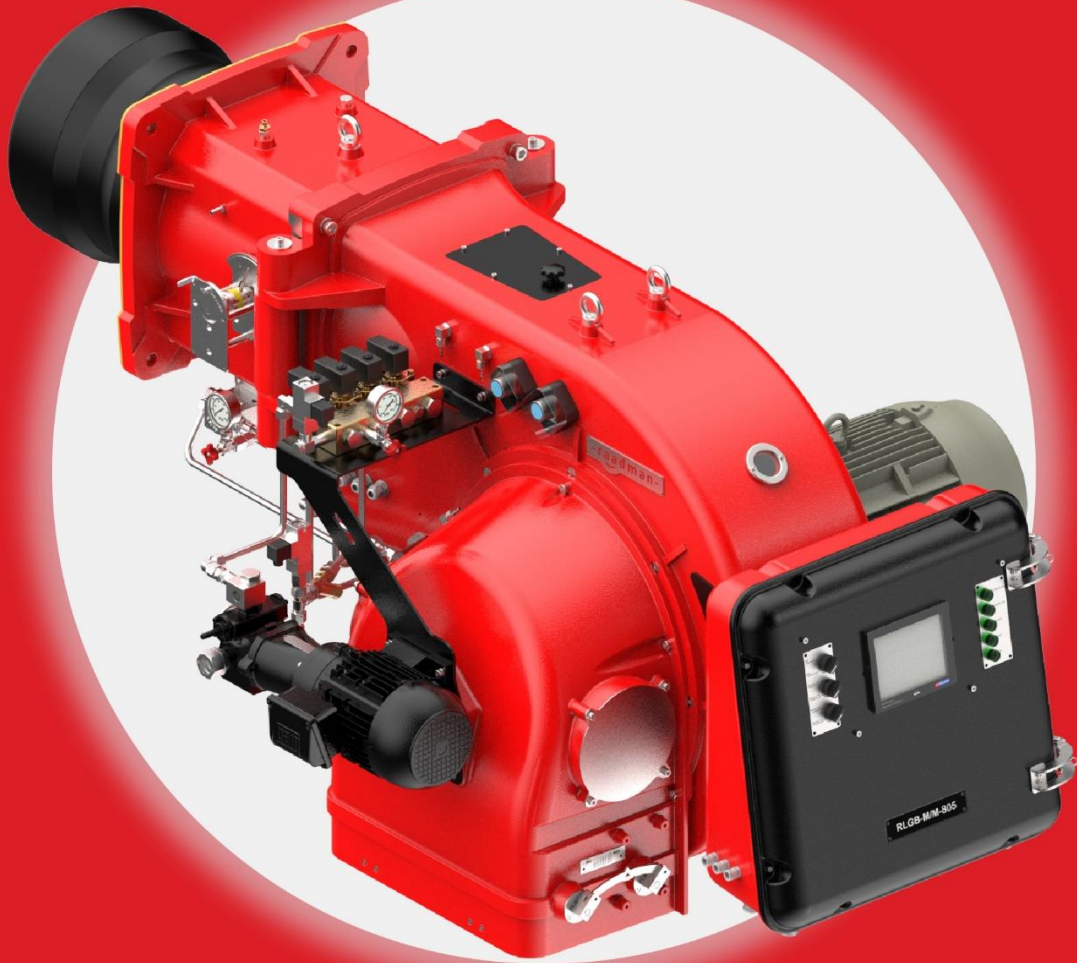


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Burner

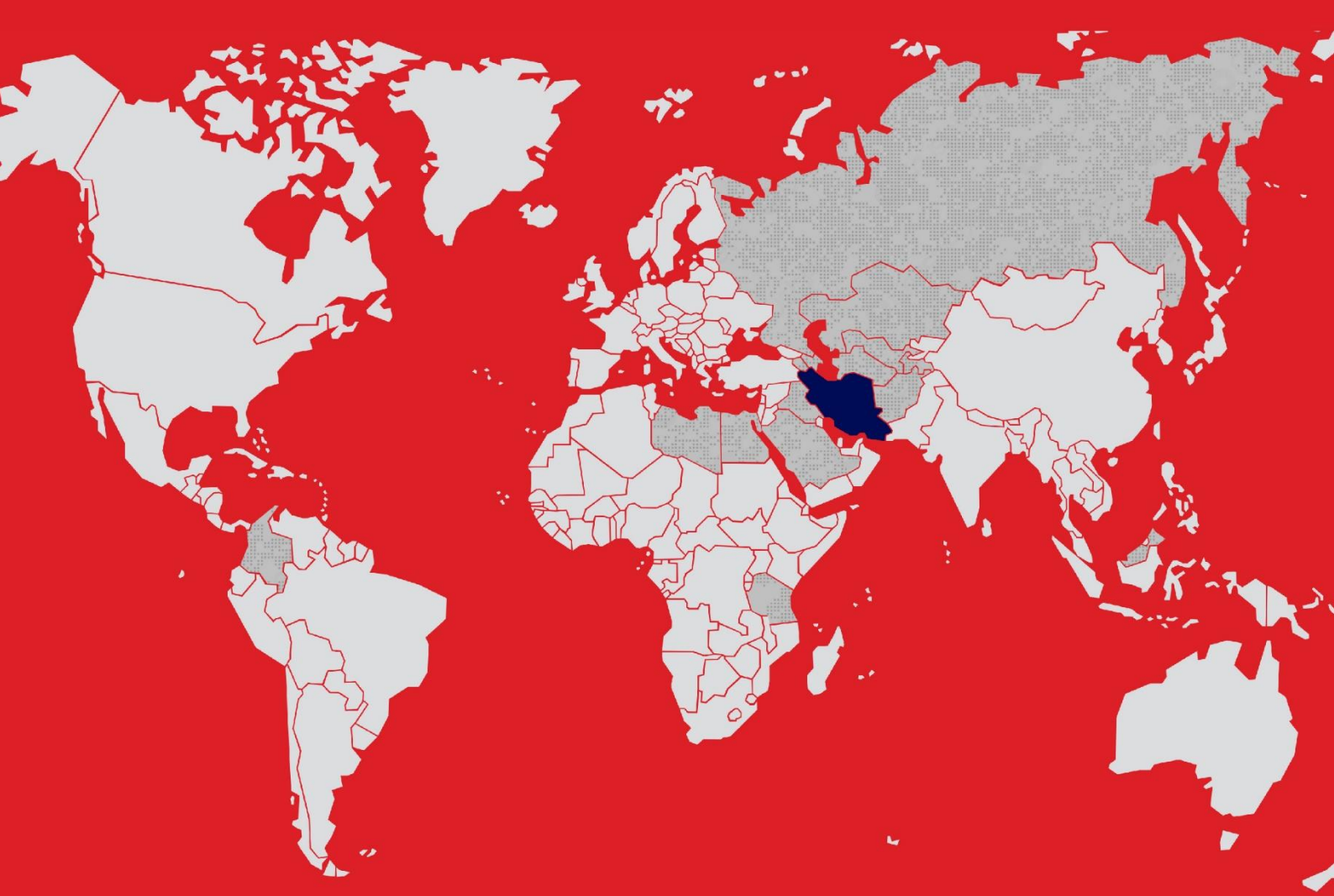


Electrical Modular Burners

— • Mono - Block Type

Last Update

February 2024



PACKMAN Product Marketing

Uzbekistan

Nakhchivan

Turkmenistan

Libya

Tajikistan

Egypt

Afghanistan

Iraq

Malaysia

Saudi Arabia

Qatar

Tanzania

U.A.E

Colombia

Azerbaijan

Russia

Armenia

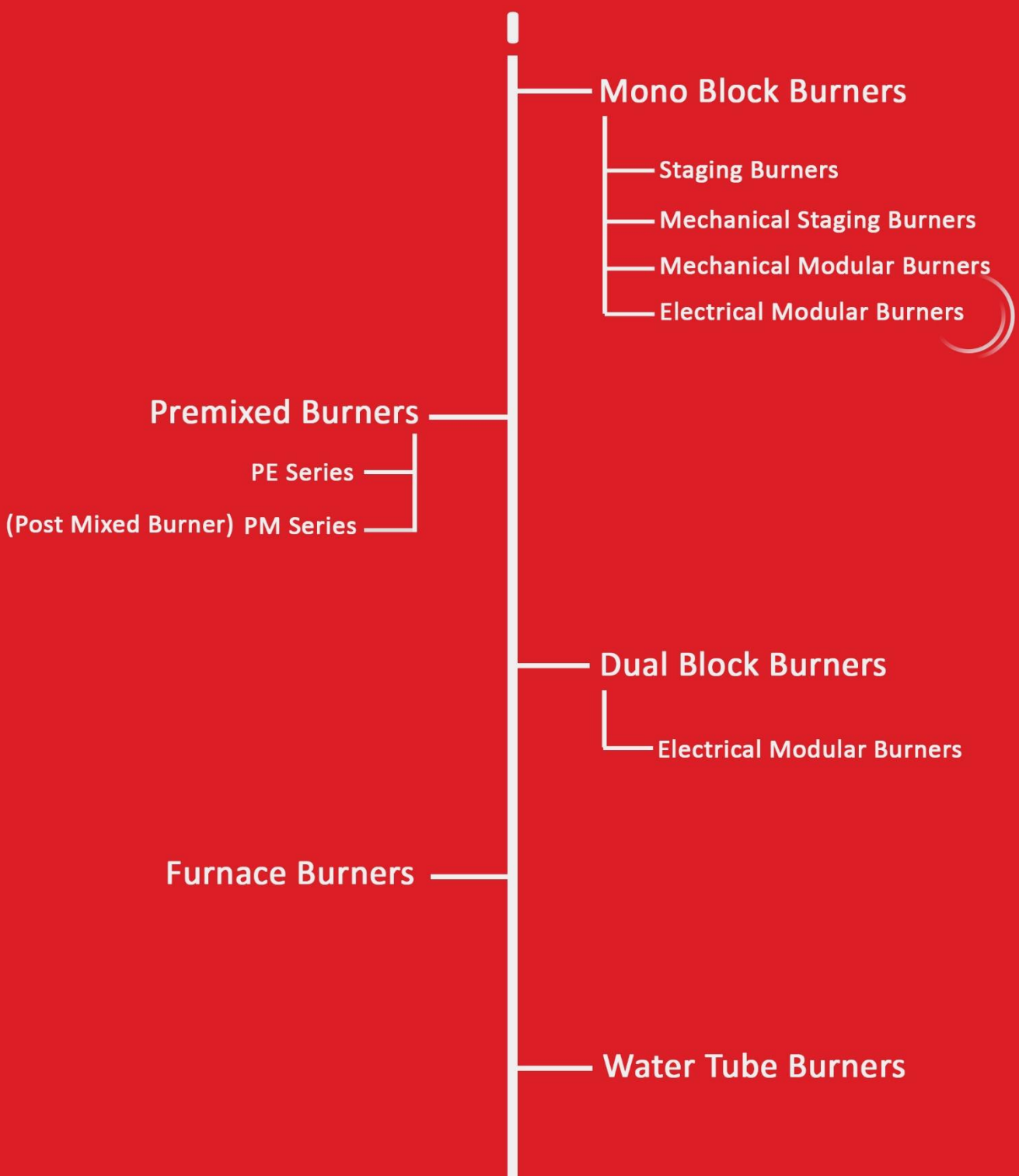
Kazakhstan

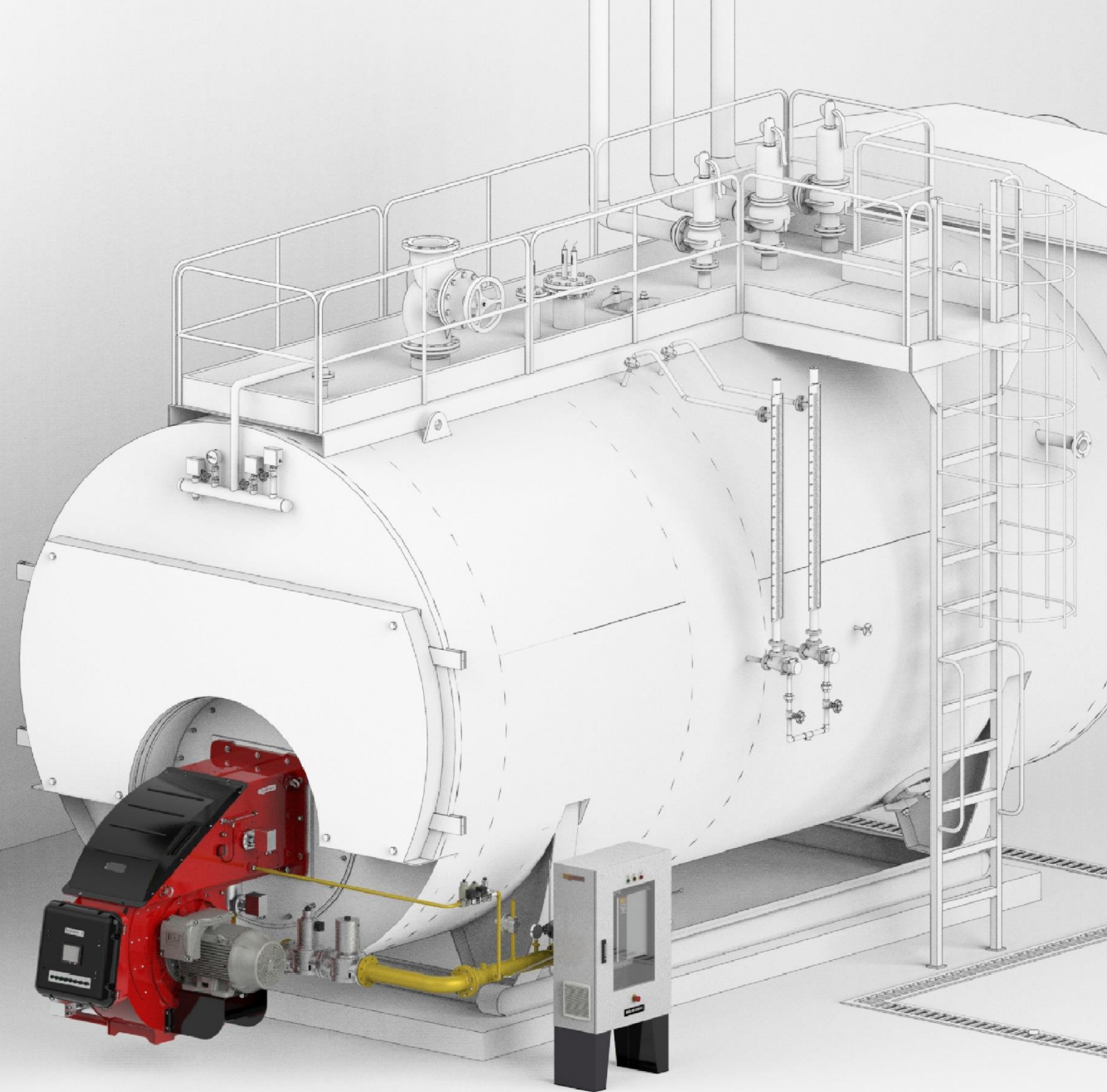
Republic of Belarus

Oman

raadman

Product Range





- raadman -

● Intelligent Burner Control



- r a a d m a n —

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History

The PACKMAN Company was established in February 1975. This company has started its activity in the field of construction of High-Pressure Vessels such as Hot-Water Boilers, Steam Boilers, Pool Coil Tanks, Softeners and Heat Exchangers since 1984. As the first supplier of high-quality hot water boilers with a standard mark, PACKMAN has started exporting its products to countries such as Uzbekistan, the United Arab Emirates and other countries in the region. Currently, PACKMAN is honored to be one the largest producers of hot-water and steam boilers in the Middle East. With 40 years of experience in the heating industry, particularly in boilers and burners, this group started its activities in the burner sector under the brand name RAADMAN in January 2011. The primary goal of this group was the enhancement and development of industrial burners to manufacture high-quality and highly efficient industrial burners designed for optimal performance in the Middle East. Based on technical knowledge and engineering design of industrial burners, PACKMAN Corporation started the production of small, medium and big industrial burners. Through the dedicated efforts of the R&D department engineers, there was a significant improvement in the combustion of the burners. Consequently, the production of burners experienced rapid development. Gas, light oil (LFO), and dual/triple fuel burners with diverse firing ranges were successfully produced and tested.

Currently, the burners manufactured by this company cover a firing range of 100 to 60000 kW. Multi stage, modular and Low NOx burners (generally lower than 80 mg/kWh and individually lower than 40 mg/kWh) are available for various domestic and industrial applications in the following classifications:

- 1- Mono block Staging burners, from 100 – 6200 kW
- 2- Mono block Mechanical Staging burners (MS series), from 300 – 6200 kW
- 3- Mono block Mechanical Modular burners (MC series), from 300 – 6200 kW
- 4- Mono block electrical modular burners (MB series), from 160 – 25000 kW
- 5- Dual block burners (DB-Series), form 1000 – 32000 kW
- 6- Premixed and post mixed burners (PE and PM Series): From 100 – 4000 kW
- 7- Water tube burners (WT series), From 3200-60000 kW



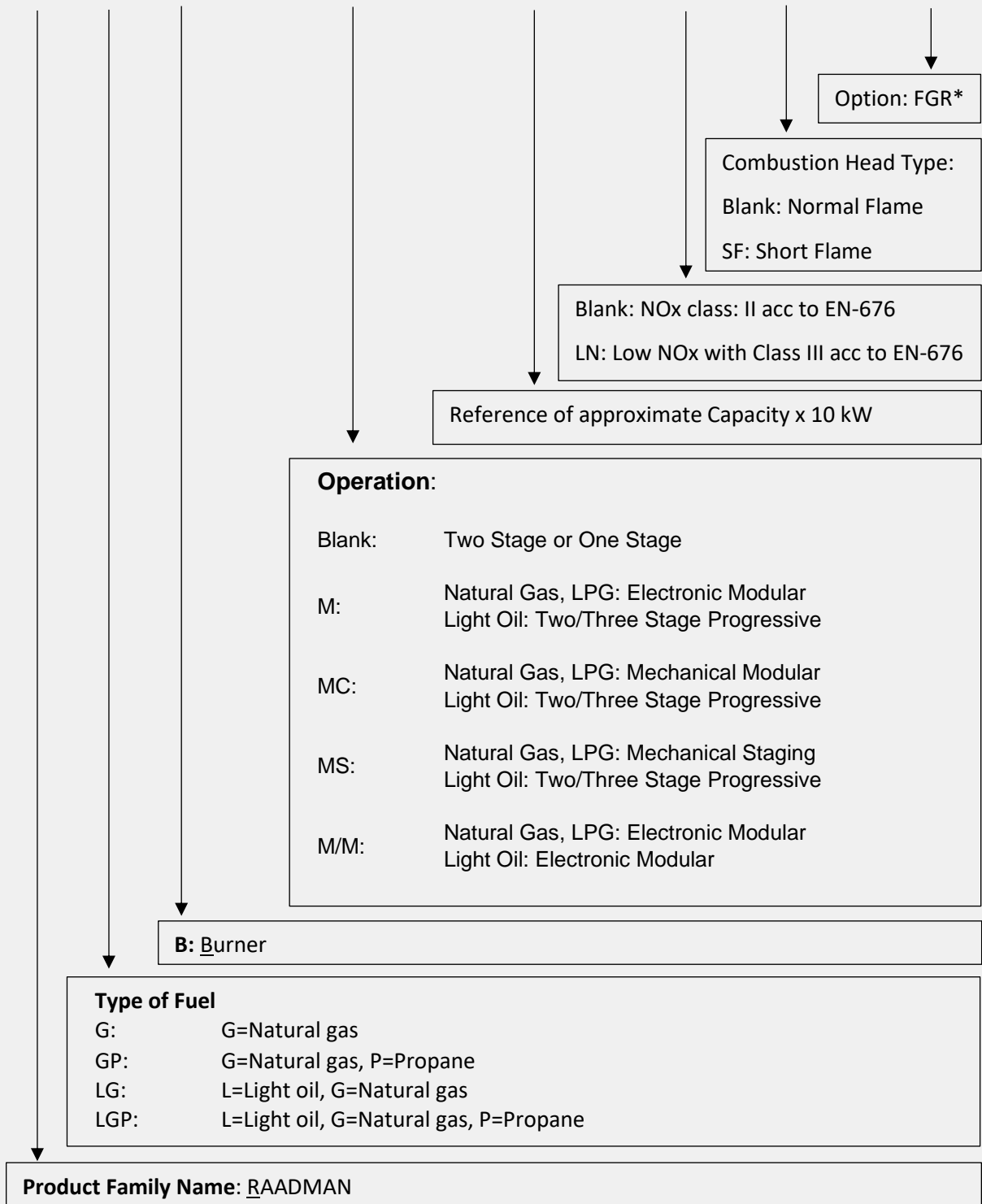


as a designer, manufacturer
reverse osmosis
ms

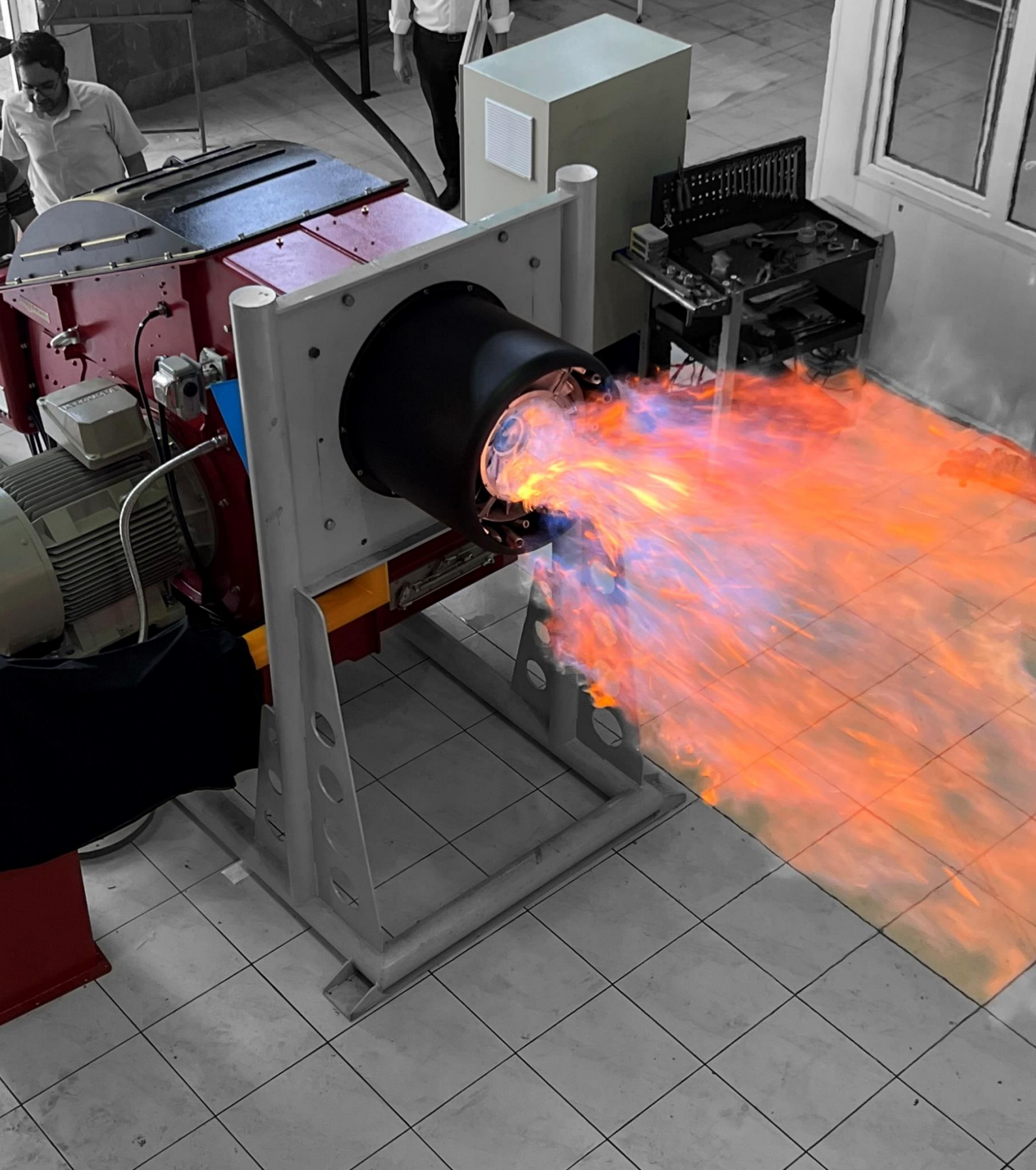


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R LG B - M / M - 805 / * - SF - FGR



*FGR=Flue Gas Recirculation



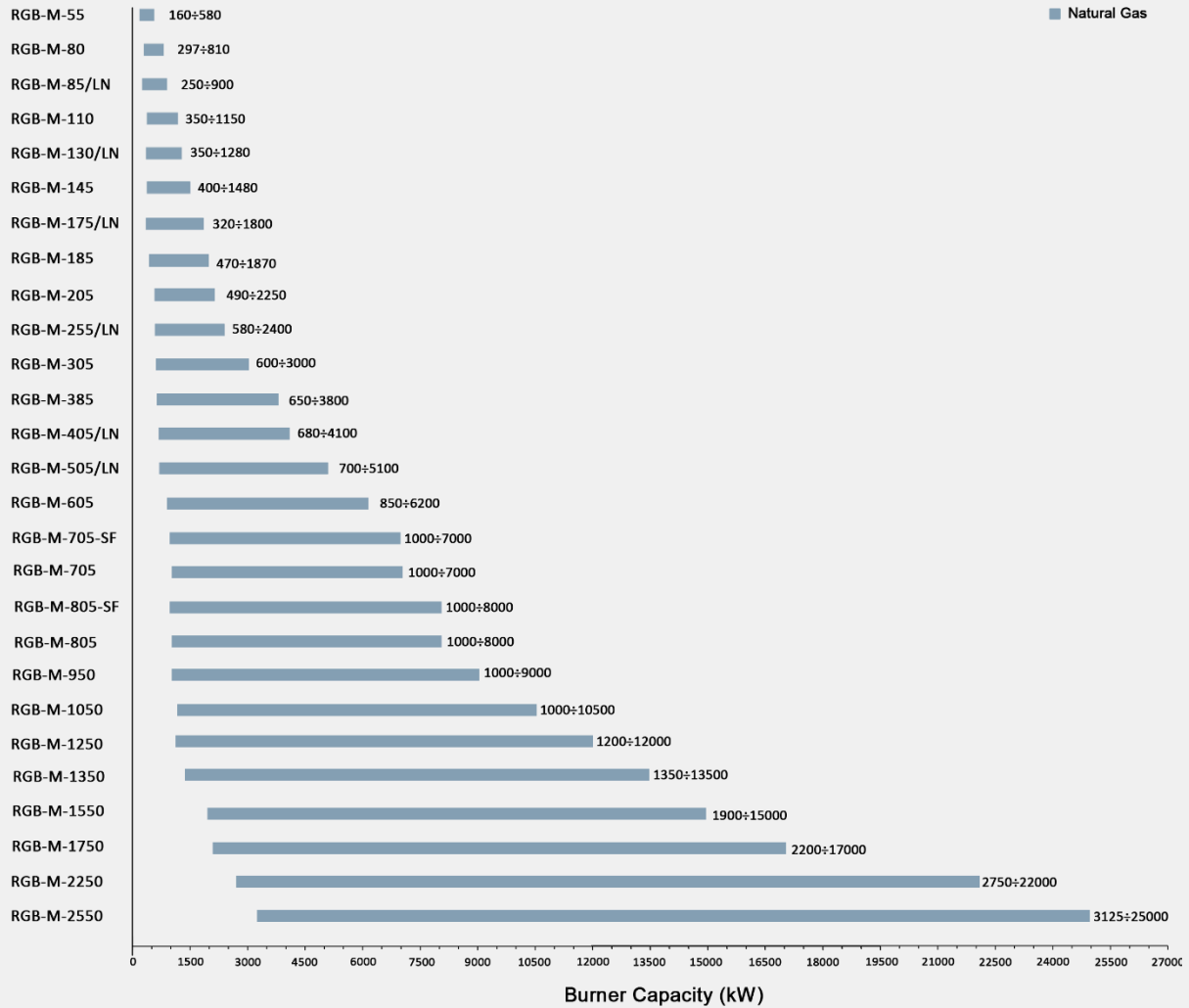
Superiority of combustion by distinctive design and manufacturing processes.

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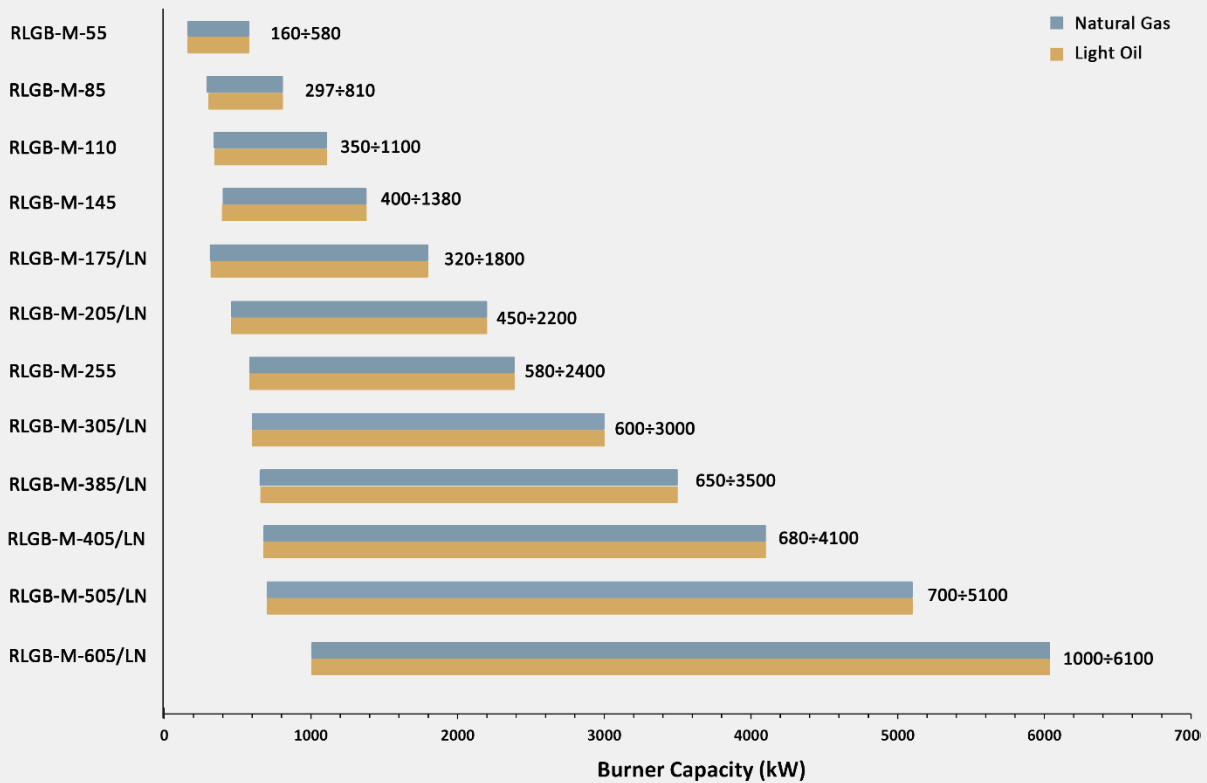


Firing ranges

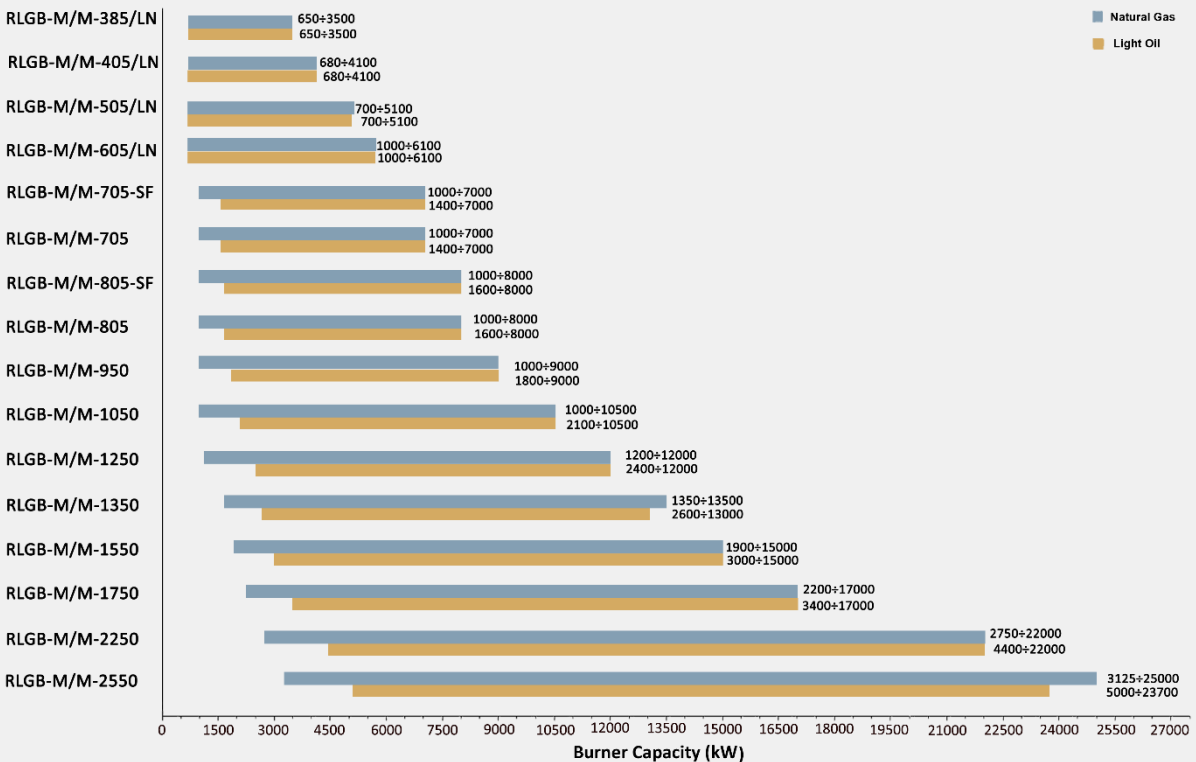
Gas burners (RGB-M series)



Dual Fuel burners (RLGB-M Series)



Dual Fuel burners (RLGB-M/M Series)



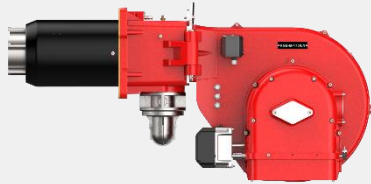
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Index

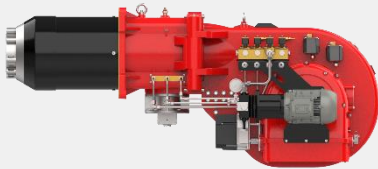
Gas burners (RGB-M series)



RGB-M series capacity diagram
 RGB-M series dimension
 RGB-M series technical

Page 18-34

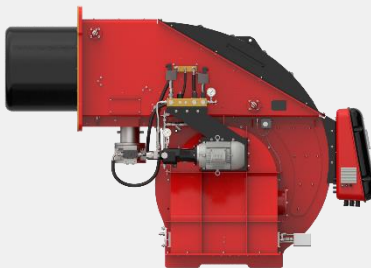
Dual fuel burners (RLGB-M series)



RLGB-M series capacity diagram
 RLGB-M series dimension
 RLGB-M series technical

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Dual fuel burners (RLGB-M/M series)



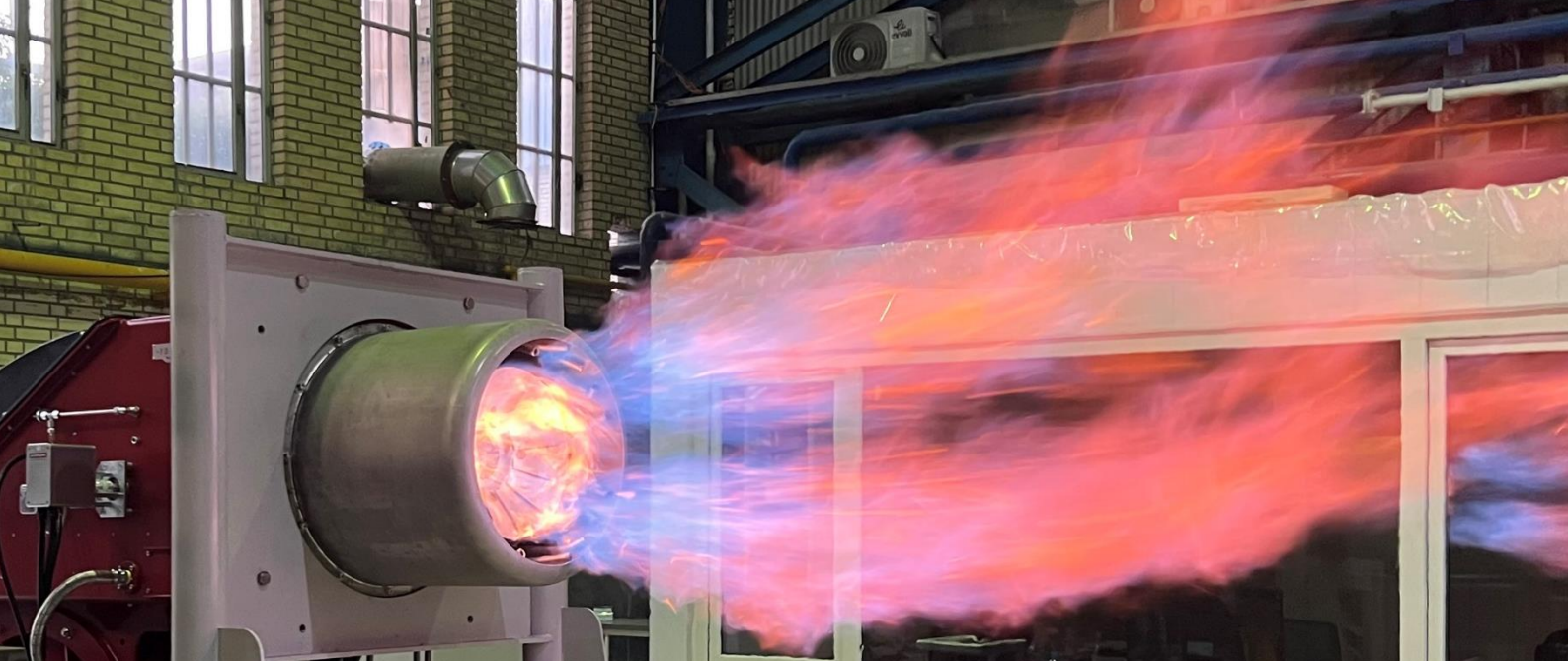
RLGB-M/M series capacity diagram
 RLGB-M/M series dimension
 RLGB-M/M series technical

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Technical and Functional Features

- Highly efficient gas/oil burners for domestic and industrial application
- Compatible with all types of combustion chambers according to EN303 standard
- Designed to maximize efficiency and fuel cost savings
- Based on Iran national standard ISIRI-7595 and ISIRI 7594 (BS-EN676 and BS-EN267) for gas and oil fuel, respectively.
- Compact design with enclosed aluminum air housing
- High-quality with low-emissions combustion
- Sound proofing materials incorporated in the air suction circuit
- Full electronic modular operation with air/gas ratio control
- Capable of running with Variable Speed Drive (VSD) to reduce noise levels and enhance the lifespan of fan wheel motor
- Capable of operating with either of pressure based or Air/steam atomizers in dual fuel version
- Capable of operating with FGR (Flue Gas Recirculation) technology for additional reduction in NOx levels (optional)
- Light weight and optimized geometry
- Easy installation, adjustment, and maintenance



Electronic modular operation

Fossil fuel burners are often used as the principal medium for delivering energy to industrial furnaces and Boilers. The growing emphasis on minimizing energy costs has prompted manufacturers to prioritize innovative burner design techniques, resulting in significant advancements in efficiency gains over the years. One of the most effective strategies involves burner management and control systems.

Fully modulating burners are designed to operate safely throughout their firing range from high fire to low fire. The most common turndown ratio in commercial boilers ranges from 1-3 up to 1-10. Turndown refers to the extent to which the burner firing rate can be decreased while still effectively maintaining combustion. High turndown is used to reduce the burner cycling and maintain a consistent temperature or pressure in the boiler. This is critical, especially when the boiler is utilized in an industrial process that demands a consistent temperature or pressure.

Each RAADMAN burner identified with -M- or -M/M- is equipped with an electronic microprocessor management panel, which controls the air damper servomotor as well as the fuel servomotors. The use of electronic modulation prevents hysteresis through precise control of the separated independent servomotors and the software linked by can-BUS and DTI.

The high precision regulation is due to the absence of mechanical clearance normally found in mechanical regulation cams on traditional modulating burners. The LAMTEC Burner Tronic BT300 as well as Siemens LMV2/3, LM51/52 and AUTOFLAME are among the most popular brands frequently utilized in RAADMAN Electrical Modular burners. The burner control systems combine the advantages of an electronic fuel/air ratio controller with an electronic burner control unit. Up to five motorized actuators can be assigned to modulate air and fuel drives with the option of an additional module to add variable speed drive control for the combustion air fan. Additional modules are available for field bus interfacing, load control and dual fuel operation.

These electrical modular systems include many standard burner functions as standard. These functions include integrated valve proving, ambient temperature compensation, flame



monitoring and operating hours and system start-up counters. Oxygen trim, CO control, load control and dual fuel functionality are all optional features available to further enhance system benefits, flexibility and efficiency. These controllers are particularly well-suited for use on mono-bloc burners.

The fuel/air ratio curves and operating parameters are set and adjusted using either the UI300 HMI, AZL50 or Mini MK8 for LAMTEC, Siemens and AUTOFLAME respectively or using their LSB Remote Software's. The fuel/air ratio can be optimized to compensate for combustion variables by implementing oxygen trim or CO control to ensure the burner operates to its maximum efficiency.

The burner and fuel/air ratio controller can be adjusted for a wide range of combustion tasks by setting parameters. In the case of BT300, LMV2/3/5 or Mini MK8 both oil and gas configurations can be adjusted to start with or without a pilot burner. The integrated valve proving system can be run either before ignition or after the shutdown of the burner. In the case of operation with gas, starting without pre-purge is possible in compliance with BS-EN676 and BS-EN 267.

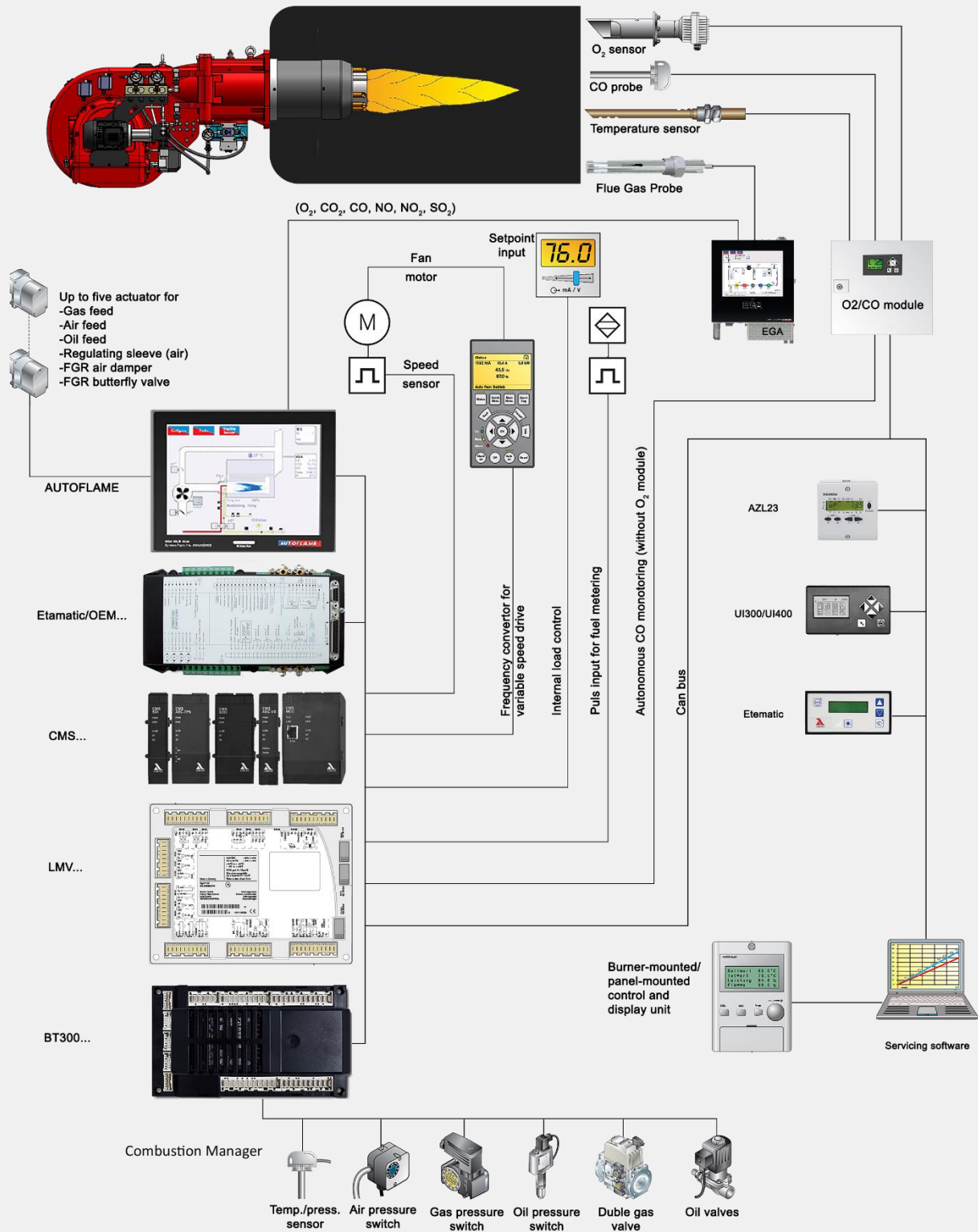
Key features and advantages include:

- Integrated linkage-less control, burner flame safeguard and modulation PID control
- Single or dual fuel (or multi fuel) application
- Controls up to 5 independent actuators for optimal efficiency in low NOx burner application
- Integrated PID temperature/ pressure controller with auto tune for extremely accurate process control
- Variable Speed Drive control with actual RPM speed sensor provides reliable, efficient and safe control of the combustion air blower
- Optional O2-CO trim in LAMTEC and Siemens and Simultaneous & continuous sampling of up to 6 exhaust gases: O2, CO2, CO, NO, NO2, SO2 in AUTOFLAME.
- Integrated gas valve proving system that checks for leak on every burner cycle for increased safety
- Up to 10 programmable points per fuel-air ratio curve for greater flexibility and tighter control
- 999 highly repeatable actuator position for precise control
- Digital positioning feedback from actuators ensure unmatched repeatability
- Independent ignition position
- Ability of being connected to building management system using different type of protocols
- World-wide approvals and technical supports
- Fuel/Air ratio control
- Full colour touch screen in AUTOFLAME
- Fully adjustable PID load control for temperature or pressure
- Internal flame safeguard – full flame supervision with self-check UV, IR and ionisation
- Gas valve train leak supervision and high/low gas pressure monitoring in AUTOFLAME

- Air pressure proving and monitoring in Mini MK8
- User definable optimum ignition position – golden start in AUTOFLAME
- User definable flue gas recirculation start position
- External voltage load control
- Outside temperature compensation of boiler setpoint
- Second setpoint with run times
- Various boiler load detectors available
- Fuel flow metering capability – instantaneous and totalised
- Password protection of all safety related functions in AUTOFLAME
- Infra-red port for upload/download of commissioning data
- Fully adjustable user options within the system to tailor sequencing operation to the application
- System control for isolation of valves or pumps (2 port valve operation)
- Standby setpoint and warming for lag boilers via a standby pressure and timing sequence aqua-stat
- Download all commissioning data from an MM module to a PC via Download Manager



Burner Management System Overview





Electrical Modular Gas Burners

Heat Rated Output: 160-25000 kW



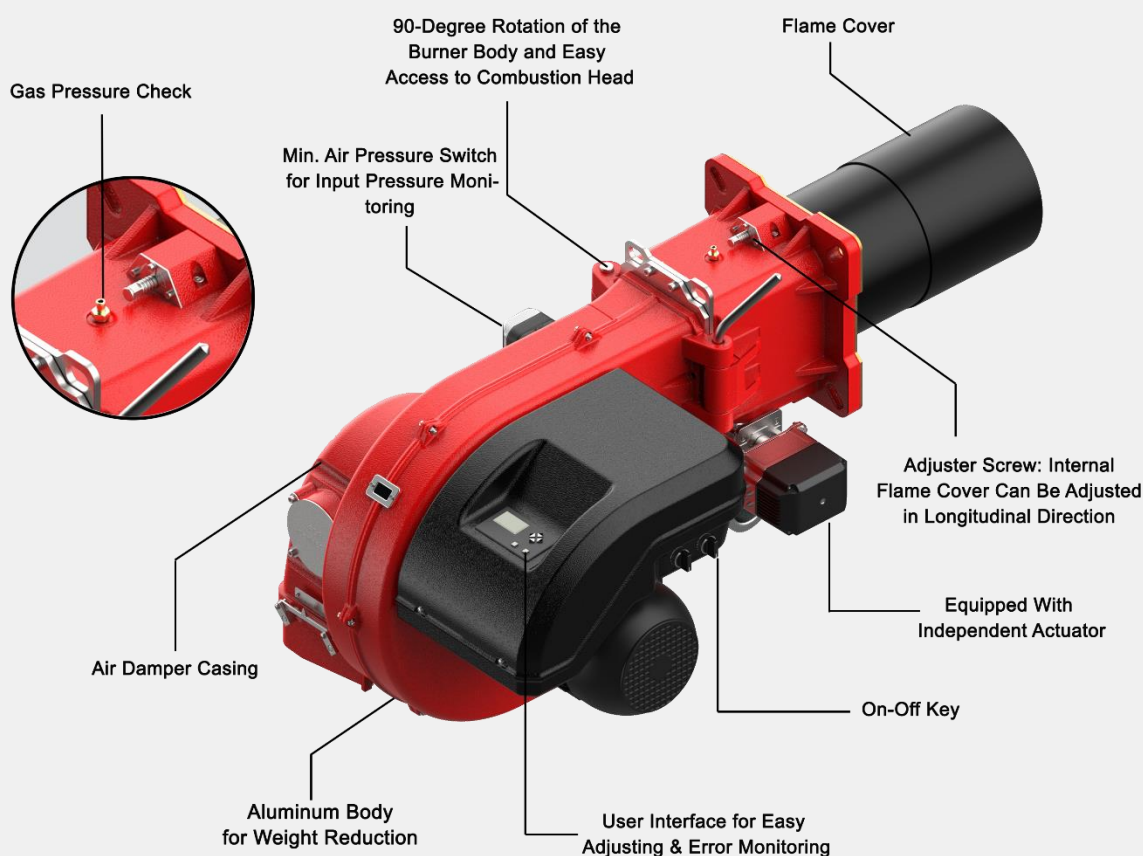
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www.raadmanburner.com

Gas burners (RGB-M series)

RGB-M Series or RAADMAN Modular gas burners, covering a firing range from 160 to 17000 kW, are designed for a wide range of domestic and industrial applications. All RAADMAN electrical modular burners are equipped with LAMTEC or SIEMENS electronic control system with capability of full air/gas ratio control throughout burner entire operating range. These burners have been tested and evaluated based on Iran national standard ISIRI-7595 (BS-EN 676). According to the conducted experiments, even in low excess air operation, the values of CO are consistently lower than 30 mg/kWh, and in some instances, values close to zero have also been reported. The precise design of the combustion head results in a full gas-air mixture ensuring high efficiency levels in a wide range of applications.

The superior design of the burner, coupled with high-quality electronic devices, has further enhanced the performance of the boiler, leading to a reduction in fuel costs and emissions.



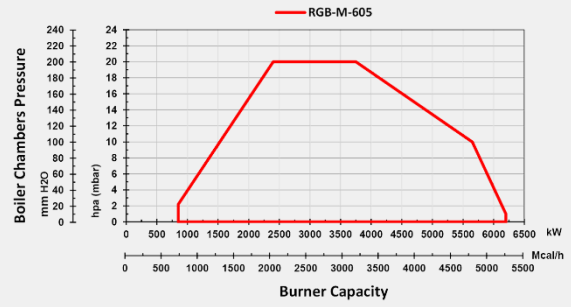
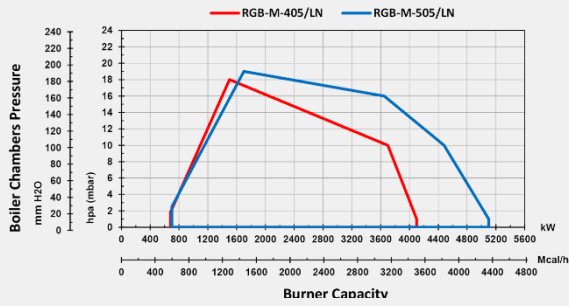


Burner selection: capacity and working diagram

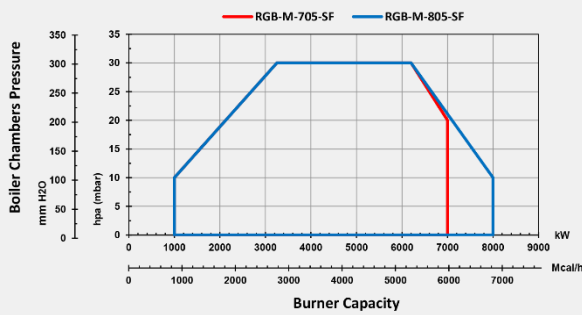
Modulating Gas Burner

Burner	Capacity (kW)	Turn down	Burner	Capacity (kW)	Turn down
RGB-M-55	NG: 160-580	1:3	RGB-M-80	NG: 297-810	1:3
RGB-M-85/LN	NG: 250-900	1:3	RGB-M-110	NG: 350-1150	1:3
RGB-M-130/LN	NG: 350-1280	1:3	RGB-M-145	NG: 400-1480	1:4
RGB-M-175/LN	NG: 320-1800	1:4	RGB-M-185	NG: 470-1870	1:4
			RGB-M-205	NG: 490-2250	1:4
RGB-M-255/LN	NG: 580-2400	1:4	RGB-M-305	NG: 600-3000	1:5
			RGB-M-385	NG: 650-3800	1:5

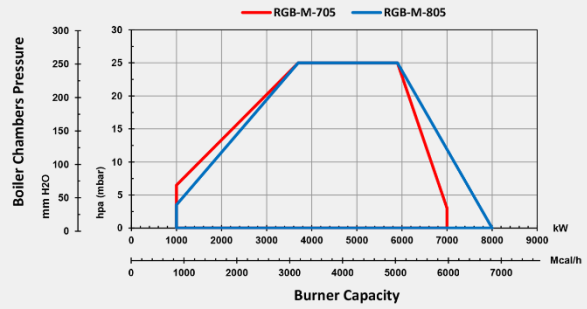
Burner	Capacity (kW)	Turn down	Burner	Capacity (kW)	Turn down
RGB-M-405/LN	NG: 680-4100	1:6	RGB-M-605	NG: 850-6200	1:7
RGB-M-505/LN	NG: 700-5100	1:7			



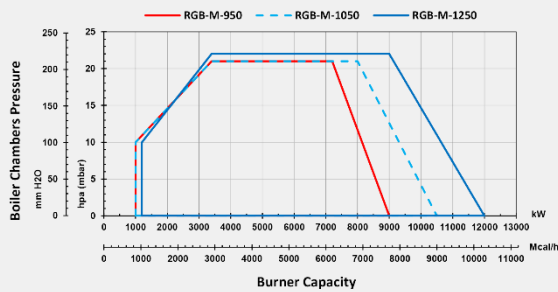
Burner	Capacity (kW)	Turn down	Burner	Capacity (kW)	Turn down
RGB-M-705-SF	NG: 1000-7000	1:7	RGB-M-705	NG: 1000-7000	1:7
RGB-M-805-SF	NG: 1000-8000	1:8*	RGB-M-805	NG: 1000-8000	1:8*



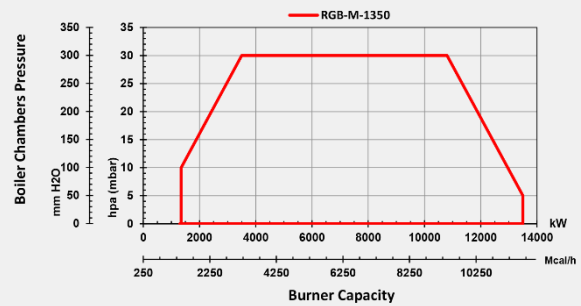
Burner	Capacity (kW)	Turn down	Burner	Capacity (kW)	Turn down
RGB-M-705	NG: 1000-7000	1:7	RGB-M-805	NG: 1000-8000	1:8*

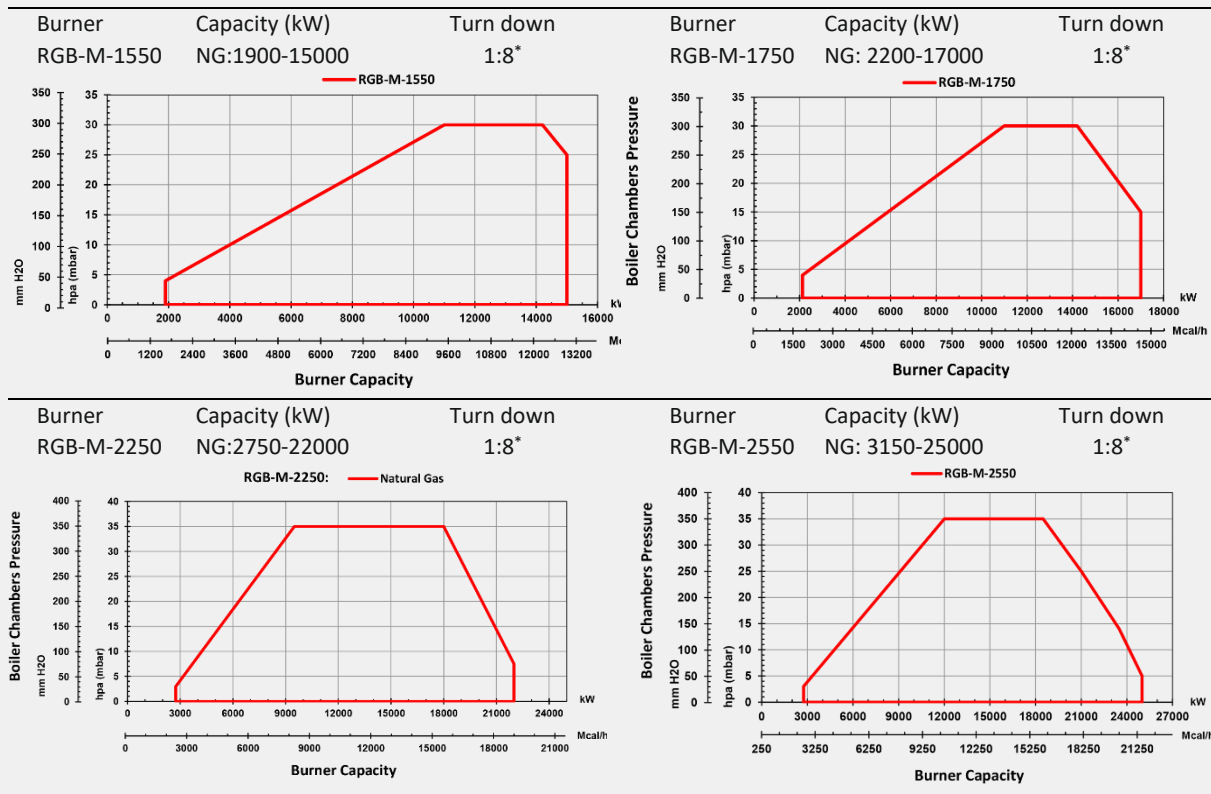


Burner	Capacity (kW)	Turn down	Burner	Capacity (kW)	Turn down
RGB-M-950	NG: 1000-9000	1:9*	RGB-M-1350	NG: 1350-13500	1:10*
RGB-M-1050	NG: 1000-10500	1:10*			
RGB-M-1250	NG: 1200-12000	1:10*			



Burner	Capacity (kW)	Turn down
RGB-M-1350	NG: 1350-13500	1:10*





About the working diagram: Working diagrams for gaseous fuel burners are certified in accordance with BS-EN 676. The firing rate diagram has been obtained considering the ambient temperature of 20°C and atmospheric pressure of 1013 mbar (Sea level condition).

* Special note: Turn-down ratio higher than (1:8, 1:9, 1:10, etc.) are accessible for the burner with the head actuator. Otherwise, without a head actuator, the max. turn-down ratio is 1:6.



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RGB-M-385

PACKMAN

Technical data: RGB-M series

- N.G operation: Electronic Modular

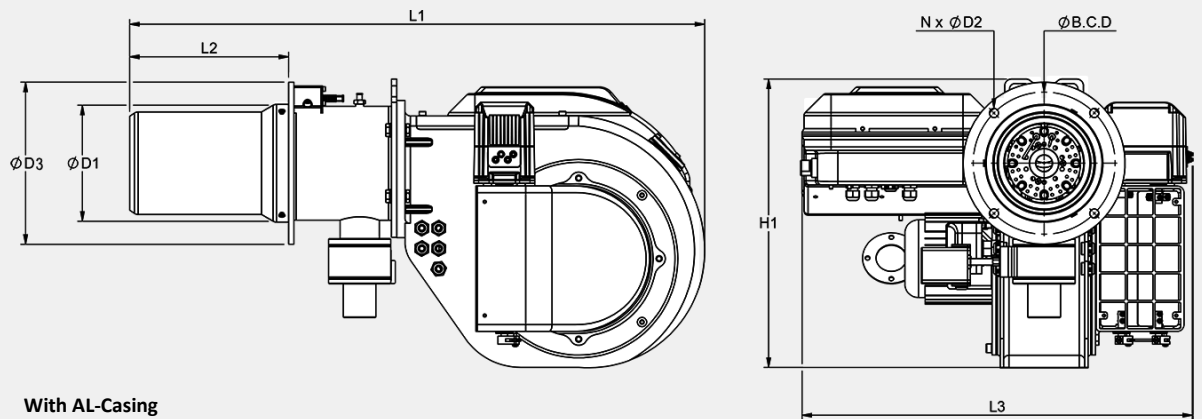
Burner	Power system		Power management system			
	Motor(kW/PH/V/HZ/rpm)	Controller		Actuator (N.M)		
		Brand	Model	Air	Fuel	Head
RGB-M-55	0.75/3/380-400/50/2840	LAMTEC	BT320	1.2	0.8	--
RGB-M-80	1.1/3/380-400/50/2840	LAMTEC	BT320	1.2	1.2	--
RGB-M-85/LN	1.5 /3/380-400/50/2840	LAMTEC	BT320	1.2	1.2	--
		SIEMENS	LMV27/37			
RGB-M-110	1.5 /3/380-400/50/2840	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV27/37			
RGB-M-130/LN	2.2 /3/380-400/50/2840	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV3...			
RGB-M-145	2.2 /3/380-400/50/2840	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV27/37			
RGB-M-175/LN	4 /3/380-400/50/2840	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV3...			
RGB-M-185	5.5 /3/380-400/50/2840	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV27/37			
RGB-M-205	5.5 /3/380-400/50/2840	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV27/37			
RGB-M-255/LN	5.5 /3/380-400/50/2840	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV27/37			
RGB-M-305	7.5 /3/380-400/50/2900	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV27/37			
RGB-M-385	7.5 /3/380-400/50/2900	LAMTEC	BT320	3	1.2	--
		SIEMENS	LMV27/37			
RGB-M-405/LN	11 /3/380-400/50/2900	LAMTEC	BT320	9	1.2	--
		SIEMENS	LMV27/37	10	1.2	
RGB-M-505/LN	11 /3/380-400/50/2900	LAMTEC	BT320	9	1.2	--
		SIEMENS	LMV27/37	10	1.2	
RGB-M-605/LN	15 /3/380-400/50/2900	LAMTEC	BT320	9	1.2	--
		SIEMENS	LMV27/37	10	1.2	
RGB-M-705-SF RGB-M-705	18.5 /3/380-400/50/2840	LAMTEC	BT320	9	1.2	--
		AUTOFLAME	MINI MK8	25	4	
RGB-M-805-SF	18.5 /3/380-400/50/2840	AUTOFLAME	MINI MK8	25	4	--
RGB-M-805	22 /3/380-400/50/2840	AUTOFLAME	MINI MK8	25	4	--

Power syste		Power management system				
Burner	Motor(kW/PH/V/HZ/rpm)	Controller		Actuator (N.M)		
		Brand	Model	Air	Fuel	Head*
RGB-M-950	22/3/380-400/50/2840	SIEMENS	LMV 5...	20	3	20
		AUTOFLAME	MINI MK8	25	4	25
RGB-M-1050	22/3/380-400/50/2840	SIEMENS	LMV 5...	20	3	20
		AUTOFLAME	MINI MK8	25	4	25
RGB-M-1250	30/3/380-400/50/2840	SIEMENS	LMV 5...	20	3	20
		AUTOFLAME	MINI MK8	25	4	25
RGB-M-1350	37/3/380-400/50/2840	SIEMENS	LMV 5...	20	3	20
		AUTOFLAME	MINI MK8	25	4	25
RGB-M-1550	45/3/380-400/50/2900	SIEMENS	LMV 5...	20	3	20
		AUTOFLAME	MINI MK8	25	4	25
RGB-M-1750	45/3/380-400/50/2900	SIEMENS	LMV 5...	20	3	20
		AUTOFLAME	MINI MK8	25	4	25
RGB-M-2250	75/3/380-400/50/2900	SIEMENS	LMV 5...	35	3	35
		AUTOFLAME	MINI MK8	25	4	40
RGB-M-2550	75/3/380-400/50/2900	SIEMENS	LMV 5...	35	3	35
		AUTOFLAME	MINI MK8	25	4	40

Note:Using combustion head actuator is necessary in burners with capacity of 15 MW and higher.

General dimension: RGB-M series

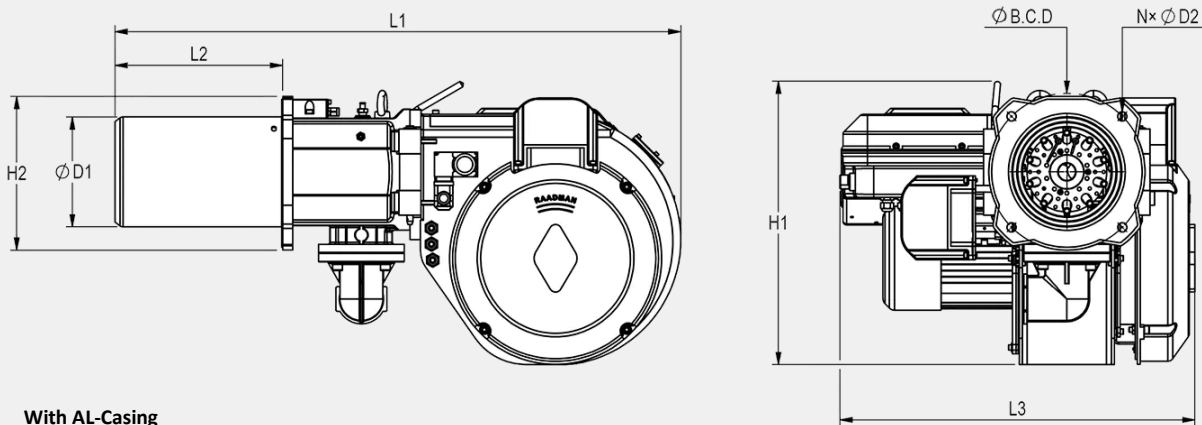
RGB-M-55



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H	D ₁	D ₂	D ₃	N	B.C. D
RGB-M-55	850	235	576	427	179	13.5	240	4	210

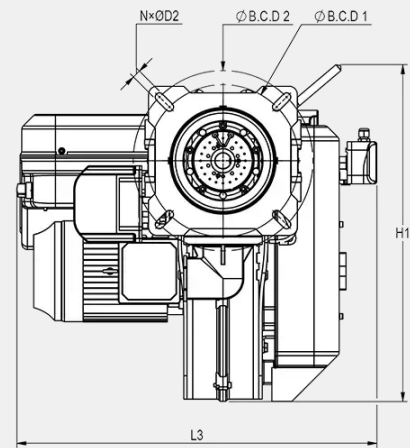
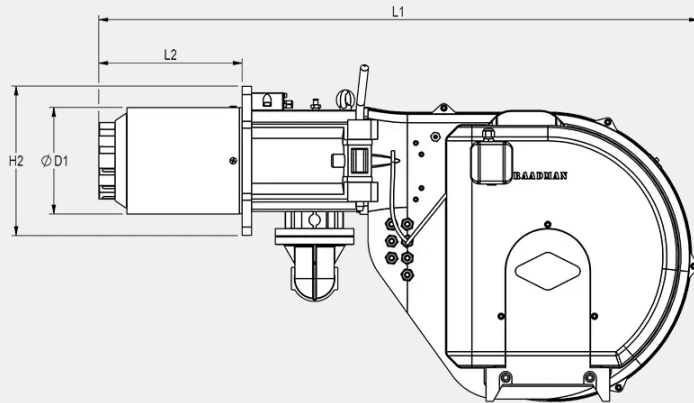
RGB-M-80



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C. D
RGB-M-80	921	273	578	461	254	183	15	4	255

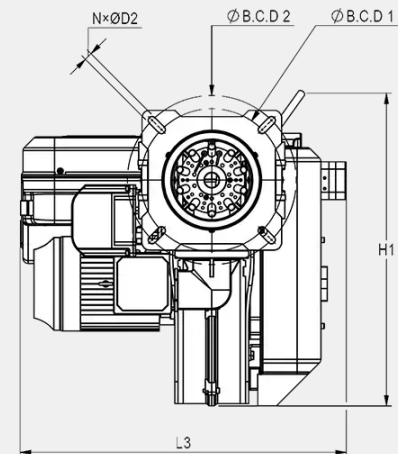
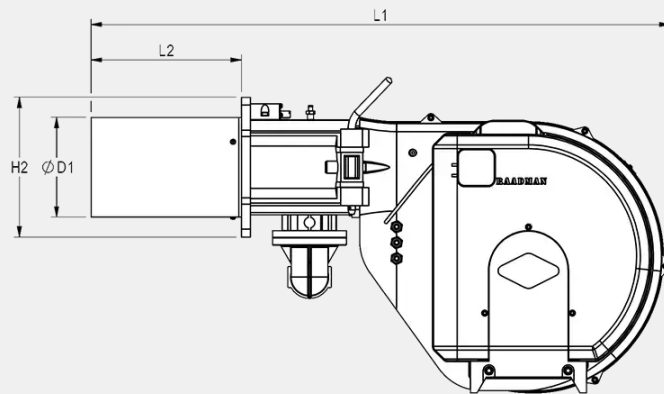
RGB-M-85/LN, RGB-M-130/LN



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C.D.1	B.C.D.2
RGB-M-85/LN	1068	255	641	598	265	194	15	4	270	320
RGB-M-130/LN	1072	260	641	598	265	194	15	4	270	320

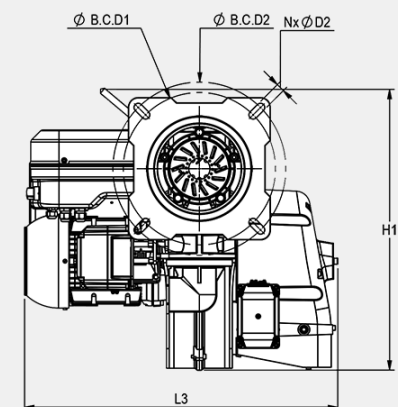
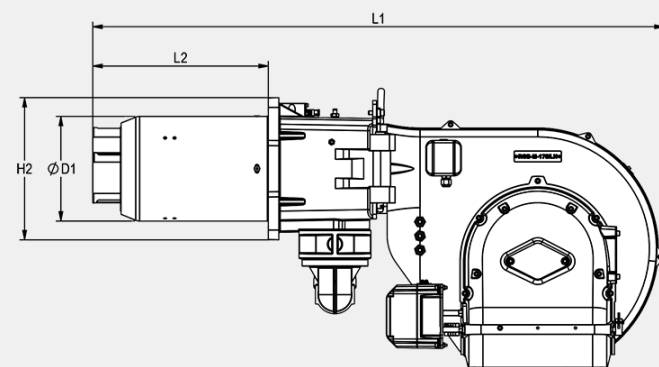
RGB-M-110, RGB-M-145



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C.D.1	B.C.D.2
RGB-M-110	1066	254	638	598	265	184	15	4	270	320
RGB-M-145	1097	285	638	598	265	194	15	4	270	320

RGB-M-175/LN

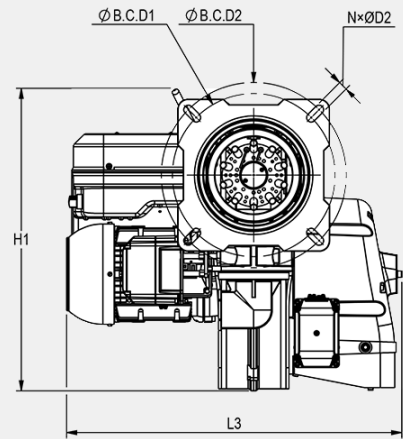
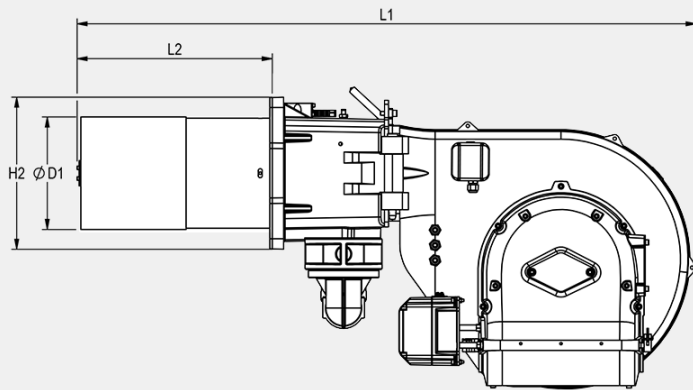


With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C.D.1	B.C.D.2
RGB-M-175/LN	1213	373	665	598	302	226	18	4	323	367



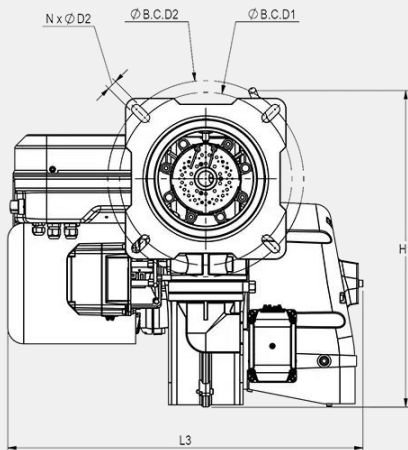
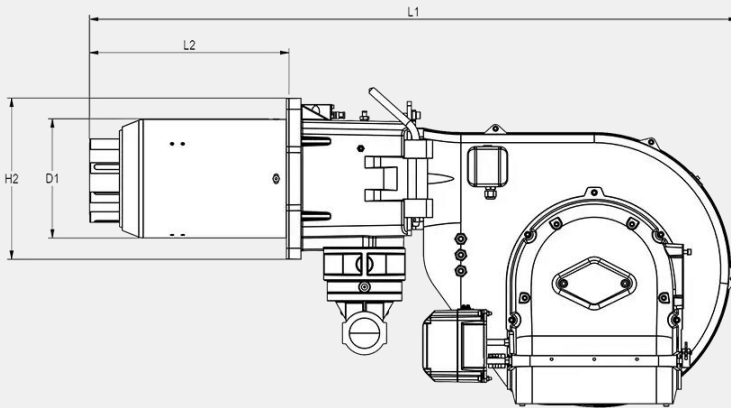
RGB-M-185, RGB-M-205



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C.D.1	B.C.D.2
RGB-M-185	1229	387.5	665	598	301	223	18	4	323	367
RGB-M-205	1229	387.5	665	598	301	223	18	4	323	367

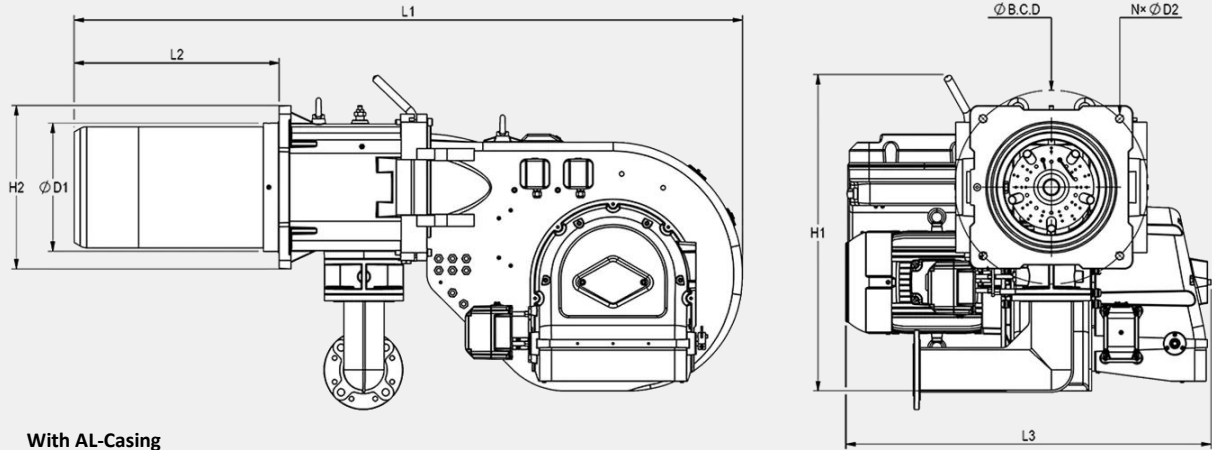
RGB-M-255/LN



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C.D.1	B.C.D.2
RGB-M-255/LN	1214	374	762	598	300	226	18	4	323	368

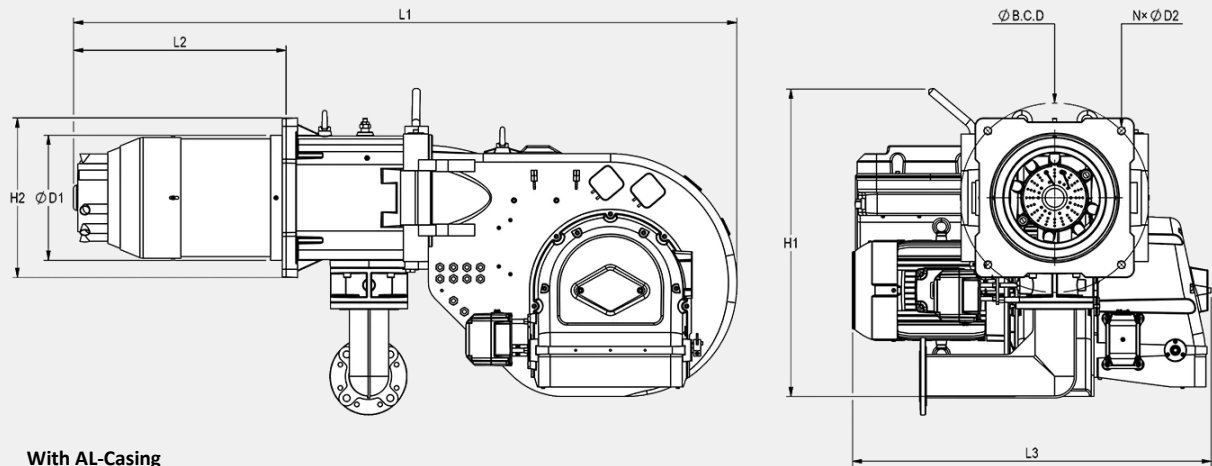
RGB-M-305, RGB-M-385



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C. D
RGB-M-305	1689	520	927	741	413	328	20	4	490
RGB-M-385	1689	520	927	741	413	328	20	4	490

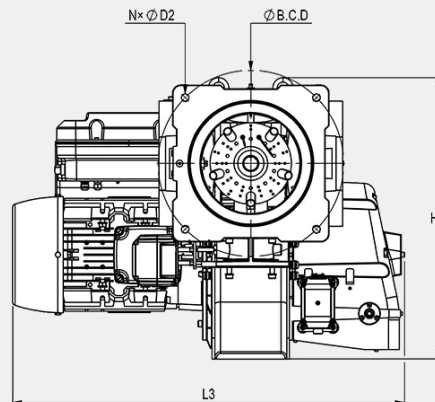
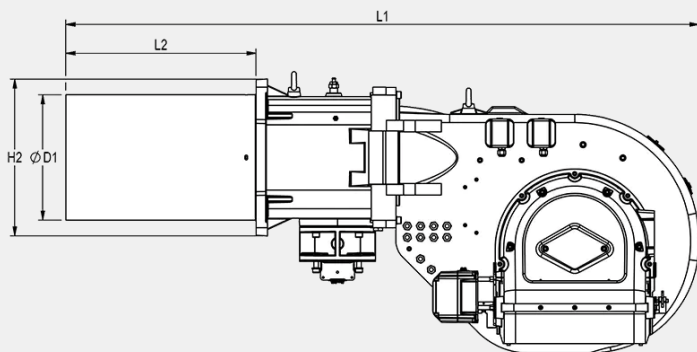
RGB-M-405/LN, RGB-M-505/LN



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C. D
RGB-M-405/LN	1721	552	930	798	413	328	20	4	490
RGB-M-505/LN	1721	552	1026	798	413	328	20	4	490

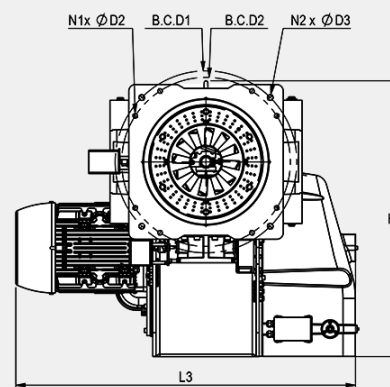
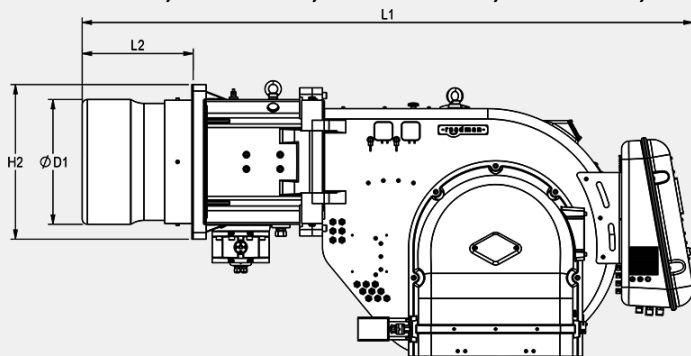
RGB-M-605



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C. D
RGB-M-605	1671	502	1035	741	413	334	20	4	490

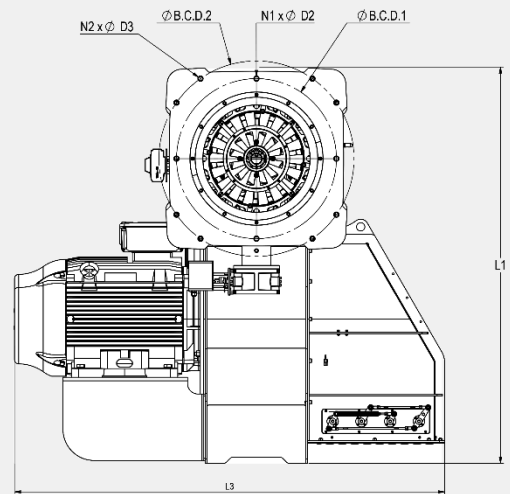
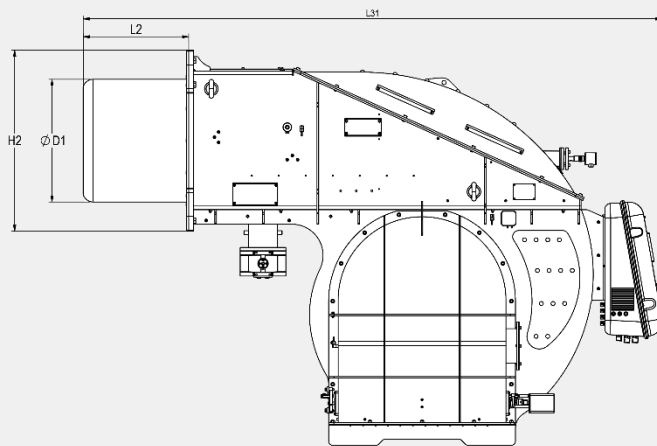
RGB-M-705-SF, RGB-M-705, RGB-M-805-SF, RGB-M-805, RGB-M-950, RGB-M-1050



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	D ₃	N ₁	N ₂	B.C.D1*	B.C.D2*
RGB-M-705-SF	2111	350	1168	950	501	400	----	22	4	-	590	--
RGB-M-705	2161	420	1212	950	501	400	----	22	4	-	590	--
RGB-M-805-SF	2111	350	1168	950	501	400	----	22	4	-	590	--
RGB-M-805	2161	420	1212	950	501	400	----	22	4	-	590	--
RGB-M-950	2375	428	1328	1046	595	480	17.5	22	8	4	650	700
RGB-M-1050	2375	428	1328	1046	595	480	17.5	22	8	4	650	700

RGB-M-950, RGB-M-1050, RGB-M-1250, RGB-M-1350, RGB-M-1550, RGB-M-1750, RGB-M-2250, RGB-M-2550



With Carbon-steel Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	D ₃	N ₁	N ₂	B.C.D1*	B.C.D2*
RGB-M-950	2060	428	1300	1046	613	480	17.5	22	8	4	650	700
RGB-M-1050	2060	428	1300	1046	613	480	17.5	22	8	4	650	700
RGB-M-1250	2008	367	1313	1320	613	480	17.5	22	8	4	650	700
RGB-M-1350	2258	367	1550	1546	660	480	20	20	8	4	590	790
RGB-M-1550	2585	510	1762	1822	872	590	20	20	4	8	770	940
RGB-M-1750	2585	510	1762	1822	872	590	20	20	4	8	770	940
RGB-M-2250	2790	508	2072	1906	872	590	20	20	4	8	770	940
RGB-M-2550	2790	508	2072	1906	872	590	20	20	4	8	770	940

*** Note:** For the hole patterns of the burner flange, kindly refer to the burner technical proposals while placing an order.



RAADMAN
Industrial Burner
Model: R-100
Power: 100 kW
Voltage: 230V
Frequency: 50 Hz
Gas: Natural Gas
Air Flow: 10 m³/h
Pressure: 20 mbar
Temperature: 1000°C
Dimensions: 100x100x100 mm
Weight: 10 kg
Certification: CE, ISO 9001

Electrical Modular Dual Fuel Burners

Heat Rated Output: 160-6100 kW

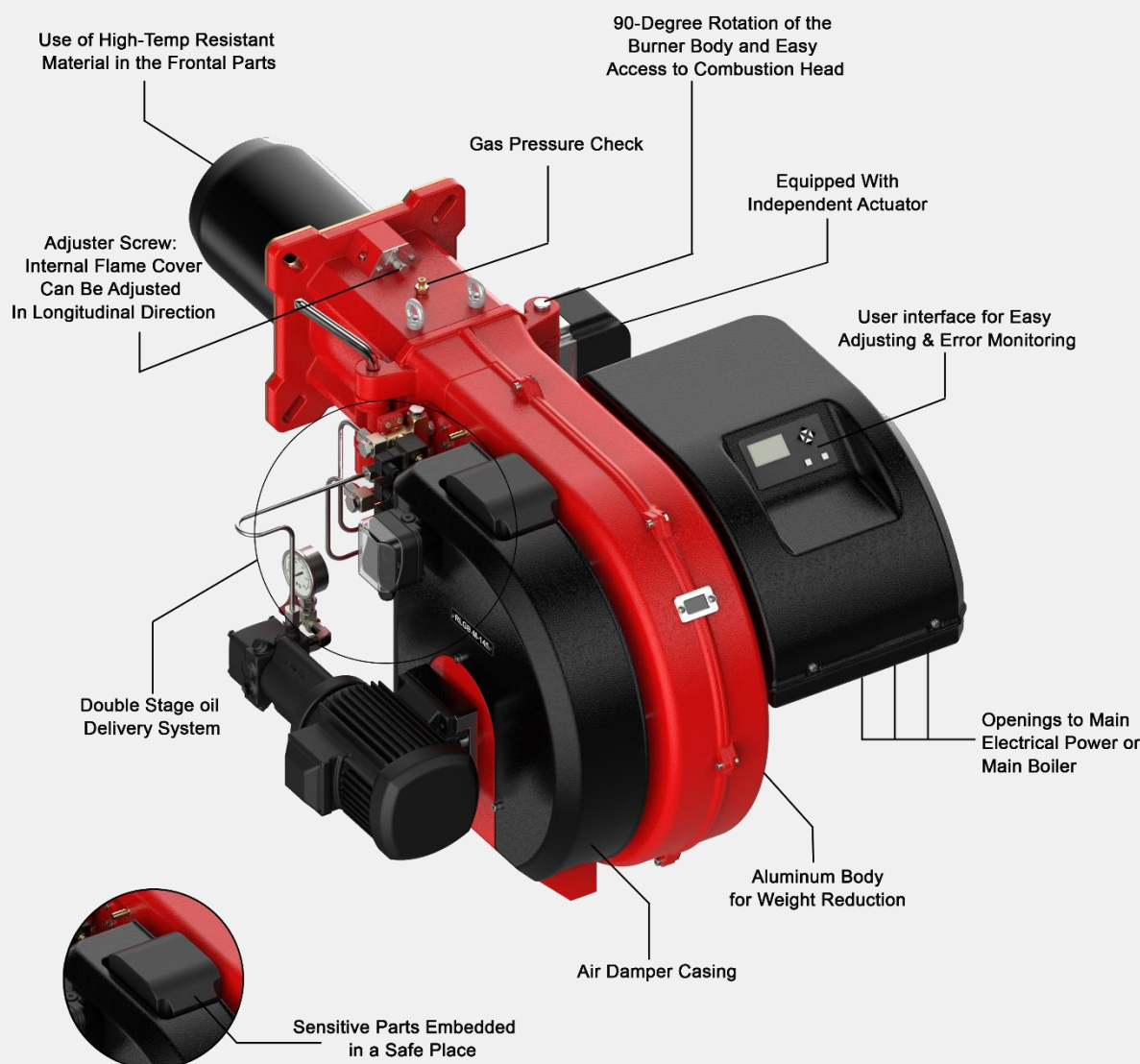


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www.raadmanburner.com

Dual Fuel burners (RLGB-M series)

RLGB-M Series or RAADMAN Modulating dual fuel burners, covering a firing range from 700 to 17000 kW, are designed for a wide range of domestic and industrial applications. These burners have been tested and evaluated in accordance with Iran national standard ISIRI-7595 (BS-EN 676) and ISIRI-7594 (BS-EN 267) for gas and oil operation respectively. According to the conducted experiments, the values of CO during low excess air operation are lower than 30 mg/kWh with some cases reporting values very close to zero. The precise design of combustion head results in a complete gas-air mixture, ensuring high efficiency levels in various applications. These burners are equipped with LAMTEC and SIEMENS control system capable of full air/gas ratio control throughout entire burner operating range as well as devices of well-known European companies such as Dungs, Kromschroder and Suntec. The superior design of the burner, complemented by high-quality electronic devices, has led to a further enhancement in the boiler's performance, contributing to decreased fuel costs and emissions.

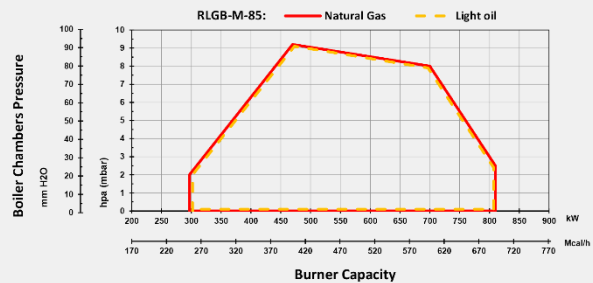
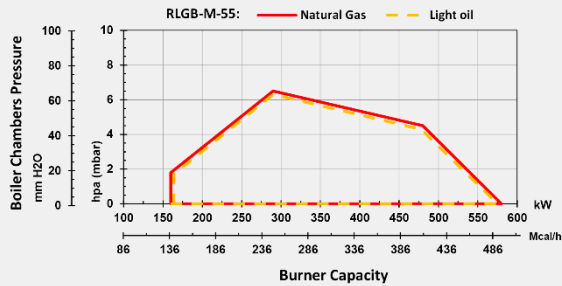




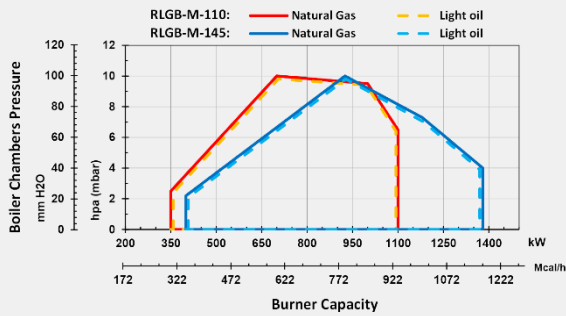
Burner selection: capacity and working diagram

Modulating Dual-fuel Burner

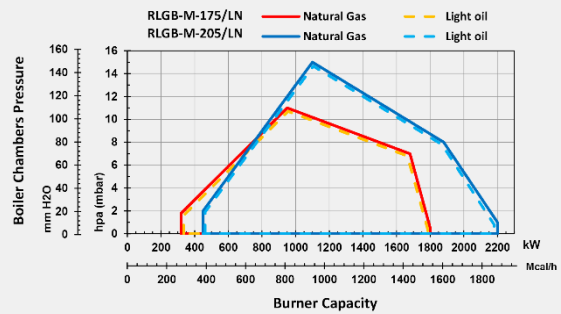
Burner	Capacity (kW)	Turn down	Burner	Capacity (kW)	Turn down
RLGB-M-55	NG: 160-580	1:3	RLGB-M-85	NG: 297-810	1:3
	LFO: 160-580	1:3		LFO: 297-810	1:3



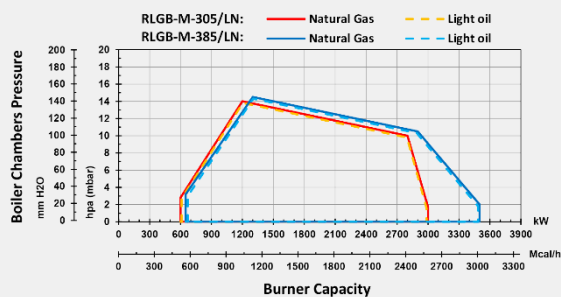
Burner	Capacity (kW)	Turn down
RLGB-M-110	NG: 350-1100	1:3
	LFO: 350-1100	1:3
RLGB-M-145	NG: 400-1380	1:4
	LFO: 400-1380	1:4



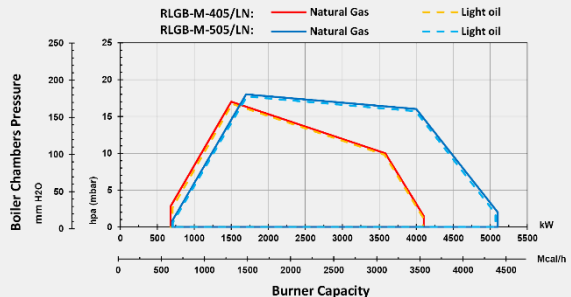
Burner	Capacity (kW)	Turn down
RLGB-M-175/LN	NG: 320-1800	1:5
	LFO: 320-1800	1:5
RLGB-M-205/LN	NG: 450-2200	1:5
	LFO: 450-2200	1:5



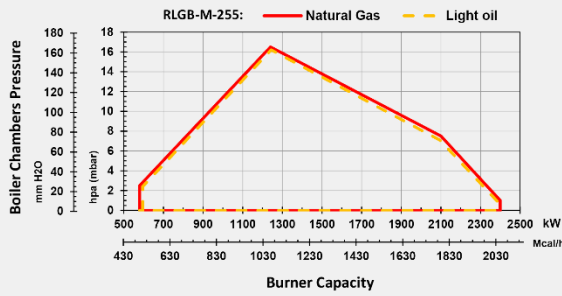
Burner	Capacity (kW)	Turn down
RLGB-M-305/LN	NG: 600-3000	1:5
	LFO: 600-3000	1:5
RLGB-M-385/LN	NG: 650-3500	1:5
	LFO: 650-3500	1:5



Burner	Capacity (kW)	Turn down
RLGB-M-405/LN	NG: 680-4100	1:6
	LFO: 680-4100	1:6
RLGB-M-505/LN	NG: 700-5100	1:7
	LFO: 700-5100	1:7



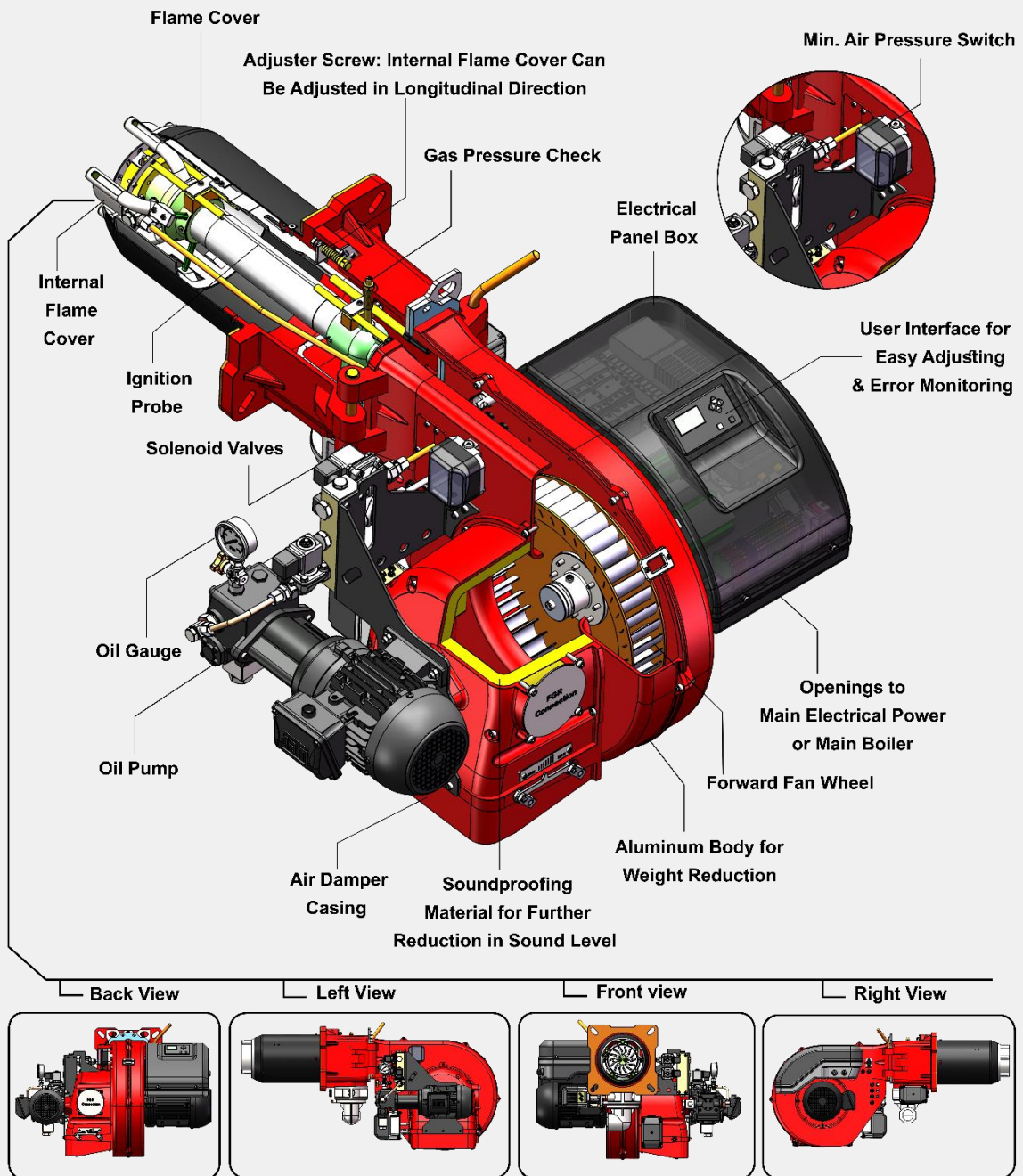
Burner	Capacity (kW)	Turn down
RLGB-M-255	NG: 580-2400	1:4
	LFO: 580-2400	1:4



About the working diagram:

The working diagrams for natural gas and light fuel oil are certified in accordance with BS-EN 676 and BS-EN 267, respectively.

The firing rate diagram has been obtained considering the ambient temperature of 20°C and atmospheric pressure of 1013 mbar (Sea level condition).



Technical data: RLGB-M series

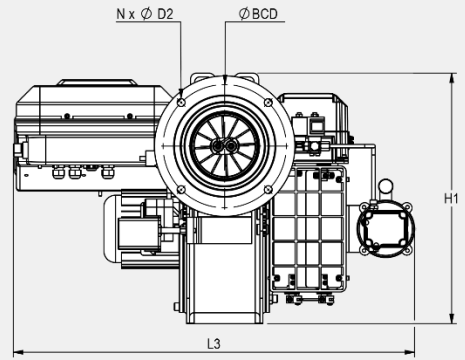
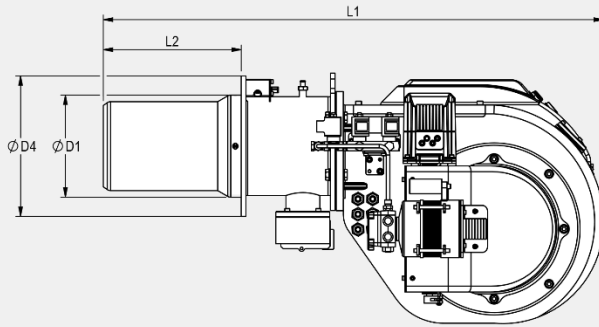
- N.G operation: Electronic Modular
- LFO operation: II or III Stage

Burner	Power system		Power management system			
	Motor(kW/PH/V/HZ/rpm)	Controller		Actuator(N.M)		
		Brand	Mode	Air	Fuel	Head
RLGB-M-55	0.75 /3 /380-400 /50 /2840	LAMTEC	BT340	1.2	0.8	--
RLGB-M-85	1.1 /3 /380-400 /50 /2840	LAMTEC	BT340	1.2	1.2	--
RLGB-M-110	1.5 /3 /380-400 /50 /2840	LAMTEC	BT340	1.2	1.2	--
		SIEMENS	LMV2...			
RLGB-M-145	2.2 /3 /380-400 /50 /2840	LAMTEC	BT340	3	1.2	--
		SIEMENS	LMV2...			
RLGB-M-175/LN	4 /3 /380-400 /50 /2840	LAMTEC	BT340	3	1.2	--
		SIEMENS	LMV2...			
RLGB-M-205/LN	5.5 /3 /380-400 /50 /2840	LAMTEC	BT340	3	1.2	--
		SIEMENS	LMV2...			
RLGB-M-255	5.5 /3 /380-400 /50 /2840	LAMTEC	BT340	3	1.2	--
		SIEMENS	LMV2...			
RLGB-M-305/LN	7.5 /3 /380-400 /50 /2940	LAMTEC	BT340	3	1.2	--
		SIEMENS	LMV2...			
RLGB-M-385/LN	7.5 /3 /380-400 /50 /2940	LAMTEC	BT340	3	1.2	--
		SIEMENS	LMV2...			
RLGB-M-405/LN	11 /3 /380-400 /50 /2940	LAMTEC	BT340	9	1.2	--
		SIEMENS	LMV2...	10		
RLGB-M-505/LN	11 /3 /380-400 /50 /2940	LAMTEC	BT340	9	1.2	--
		SIEMENS	LMV2...	10		
RLGB-M-605/LN	15 /3 /380-400 /50 /2940	LAMTEC	BT340	9	1.2	--
		SIEMENS	LMV2...	10		



General dimension: RLGB-M series

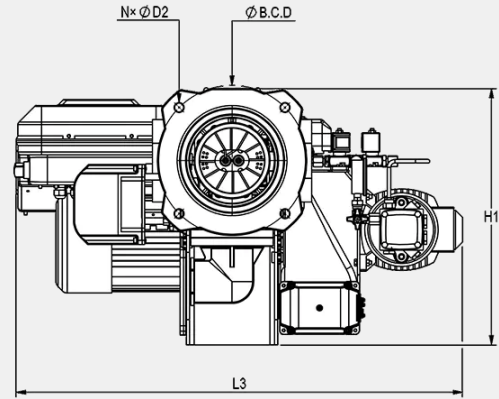
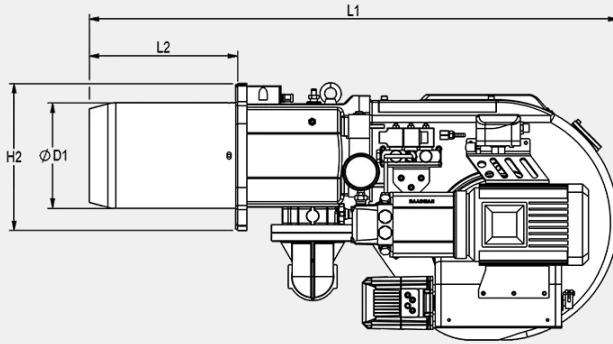
RLGB-M-55



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H	D ₁	D ₂	D ₃	N	B.C. D
RLGB-M-55	853	235	685	427	179	13.5	240	4	210

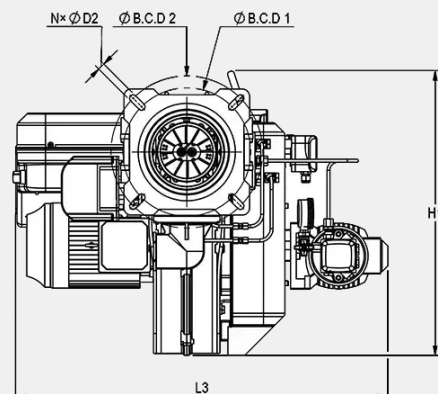
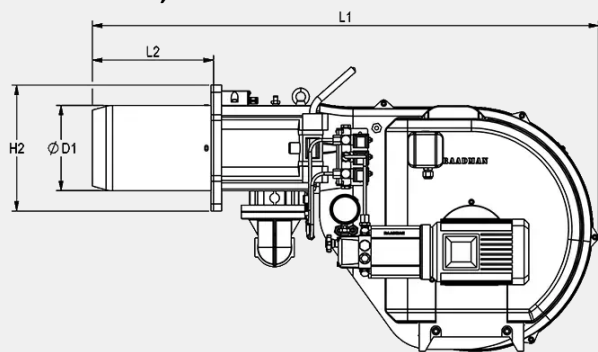
RLGB-M-85



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C. D
RLGB-M-85	901	253	763	436	250	179	15	4	255

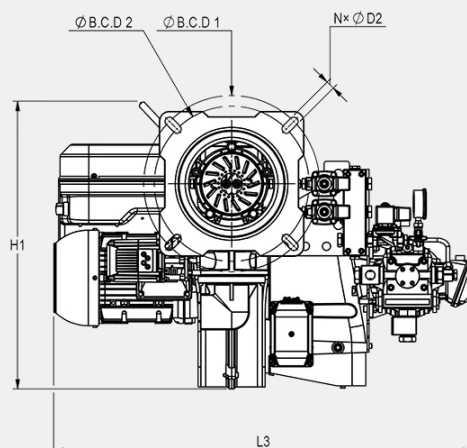
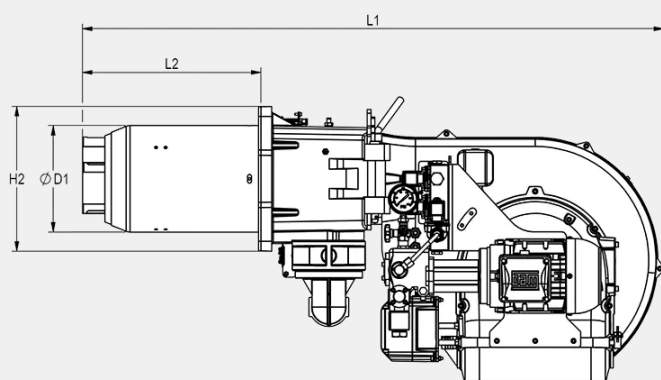
RLGB-M-110, RLGB-M-145



With AL-Casing

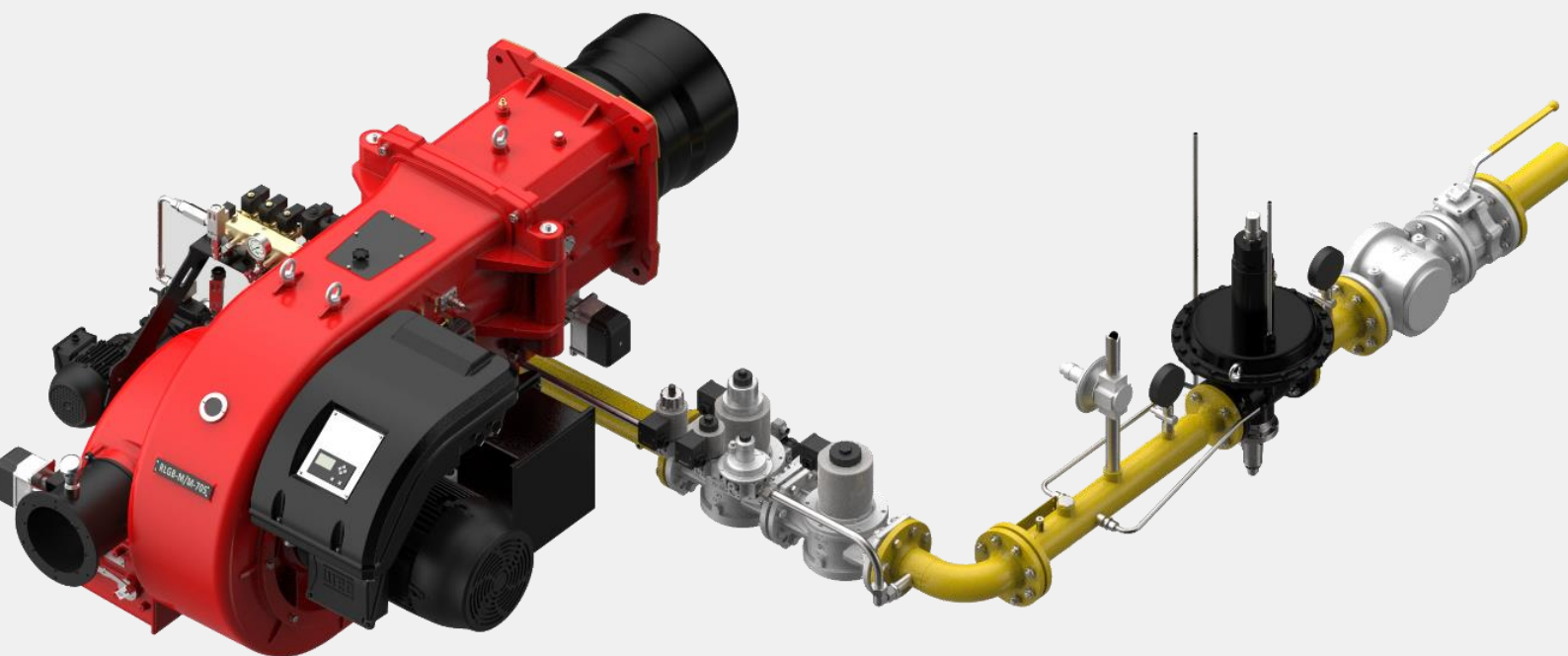
Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C.D1	B.C.D2
RLGB-M-110	1068	255	791	598	265	184	15	4	270	320
RLGB-M-145	1068	255	791	598	265	194	15	4	270	320

RLGB-M-175/LN, RLGB-M-205/LN

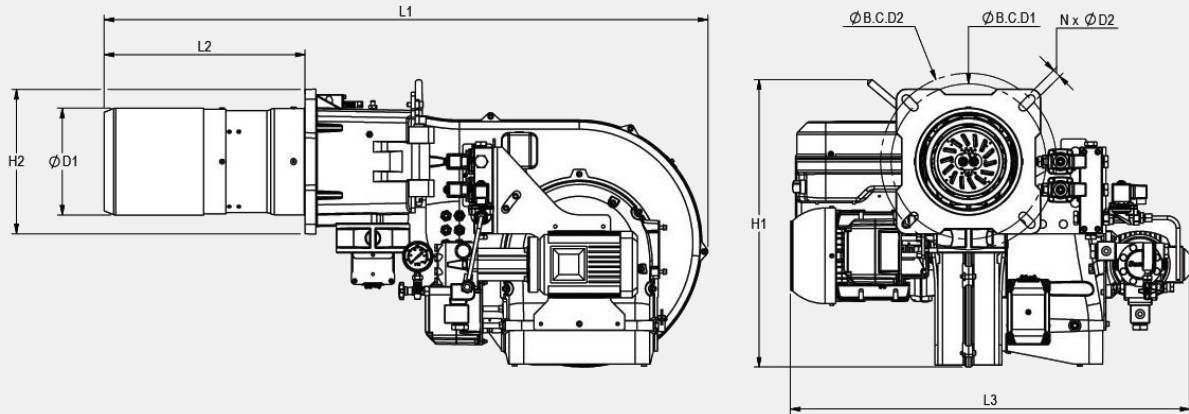


With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C.D1	B.C.D2
RLGB-M-175/LN	1213	373	875	598	302	226	18	4	323	367
RLGB-M-205/LN	1213	373	875	598	302	226	18	4	323	367



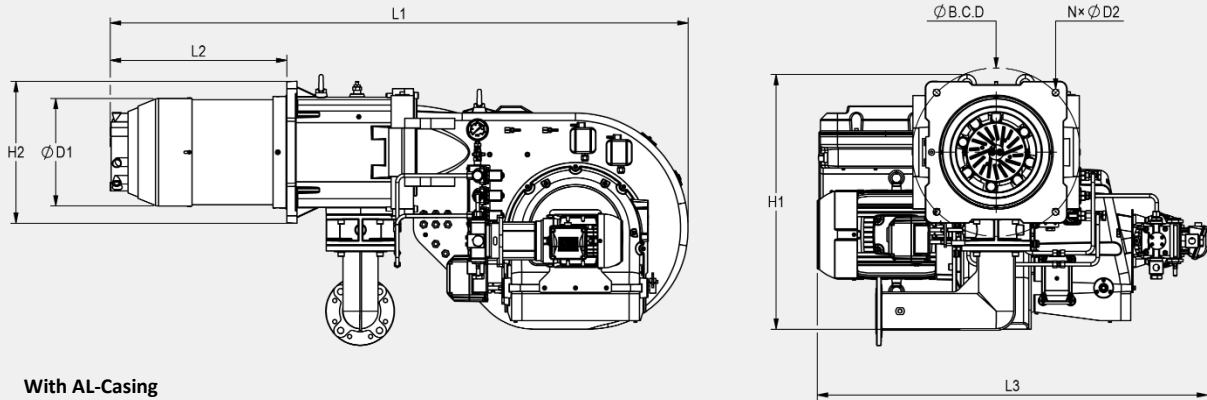
RLGB-M-255



With AL-Casing

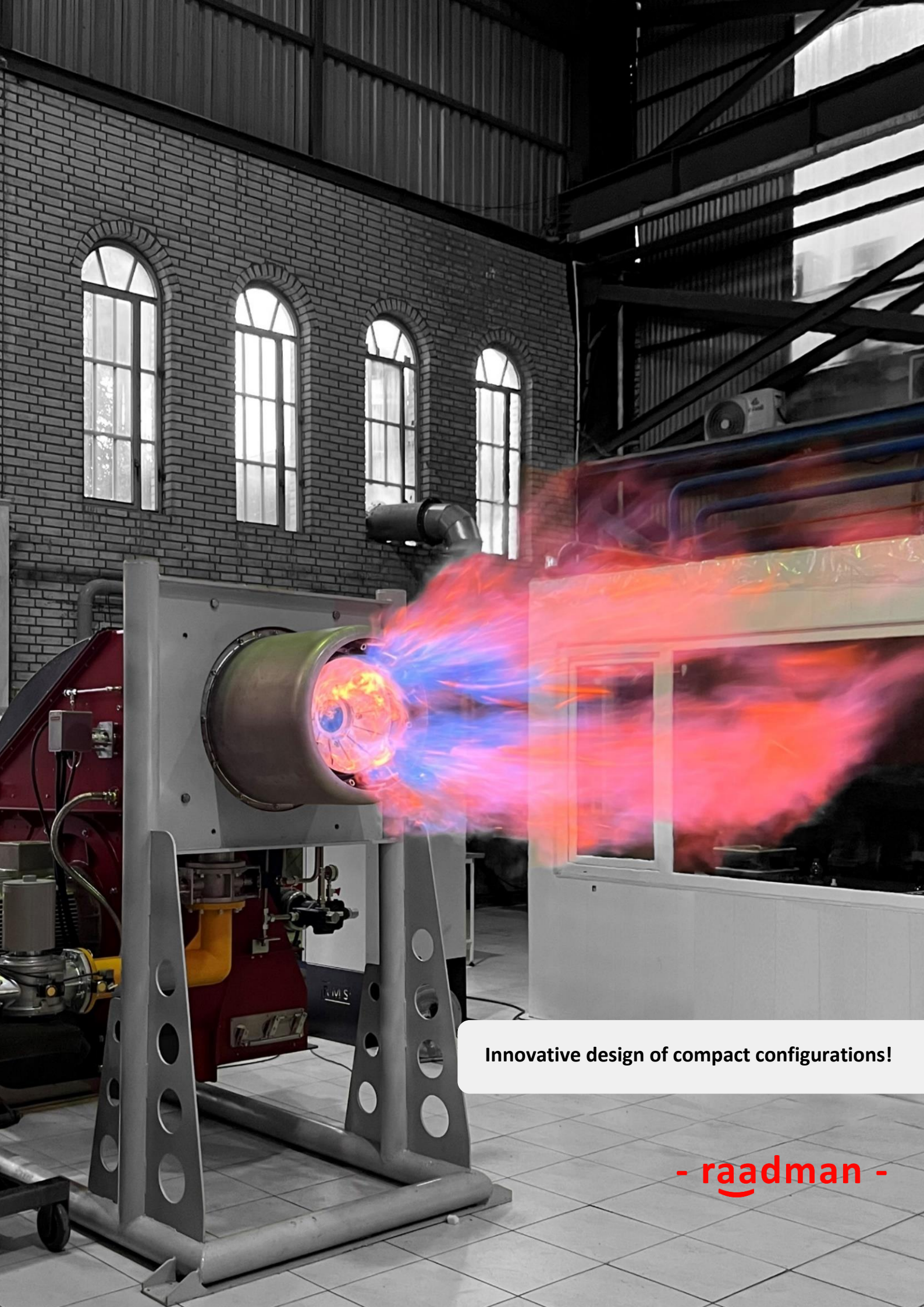
Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C.D1	B.C.D2
RLGB-M-255	1260	419	833	598	302	223	18	4	323	367

RLGB-M-305/LN, RLGB-M-385/LN, RLGB-M-405/LN, RLGB-M-505/LN, RLGB-M-605/LN



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C. D
RLGB-M-305/LN	1683	514	1137	741	413	328	20	4	490
RLGB-M-385/LN	1683	514	1137	741	413	328	20	4	490
RLGB-M-405/LN	1683	514	1249	741	413	328	20	4	490
RLGB-M-505/LN	1683	514	1249	741	413	328	20	4	490
RLGB-M-605/LN	1680	512	1245	741	413	340	20	4	490



Innovative design of compact configurations!

- raadman -

Full Electrical Modular Dual Fuel Burners

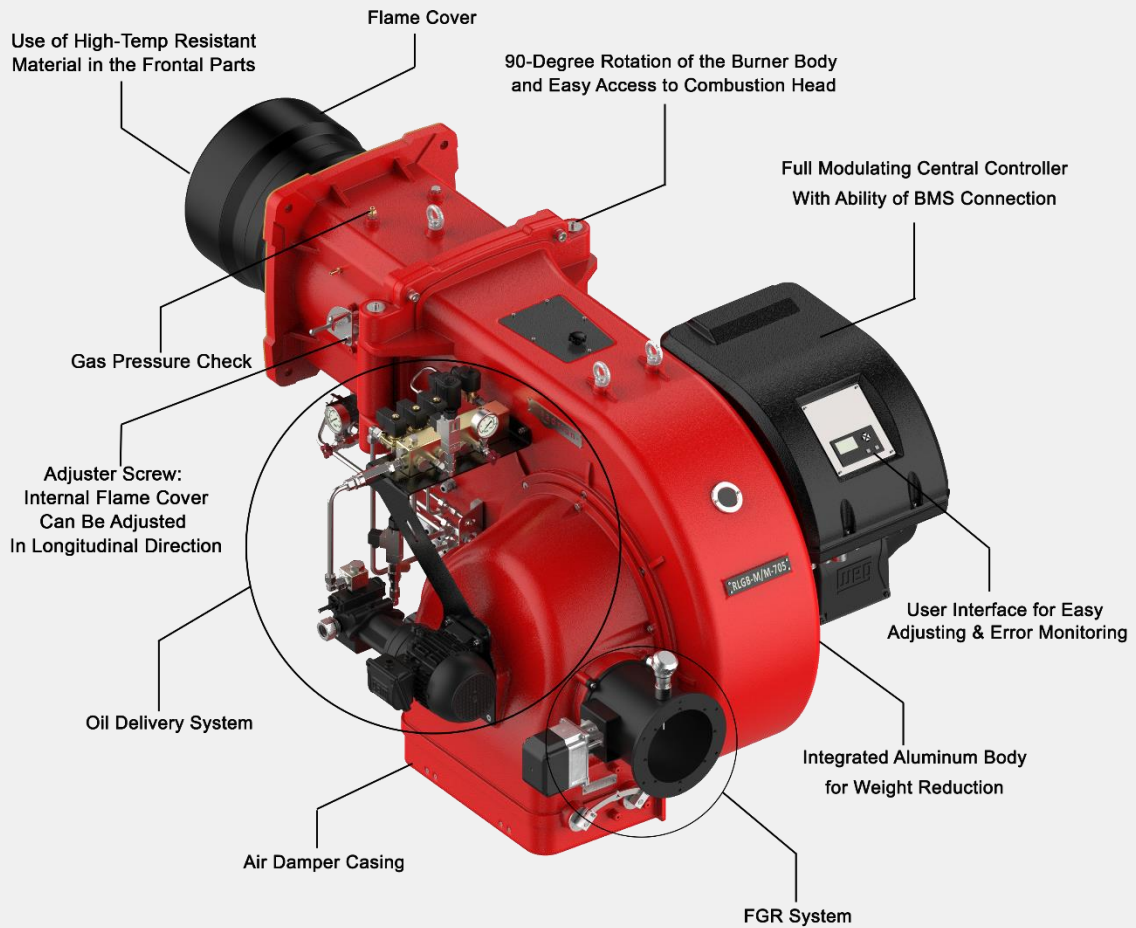
Heat Rated Output: 1000-25000 kW



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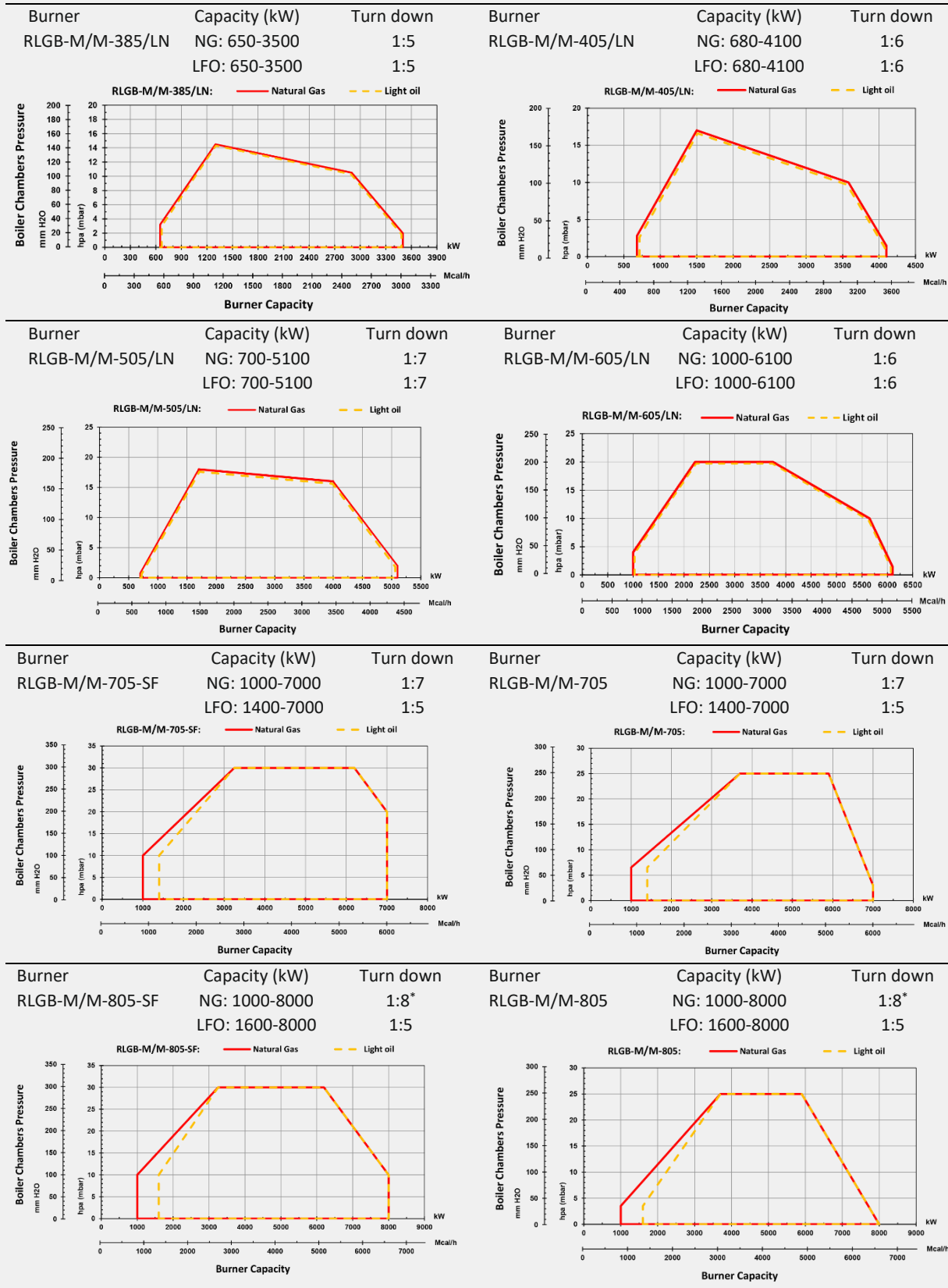
Dual Fuel burners (RLGB-M/M Series)

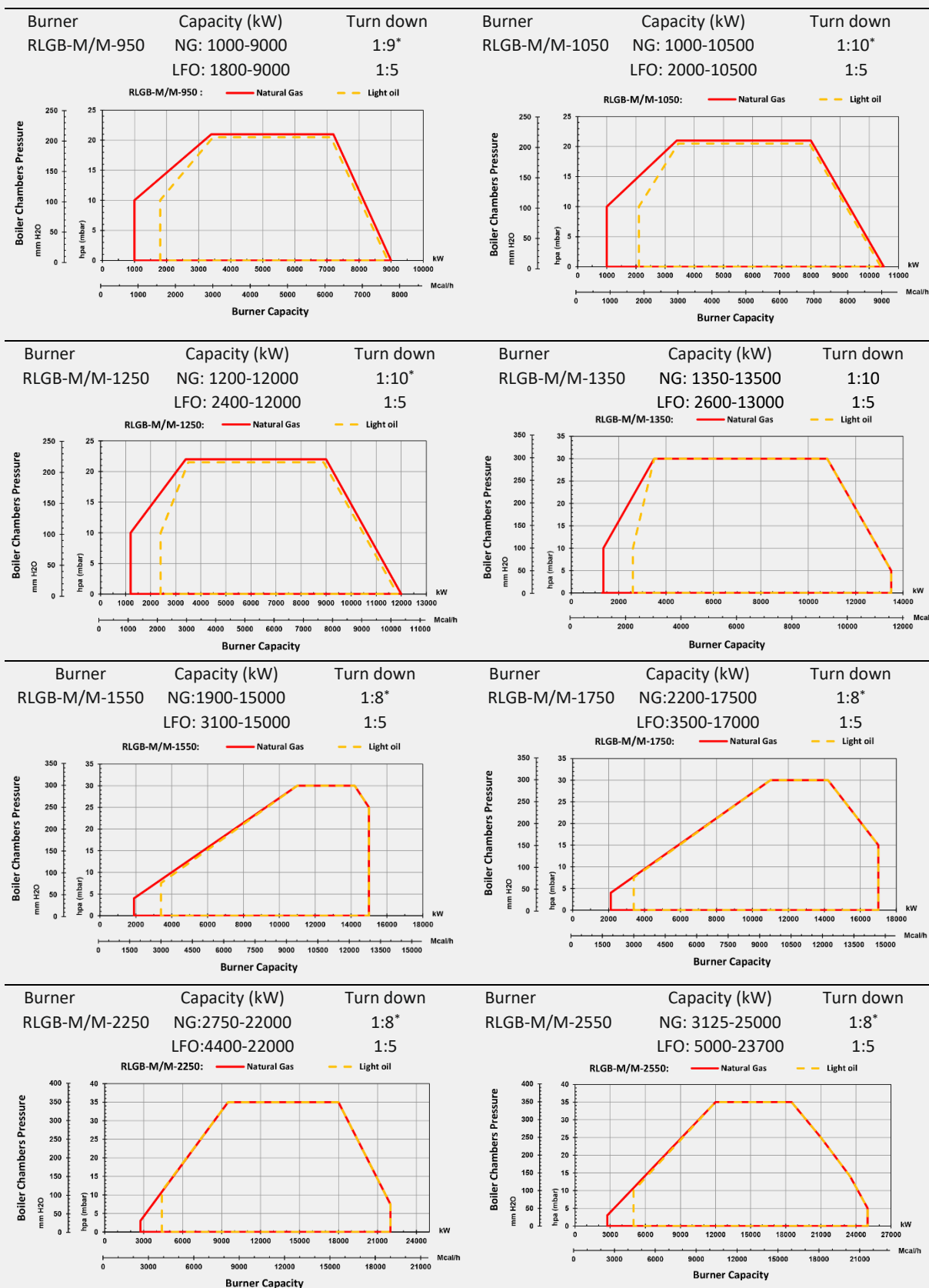




Burner selection: capacity and working diagram

Modulating Dual-Fuel Burner





*Special note: Turn-down ratio higher than (1:8, 1:9, 1:10, etc.) are accessible for the burner with the head actuator. Otherwise, without a head actuator, the maximum turn-down ratio is 1:6.



Technical data: RLGB-M/M series

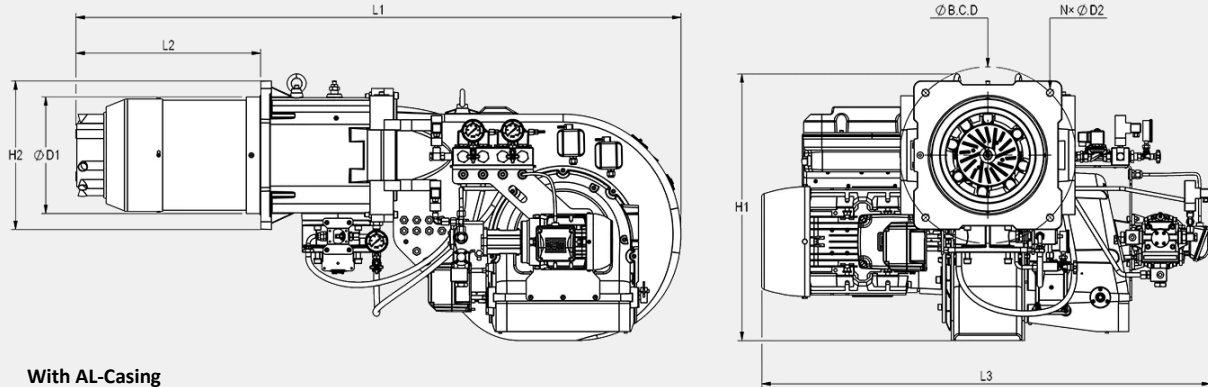
- N.G operation: Electronic Modular
- LFO operation: Electronic Modular

Power system		Power management system				
Burner	Motor(kW/PH/V/HZ/rpm)	Controller		Actuator (N.M)		
		Brand	Name	Air	Fuel	Head*
RLGB-M/M-385/LN	7.5 /3/380-400 /50 /2840	LAMTEC	BT340	3	3	--
		SIEMENS	LMV26			
RLGB-M/M-405/LN	11 /3 /380-400 /50 /2840	LAMTEC	BT340	9	3	--
		SIEMENS	LMV26	10		
RLGB-M/M-505/LN	11 /3/380-400 /50 /2840	LAMTEC	BT340	9	3	--
		SIEMENS	LMV26	10		
RLGB-M/M-605/LN	15 /3/380-400 /50 /2840	LAMTEC	BT340	9	3	--
		SIEMENS	LMV26	10		
RLGB-M/M-705-SF RLGB-M/M-705	18.5/3/380-400 /50 /2840	LAMTEC	BT340	9	3	--
		AUTOFLAME	MINI MK8	25	4	
RLGB-M/M-805-SF	18.5 /3 /380-400 /50 /2840	AUTOFLAME	MINI MK8	25	4	--
RLGB-M/M-805	22 /3 /380-400 /50 /2840	AUTOFLAME	MINI MK8	25	4	--
RLGB-M/M-950	22/3/380-400 /50 /2840	SIEMENS	LMV5...	20	3	20
		AUTOFLAME	MINI MK8	25	4	25
RLGB-M/M-1050	22/3/380-400 /50 /2840	SIEMENS	LMV5...	20	3	20
		AUTOFLAME	MINI MK8	25	4	25
RLGB-M/M-1250	30/3/380-400 /50 /2840	SIEMENS	LMV5...	20	20	20
		AUTOFLAME	MINI MK8	25	4	25
RLGB-M/M-1350	37/3/380-400 /50 /2840	SIEMENS	LMV5...	20	20	20
		AUTOFLAME	MINI MK8	25	25	25
RLGB-M/M-1550	45/3/380-400 /50 /2900	SIEMENS	LMV5...	20	20	20
		AUTOFLAME	MINI MK8	25	25	25
RLGB-M/M-1750	45/3/380-400 /50 /2900	SIEMENS	LMV5	20	20	20
		AUTOFLAME	MINI MK8	25	25	25
RLGB-M/M-2250	75/3/380-400 /50 /2900	SIEMENS	LMV5	35	20	35
		AUTOFLAME	MINI MK8	25	25	40
RLGB-M/M-2550	75/3/380-400 /50 /2900	SIEMENS	LMV5	35	20	35
		AUTOFLAME	MINI MK8	25	25	40

*Optional, note: Using combustion head actuator is necessary in burners with capacity of 15 mW and higher.

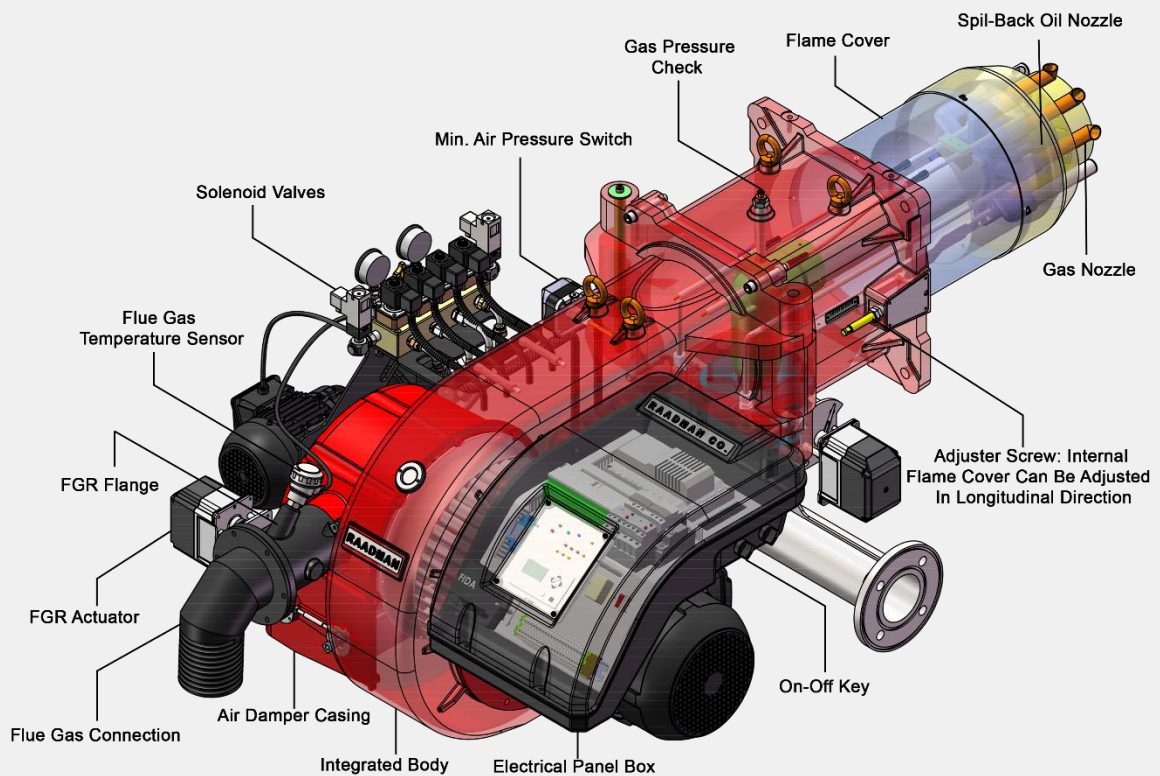
General dimension: RLGB-M/M series

RLGB-M/M-385/LN, RLGB-M/M-405/LN, RLGB-M/M-505/LN, RLGB-M/M-605/LN

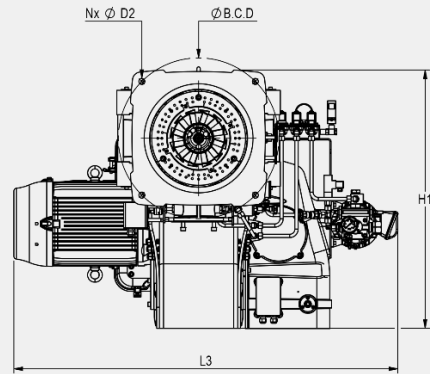
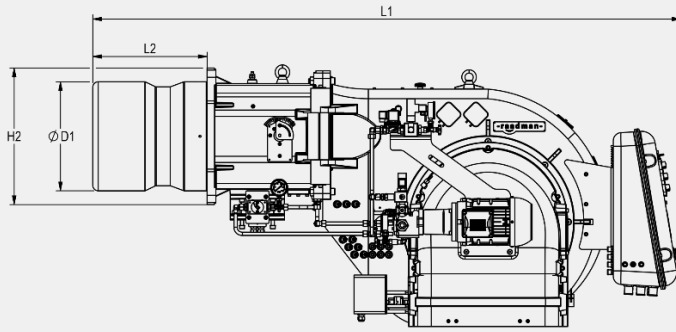


With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	N	B.C. D
RLGB-M/M-385/LN	1683	514	1140	741	413	328	20	4	490
RLGB-M/M-405/LN	1683	514	1141	741	413	328	20	4	490
RLGB-M/M-505/LN	1683	514	1141	741	413	328	20	4	490
RLGB-M/M-605/LN	1680	512	1246	741	413	340	20	4	490



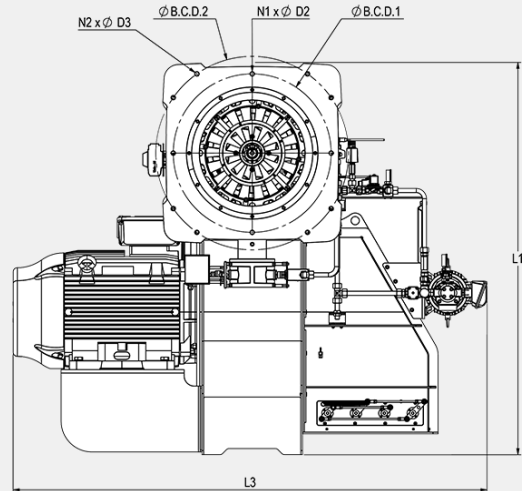
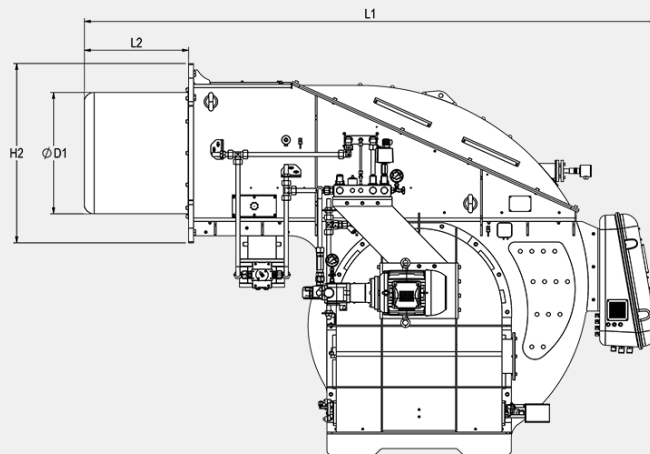
RLGB-M/M-705-SF, RLGB-M/M-705, RLGB-M/M-805-SF, RLGB-M/M-805, RLGB-M/M-950, RLGB-M/M-1050



With AL-Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	D ₃	N ₁	N ₂	B.C.D1*	B.C.D2*
RLGB-M/M-705-SF	2075	350	1415	955	502	400	----	22	--	4	----	590
RLGB-M/M-705	2195	420	1457	955	502	400	----	22	--	4	----	590
RLGB-M/M-805-SF	2075	350	1415	955	502	400	----	22	--	4	----	590
RLGB-M/M-805	2195	420	1457	955	502	400	----	22	--	4	----	590
RLGB-M/M-950	2375	428	1559	1046	595	480	17.5	22	8	4	650	700
RLGB-M/M-1050	2375	428	1559	1046	595	480	17.5	22	8	4	650	700

RLGB-M/M-950, RLGB-M/M-1050, RLGB-M/M-1250, RLGB-M/M-1350, RLGB-M/M-1550, RLGB-M/M-1750, RLGB-M/M-2250, RLGB-M/M-2550



With Carbon-Steel Casing

Burner Type	L ₁	L ₂	L ₃	H ₁	H ₂	D ₁	D ₂	D ₃	N ₁	N ₂	B.C.D1*	B.C.D2*
RLGB-M/M-950	2069	428	1545	1326	613	480	17.5	22	8	4	650	700
RLGB-M/M-1050	2069	428	1545	1326	613	480	17.5	22	8	4	650	700
RLGB-M/M-1250	2008	367	1625	1324	613	480	17.5	22	8	4	650	700
RLGB-M/M-1350	2258	367	1625	1700	660	480	20	20	4	4	790	590
RLGB-M/M-1550	2585	510	1918	1822	872	590	20	20	4	8	770	940
RLGB-M/M-1750	2585	510	1918	1822	872	590	20	20	4	8	770	940
RLGB-M/M-2250	2790	508	2212	1906	872	590	20	20	4	8	770	940
RLGB-M/M-2550	2790	508	2212	1906	872	590	20	20	4	8	770	940

* Note: For the hole patterns of the burner flange, kindly refer to the burner technical proposals while placing an order.



Production Hall of raadman burner Factory- 2023

Gas Train Components

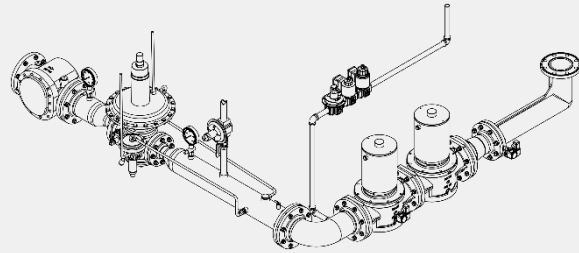
Pressure reduction and regulation units allow to bring gas pressure available in the line to values suited to the specific application. Gas trains include a series of safety and control devices for gas feeding to the burner. They are constructed and supplied with two different selection options (separated or assembled units). The selection has to be made on the specific application (available pressure, installation chances,...). This permits to reach the best flexibility using pre-assembled units, which are also tested in the factory according to existing norms designed for easy installation.

Gas train selection

High-pressure gas supply, standard version

Used when:

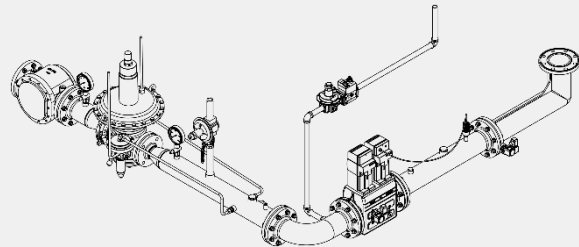
Input pressure is between 500 mbar and 4 bar.
The total pressure loss in gas valves, Butterfly valve and combustion chamber resistance does not exceed 200 mbar.



High-pressure gas supply, Multi bloc version

Used when:

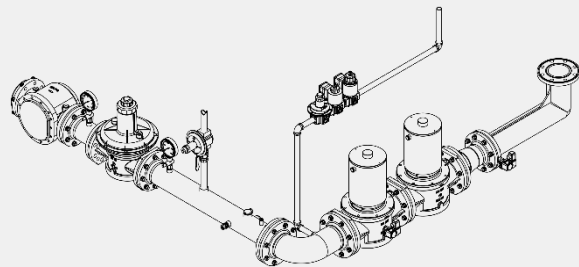
Input pressure is between 360 mbar and 4 bar.
The total pressure loss in gas valves, Butterfly valve and combustion chamber resistance does not exceed 450 mbar.



Low-pressure gas supply

Input pressure is < 500 bar

The total pressure loss in gas valves, Butterfly valve and combustion chamber resistance does not exceed 200 mbar.



Ball valve: To isolate the system from any other train in boiler room (Excluded from the burner gas train)

Filter: To protect rest of the system from any debris or dust that may be carried with gas stream. Debris may for example consist of parts accidentally left in the pipe during construction.

Regulator: To keep the input pressure of a fluid to a desired value at its output. Based on the input pressure of the gas line, they are divided in two categories: Low pressure regulator, High pressure regulator.

Safety Valve: Single-stage solenoid valve, normally when closed, fast opening, fast closing, manual limitation of flowing gas volume by adjusting main volume.

Main valve: Single-stage solenoid valve, normally when closed, slow opening, fast closing. Opening time adjustment with fast stroke range, Main volume adjustment.

Note:

According to the BS-EN 676, valve proving system shall be used in burners with capacity above 1.2 MW. Consequently, MADAS-MTC10 or DungsVDK200 valve proving systems are highly recommended.

Layout of the valve train

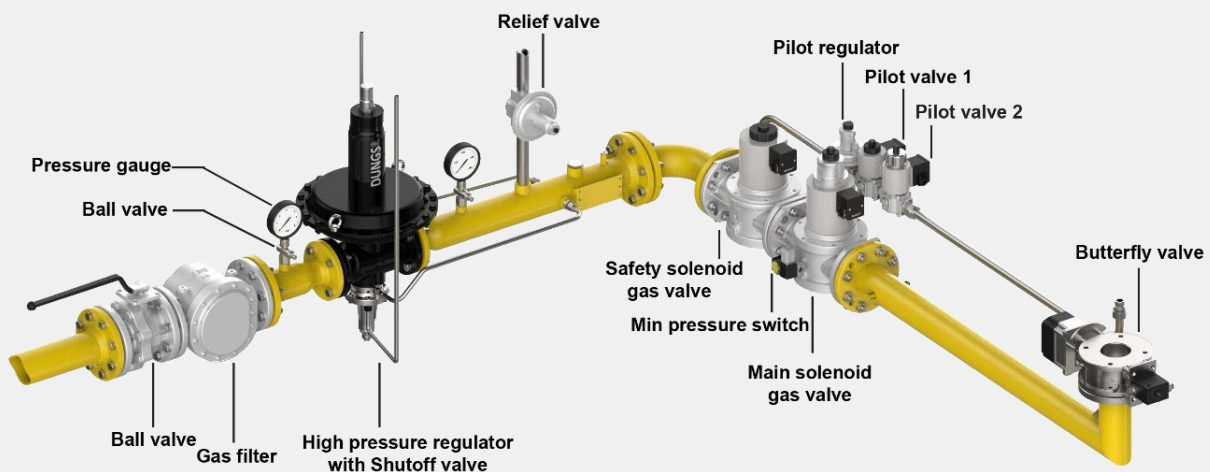
On boilers with hinged doors, the valve train must be mounted on the opposite side to the boiler door hinges.

Break points in the valve train

Break points in the valve train should be provided to enable the door of the heat generator to be swung open. The main gas line is best separated at the compensator.

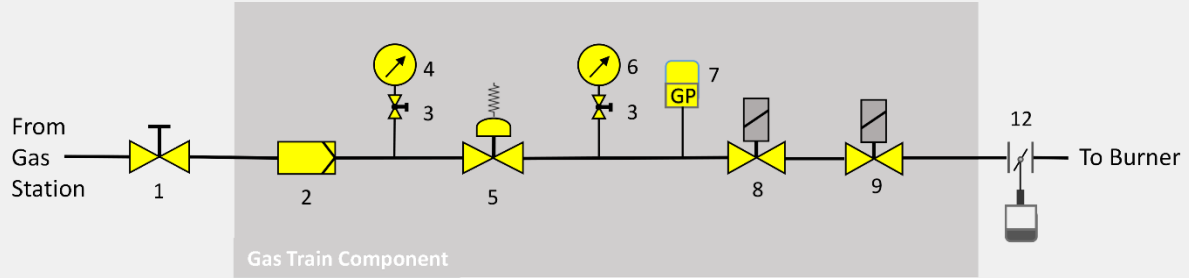
Support of the valve train

The valve train should be properly supported in accordance with the site conditions. See the radman accessories list for various valve train support components.

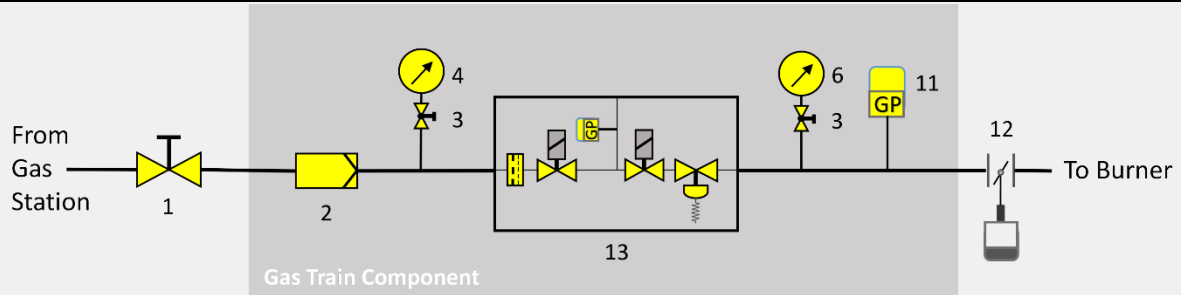


Gas train diagram

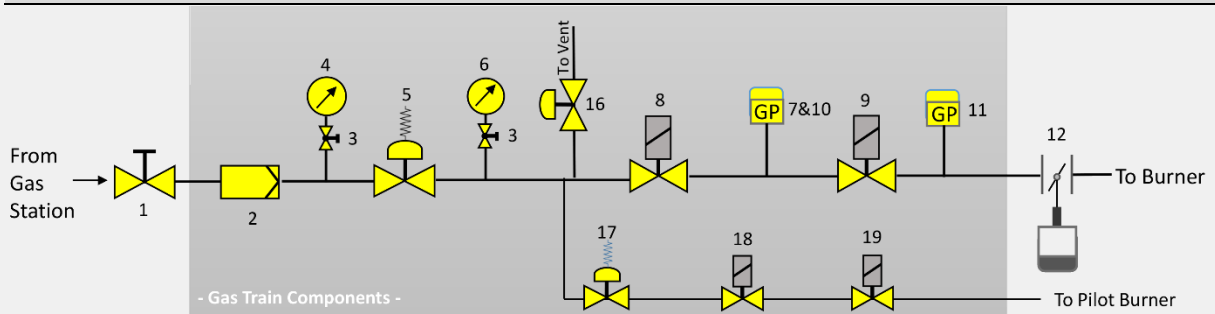
GT1 (Pressure input < 360 mbar, separated items)



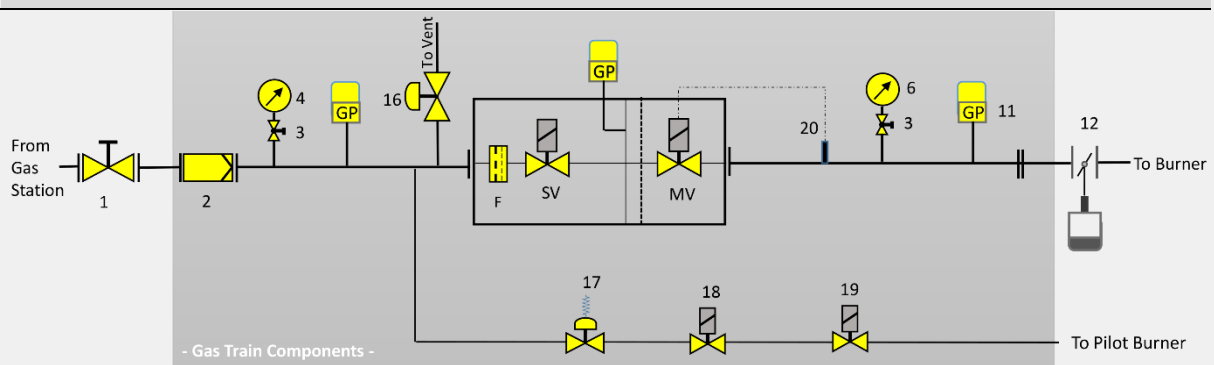
GT2 (Pressure input < 360 mbar, multi bloc gas train)



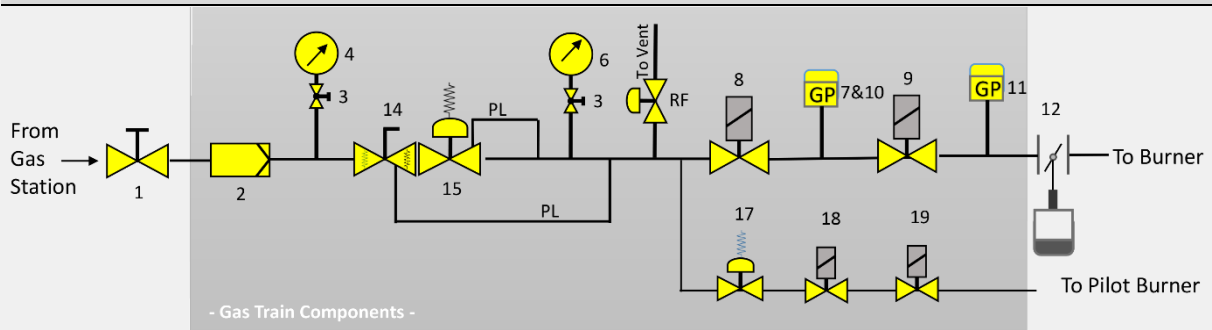
GT3 (Pressure input < 360 mbar, separated gas train, with pilot)



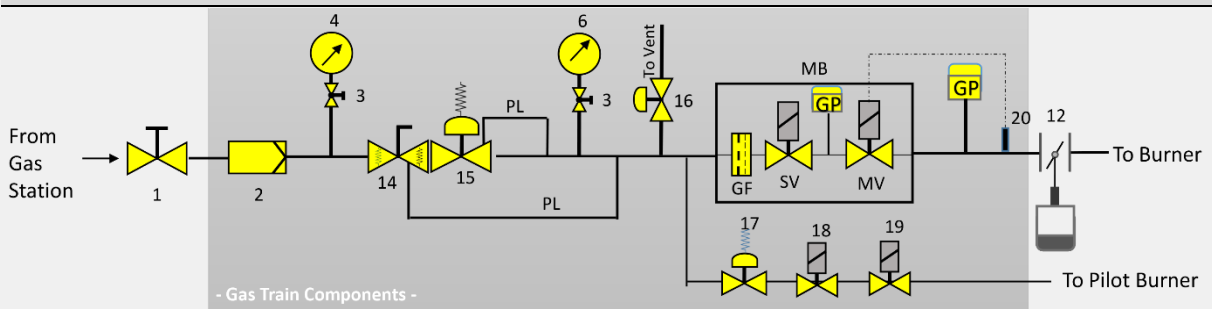
GT4 (Pressure input < 360 mbar, multi block gas train, with pilot)



GT5 (Pressure input >360 mbar, separated gas train, with pilot)



GT6 (Pressure input >360 mbar, multi block gas train, with pilot)



- | | | |
|--------------------------------------|-----------------------------------|-----------------------------|
| 1: Ball valve | 8: Safety gas valve | 15: High pressure regulator |
| 2: Gas filter | 9: Main gas valve | 16: Relief valve |
| 3: Push button valve | 10: Leak Test gas pressure switch | 17: Pilot regulator |
| 4: Pressure Gauge | 11: Max. gas pressure switch | 18: Pilot valve 1 |
| 5: Pressure regulator (Low-pressure) | 12: Butterfly valve | 19: Pilot valve 2 |
| 6: Pressure Gauge | 13: Multi-Block Solenoid Valve | 20: Pressure transmitter |
| 7: Min. gas pressure switch | 14: Shut-off valve | |

Gas train size

RGB-M Series				
Burner	Gas model	Gas train size	$\Delta P B. V$	$\Delta P C.H^*$ (mbar)
RGB-M-55	GT-1	Rp 1 ½	2	7.2
	GT-2	Rp 1 ½		
RGB-M-80	GT-1	Rp 1 ½	2	10.3
	GT-2	Rp 1 ½		
RGB-M-85/LN	GT-1	Rp 1 ½	2	11.7
	GT-2	Rp 1 ½		
RGB-M-110	GT-1	Rp 1 ½	2	9
	GT-2	Rp 1 ½		
RGB-M-130/LN	GT-1	Rp 1 ½	2	22.5
	GT-2	Rp 1 ½		
RGB-M-145	GT-1	Rp 2	2	8.6
	GT-2	Rp 2		
RGB-M-175/LN	GT-1	Rp 2	3	17
	GT-2	Rp 2		
RGB-M-185	GT-1	Rp 2	3	14.5
	GT-2	Rp 2		
RGB-M-205	GT-1	Rp 2	3	14.5
	GT-2	Rp 2		
RGB-M-255/LN	GT-1	DN65	3	24.9
	GT-2	Rp 2		
RGB-M-305	GT-1	DN65	4	20.6
	GT-2	Rp 2		
RGB-M-385	GT-1	DN80	4	31.7
	GT-2	DN65		
RGB-M-405/LN	GT-1	DN80	4	47
	GT-2	DN65		
RGB-M-505/LN	GT-1	DN80	4	56
	GT-2	DN65		
RGB-M-605	GT-1	DN80	4	62.8
	GT-2	DN65		
RGB-M-705-SF	GT-3	DN100	4	78
	GT-4	DN80		
RGB-M-705	GT-3	DN100	4	85
	GT-4	DN80		
RGB-M-805-SF	GT-3	DN100	5	90
	GT-4	DN80		
RGB-M-805	GT-3	DN100	5	95
	GT-4	DN80		
RGB-M-950	GT-3	DN100	5	85
	GT-4	DN80		
	GT-5	DN80		
RGB-M-1050	GT-3	DN100	5	110
	GT-4	DN100		
	GT-5	DN100		
RGB-M-1250	GT-5	DN100	5	85
	GT-6	DN100		
RGB-M-1350	GT-4	DN100	6	100
	GT-5	DN100		
	GT-6	DN100		

*Combustion head

RGB-M Series				
Burner	Gas model	Gas train size	$\Delta P B. V$	$\Delta P C.H^*$ (mbar)
RGB-M-1550	GT-4	DN100	7	110
	GT-5	DN100		
	GT-6	DN100		
RGB-M-1750	GT-4	DN100	7	125
	GT-5	DN100		
	GT-6	DN100		
RGB-M-2250	GT-5	DN125	15	165
	GT-5	DN125		
	GT-6	DN100		
RGB-M-2550	GT-4	DN125	17	160
	GT-5	DN125		
	GT-6	DN100		

RLGB-M Series				
Burner	Gas model	Gas train size	$\Delta P B. V$	$\Delta P C.H^*$ (mbar)
RLGB-M-55	GT-1	Rp 1 ½	2	14
	GT-2	Rp 1 ½		
RLGB-M-85	GT-1	Rp 1 ½	2	6.2
	GT-2	Rp 1 ½		
RLGB-M-110	GT-1	Rp 2	2	9
	GT-2	Rp 2		
RLGB-M-145	GT-1	Rp 2	2	13
	GT-2	Rp 2		
RLGB-M-175/LN	GT-1	Rp 2	3	17
	GT-2	Rp 2		
RLGB-M-205/LN	GT-1	DN65	3	21.5
	GT-2	Rp 2		
RLGB-M-255/LN	GT-1	DN65	3	27.8
	GT-2	Rp 2		
RLGB-M-305/LN	GT-1	DN65	4	23
	GT-2	Rp 2		
RLGB-M-385/LN	GT-1	DN80	4	27.3
	GT-2	DN65		
RLGB-M-405/LN	GT-1	DN80	4	44
	GT-2	DN65		



RLGB-M/M Series				
Burner	Gas model	Gas train size	$\Delta P B. V$	$\Delta P C.H^*$ (mbar)
RLGB-M/M-385/LN	GT-1	DN65	4	31.4
	GT-2	DN65		
RLGB-M/M-405/LN	GT-1	DN80	4	47
	GT-2	DN65		
RLGB-M/M-505/LN	GT-1	DN80	4	56
	GT-2	DN65		
RLGB-M/M-605/LN	GT-1	DN80	4	62.8
	GT-2	DN65		
RLGB-M/M-705-SF	GT-3	DN100	4	78
	GT-5	DN80		
RLGB-M/M-705	GT-3	DN100	5	85
	GT-5	DN80		
RLGB-M/M-805-SF	GT-3	DN100	5	90
	GT-5	DN80		
RLGB-M/M-805	GT-3	DN100	5	95
	GT-5	DN80		
RLGB-M/M-950	GT-3	DN100	5	85
	GT-4	DN80		
	GT-5	DN80		
RLGB-M/M-1050	GT-3	DN100	5	110
	GT-4	DN80		
	GT-5	DN80		
RLGB-M/M-1250	GT-4	DN100	5	85
	GT-5	DN100		
	GT-6	DN100		
RLGB-M/M-1350	GT-4	DN100	6	100
	GT-5	DN100		
	GT-6	DN100		
RLGB-M/M-1550	GT-4	DN100	7	110
	GT-5	DN100		
	GT-6	DN100		
RLGB-M/M-1750	GT-4	DN100	7	125
	GT-5	DN100		
	GT-6	DN100		
RLGB-M/M-2250	GT-4	DN125	15	165
	GT-5	DN125		
	GT-6	DN100		
RLGB-M/M-2550	GT-4	DN125	17	155
	GT-5	DN125		
	GT-6	DN100		

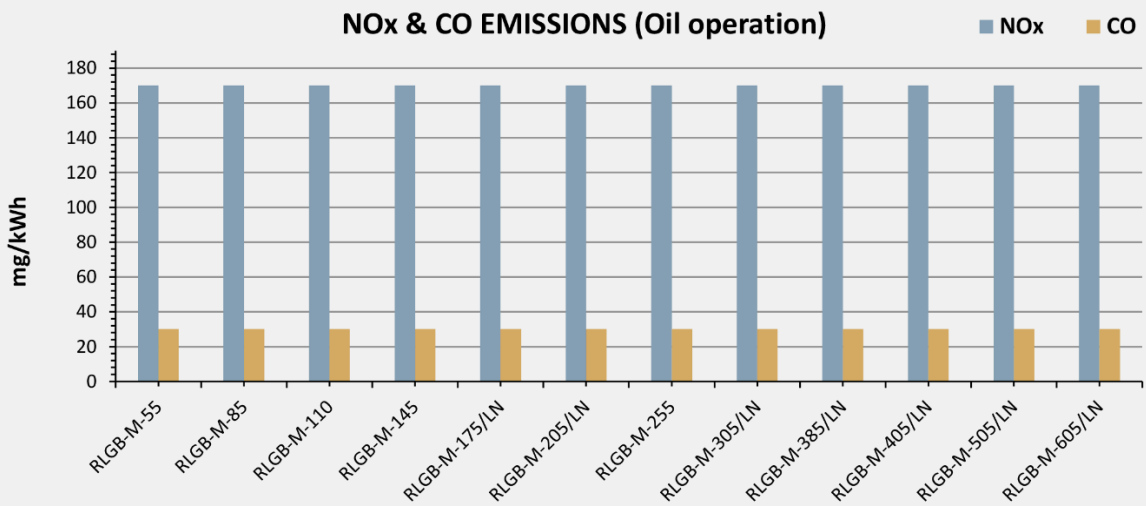
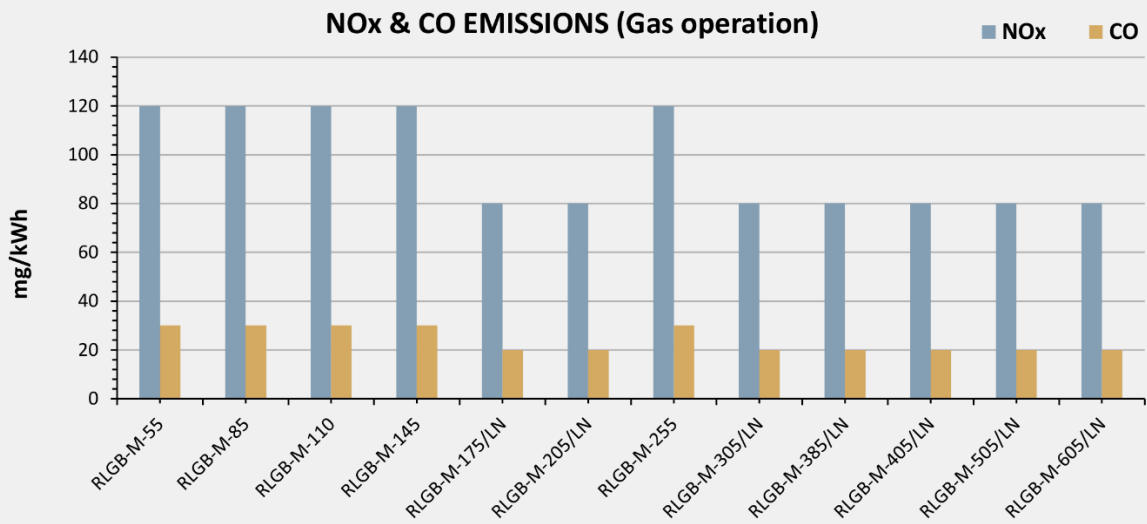
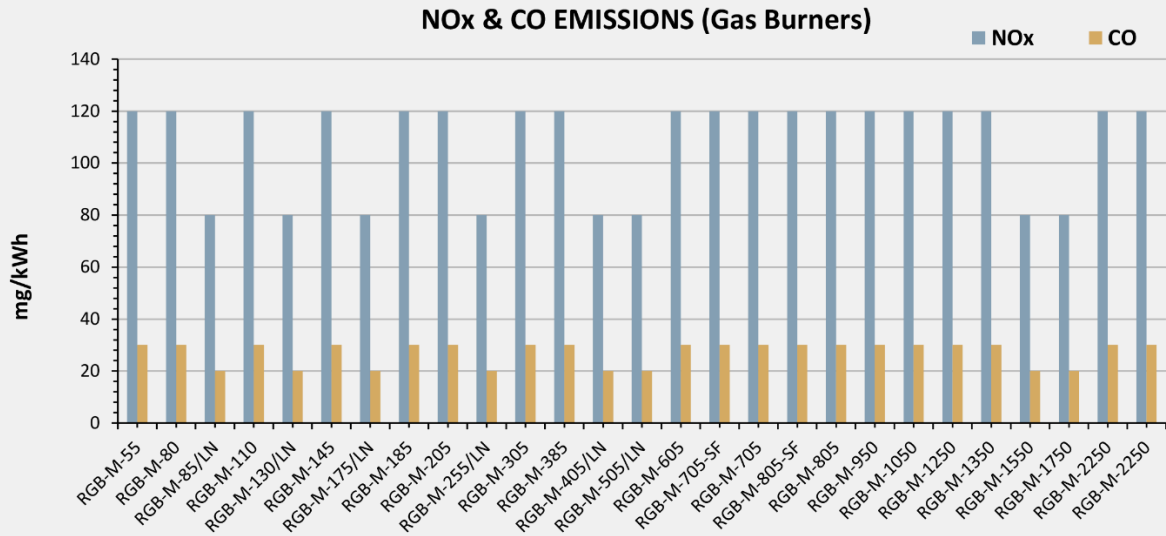
*Combustion head

Special Note: The above gas train sizes are proposed based on customer's requests and limits of the projects while placing an order. Therefore, we kindly ask the readers that assume this information as an initial and most likely offers.

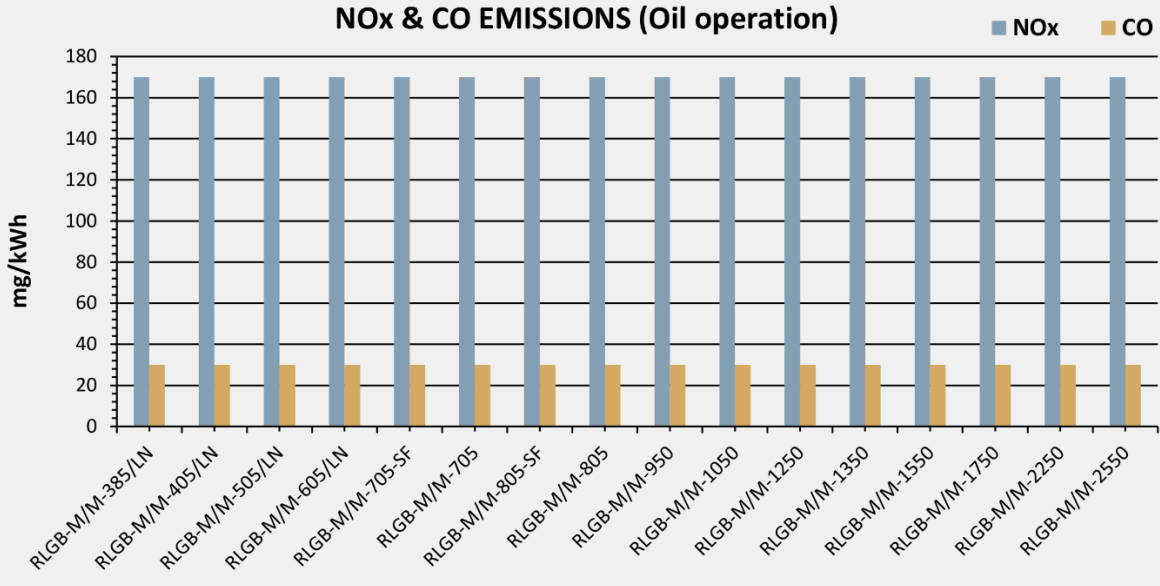
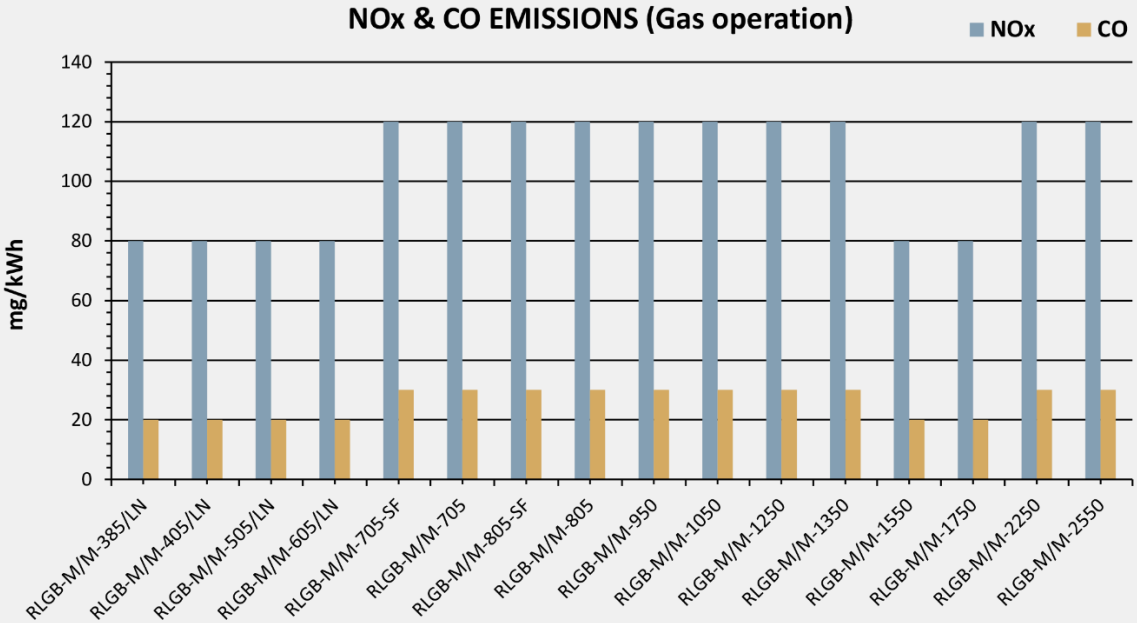




Emissions

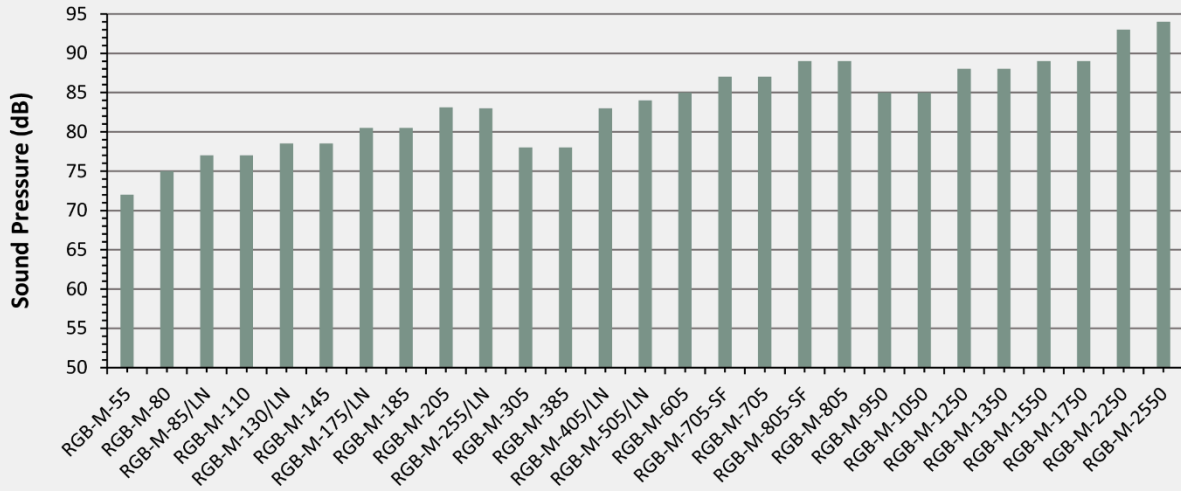


The superiority of Low NOx combustion

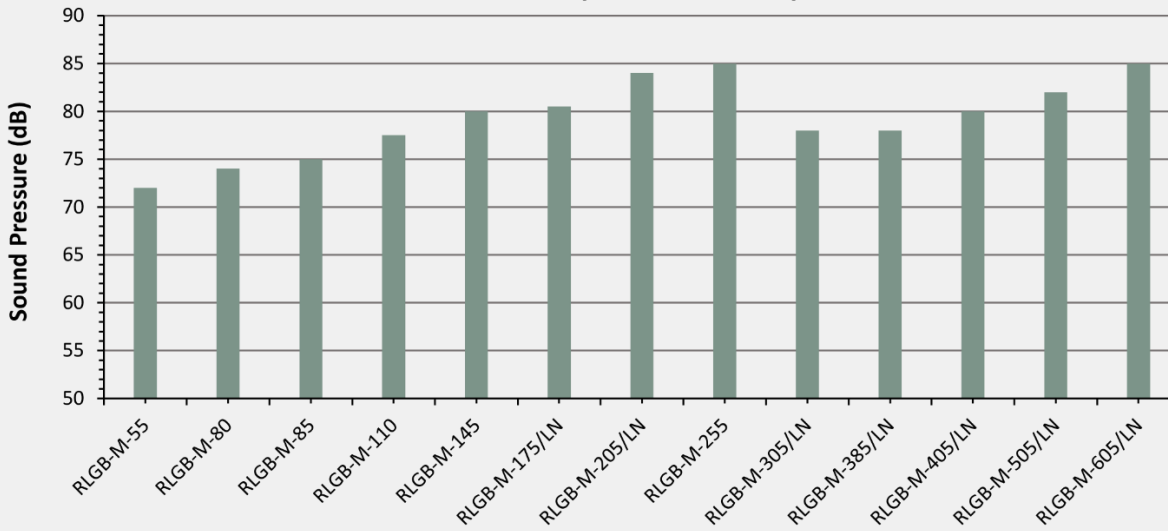




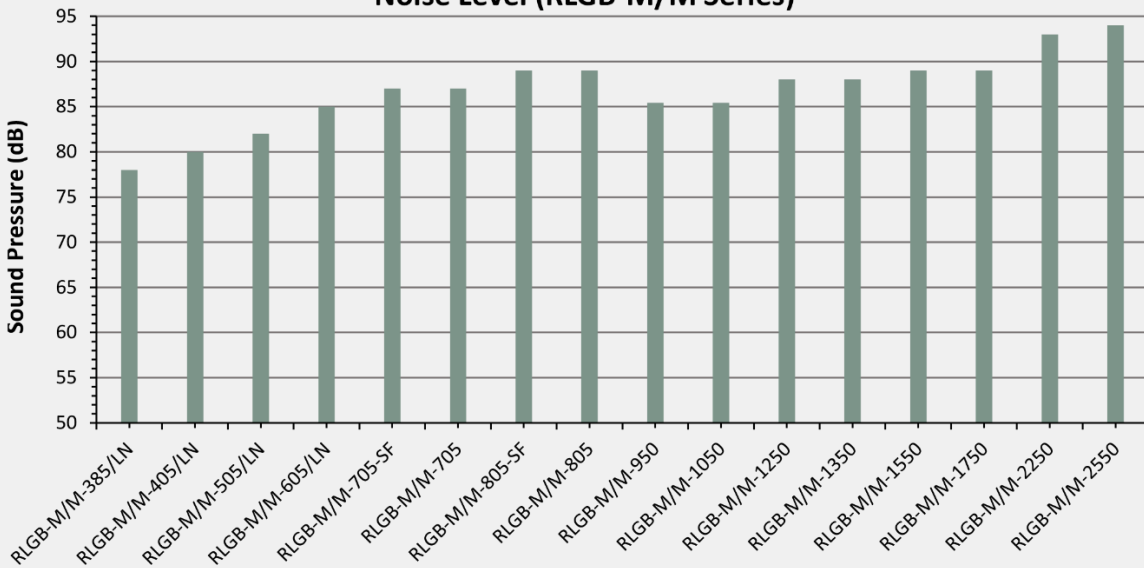
Noise level (RGB-M Series)



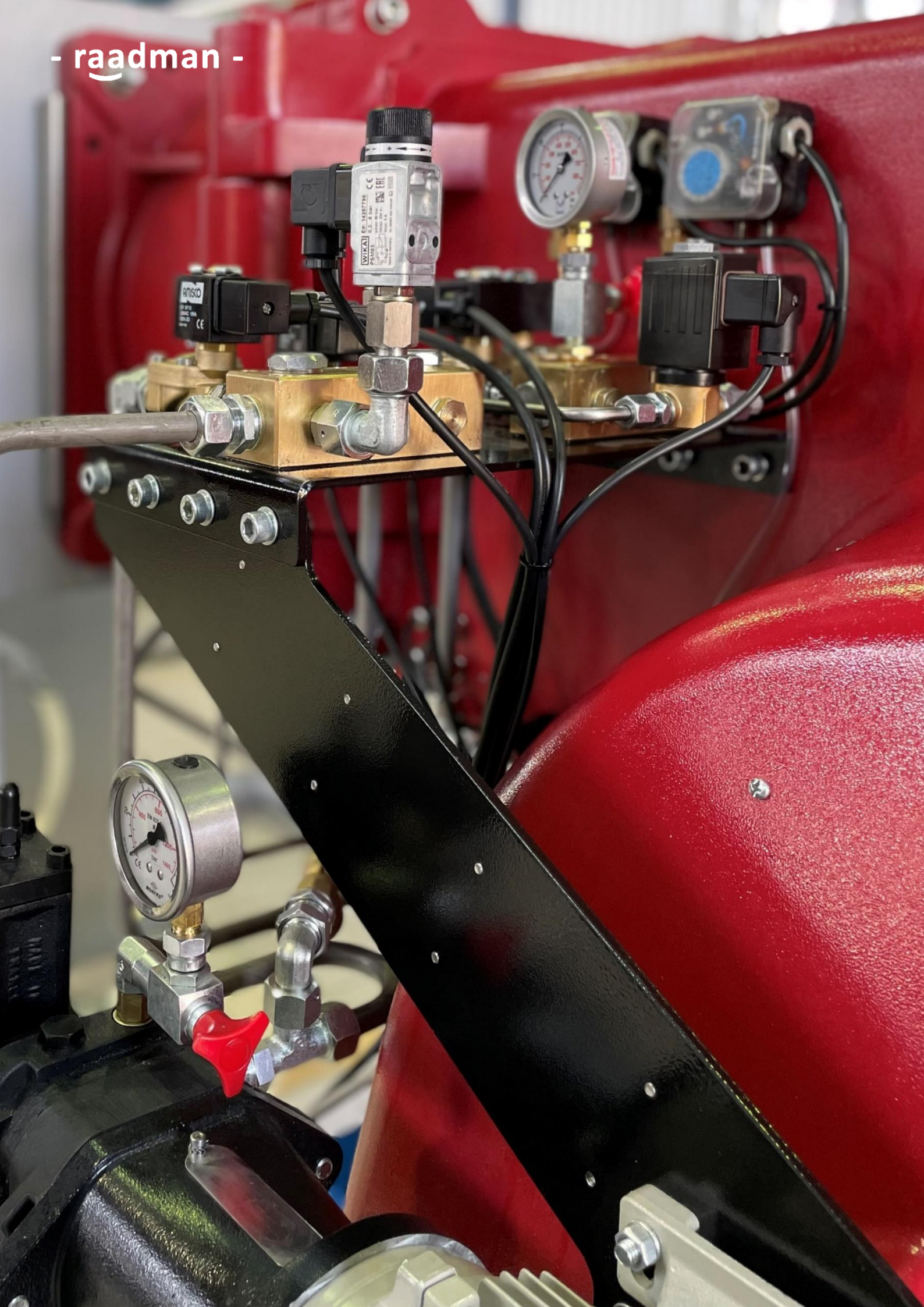
Noise level (RLGB-M Series)



Noise Level (RLGB-M/M Series)



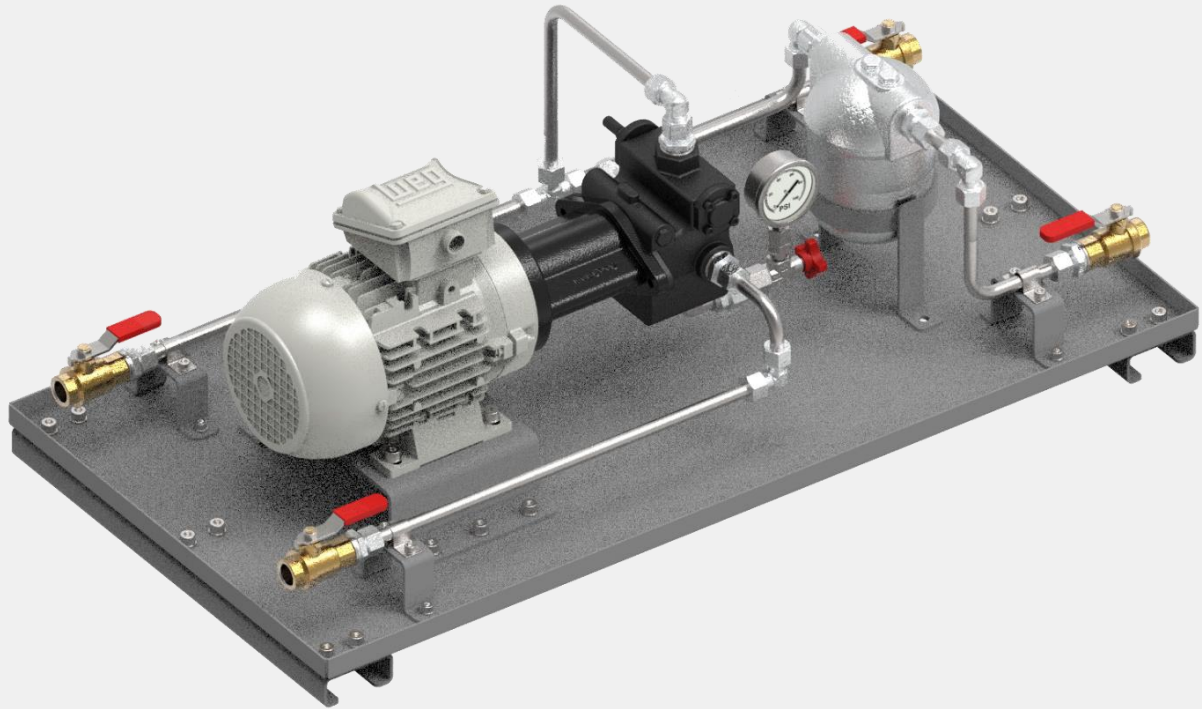
- raadman -



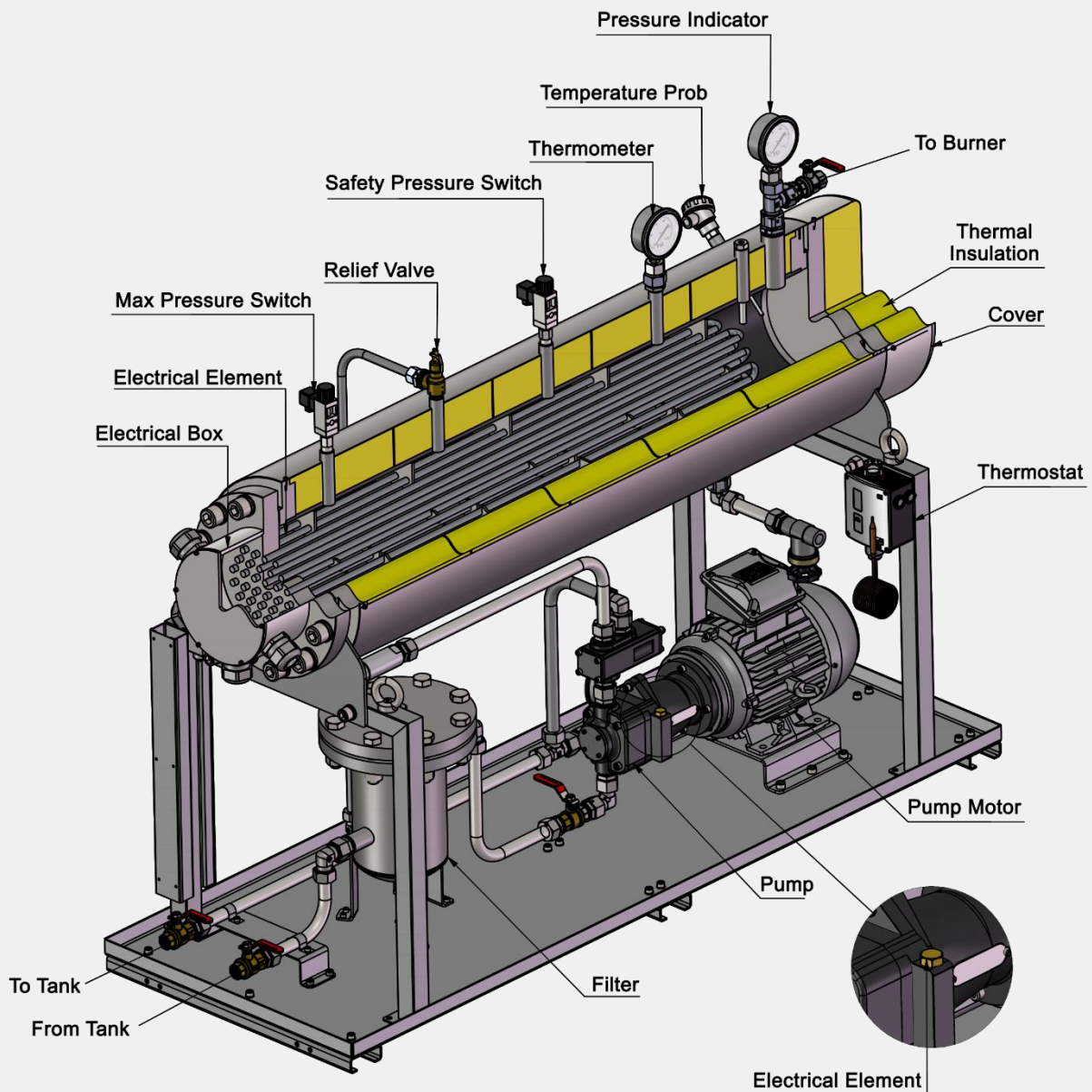
Oil station

The Oil Stations are designed to treat and prepare light oil; they mainly consist of a filter, a pump and a motor.

The Oil Station can independently be prepared, assembled, tested and installed. The wide range of available models makes the system suitable for many different applications.



Heavy oil heater



Packman heavy fuel oil preheaters are designed to heat heavy oil efficiently to adjust the proper viscosity for the burner. The design is based on the general conditions such as the type and properties of the heavy fuel oil, pressure requirements of the pump and temperature as well as the desired operating points in the process. Electrical heavy fuel oil heater directly heats fuel by converting electrical energy in the heating elements to thermal energy. The thermal energy is then transferred from the heating electrical elements to the fluid.

The unit skids are designed in order to prepare heavy fuel oil with max viscosity 10 cSt at 130°C and outlet pressure of 25 mbar.

Modular oil delivery system

Generally, two types of atomizing principles are utilized in raadman modular oil burners:

Pressure based spill back lances/atomizers

All raadman pressure based atomizing modular oil burners are equipped with a burner lance and a fly-back oil atomizer. The burner-lance is particularly suitable for use in or on an oil burner and is designed to operate spill back atomizers with integrated shut-off needle. The strong spring on the actuating rod pushes the needle in closed position. This ensures a reliable shut-off under all circumstances.

Fuel, branched off from the supply line actuates the piston for opening. This can be controlled by two external solenoid valves or by one 3/2 solenoid valve. The piston has a fixed travel. While opening, the needle inside the atomizer is retracted in the correct position by means of a spring at the back of the atomizer against a fixed stop on the needle itself.

During the pre-purge period of the burner, the needle is keeping the orifice closed and the fuel circulates through the lance at pre-set supply and return pressure. On energizing both solenoid valves and the 3/2 solenoid valve, even after long idle intervals, there is immediate atomization guaranteeing perfect ignition.

The burner-lance is suitable to supply pressures from 20 up to 40 bar and fuel temperatures up to 140°C.



Air or Steam lances/atomizers

All raadman air/steam atomizing modular oil burners are equipped with a special burner lance and an air/steam atomizer. The burner-lance is designed to operate 32-Y atomizers with compressed air or steam.

The strong spring on the actuating rod pushes the needle in closed position. Compressed air, controlled by an external 3/2 solenoid valve, actuates the piston for opening. The piston has a fixed travel, pulling the needle in the correct position when it opens.

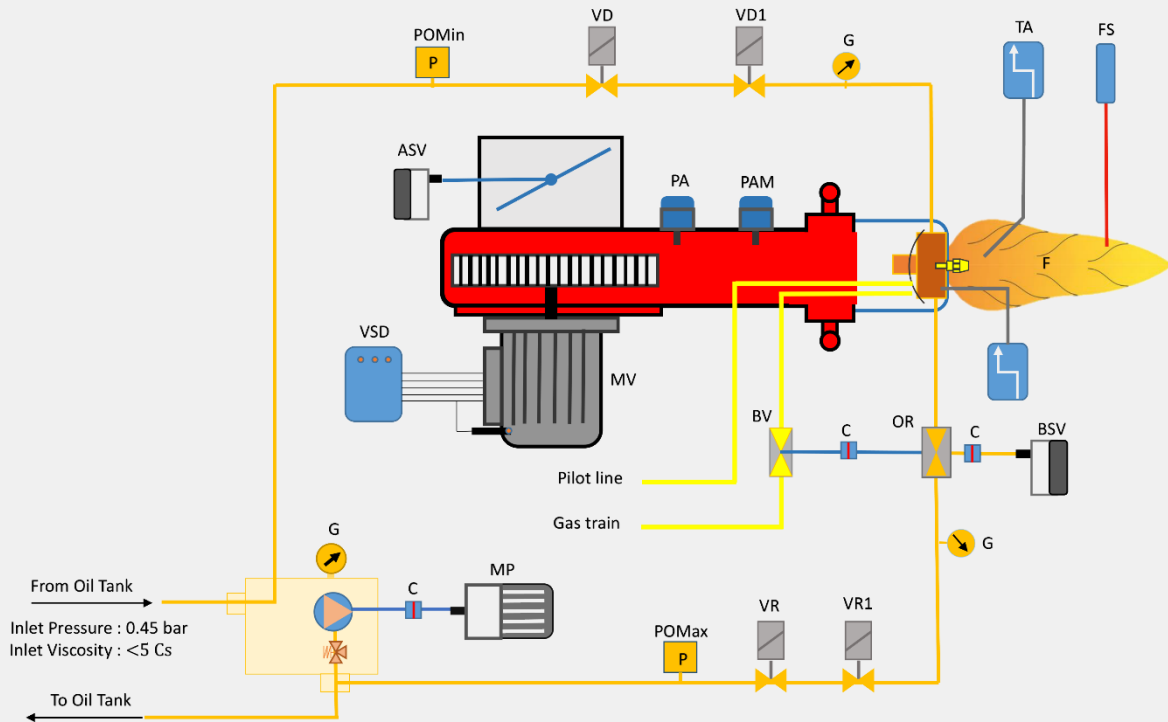
During the pre-purge period of the burner, the needle is keeping the central orifice in the reverse disc closed. On energizing the 3/2 solenoid valve, even after long idle intervals, there is immediate atomization guaranteeing perfect ignition.

The burner-lance is suitable to supply pressures up to 16 bar and fuel temperatures up to 140°C.

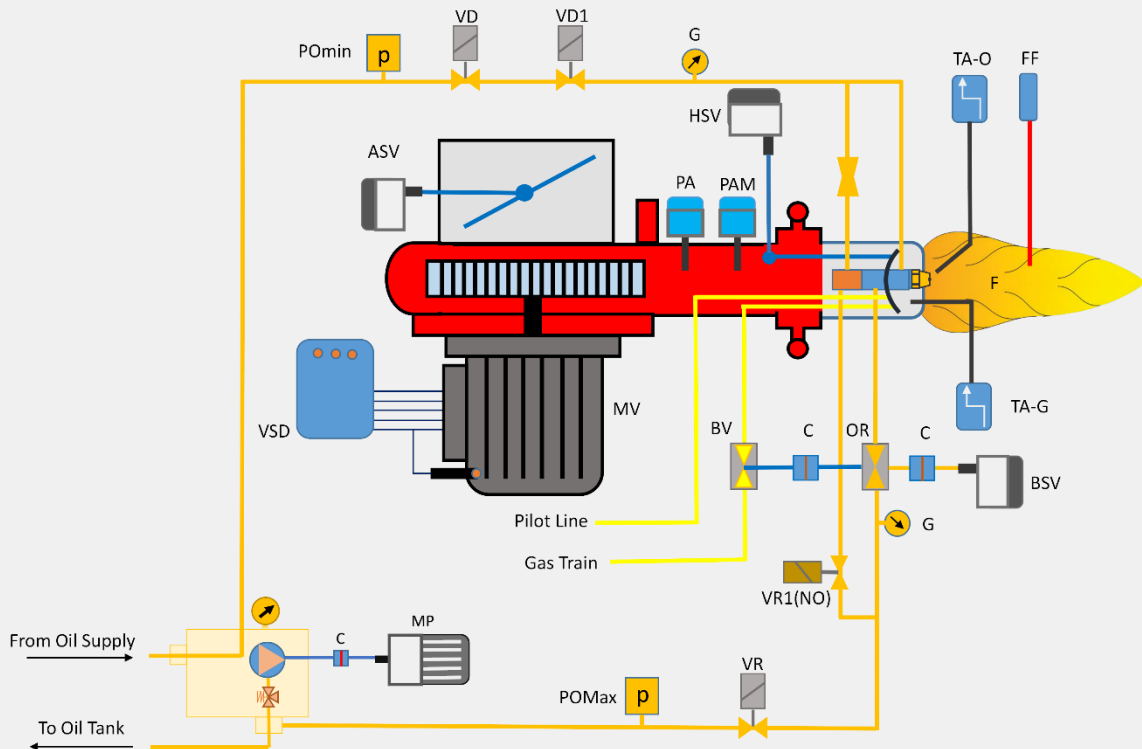


Modulating dual fuel burner type

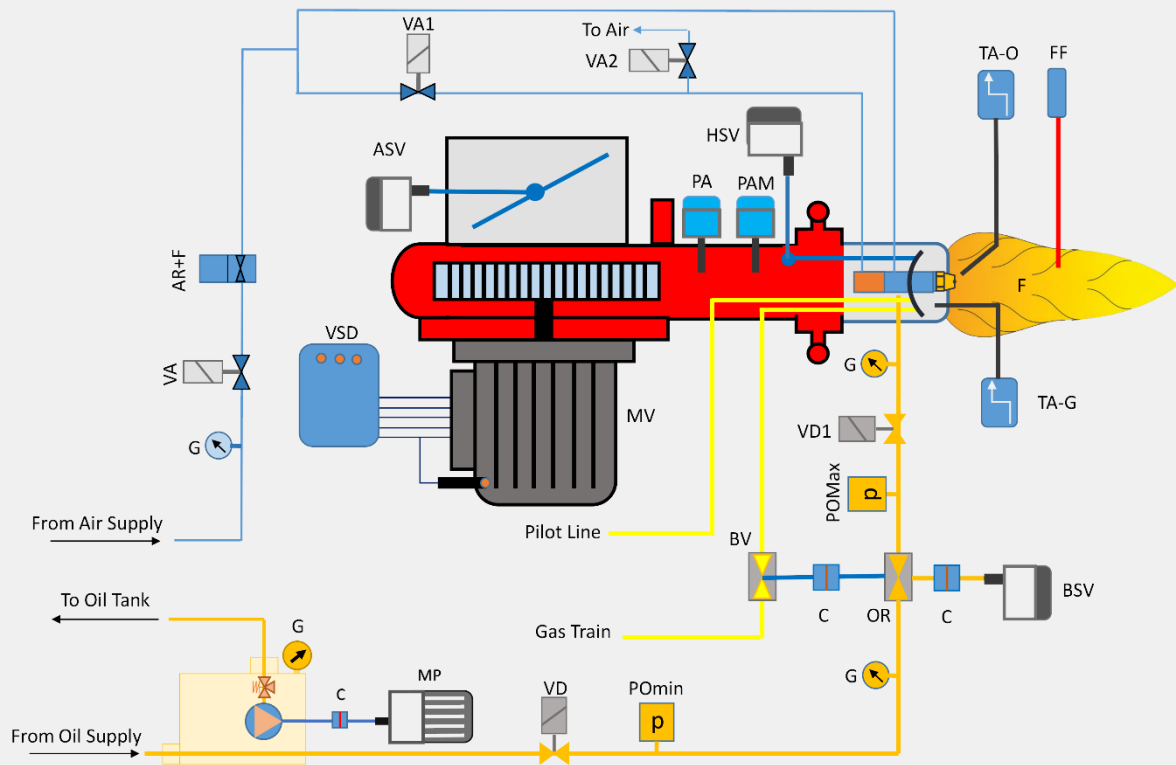
Type OL-I: (Pressure based atomizer – without closing needle)



Type OL-II: (Pressure based atomizer with closing needle)



Type OL-III: (Air/Steam Atomizing technology with closing needle)



MP: Pump motor

FF: Flame sensor

VR: Return solenoid valve

VR1: Return solenoid valve

VR1(NO): Return solenoid valve (N.O)

VD: Light oil safety valve (N.C)

VD1: Light oil delivery valve (N.C)

VA1: Air solenoid valve1

VA2: Air solenoid valve2

PA: Min. Air pressure switch

PAM: Max. air pressure switch

POmin: Min oil pressure switch

POMax: Max oil pressure switch

VA: Air Valve

AR+F: Air regulator and filter

TA: Flame Scanner

FS: Flame Sensor

F: Gas or oil flame

TA-O: Oil ignition transformer

TA-G: Gas ignition transformer

BSV: Butterfly valve servomotor

ASV: Air damper servomotor

HSV: Head servomotor (Optional)

BV: Butterfly valve

OR: Oil Regulator

MV: Fan motor

VSD: Variable speed

drive(optional)

C: Coupling

G: Gauge



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Modulating Dual Fuel Burner
Model: EL-GS-MW-403
Capacity: 1000kW / 3000kW
NOx emissions: 1.2 mg/kWh

#NEW

22nd International Exhibition of HVAC&R, 2023-Tehran, Iran

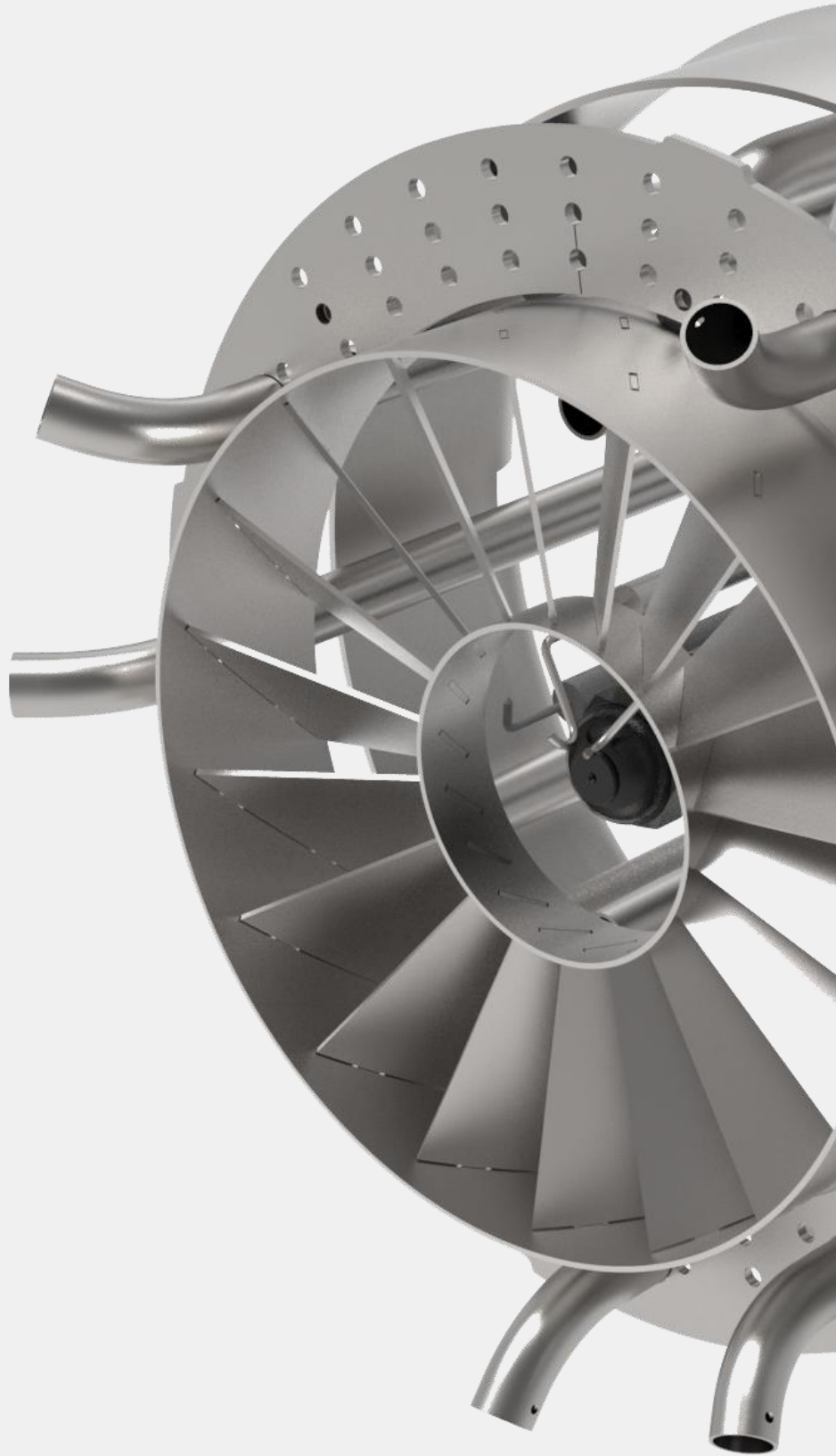
A look to the future

With Low-NO_x burners

NO_x gases play an important role in the formation of smog, producing the brown haze often observed over cities, particularly during the summer. When exposed to the UV rays in sunlight, NO_x molecules break apart and form ozone (O₃). The problem is made worse by the presence in the atmosphere of volatile organic compounds (VOC), which also interact with NO_x to form dangerous molecules. Ozone at the ground level is a serious pollutant, unlike the protective ozone layer much higher up in the stratosphere.

Nitrogen oxides form when oxygen and nitrogen from the air interact during a high-temperature combustion event. Heating industry and industrial burners, in particular, produce large amounts of nitrogen oxides.

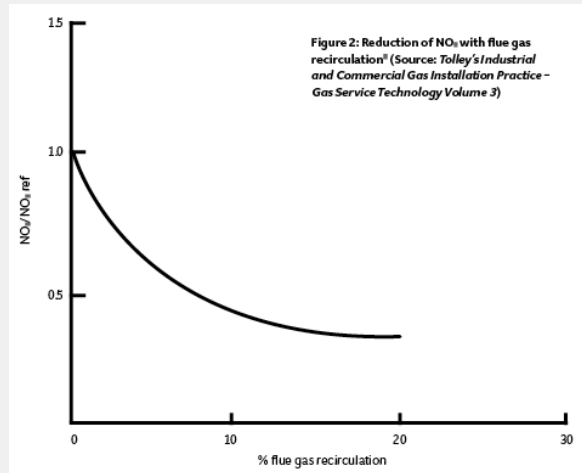
The idea of Low NO_x burners is to control fuel and air mixing at each burner in order to create larger and more branched flames. Peak flame temperature is thereby reduced, and results in less NO_x formation. The improved flame structure also reduces the amount of oxygen available in the hottest part of the flame thus improving burner efficiency.



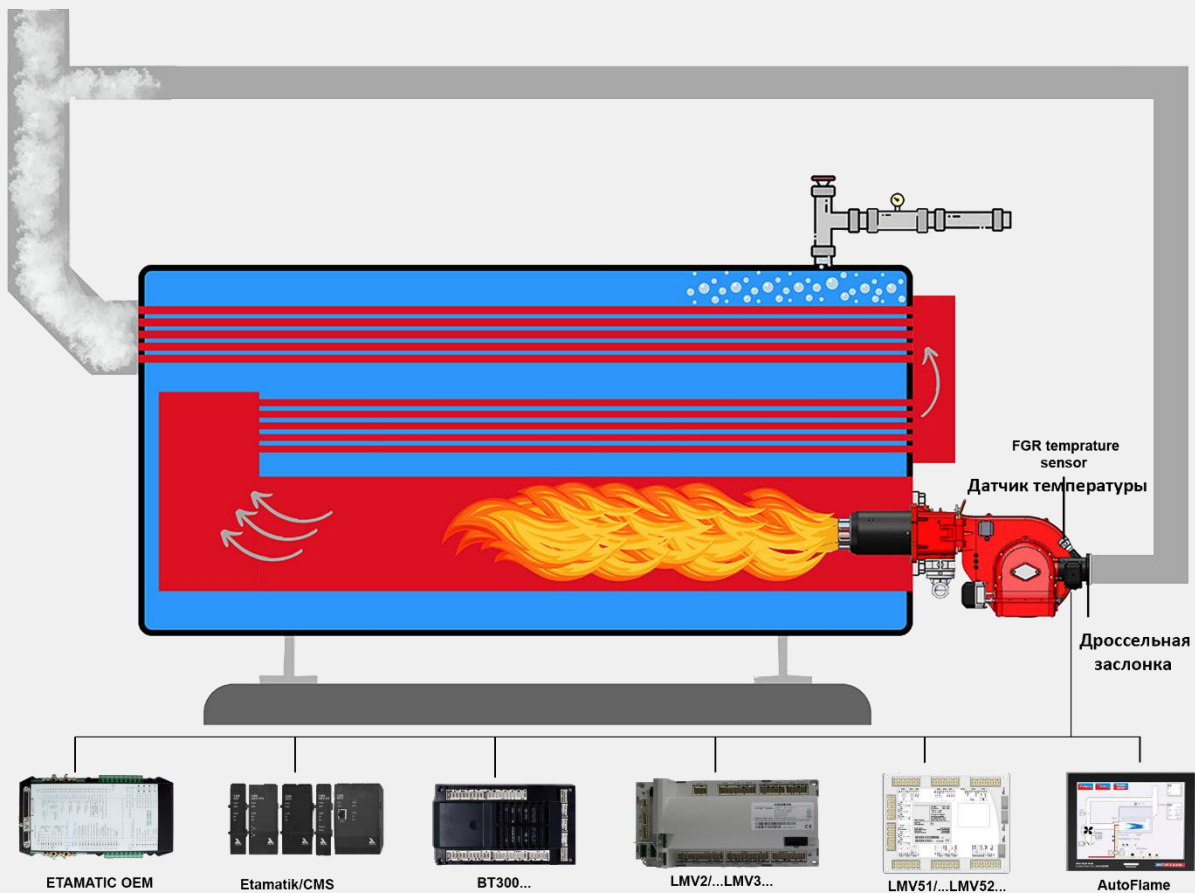
FGR Technology

Flue gas recirculation (FGR) can be a highly effective technique for reducing NOx emissions from burners, and it is relatively cost-effective to implement. Initial research on FGR primarily focused on boilers, revealing that recirculating up to 25% of the flue gases through the burner could decrease NOx emissions to as little as 25% of their usual levels.

FGR technology, comprising a temperature sensor and flue gas damper with an actuator connected to a flange, allows a portion of the exhaust (flue) gas circulates back into the combustion zone. This process lowers the flame temperature and reduces nitrogen oxide (NOx) emissions from the flame.



When utilizing FGR, there is a reduction in radiation heat transfer, which may lead to a decrease in boiler efficiency, typically in the range of 0.25 percent to 1 percent, depending on the amount of FGR added. Plant experience shows that the combination of low NOx burners with re-burning using FGR system reduces the NOx level to approximately lower than 40 mg/kWh.



CFD experts in R&D department

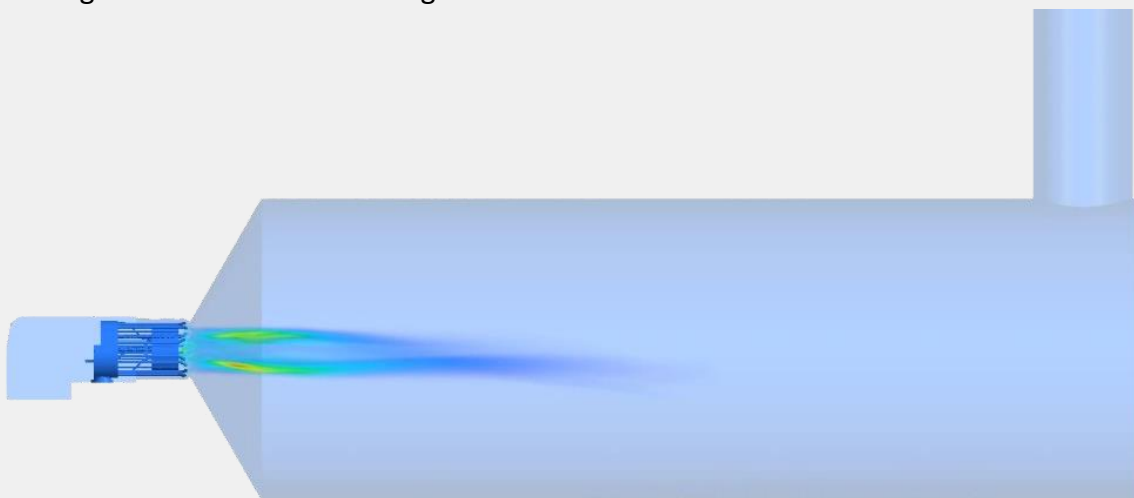
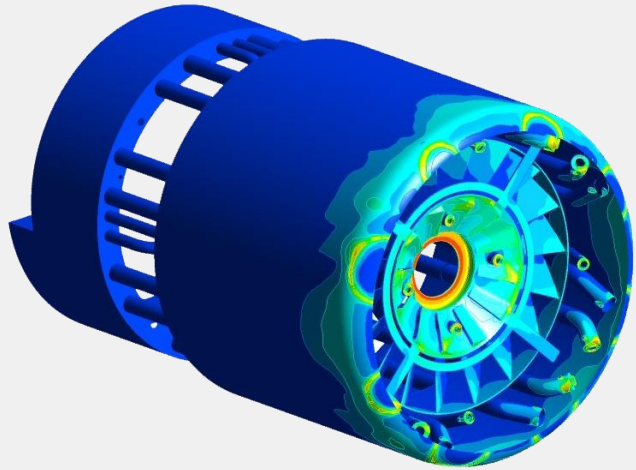
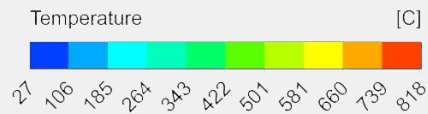
The industrial sector depends on the heat generated by burners in various combustion systems. Optimizing burner performance is critical to complying with stringent emissions requirements and to improve industrial productivity. Engineers engaged in the design and construction of advanced combustion equipment for the hydrocarbon process industries frequently employ Advanced CFD to advance new burner technology. The science and technology of Computational Fluid Dynamics (CFD) has reached a level of maturity where performance predictions can be made with a significant degree of confidence.

These predictions are derived from

models covering a wide range of complex furnace, burner, and reactor geometries. While tremendous advances have been made in understanding the fundamentals of combustion, the remaining challenges are complex.

To make improvements, it is critical to understand the dynamics of the fuel fluid flow and the flame and its characteristics. Computational Fluid Dynamics offers a numerical modeling methodology that helps in this regard. Commercial CFD codes adopt a standardized approach to simulate chemical kinetics, approximating the consumption and production of chemical species. This requires the engineers to make simplifying assumptions about the chemistry considered in the simulation.

CFD can assist engineers in optimizing the flow through orifices, blades and swirlers to achieve a homogenous mixture of air and gas.



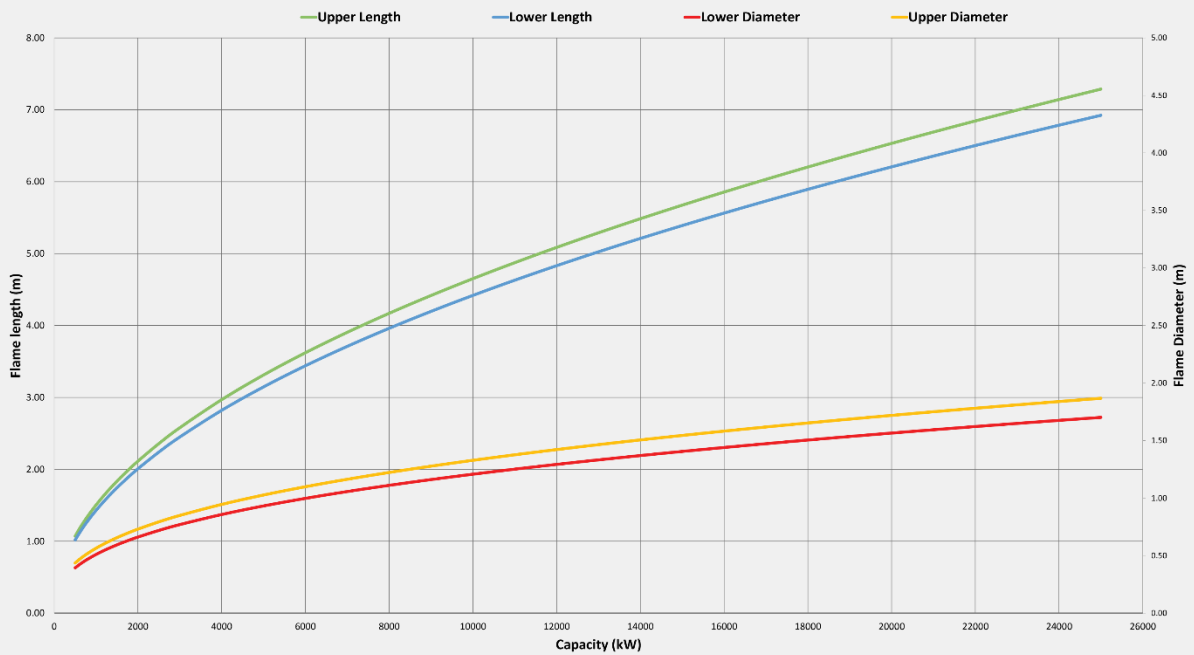
Ventilation system

The design of the fan blades is the outcome of thorough research and analysis, leading to the development of high-performing and efficient centrifugal fans. Our R&D team ensures compliance with all safety certifications at the design stage, ensuring that the fans are stable, reliable, and safe.

Thanks to improved CFD simulations and FEM analysis, blade design is optimized from both a structural and aerodynamic perspectives simultaneously, also helping to provide customized solutions for market requirements. Our team conducts comprehensive step-by-step analyses of a centrifugal fan, covering everything from its initial design to advanced CFD and FEA simulations, including Fluid-Structure Interaction (FSI) and modal analysis.

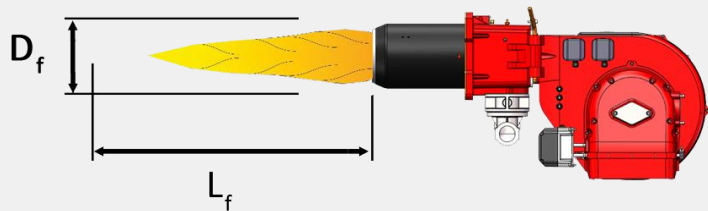


Flame dimension



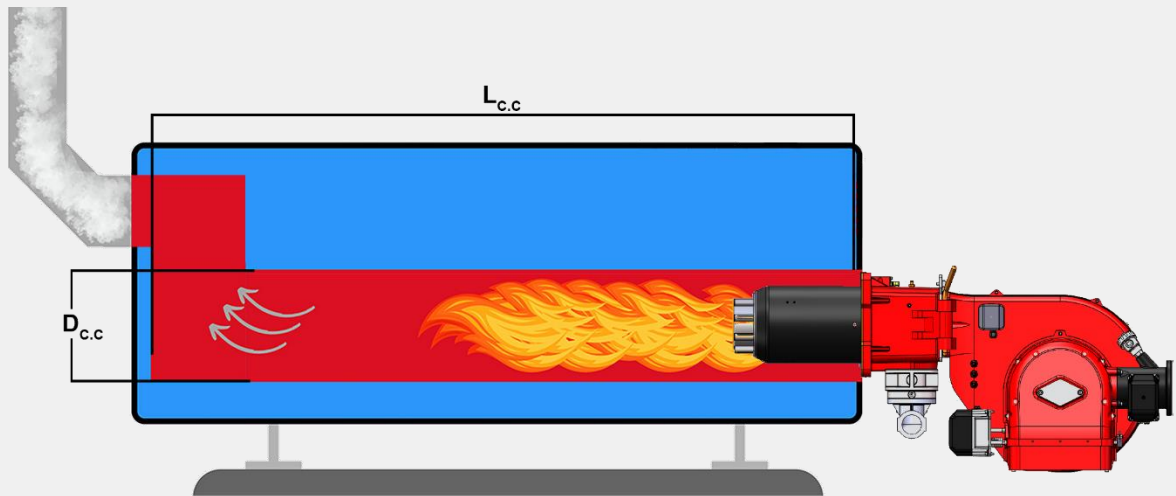
Note: Due to the possibility of changes in the flame dimensions because of variable geometry of combustion heads in the burners, the length and diameter of the burner flame are considered within a range of $\pm 5\%$.

The flame dimensions which significantly impact burner efficiency and influence their compatibility with the boiler combustion chamber geometry, are illustrated in the diagram above.



Suggested Combustion Chamber Dimensions

RAADMAN burners can be suitably chosen for all boilers designed in accordance with standards such as BS-2790, BS-855, EN-303, and BS-EN 12953-3. It is advisable that the flame fills 90% of the combustion chambers at its maximum output.



Additional Options Available for Order with us

Panel Exhaust Gas Analyzer (PEGA)

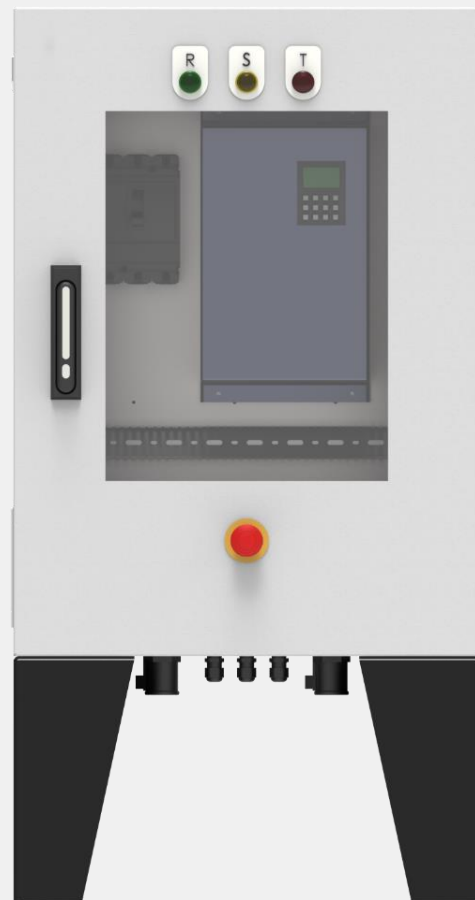
The panel can operate both as a continuous and independent monitoring system, or it can be setup to feed back its readings to the boiler/burner panel or PCP that has MK8 MM or Mini MK8 MM controllers. This proves to be an efficient method for combustion trim.

Optimizing the efficiency and operation of EGA system works by extracting a wet sample from the exhaust gas continuously using a sampling probe. This sample is cooled down in the chiller in the EGA to extract the sample moisture, then the sample passes through filters to remove the moisture and extract the remaining particles before passing through a series of cells. Finally, by passing through a set of separate cells, it is used to analyze the content of the exhaust gas in the sample.



Variable Speed drive (VSD)

A variable speed drive (VSD) is a type of motor drive used in electro-mechanical drive systems. It controls AC motor speed and torque by adjusting the motor input frequency and, depending on the topology, also manages associated voltage or current variation. VFDs may also be known as 'VFDs' (variable-frequency drive), 'AFDs' (adjustable-frequency drives), 'ASDs' (adjustable-speed drives), 'AC drives', 'micro drives', 'inverter drives' or, simply, 'drives'. Using this speed controller can reduce the electrical energy consumption up 35 %.



Raadman Ventilation Motor Starter (RMS)

In burners with ventilation motor capacity of 22kW and above, the power circuit and control circuit need to be installed separately due to destructive effects of electrical noise that power circuit or high voltage has on the control devices. With Regard to this reason, raadman motor starter (RMS) in which the power circuit is embedded, is introduced.

* The burner ventilation motor starter (RMS Series) must be ordered with ventilation motor capacity of 30kW and larger than.

Contact us



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Support center

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www.raadmanburner.com



Reliable worldwide packing

- raadman -



Registration Certificate

This is to certify that the

QUALITY MANAGEMENT SYSTEM

of

Packman Co.

Head Office: 4th Floor, No. 2, 10th St., Bokharest Ave., Tehran-Iran
1st Manufacturing Site : Packman St., Khomeinishahr, Esfahan-Iran
2nd Manufacturing Site: Montazeryeh Industrial Zone, Vilashahr, Esfahan-Iran

for

Design, manufacturing, installation and after sales services of steam and hot water boilers as well as other relevant products including water softeners, sand filters, deaerators, heat exchangers, industrial gas & oil burners, condensing boilers, water desalination systems and CO2 dosing packages

has been assessed and registered against the provisions of

ISO 9001:2015

Registration Number: **1810715**
Assessment Date: **30 August, 2022**
Date of Registration: **31 August, 2022**
Date of Expiry: **14 Feb., 2024**

NACE Code: **DJ28.51 & L74.30**

Exclusion: **None**

Chief Executive Officer
Concord Certification Corporation



Although this certificate has an expiry date on it, this is pertinent to mention that the three years validity of certificate is subject to on time performing of surveillance visits. Should surveillance audits not take place when required, registration shall be removed. This certificate is the property of Concord Certification Corp. and must be returned upon request.



جمهوری اسلامی ایران
ریاست جمهوری
سازمان ملی استاندارد ایران

شماره پروانه: ۶۳۷۴۹۱۴۱۷۵
تاریخ صدور اولیه: ۱۳۹۷/۱۲/۰۵
تاریخ تجدید: ۱۴۰۰/۱۲/۰۵



پروانه کاربرد علامت استاندارد اجباری

براساس قانون تقویت و توسعه نظام استاندارد، مصوب سال یک هزار و سیصد و نود و شش و در اجرای مصوبت شورای عالی استاندارد؛ به موجب این پروانه اجازه داده می‌شود: شرکت ماسیساتی ساختمانی پاکمن (سهامی خاص) با رعایت قوانین و مقررات مربوطه و استاندارد ملی شماره ۷۵۹۵ از علامت استاندارد ایران برای محصول: مثلثی گازسوز با توان ۷۰ تا ۱۲۰ کیلووات و مثلث گازسوز با توان بیشتر از ۱۲۰ کیلووات با نام یا علامت تجاری ثبت شده به شماره ۲۹۵۴۴۲ مورخ ۱۳۹۶/۱۲/۱۴ (پاکمن PACKMAN) استفاده نماید.

محمد فرمانی
رئیس سازمان ملی استاندارد ایران
هدی اسلام‌ناه
محمود فرمانی

واحد تولیدی یا خدماتی یا حداقل ۳ ماه قبل از پایان اعتبار پروانه، اقدامات لازم را به منظور تجدید پروانه و به روز رسانی مستندات عمل آورد.
نشانی واحد تولیدی / خدماتی: استان تهران، شهر تهران، خیابان شهید بهشتی، پلاک ۱۲، واحد ۱۲، طبقه مشرف شرقی، خیابان دکتور
رعایت مندرجات پشت پروانه برای واصله آن الزامی است.
مدت اعتبار این پروانه از تاریخ صدور سه سال است (۱۴۰۳/۱۲/۰۵)



جمهوری اسلامی ایران

بیاست جمهوری

سازمان ملی استاندارد ایران

شماره پروانه: ۶۳۷۴۹۱۵۱۷۵

تاریخ صدور اولیه: ۱۳۹۷/۱۲/۰۵

تاریخ تمدید: ۱۴۰۰/۱۲/۰۵



پروانه کاربرد علامت استاندارد اجباری

براساس قانون تقویت و توسعه نظام استاندارد، مصوب سال یک هزار و سیصد و نود و شش و در اجرای مصوبات شورای عالی استاندارد؛ به موجب این پروانه اجازه داده می‌شود: شرکت تاسیساتی ساختمانی پاکمن (سهامی خاص) با رعایت قوانین و مقررات مربوطه و استاندارد ملی شماره ۷۵۹۴ از علامت استاندارد ایران برای حصول: مثل همی کازونیل سوز دمنده دار با ویژگی مثل همی با گذر کازونیل کتیریا مساوی ۱۰۰ کیلوگرم بر ساعت، مثل همی با گذر کازونیل میش از ۱۰۰ کیلوگرم بر ساعت با نام یا علامت تجاری ثبت شده به شماره ۲۹۵۴۴۲ مورخ ۱۳۹۶/۱۲/۱۴ (پاکمن PACKMAN) استفاده نماید.

همدی اسلام ناه

رئیس سازمان ملی استاندارد ایران

محمود فرمائی



واحد تولیدی یا خدماتی باید حداقل ۳ ماه قبل از پایان اعتبار پروانه، اقدامات لازم را به منظور تمدید پروانه در روز رسانی مستندات عمل آورد. نشانی واحد تولیدی / خدماتی: همدان - شهرستان - نبش بلوار شهکد - شرکت صنعتی نظیر - خیابان ۱۷۱ - دو طبقه شرقی خیابان مذکور رعایت مندرجات پشت پروانه برای دلنیزه آن الزامی است.

مدت اعتبار این پروانه از تاریخ صدور سه سال است (۱۴۰۳/۱۲/۰۵)

ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ



СЕРТИФИКАТ СООТВЕТСТВИЯ

№ ЕАЭС RU C-IR.БЛ08.В.01522/22

Серия **RU** № **0378484**

ОРГАН ПО СЕРТИФИКАЦИИ Орган по сертификации "ИВАНОВО-СЕРТИФИКАТ" Общества с ограниченной ответственностью "Ивановский Фонд Сертификации": Место нахождения (адрес юридического лица): 153032, Россия, Ивановская область, город Иваново, улица Станкостроителей, дом 1, помещение 169, этаж 4; Адрес места осуществления деятельности: 153032, Россия, Ивановская область, город Иваново, улица Станкостроителей, дом 1; Телефон: +7 (4932) 77-34-67; Адрес электронной почты: info@i-f-s.ru; Аттестат аккредитации № RA.RU.11БЛ08 от 24.03.2016 г.

ИЗГОТОВИТЕЛЬ Фирма "РАСКМАН", Место нахождения (адрес юридического лица) и адрес места осуществления деятельности: ИСЛАМСКАЯ РЕСПУБЛИКА ИРАН, г. Тегеран, ул. Бохарэст, 10-й переулок, № 2, 4-й этаж. Адрес места осуществления деятельности по изготовлению продукции: ИСЛАМСКАЯ РЕСПУБЛИКА ИРАН, обл. Исфahan, г. Вилашахр, промышленный парк, Монтазерия, ул. 102, № 5.

ПРОДУКЦИЯ Горелки газовые блочные промышленные, типы: RGB-M, RPB-M.
Изготовлена в соответствии с Национальным стандартом BS.EN.676
Серийный выпуск

КОД ТН ВЭД ЕАЭС 8416201000

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ ТР ТС 016/2011 "О безопасности аппаратов, работающих на газообразном топливе"

СЕРТИФИКАТ СООТВЕТСТВИЯ ВЫДАН НА ОСНОВАНИИ

Протокол испытаний

№ 3337/2022 от 05.10.2022 г. – Испытательная лаборатория ООО "ТЕСТ-ИНЖИНИРИНГ" (Аттестат аккредитации № RA.RU.21MP40). Акт анализа состояния производства № 22090902/ТРТС/РА от 14.09.2022 г., выдан ОС "ИВАНОВО-СЕРТИФИКАТ" ООО "Ивановский Фонд Сертификации" (Аттестат аккредитации № RA.RU.11БЛ08). Инструкции по монтажу, техническому обслуживанию и эксплуатации горелки б/н от 01.09.2022 г. Схема сертификации 1с

СРОК ДЕЙСТВИЯ С 07.10.2022 ПО 06.10.2023
ВКЛЮЧИТЕЛЬНО

Руководитель (уполномоченное
лицо) органа по сертификации

Эксперт (эксперт-аудитор)
(эксперты (эксперты-аудиторы))



Иванов Александр Вениаминович
(Ф.И.О.)

Жинкин Сергей Александрович
(Ф.И.О.)

ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ



СЕРТИФИКАТ СООТВЕТСТВИЯ

№ ЕАЭС RU C-IR.БЛ08.В.01521/22

Серия **RU** № **0378483**

ОРГАН ПО СЕРТИФИКАЦИИ Орган по сертификации "ИВАНОВО-СЕРТИФИКАТ" Общества с ограниченной ответственностью "Ивановский Фонд Сертификации"; Место нахождения (адрес юридического лица): 153032, Россия, Ивановская область, город Иваново, улица Станкостроителей, дом 1, помещение 169, этаж 4; Адрес места осуществления деятельности: 153032, Россия, Ивановская область, город Иваново, улица Станкостроителей, дом 1; Телефон: +7 (4932) 77-34-67; Адрес электронной почты: info@i-f-s.ru; Аттестат аккредитации № RA.RU.11БЛ08 от 24.03.2016 г.

ИЗГОТОВИТЕЛЬ Фирма "РАСКМАН", Место нахождения (адрес юридического лица) и адрес места осуществления деятельности: ИСЛАМСКАЯ РЕСПУБЛИКА ИРАН, г. Тегеран, ул. Бохарэст, 10-й переулок, № 2, 4-й этаж. Адрес места осуществления деятельности по изготовлению продукции: ИСЛАМСКАЯ РЕСПУБЛИКА ИРАН, обл. Исфahan, г. Вилашахр, промышленный парк, Монтазерия, ул. 102, № 5.

ПРОДУКЦИЯ Горелки комбинированные блочные промышленные, типы: RLGB-M, RLGB-M/M. Изготовлена в соответствии с Национальным стандартом BS.EN.676
Серийный выпуск

КОД ТН ВЭД ЕАЭС 8416202000

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ ТР ТС 016/2011 "О безопасности аппаратов, работающих на газообразном топливе"

СЕРТИФИКАТ СООТВЕТСТВИЯ ВЫДАН НА ОСНОВАНИИ

Протокол испытаний

№ 3338/2022 от 05.10.2022 г. – Испытательная лаборатория ООО "ТЕСТ-ИНЖИНИРИНГ" (Аттестат аккредитации № RA.RU.21MP40). Акт анализа состояния производства № 22090903/ТРТС/РА от 14.09.2022 г., выдан ОС "ИВАНОВО-СЕРТИФИКАТ" ООО "Ивановский Фонд Сертификации" (Аттестат аккредитации № RA.RU.11БЛ08). Инструкции по монтажу, техническому обслуживанию и эксплуатации горелки б/н от 01.09.2022 г. Схема сертификации 1с

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ (см. Приложение – бланк № 0923100).

СРОК ДЕЙСТВИЯ С 07.10.2022 ПО 06.10.2023
ВКЛЮЧИТЕЛЬНО

Руководитель (уполномоченное
лицо) органа по сертификации

Эксперт (эксперт-аудитор)
(эксперты (эксперты-аудиторы))



Юров Александр Вениаминович

(Ф.И.О.)

М.П. Каролина А. Иванович

(Ф.И.О.)

ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ЕАЭС RU C-IR.БЛ08.В.01521/22

Серия **RU** № **0923100**

Стандарты, в результате применения которых на добровольной основе обеспечивается соблюдение требований Технического регламента Таможенного союза

Обозначение стандарта	Наименование стандарта
ГОСТ 21204-97	Горелки газовые промышленные. Общие технические требования
ГОСТ Р 50591-2013	Агрегаты тепловые газопотребляющие. Горелки газовые промышленные. Предельные нормы концентраций NOx в продуктах сгорания

Анализ состояния производства проведен посредством дистанционной оценки.
Условия хранения конкретного изделия, срок хранения (службы) указываются в прилагаемой к продукции товаросопроводительной и/или эксплуатационной документации.



Руководитель (уполномоченное лицо) органа по сертификации

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы))

(Handwritten signature)

Зов Александр Вениаминович

(Ф.И.О.)

М.П.

ИВАНОВО

Уткин Сергей Александрович

(Ф.И.О.)



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