RPD N

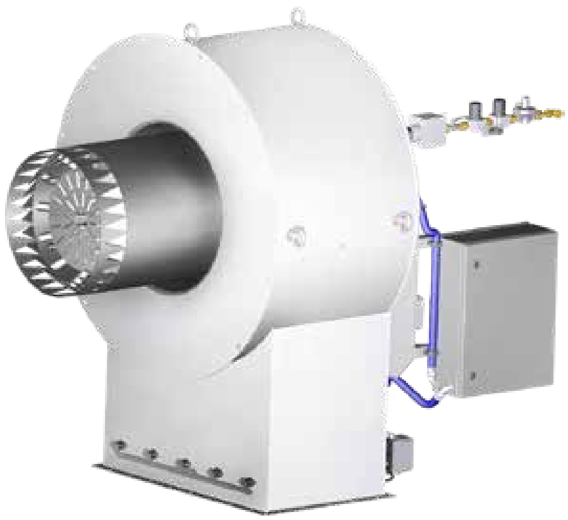
LOW NOx AND ULTRA LOW NOx
DUOBLOCK BURNERS
3000 - 80000 kW

MAIN CHARACTERISTICS OF THE RANGE

Burner concept

Improved and optimized

The RPD N range is an evolution of the successful RPD duoblock series.
The flexible and modular design of the range has been improved in almost any area, from the burner housing design to the combustion head.
The result is a range of products from 3 to 80 MW suitable for an extremely wide range of applications, especially in all those cases where complex tasks and high technical requirements demand customised heating installation solutions.



Flexible range

Versatile and multi-purpose

The well-known flexibility of the duo-block burners combined with the particular characteristics of the RPD N burners guarantee extreme versatility of use an suitability to almost any firing-related task.
Typical exemples of use include:

- water tube boilers used in big heating installations and industrial processes with remarkable thermal demand;
- diathermic oil boilers;
- waste incineration plants.

Burner structure

Simplified and harmonized

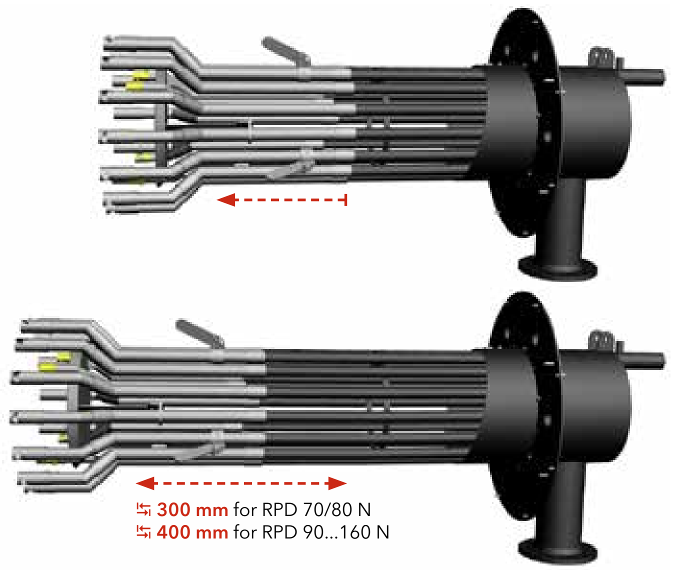
The housing of the burner has been harmonized to reduce the product complexity, reduce the weight of the burner and improve the setting during the commissioning.
The air flap system has been redesigned and now includes a lever that allows adjustment of the angle of all flaps, providing a positive impact on the air swirl.
Thanks to the CFD simulation the air flow has been optimized, avoiding turbolence and providing a better distribution of the air. The result is a reduction of the pressure drop and an important contribution to lowering the NOx emission.

Low emission

Low NOx and Ultra Low NOx configurations

RPD N burners are available with different combustion heads to provide a perfect match between burner performance and required NOx emission level:

- models equipped with U1 and U2 combustion heads are Low NOx Class 3 according to the EN676 Standard (NOx<80 mg/kWh);
- the new FX Blue Triple head reaches NOx values far below 50 mg/kWh thanks to the new head configuration; the best combustion parameters and the highest flame stability are guaranteed by the optimized mix of the primary and secondary air flow combined with the primary gas, split between the central nozzle and the central gas lance, and the main gas supply;
- for installations requiring even lower emission values, the RPD N burners can be equipped with the FGR System, which allows to operate below 30 mg/kWh



Combustion head

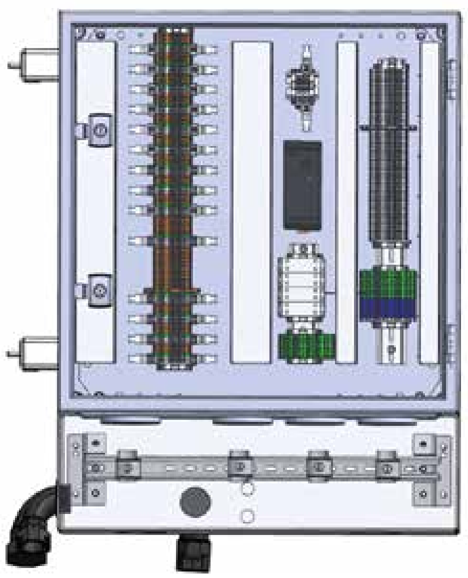
Flexible and easily adjustable

In the U1 and U2 versions the head has been redesigned in order to adapt its length to the boiler characteristics: this new concept allows the combustion components to slide and modify the length of the head:
- up to 300 mm for RPD 70 N and 80 N;
- up to 400 mm for RPD 90 N ... 160 N.
Even if the short length is ordered the user can modify the length of the combustion head to the long version.
This enlarged flexibility of head setting allows to fit all the most requested boiler lining depths.
Also the head pull-out slider has been improved to give a perfect alignment of the head with the housing of the burner and ease the maintenance operation.

Switch cabinet

Standardized to suit any application

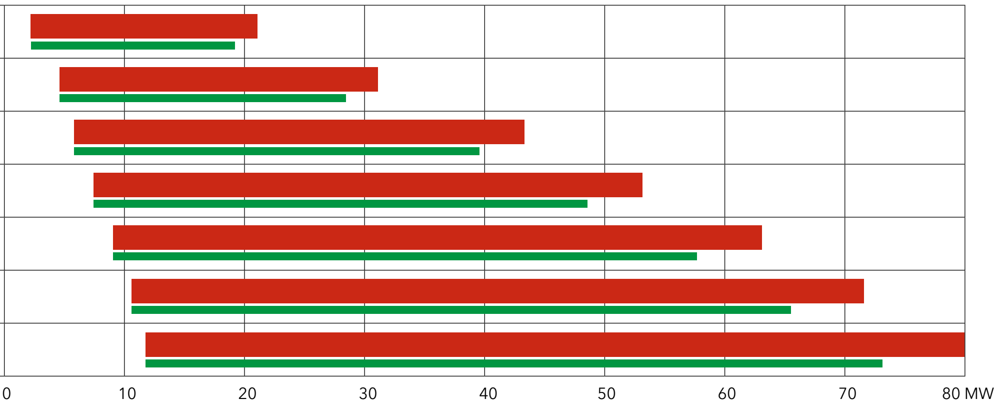
The new standardized design of the switch cabinet of the RPD N offers a more industrial and flexible solution to the end user.
The new structure is conceived to suit nearly all applications (even special burner models), with increased space to bear components as flame detection device or special components required for particular configurations.
Finally, the degree of protection has been raised to IP54.



RANGE OVERVIEW

The RPD N range offers duoblock burners from 3 MW to 80 MW.
The burners can be equipped with different combustion heads according to the performance and requirements of the installation.

RPD 70 N	3000 – 21000 kW
RPD 80 N	4450 – 31000 kW
RPD 90 N	6140 – 43000 kW
RPD 100 N	7570 – 53000 kW
RPD 110 N	9000 – 63000 kW
RPD 130 N	10300 – 72000 kW
RPD 160 N	12000 – 80000 kW



U1/U2 head

FX head

FUEL
G = Natural gas

COMBUSTION TYPE
U1, U2 = Low NOx Diamond head
FX = Ultra Low NOx Blue Triple head

RPD 100 N G-EU2 /FGR KN

SIZE
70 ... 160

OPERATION TYPE
E = 2 stage progressive/ modulating electronic

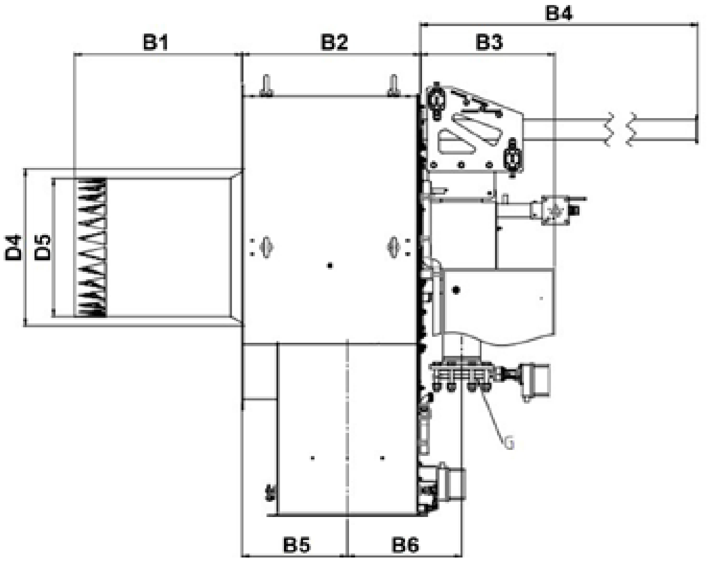
ULTRA LOW NOx CONFIGURATION
FGR = FGR equipment installed

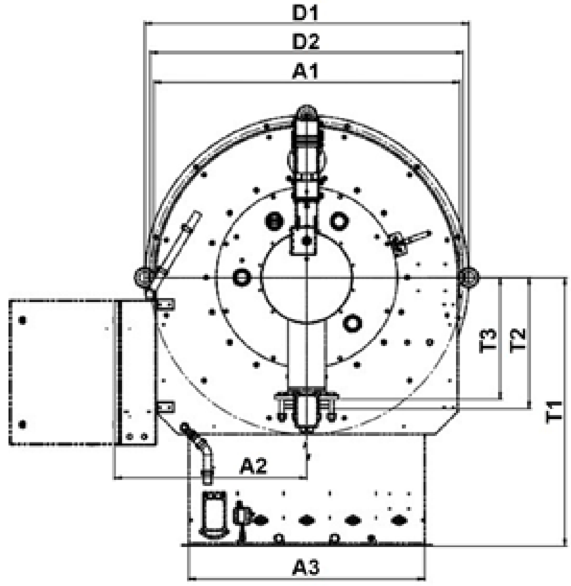
HEAD LENGTH
KN = short
KM = medium
KL = long

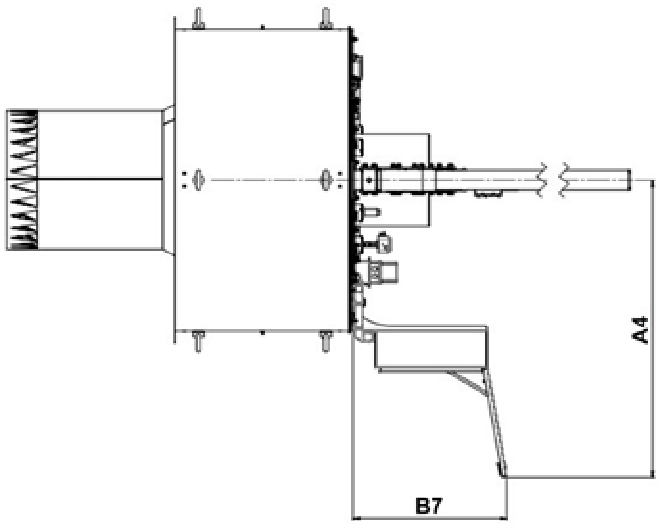
CONFIGURATIONS

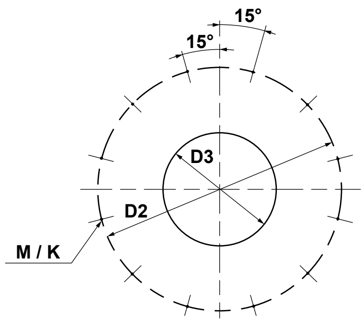
	Fuel	Operation	Combustion head			
			Type	NOx emission	Sliding system	Primary air
RPD 70 N	G	E	U1/U2	80 mg/kWh	●	
			FX	50 mg/kWh		●
RPD 80 N	G	E	U1/U2	80 mg/kWh	●	
			FX	50 mg/kWh		●
RPD 90 N	G	E	U1/U2	80 mg/kWh	●	
			FX	50 mg/kWh		●
RPD 100 N	G	E	U1/U2	80 mg/kWh	●	
			FX	50 mg/kWh		●
RPD 110 N	G	E	U1/U2	80 mg/kWh	●	
			FX	50 mg/kWh		●
RPD 130 N	G	E	U1/U2	80 mg/kWh	●	
			FX	50 mg/kWh		●
RPD 160 N	G	E	U1/U2	80 mg/kWh	●	
			FX	50 mg/kWh		●

OVERALL DIMENSIONS









	A1	A2	A3	A4 (1)	D1	D2	D3	D4	D5	B1 (2)			B2	B3	B4 (3)	B5 (4)	B6	B7	T1	T2	T3	G	M (5)	K (6)
										KN	KM	KL												
RPD 70 N	1368	860	1054	1330	1450	1400	750	727	617	600	750	900	799	600	2337	475	511	690	1200	586	544	DN150-P16	16	80
RPD 80 N									701															
RPD 90 N									856															
RPD 100 N	1710	1035	1412	1501	1800	1750	995	985	906	850	1050	1250	1030	600	2843	590	669	690	1300	676	630	DN200-P16	16	80
RPD 110 N									956															
RPD 130 N	2112	945	1624	1415	2210	2200	1190	1148	1063	1150			1145	600	3323	641	992	690	1386	696	650	DN200-P16	16	80
RPD 160 N									1130															

Note: dimensions are guidelines only and referred to the U1/U2 version. Dimensions of models equipped with FX burner head depends on the installation requirements.
(1): optional switch cabinet at other burner side mounted
(2): other length on request
(3): measure may differ in case of special combustion head length (B1)
(4): with 3 mm sealing
(5): dimension stud screw
(6): length stud screw (with expansion sleeve 40mm)

ELCO COMBUSTION TECHNOLOGIES

DIAMOND HEAD (U1, U2)

Low emissions and reliable operation

The principle of the Diamond Head is based on the internal recirculation of the combustion flue gases. These are partially drawn into the base of the flame via triangular openings positioned at the end of the combustion head.
The position and geometry of the gas injectors are such that a significant quantity of combustion flue gas is drawn in and rapidly mixed with air and gas at the root of the flame. This mixture crosses the main reaction area, slowing the combustion, which in turn results in lowering the main flame temperature. The result of this staging combustion is a significant reduction in the formation of thermal nitrogen oxides.
The advantage of this internal recirculation technique is an automatic adjustment to the quantity of recycled combustion flue gases: the volume of the flame is always as low as possible, which has a very minor effect on the nominal power of the generator, unlike external recirculation systems.

BLUE TRIPLE HEAD (FX)

Extreme low NOx values and high flame stability

The principle of the Blue Triple head is based on a stage combustion combined with an internal recirculation of the combustion flue gases.
A first central nucleus burns at a high excess air, giving stability at 0 NOx. The next stage is a mixture with the flame coming from the external nozzles, designed to get the highest internal flue gas recirculation.
The result is a very low NOx value, a CO tending to 0 and a high stability that guarantee the limits even in standard combustion chambers.

ELCO COMBUSTION TECHNOLOGIES

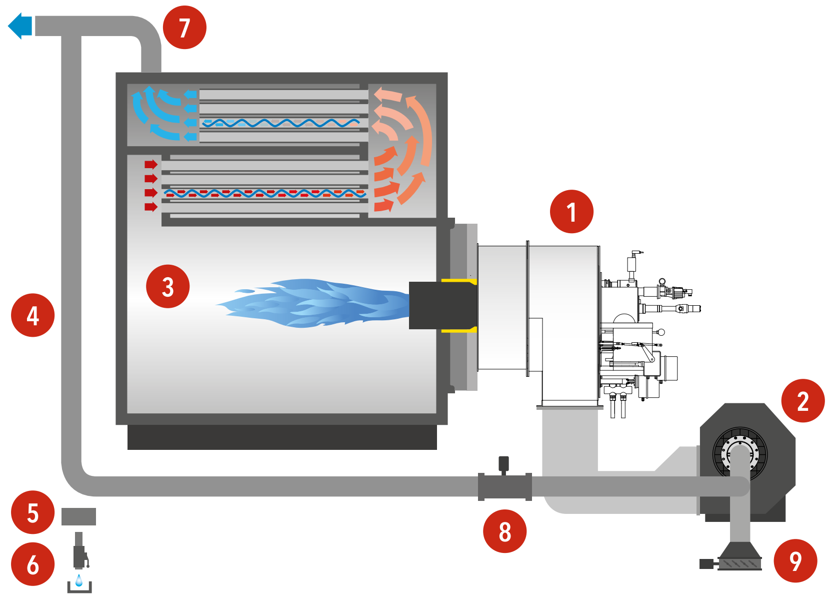
FGR SYSTEM
Ultra low NOx solutions to reach emissions of less than 30 mg/kWh

ELCO has an enormous experience in the application of low emissions systems, going back to the early 90s, when the first Low NOx installation have been successfully commissioned.
Thanks to this experience and the technologies developed over the years, ELCO offers a wide range of products which use the external FGR technology to reduce NOx emissions and satisfy even the most stringent regulations.
The external recirculation sends a mixture of air and flue gas to the burner combustion head. The gases are mixed upline of the combustion process by the burner fan (for monoblock units) or by the external fan (in case of duoblock burners).

FGR System on duoblock burners: layout "A"

The FGR system for duoblock burners, since the draught fan is installed far from the burner, needs a different layout from the one of the monoblock burners, so that the flue duct ends upstream of the draught fan. In order to produce the needed suction to get flue from the stack and to mix it with the fresh air, the air damper is fitted upstream of the draught fan and upstream of the flue duct end, too. The flue duct has to be properly sized in order to minimize the pressure drop.

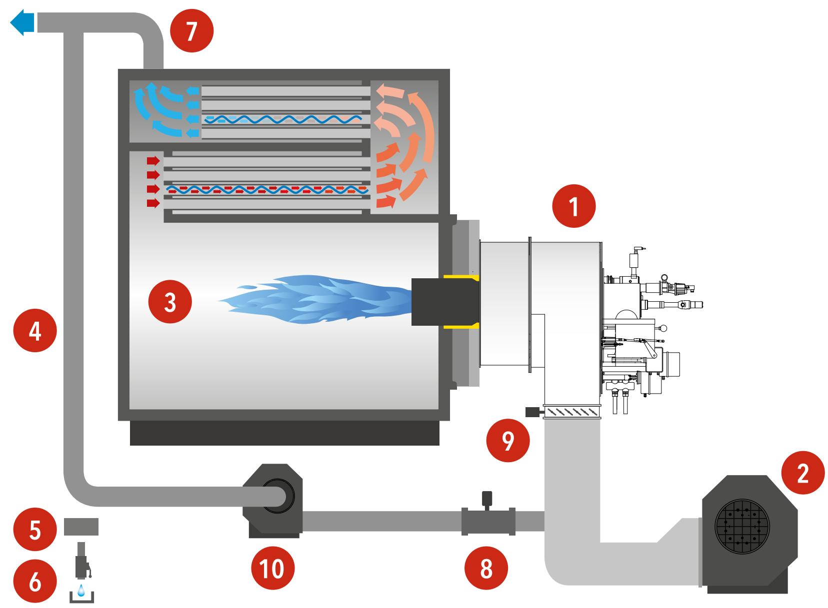
Legenda: 1 – Burner | 2 – Draught fan | 3 – Furnace
4 – Flue pipeline | 5 – Drainage | 6 – Drainage valve
7 – Stack | 8 – FGR valve | 9 – Air damper



FGR System on duoblock burners: layout "B"

An alternative layout to layout "A" provides a further draught fan dedicated to the flue. It takes the flue from the stack and pushes it into the duct between the burner and the fresh air draught fan. The flue damper is just after the flue fan. The air damper is on burner board and therefore it adjusts the rate of the mixture between the flue and the fresh air. As for the previous layout, the flue duct has to be properly sized in order to minimize the pressure drop.

Legenda: 1 – Burner | 2 – Fresh air draught fan
3 – Furnace | 4 – Flue pipeline | 5 – Drainage
6 – Drainage valve | 7 – Stack | 8 – FGR valve
9 – Air damper | 10 – FGR draft fan



ELCO COMBUSTION TECHNOLOGIES

HYDROGEN BURNERS

The importance of hydrogen in the decarbonization of the industry

In recent years, decarbonization has become a fundamental issue in our lives, not only for improving the environment but also as a new way of understanding industrial relations and improving our production processes. After many years of intense debate, many countries are now committed to changing the global economy in a climate-friendly way.
In this context, hydrogen shall be deployed as a major future energy source, which is why various development projects are dealing with hydrogen production, transport and storage as well as feeding it into existing gas networks.
Hydrogen is thought to be able to provide up to 24% of total energy needs by 2050. This means that in the next few years we will have to deal with the transformation of a large number of plants that consume traditional fuels to make them suitable to work with hydrogen or with mixtures of gases, with hydrogen as the main fuel.
Hydrogen is the most occurring element in the universe and one of the most common elements on earth, where it is bounded in hydrocarbon compounds, in alkaline solutions or in water. However, elemental hydrogen H_2 can be found only in traces in the earth's atmosphere and must be obtained through several processes.

TYPES OF HYDROGEN

GREY HYDROGEN

/ Product of the steam reforming of natural gas (where CO_2 emissions are produced); currently, this represents about 90% of the hydrogen generated for industrial purposes

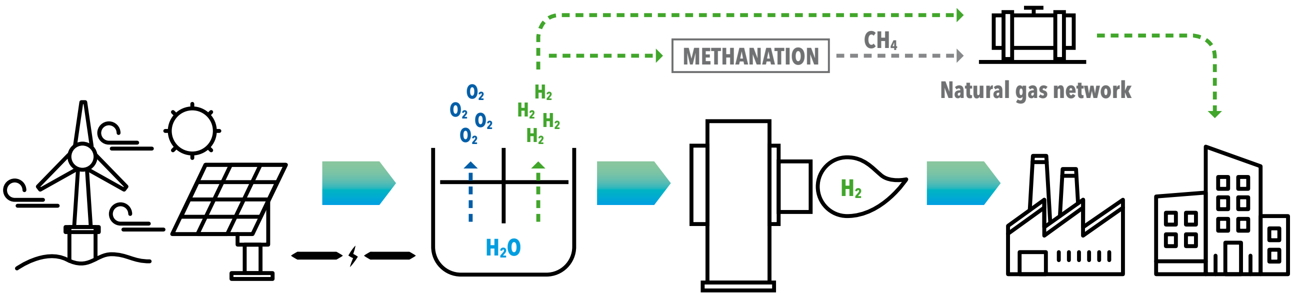
BLUE HYDROGEN

/ Produced from natural gas, with subsequent storage or disposal of the CO_2 underground/under the seabed (CCS technology)

GREEN HYDROGEN

/ Obtained by (comparatively expensive) electrolysis/power-to-gas processes based on renewable energies

The expected decrease in the cost of electrolysers and the technological developments in renewable energy technologies will soon create the conditions for large-scale green hydrogen production plants. Consequently, the production of green hydrogen could become easier and more convenient, and in the future become a way to manage, store and reuse energy produced from renewable sources:



/ Renewable energies
Excess renewable energy, due to periods of low demand, creates challenges for network stability

/ Electrolysis
Excess electricity generated at low prices is funnelled into electrolysers that split water into hydrogen and oxygen

/ Hydrogen combustion
Hydrogen can be injected into the main gas networks and blended with natural gas as a form of energy storage or can be used directly for industrial processes

Compared with natural gas, hydrogen has several peculiar characteristics:
- it is colorless, odorless and tasteless;
- it is around 8 times lighter and can volatilize very quickly through porous materials or through the smallest leaks;
- the calorific value is lower by a factor of 3/3,5 than most commercially available natural gases;
- it has an extremely wide flammability range and the flame (almost invisible) burns about 8 times faster than natural gas;
- it needs 15 times less spark energy for ignition than natural gas and ignition speed is about 7 times higher.

The theoretical replacement of natural gas with hydrogen within a system causes enormous changes in the air demand, flame temperature, combustion quality, power output and, due to the different density, also regarding gas pressure losses.
For all these reasons, integrate hydrogen into the energy mix requires a huge experience and specific know-how.

ELCO COMBUSTION TECHNOLOGIES

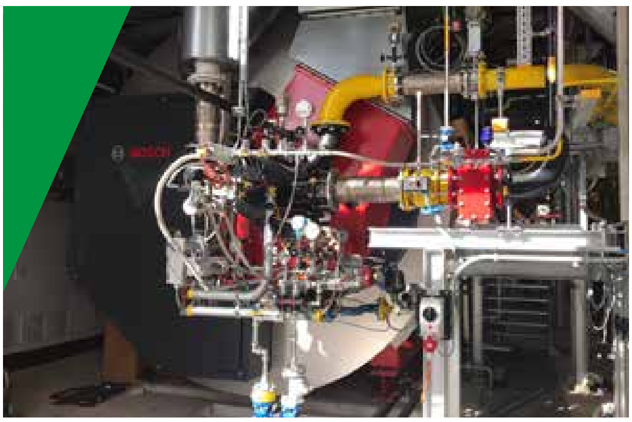
HYDROGEN BURNERS

Green combustion technologies ready for the future

ELCO has been manufacturing Low NOx combustion systems for several decades and can count on a strong expertise also with hydrogen applications, developed by our R&D Department since the 90s. Thanks to the know-how developed on the field, ELCO is one of the few suppliers in the world that can already offer safe, reliable and performing Low NOx hydrogen burners, guaranteeing excellent results in terms of emission level, flame stability and energy efficiency.

Burner	Fuels	Country	Date
RPD 30	H_2 / Natural gas	China	1995
RPD 30	H_2 / Heavy oil	China	1996
RPD 60	H_2 / Natural gas	China	1996
RPD 60	H_2 / Heavy oil	China	2002
RPD 20	H_2 / Light oil	Saudi Arabia	2003
RPD 60	H_2 / Heavy oil	China	2004
RPD 30	H_2 / Heavy oil	India	2005
RPD 60	H_2 / Heavy oil	China	2005
RPD 60	H_2 / Natural gas	Taiwan	2006
RPD 70	H_2 / Heavy oil	China	2006
RPD 40	H_2 / Heavy oil	India	2007
RPD 60	H_2 / Natural gas	India	2008
RPD 40	H_2 / Heavy oil	India	2008
EK-DUO 2.550	H_2	Belgium	2008
RPD 40	H_2 / Heavy oil	India	2010
RPD 30	H_2 / Heavy oil	India	2010
RPD 30	H_2 / Heavy oil	Syria	2010
RPD 50	H_2	China	2010
RPD 30	H_2 / Natural gas	India	2010
RPD 40	H_2 / Natural gas	India	2011
RPD 30	H_2 / Heavy oil	India	2011
RPD 30	H_2 / Natural gas	Belgium	2012
RPD 50	H_2 / Natural gas	China	2012
RPD 40	H_2 / Natural gas	India	2012
RPD 50	H_2 / Natural gas	China	2013
RPD 60	H_2 / Natural gas / Carbide gas	China	2013
RPD 80	H_2 / Light oil	Qatar	2013
RPD 30	H_2 / LPG	India	2014
RPD 30	H_2 / Heavy oil	Indonesia	2014
RPD 30	H_2 / LPG	India	2015
RPD 70	H_2 / Coke gas / Carbide gas	China	2015
RPD 40	H_2 / Natural gas	Kuwait	2016
RPD 30	H_2 / Heavy oil	Jordan	2017
RPD 50	H_2 / Heavy oil	India	2017
RPD 50	H_2 / Heavy oil	India	2017
RPD 40	H_2 / Heavy oil	India	2018
RPD 70	H_2 / Natural gas / Light oil	Switzerland	2019
RPD 70	H_2 / Natural gas / Light oil	Taiwan	2019
RPD 70	H_2 / Natural gas	Taiwan	2019
RPD 40	H_2 / Natural gas / Heavy oil	Saudi Arabia	2019
RPD 50	H_2 / Natural gas	India	2019
RPD 30	H_2 / Natural gas	Germany	2021
RPD 30	H_2 / Natural gas	India	2021
RPD 30	H_2 / Natural gas	India	2021
RPD 50	H_2 / Natural gas	India	2021
RPD 40	H_2	China	2021
RPD 70	H_2 / Natural gas	China	2022
RPD 60	H_2 / Natural gas	Italy	2022
RPD 20	H_2	Italy	2022
EK EVO 6.2400	H_2 / Natural gas	Belgium	2022

INSTALLATIONS WITH HYDROGEN BURNERS



Location: Switzerland

Fuels: hydrogen, natural gas, light oil
H_2 pressure: 500 mbar

Maximum power output: 13,6 MW

Burner: RPD 70 GGL-EU1-So
Hot air version (130°C), IP65, FGR System

Location: Jordan

Fuel: hydrogen, natural gas, heavy oil

Maximum power output: 6,2 MW

Burner: RPD 30 GS-ED-So
Hot air version (270°C), IP54

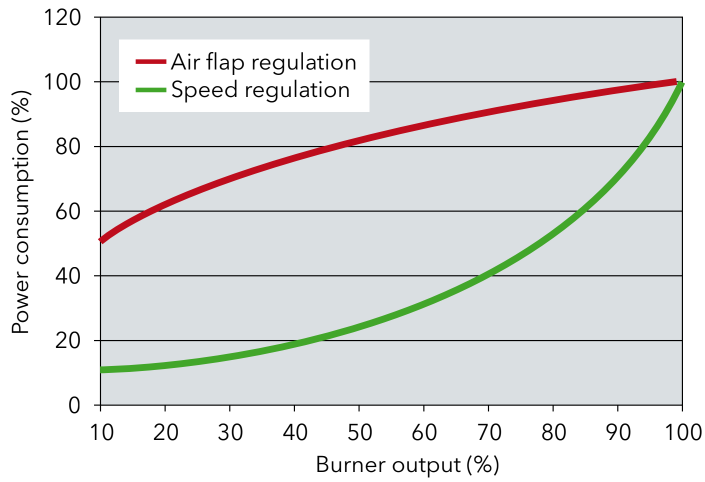
ELCO TECHNOLOGIES AND SYSTEMS

VARIATRON
Speed regulation: noise reduction and energy saving

Conventionally, the air in modulating burners is regulated by an air flap. In the partial load range, a large amount of the air pressure generated by the ventilator goes to waste.
With speed regulation, the speed of the combustion-air fan is varied continuously depending on the burner output required. Full speed is reached only at maximum burner output. In the predominant partial load range, the lower speed translates into significant reductions in power consumption and noise emissions.

Savings on electrical energy

A speed regulator makes it possible to conserve valuable electrical energy.
The diagram compares the power consumption of a burner ventilator with speed regulation with a burner ventilator with air-flap control. In the medium output range, a saving of around 70% is achieved, decreasing at full and low load. Therefore, the total savings over an operating year depends fundamentally on the load of the heating installation. For installations that are predominantly operated close to nominal output –mainly in the process engineering industry– the achievable saving is likely to be relatively small. The majority of plants, however, make great demands on the modulation range. Often, maximum burner output is demanded for only a few hours a year.
For the most part, these are outnumbered by the hours of operation under reduced load in which power consumption is significantly reduced by speed regulation technology. Energy savings of 40/50% have been proven in a real-world environment in plants with a conventional heat-demand pattern.

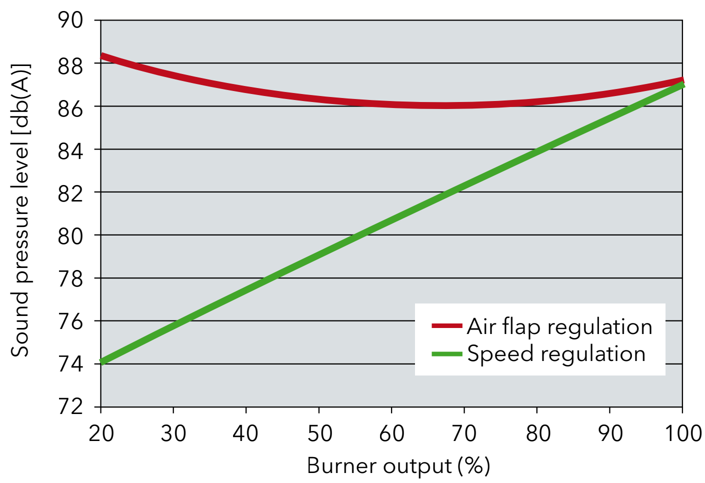


Pre-purging inhabit mode

If one combustion chamber contains multiple burners, you can choose whether the burner should be started with or without preliminary air, depending on whether or not a burner is already in operation.

Reduced noise emissions

Where airflow is regulated by an air flap, not only does the air pressure generated by the ventilator go to waste, but this process and the subsequent collapse of pressure are, more particularly, accompanied by a certain amount of noise. The graphic shows the sound level curve for a burner with speed regulation and for a burner without. This real example demonstrates that, at approximately 50% burner output, a sound level reduction of around 7 dB(A) is achieved. To put this into context, the human ear perceives a 10 dB(A) increase in the sound level as being twice as loud.



ELCO TECHNOLOGIES AND SYSTEMS

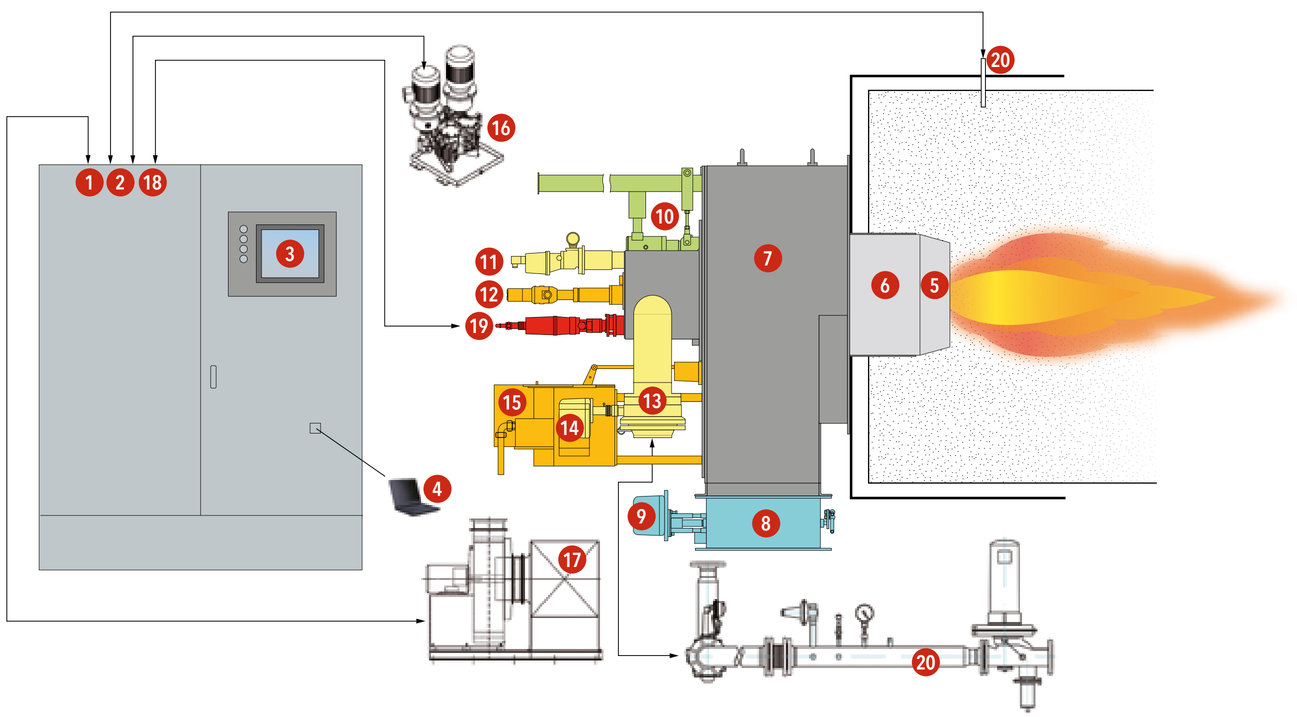
GEM SYSTEM
Electronic burner control: high safety and low costs

Digital combustion management, communication concept
The use of digital technologies in burner control systems helps to reduce running costs, improve reliability of operation and lower pollutant emissions. The digital combustion managers used on ELCO burners are responsible not only for burner control (formerly the task of the traditional automatic combustion control unit) but also for fuel/air regulation (formerly the task of the mechanical compound controller). Data stored electronically has replaced the mechanical characteristic curve and helps to achieve an unprecedented level of precision in air/fuel ratio regulation across the burner's entire control range – a prerequisite for efficient as well as energy and cost-saving operation. Communication with central management systems is possible via the established bus protocol.

Price advantage through integrated safety
Safety chains, sensors and monitoring signals are arranged directly on the combustion manager, and servomotors, valves and frequency converters are controlled directly. This greatly reduces the costs associated with additional relays and wiring and keeps potential fault sources to a minimum. Integrated safety concepts, such as the automation of gas-valve leak monitoring, lower component costs and improve the operational reliability of the overall system. Other combustion-related functions that were previously fulfilled by separate devices may be integrated:

- burner output regulator
- operating hours counter
- start-up counter
- fault alert management
- speed regulation of the combustion-air fan
- O_2/CO regulation
- interface with control technology

Naturally, our combustion managers fulfil all relevant standards and regulations and are approved for intermittent and continuous operation.



Legenda
1 – SPS
2 – Combustion manager
3 – Display and operating unit
4 – Laptop
5 – Blast tube
6 – Burner tube
7 – Burner body
8 – Secondary air connection
9 – Servomotor
10 – Extension equipment
11 – Ignition burner
12 – Nozzle rod assembly
13 – Gas flap
14 – Servomotor for gas flap
15 – Oil regulation
16 – Pump unit
17 – Blower
18 – O_2/CO regulator module
19 – Flame monitor
20 – Gas regulation section
21 – O_2/CO probe

ELCO TECHNOLOGIES AND SYSTEMS

GEM SYSTEM

Electronic burner control: high flexibility for precise and efficient processes

Flexible operating modes with electronic compound

For more complex tasks, digital firing managers offer various options. Depending on requirements, separate units are used here for digital burner control and electronic fuel-air regulation.

Sliding fuel switchover

If, for process-related reasons, the burner output may not be reduced during a fuel switch, the sliding fuel change can be used. During the switchover phase, the flow of the first fuel is reduced continuously and the second increased at the same rate until the change is complete. The sum of the two fuels during the switchover always amounts to the required burner output.

Mixed firing

If combustible residues and waste products are formed during production, it stands to reason that these should be disposed of in an environmentally-friendly, energy-saving and cost-effective manner in an existing heating installation. Usually, however, these waste fuels form in variable and insufficient quantities, so that it is only possible to use parallel multi fuel firing to form a main fuel. This kind of mix firing should be performed with an electronic compound controller, without laborious quantity measurements, in a fail-safe and tried-and-tested manner.

User-friendly operation

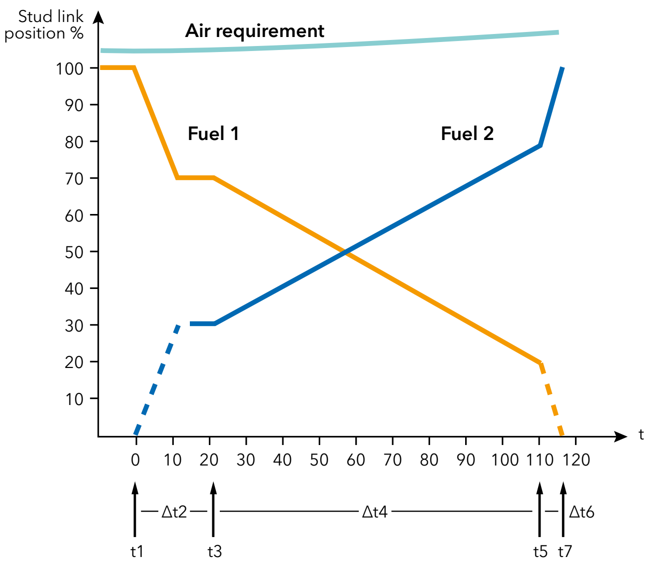
For burner commissioning and adjustments, the combustion manager is connected to a user-friendly or practice-oriented display and operating unit or to a PC. Menu-driven procedures guide the user safely and conveniently through the operating and commissioning process.

Stand-by mode

In the case of firing systems that frequently start and stop for process-related reasons, it may be logical not to shut down the burner completely, but to leave the ignition burner activated during breaks. This stand-by mode enables firing to start up immediately. Losses due to cooling are prevented.

Freely-programmable burner controller

In addition to the options described, ELCO also offers the burner control design as a freely-programmable system. The compound can be broken down electronically and the ratio controlled.



Time	*Process*
t1:	*change of fuel signal*
Δt2:	*reduction of gas output by the light oil basic load*
t3:	*release of light oil valves*
Δt4:	*sliding process for fuel flaps against one another in connection. Gas switches to the gas basic load, oil switches to the required output minus gas basic load*
t5:	*gas valve shutdown*
Δt6:	*oil simulates the missing output*
t7:	*change completed*

ELCO TECHNOLOGIES AND SYSTEMS

GEM SYSTEM

O_2/CO regulation: costantly working with optimum performance

O_2/CO regulation for optimum combustion

The efficiency of a heating installation is, to a large degree, contingent on the burner working with the optimum fuel/air ratio (λ).
If the burner is supplied with too little air (λ<1), the proportion of flue gas made up of unburnt fuel particles in the form of CO, CxHy and soot increases sharply. Not only are these unburnt fuel particles harmful to the environment, they also contain latent heat, which is carried away from the combustion process.
If the burner is supplied with too much air (λ>1), the proportion of unburnt fuel particles similarly increases.
More notably, however, the surplus air in the heating installation is heated and leaves the plant through the chimney at an elevated temperature, literally blowing away the operator's valuable energy reserves. For this reason, the goal of any burner calibration should be to set the air-to-fuel ratio no higher than is necessary. Nevertheless, a margin of safety has to be maintained because a number of disturbance variables have a bearing on the fuel/air mixture control process. These include:

Air:
- temperature
- pressure
- humidity

Fuel:
- calorific value
- viscosity
- pressure

Contamination:
- burner
- boiler

Mechanics:
- hysteresis of the actuators

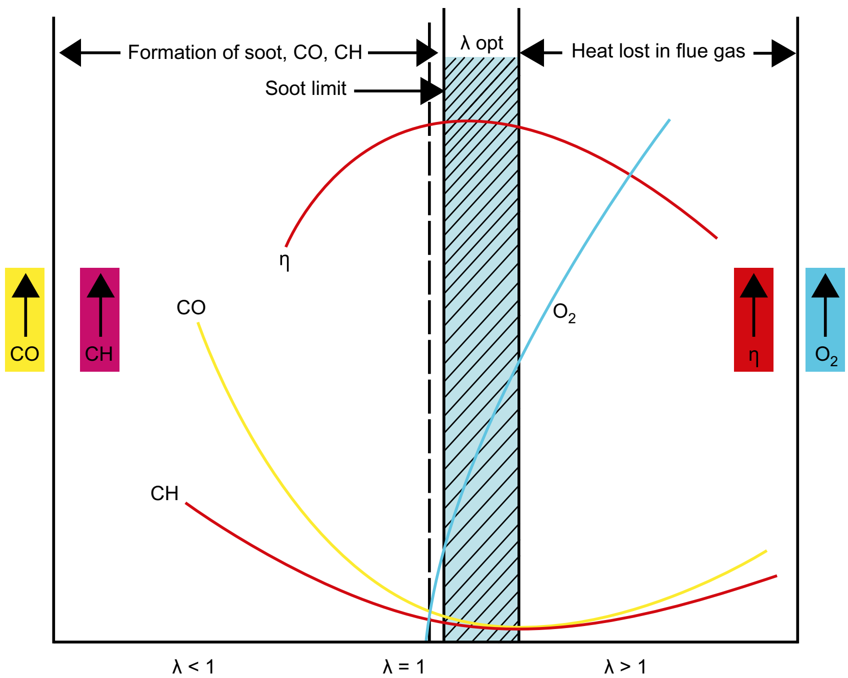
Variations in air density alone –caused by temporary or seasonal weather changes– can have an effect on the O_2/CO value of more than 1%. Every service engineer will therefore adjust the O_2/CO value to such a level that, even in the worst conditions, emissions of CO, CxHy and soot remain within acceptable limits.

The solution is provided by an O_2/CO regulator, which measures the air surplus continuously and corrects the ratio to the stored setpoint value for each operating point.

How an O_2/CO regulator pays for itself

The period in which investment in an O_2/CO regulator pays for itself fundamentally depends on a range of system-specific factors. However, based on theoretical calculations and on comparison measurements carried out on completed installations, a potential saving of 1,0% to 1,5% of annual fuel costs can be considered realistic.

Relationship between pollutant emissions and the efficiency of a heating installation:



REFERENCES

Xining, China

Burners: 12x RPD N 70 G-EU1 FGR
Fuel: natural gas
Nominal output:
14000 kW hot water boiler;
total system: 168 MW
Emissions: Ultra low NOx (≤30 mg/kWh) with FGR system

Tianjin, China

Burners: 3x RPD N 100 G-EU1 FGR
Fuel: natural gas
Nominal output:
46000 kW hot water boiler;
total system: 138 MW
Emissions: Ultra low NOx (≤30 mg/kWh) with FGR system

Tianjin, China

Burners: 2x RPD N 90 G-EU1 FGR
2x RPD N 130 G-EU1 FGR
Fuel: natural gas
Nominal output:
29000 kW + 58000 kW hot water boiler;
total system: 174MW
Emissions: Ultra low NOx (≤30 mg/kWh) with FGR system

REFERENCES

Tianjin, China

Burners: 2x RPD N 90 G-EU1 FGR
3x RPD N 160 G-EU1 FGR
Fuel: natural gas
Nominal output:
29000 kW + 70000 kW hot water boiler;
total system: 268 MW
Emissions: Ultra low NOx (≤30 mg/kWh) with FGR system

Beijing, China

Burners: 4x RPD N 80 G-EU1 FGR
Fuel: natural gas
Nominal output:
21000 kW hot water boiler;
total system: 84 MW
Emissions: Ultra low NOx (≤30 mg/kWh) with FGR system

Tianjin, China

Burners: 2x RPD N 90 G-EU1 FGR
Fuel: natural gas
Nominal output:
29000 kW hot water boiler;
total system: 58 MW
Emissions: Ultra low NOx (≤30 mg/kWh) with FGR system

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