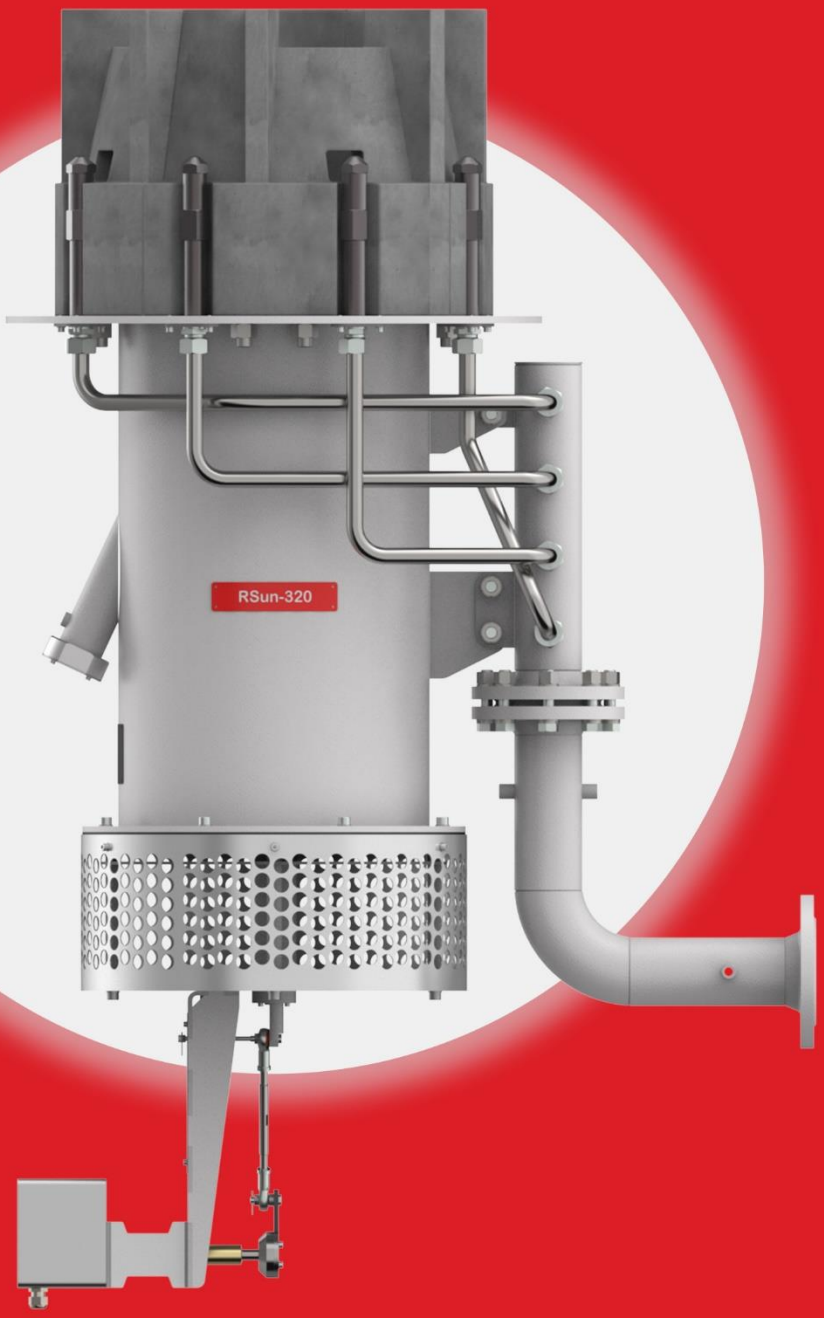
- raadman -
Burner



RSun Series Burner

Last Update
February 2025

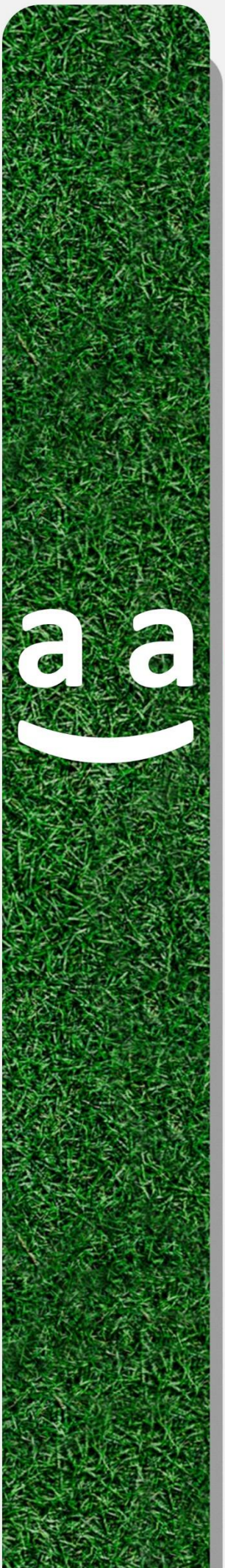
Natural Draft (1.3 MW to 8 MW)

Forced Draft (Higher than 8 MW)

Ultra-Low NOx

Design Standard: API 535

Application: Fired Heaters, Reformers or Other Furnaces in the Petrochemicals Industry

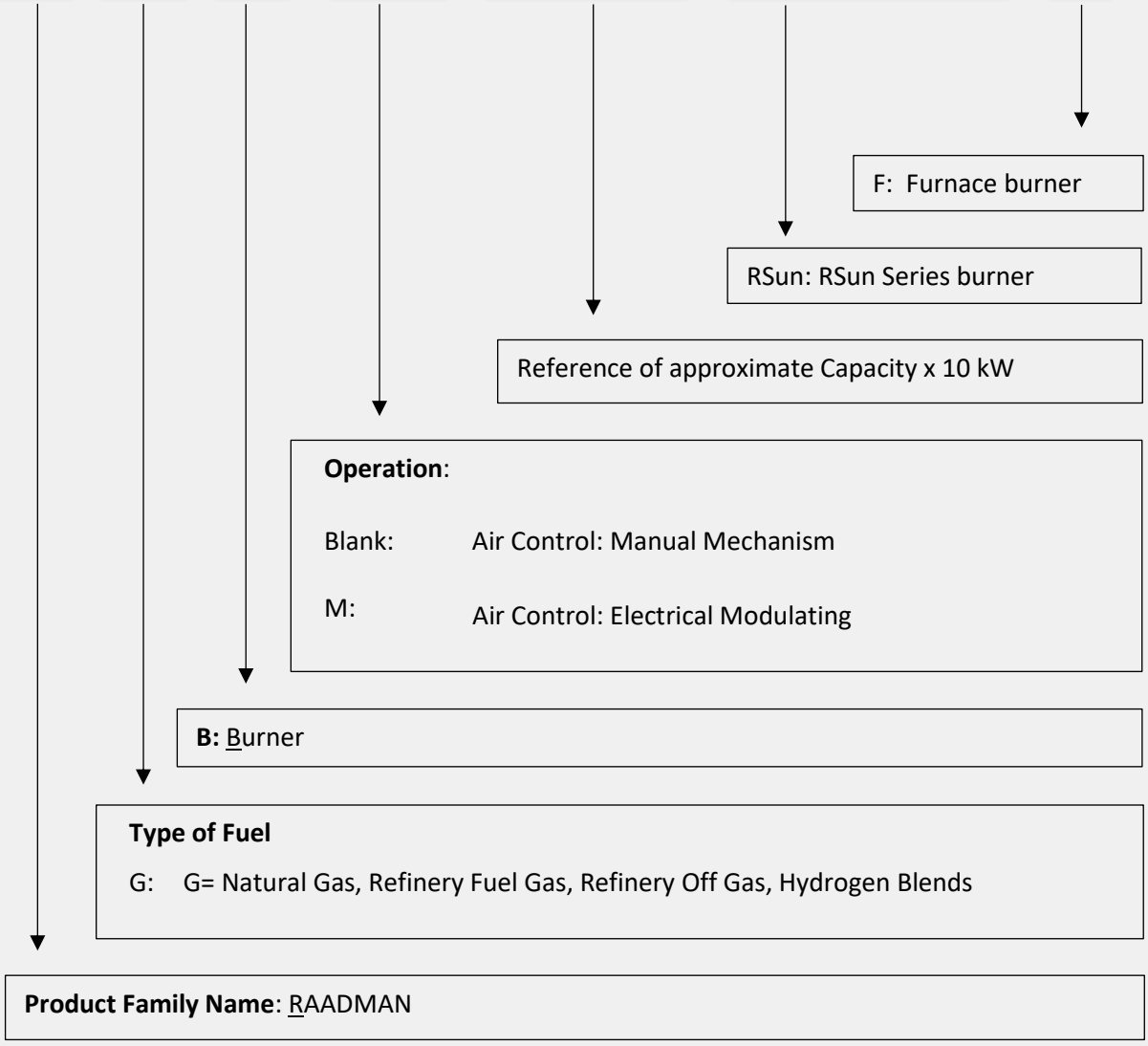


- raadman

- SMILE INTO THE FUTURE

8040I9Z1I4Z3@8D8I2H7@1V46631

R G B-M-130-RSun-F



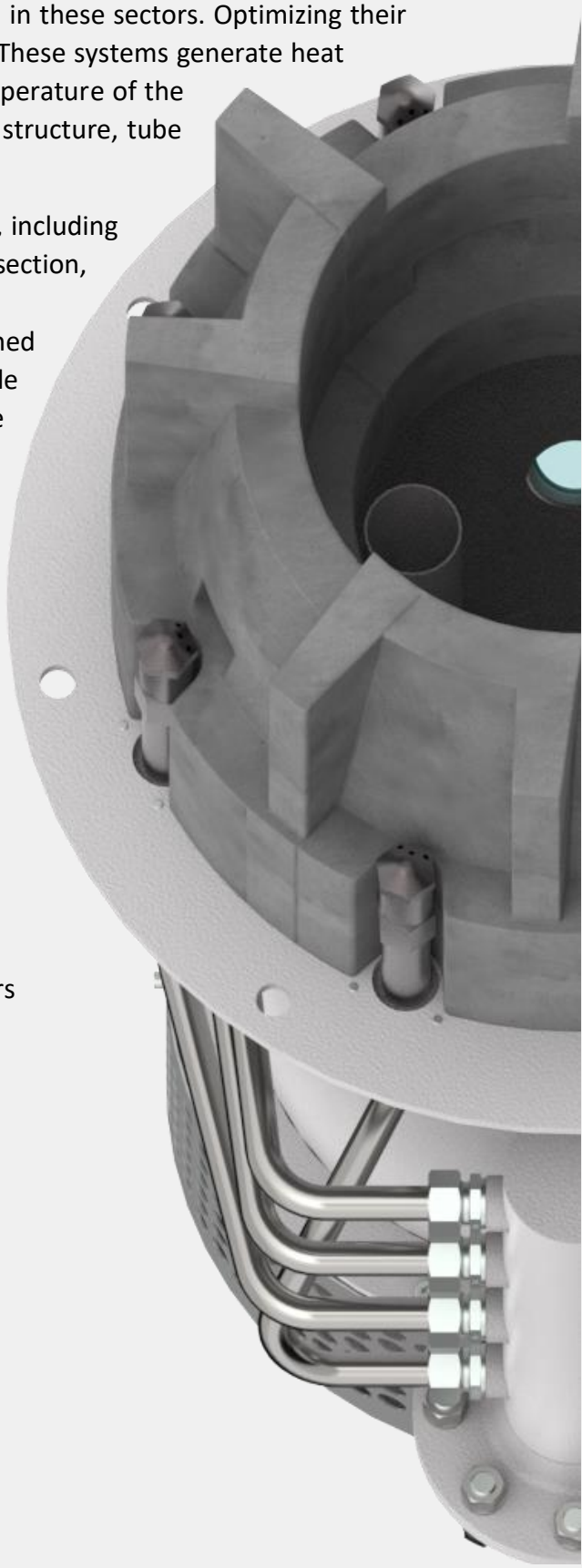
raadman RSun Series Burner

Fired heaters are critical components in the refineries and petrochemical industries, accounting for a substantial share of energy consumption in these sectors. Optimizing their performance can significantly enhance energy efficiency. These systems generate heat by burning natural gas, oil, or other fuels to raise the temperature of the process fluid. Fired heaters vary in design based on their structure, tube configuration, and airflow.

A typical fired heater consists of several key components, including burners, a radiant section, a heat shield, a convection section, breeching, and a chimney.
The RSun series burners by Raadman are specifically designed for use in fired heaters, ensuring low NOx emissions while providing a flame that meets the specific needs of these systems. This design helps to prevent flame impingement and its subsequent damages. Available in multiple sizes, these burners can operate at capacities of up to 8 MW in natural draft mode. When used in forced draft mode, they can achieve even higher capacities.

The following section outlines the applications of these burners in various industries:

- Various types of fired heaters
- Coker heaters
- Ethylene cracking furnaces
- Crude and vacuum heaters
- Horizontally fired platformers
- Hot oil heaters, charge heaters, reboilers, etc.
- Down-fired methanol, ammonia, and hydrogen reformers

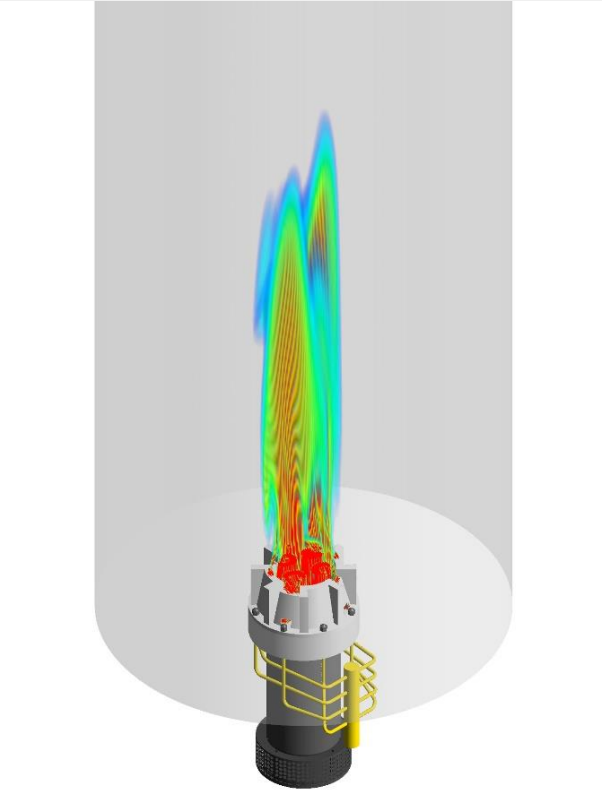


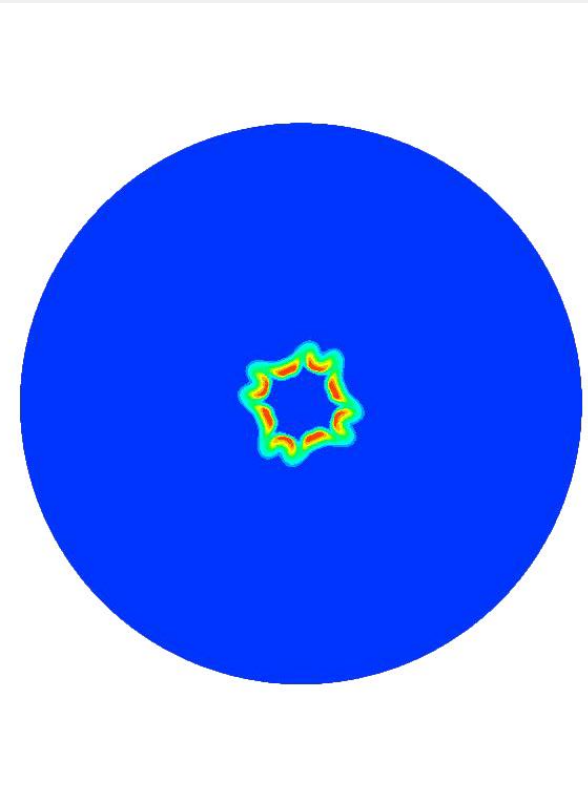
CFD Experts in R&D Department

In Raadman, any new burner that is going to be manufactured must pass through multiple phases before reaching its final detailed design. One of the most important steps that determines and optimizes the thermofluidic performance of the burner is done in the R&D department. The two important tools in this process are CFD and experimental tests.

Computational fluid dynamics or CFD is a modern computer-aided method that uses computational methods to solve physical model equations and simulate the flow and combustion in a burner. It is a very efficient tool that could reduce the time and expenses of a burner development process significantly, as it allows the investigation of a relatively large number of configurations. While CFD has a lot of advantages, it requires powerful computers and high expertise to achieve reliable results.

In the procedure of developing Raadman process burners, CFD was one of the main tools. The geometries of such burners include multiple design parameters that could have many possible combinations. In order to determine the effects of each parameter and achieve the optimum combination of them, CFD was applied to simulate the performance of different geometry cases. The key factors to evaluate the performance of each case were: flame dimensions, NOx emissions, CO emissions, air pressure drop, inlet gas pressure, and temperature distribution on heat-exposed components. These factors play crucial roles in determining the operation of a burner in an industrial furnace.



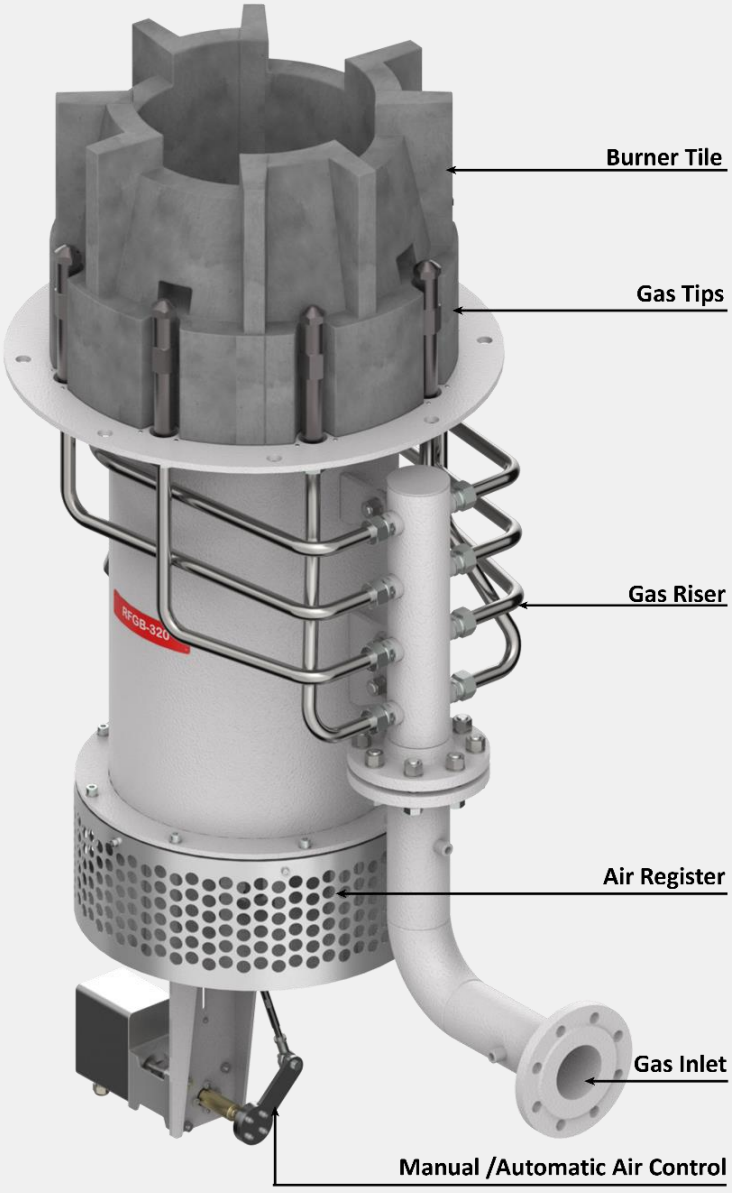


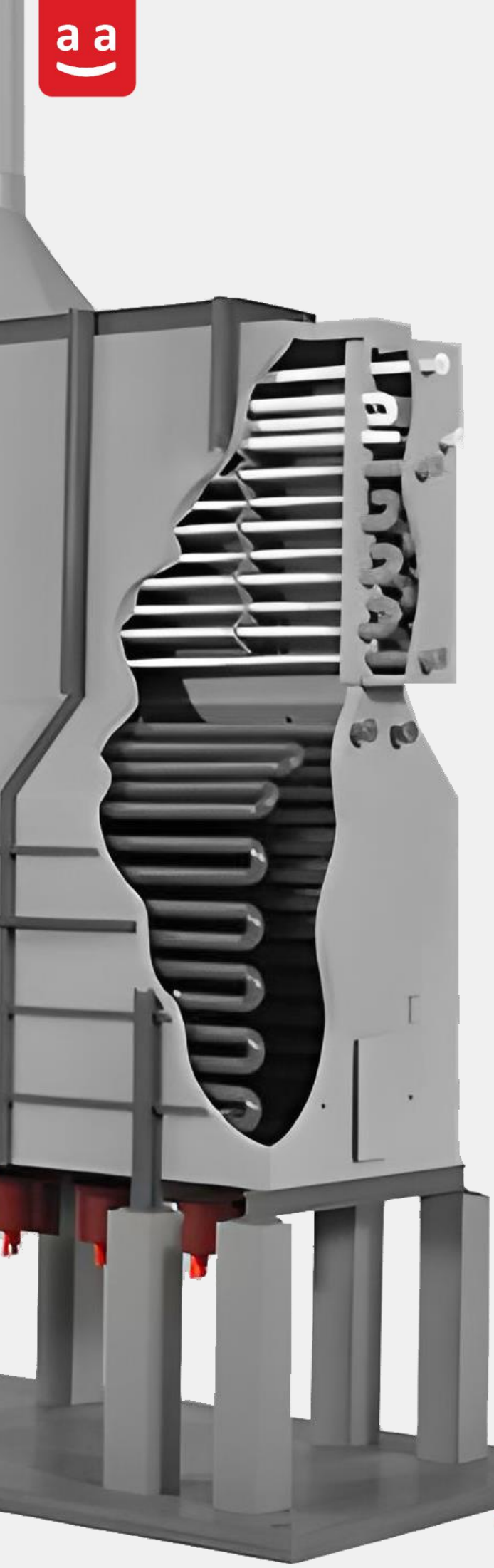
raadman RSun Series Features

The following section introduces the components of the RSun series burners and highlights the key features of these products.

- Compatibility with Gaseous Fuels Such as:
  - Natural Gas
  - Refinery Fuel Gas
  - Refinery Off Gas
  - Hydrogen Blends

- Ultra-Low NOx
  - Up to 90% reduction in NOx emissions
  - Could reach NOx emissions as low as 15 ppmvd or even lower in some conditions





- Fitted with Raadman Radial Air Register
  - Radial air inlet takes smaller space compared to conventional side entry design
  - Radial air inlet ensures uniform air distribution, consequently enhancing flame shape and emissions
  - Linear air control provides more accurate excess air adjustment from minimum to maximum firing rates
  - Lower wind effects compared to conventional registers

- Simple Operation
  - Stable burner start-up
  - Automatic air control proportionate to the firing rate available
  - Single fuel-gas connection

- Low Maintenance
  - The position of fuel tips on the furnace floor protects them from extremely high temperatures
  - High durability tile
  - Gas tips with their stainless-steel risers are separately removable
  - No need for metal flame holders to stabilize the flame

- Reliable and Stable
  - Optimal flame dimensions minimize the probability of flame impingement and provide maximum thermal efficiency
  - Stable flame with a variety of gaseous fuels and furnace conditions
  - No need to pilot flame for burner stability

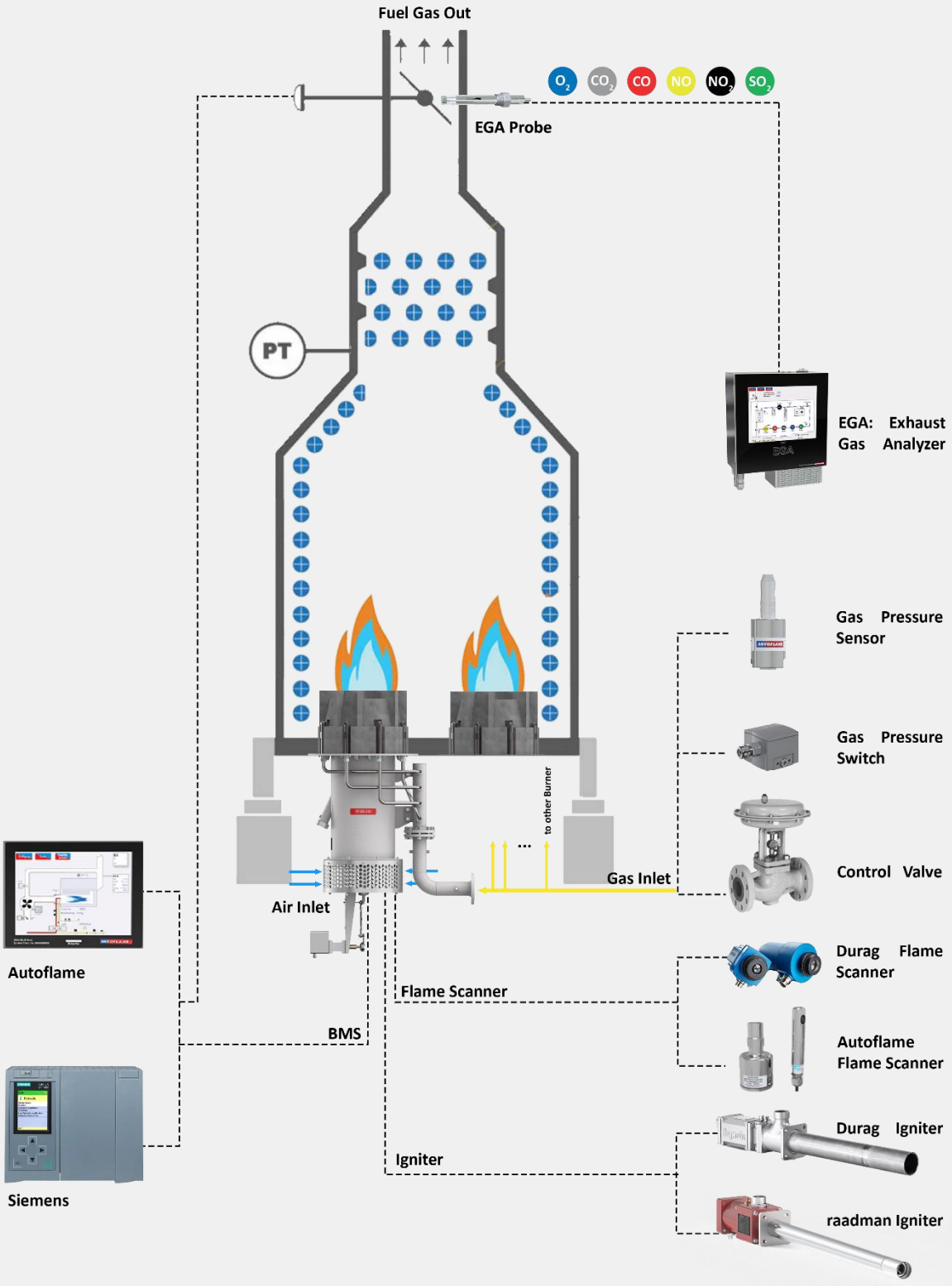
- Versatile Design
  - Applicable in natural or forced draft mode
  - Installable in up-fired, down-fired, and horizontal configurations
  - Individual or common plenum in multiple burner furnaces

- Turndown Ratio
  - 4:1 or higher if required

- Design Standards
  - API-535 and API-560

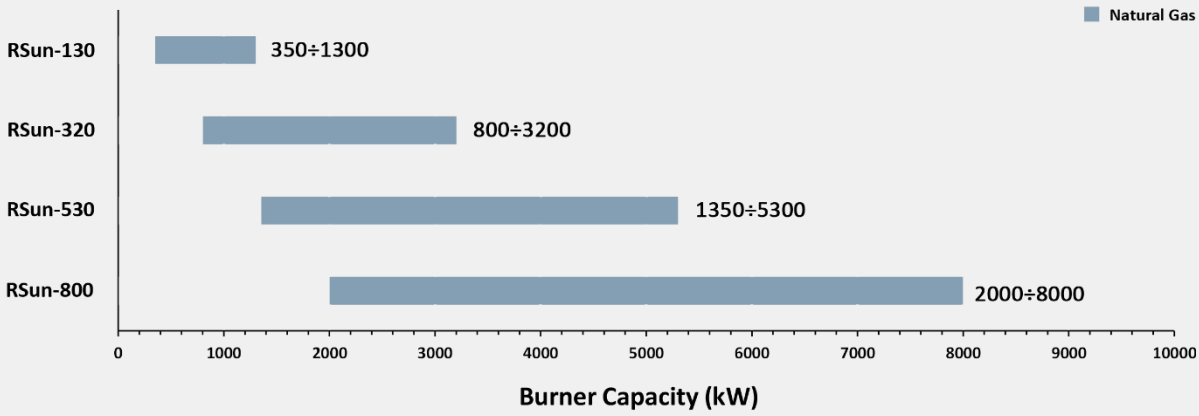
Cut the Emissions in Fired Heaters by RSun Series

Process Flow Diagram of RSun Series

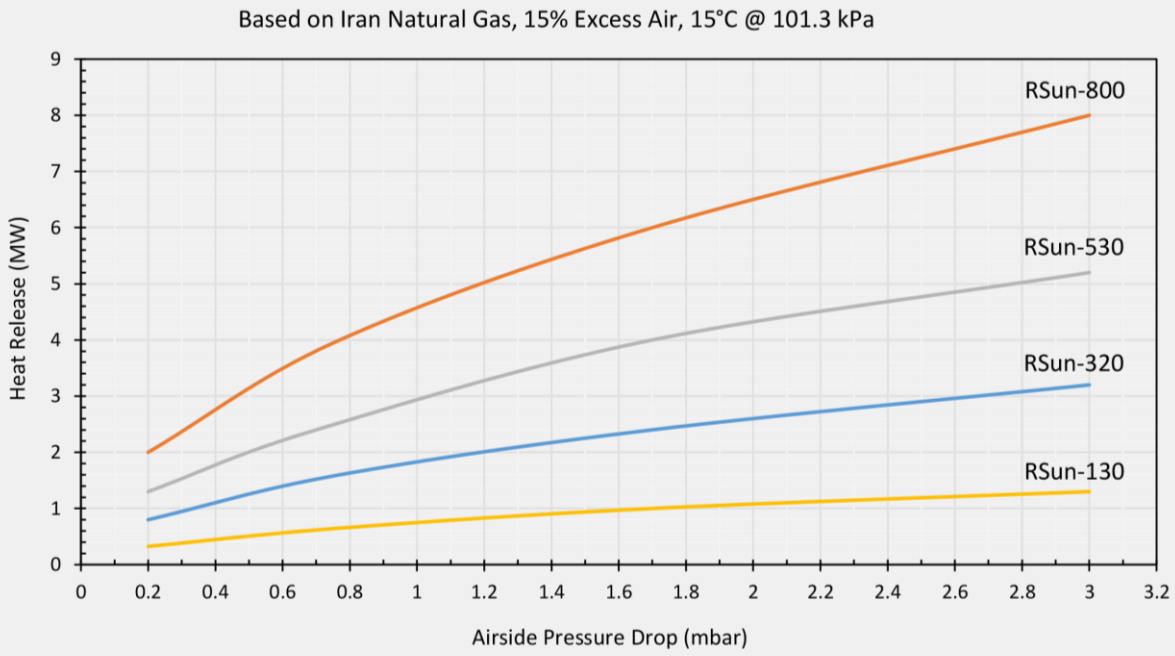


RSun Series Range

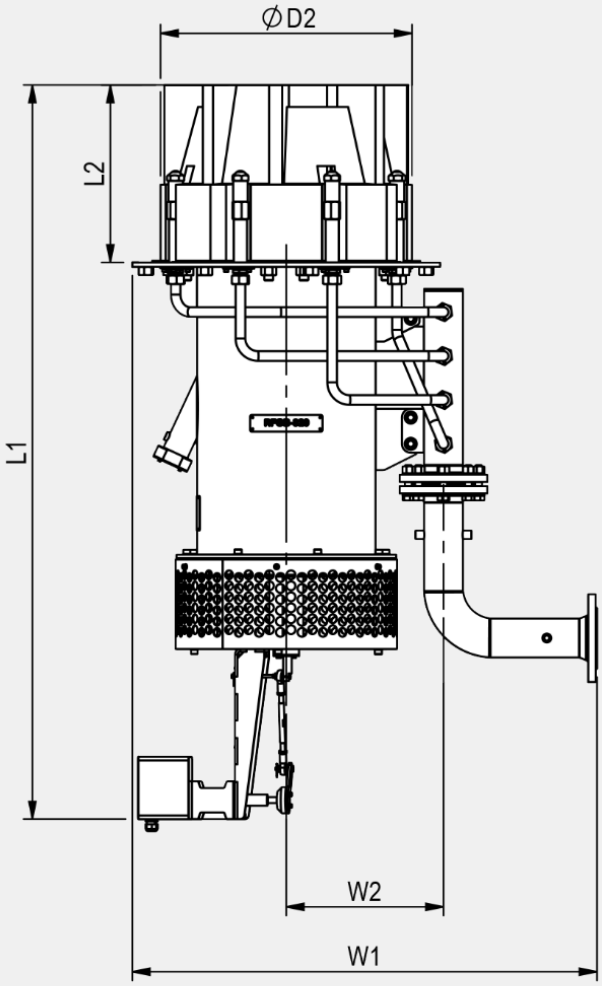
Raadman's RSun Series burners can be designed and manufactured in various capacities. The capacity range of this type of burner in natural draft mode is presented in the diagram below.

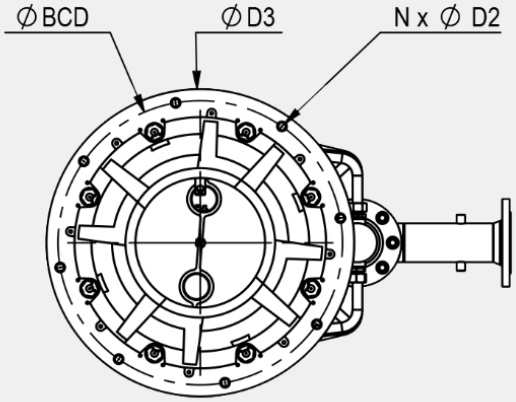


RSun Series Capacity Curve



General Dimension: RSun Series





Burner Model	L_1	L_2	W_1	W_2	D_1	D_2	D_3	N	B.C. D
RSun-130	o	o	o	o	470	o	o	o	o
RSun-320	1672	404	1057	358	572	22	700	8	647
RSun-530	o	o	o	o	648	o	o	o	o
RSun-800	o	o	o	o	724	o	o	o	o

o: on request

Contact us

Central Office

Address: 4th floor, No2, 10th St, Ahmad Ghasir Ave, Tehran, Iran

Phone: (+9821) 42362

Fax: (+9821)88737131

www.packmangroup.com

Burner Factory

Address: No. 5, 102 Ave. Montazeriye Industrial Town, Vilashahr, Isfahan, Iran

Phone: (+9831) 42290483

Information Center

Mobile Phone (Telegram & Whatsapp): (+98) 913 429 4984

Email: info@raadmanburner.com

International Sales

Mobile Phone (Telegram & Whatsapp): (+98) 913 429 4965

Email: Sales@raadmanburner.com

Support Center

Mobile Phone (Telegram & Whatsapp): (+98) 913 429 4981

Email: Support@raadmanburner.com

www.raadmanburner.com

Note

Note

- SMILE INTO THE FUTURE -

www.raadmanburner.com