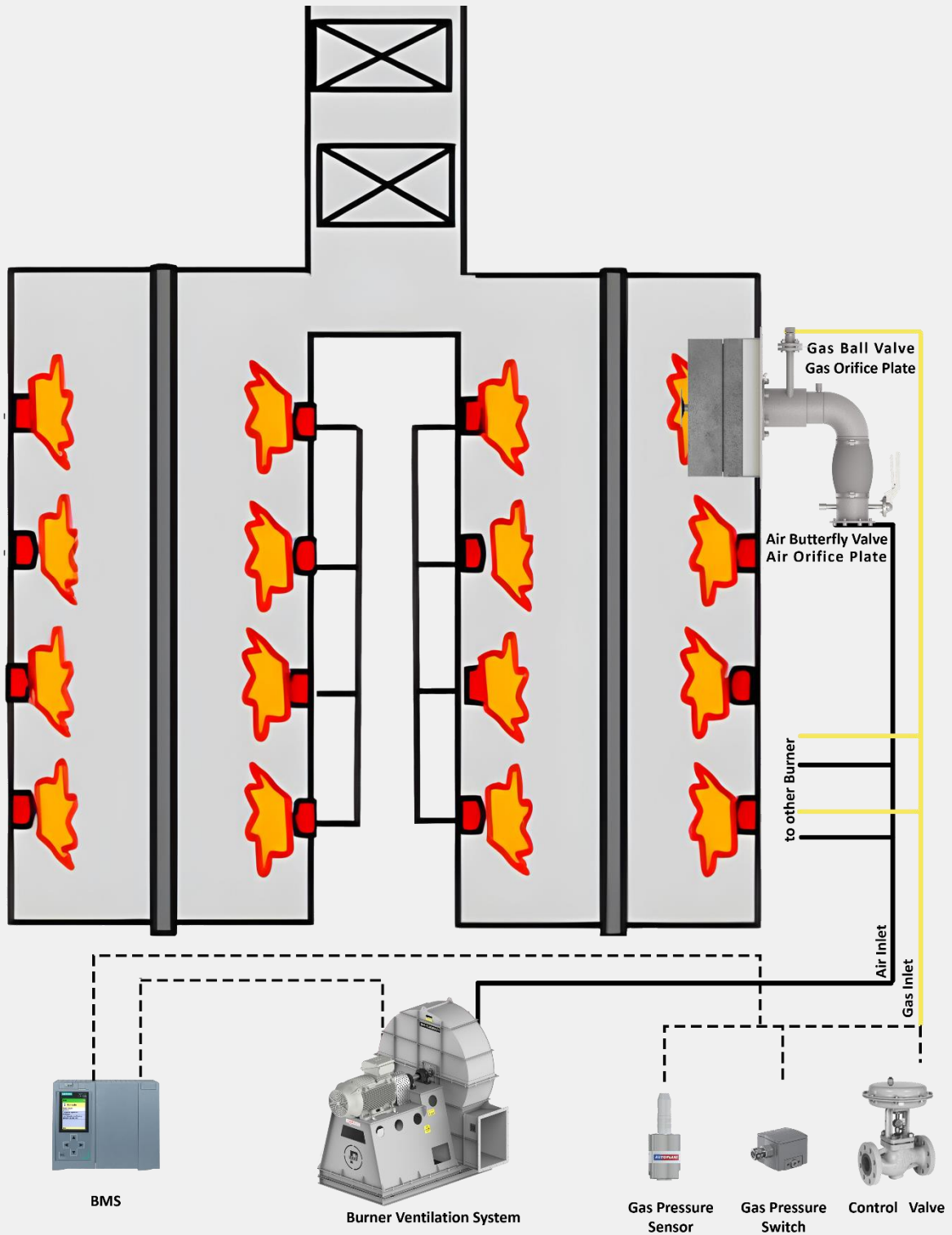
- Nozzle-mix burner type
- Use of a diffuser to create a flat flame and ensure homogeneous distribution of temperature
- Burner air supply:
  - Forced draft airflow using a fan
  - Preheating air up to 250°C
- Compatibility with the following fuels:
  - Natural gas
  - Hydrogen-containing gases
- Low emissions:
  - CO levels close to zero
  - NO levels below 50 ppm
- Burner body:
  - Made of high-temperature resistant steel
  - High service life
- Stability:
  - Stable and symmetrical flame
- Turndown Ratio
  - Turndown Ratio of 1:5
- Refractory wall (muffle block):
  - Three-layer structure: Includes 60% alumina, calcium silicate, and ceramic fibers for optimal insulation
  - High thermal resistance: Can withstand temperatures up to 1650°C
  - Long-lasting durability: Designed for a long service life



**RShine Series: Uniform Temperature in Side-Fired Reformer**

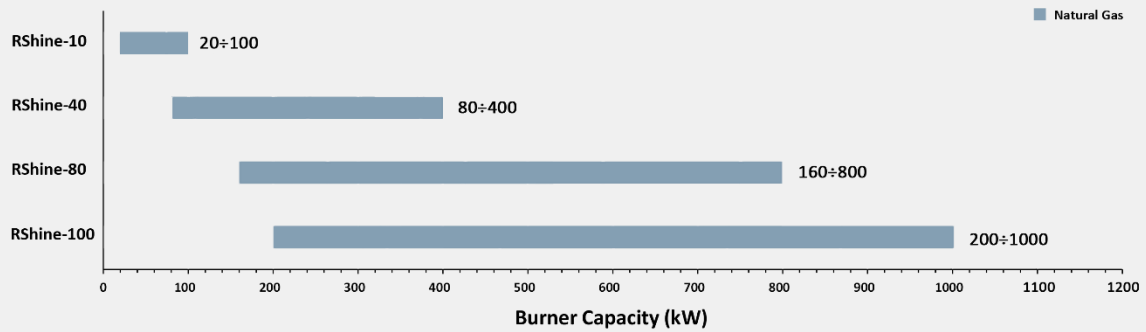


# Process Flow Diagram of RShine Series

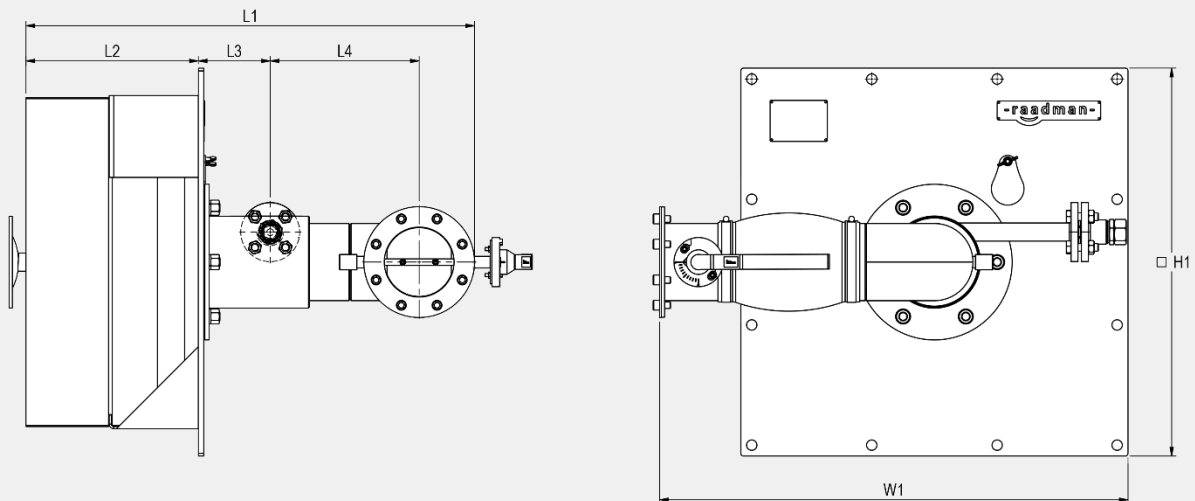


## RShine Series Range

Raadman's RShine Series burners can be designed and manufactured in various capacities. The capacity range of this type of burner in forced draft mode is presented in the diagram below.



## General Dimension: RShine Series



Burner Model	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub> *	L <sub>4</sub>	W <sub>1</sub>	H <sub>1</sub>	D <sub>1</sub>	N
RShine-10	o	o	o	o	o	o	o	o
RShine-40	822	316	132	273	860	710	19	12
RShine-80	822	316	132	273	860	710	19	12
RShine-100	o	o	o	o	o	o	o	o

o: on request

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## Note

A series of 30 horizontal dotted lines for writing notes.





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