



For more information, please contact the following offices.

NIPPON THERMOENER CO., LTD.

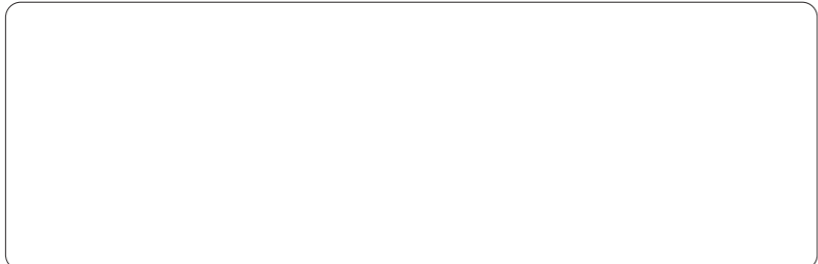
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NTEC Engineering CO., LTD.
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● Please note that the descriptions are subject to change without prior notice.

K0A0205E
2022.03R

EQOS Steam Boiler

Oil fired EQS (H) Series / EQR (H) Series / LTE Series

Gas fired EQS (H) Series / EQR (H) Series / LTE Series

Gas fired

Oil fired

EQOS Steam Boiler Series

C O N T E N T S



System flow / S-Navi control / BM control / BL control / V-Navi

03

05

EQS-121_{N/L} EQS-161_{N/L}
 EQS-251_{N/L} EQS-351_{N/L}
 EQS-101_k EQS-201_{kM/AM}
 EQS-301_{kM/AM}

07

EQS-402_{NS/LS/NM/LM}
 EQS-502_{NS/LS/NM/LM} EQSH-502_{NM/LM}
 EQS-751_{NS/LS/NM/LM} EQSH-751_{NM/LM}
 EQS-402_{KS/AS/KM/AM}
 EQS-502_{KS/AS/KM/AM} EQSH-502_{KM/AM}
 EQS-751_{KS/KM} EQSH-751_{KM} EQS-751_{KS/KM(II)}

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EQS-1002_{NS/LS/NM/LM} EQSH-1002_{NM/LM}
 EQS-1502_{NS/LS/NM/LM} EQSH-1502_{NM/LM}
 EQSH-2002_{NM/LM}
 EQS-1002_{KS/KM} EQSH-1002_{KM}
 EQS-1502_{KS/KM} EQSH-1502_{KM}
 EQSH-2002_{KM}

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EQR(H)-502_{NM/LM} EQR(H)-750_{NM/LM}
 EQRH-1001_{NM/LM}
 EQR(H)-502_{KM/AM} EQR(H)-750_{KM/AM} EQR-750_{KM/AM(II)}
 EQRH-1001_{KM/AM}

15

LTE-2002_{NM/LM}
 LTE-2002_{KM}

Steam boiler feedwater preheating system F-nex

17

100

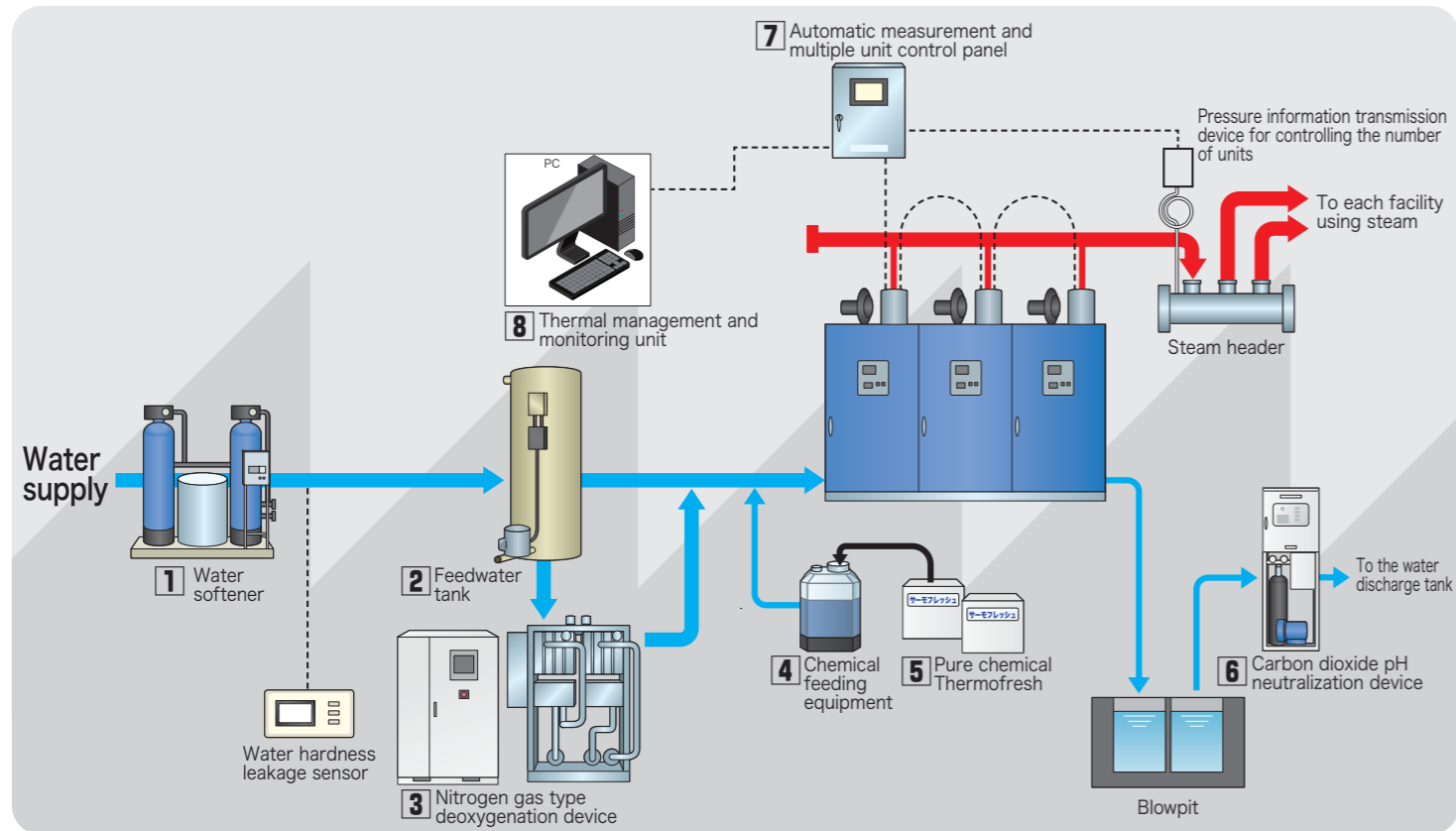
300

750

1000

2000

System flow (example)



1 Water softener

This device thoroughly removes substances in raw water that increase the water hardness and cause scale to adhere to the boiler without troubling users. The high-performance water hardness leakage sensor strengthens reliability by regularly checking the water hardness when water is passed and immediately switching the water softener to another one if water hardness leakage is detected. Adopting a regeneration method based on the accumulated water passing amount that is measured by a built-in water flow gauge, this water softener fully utilizes its capacity and eliminates waste of regeneration salt.



2 Feedwater tank

Feedwater deaeration and boiler water supply are automated. Of course, an opening for drain recovery is provided and can be used together. The tank is made of stainless steel, which is resistant to rust. A reliable steam silencer incorporated inside the tank ensures silent and reliable deaeration. Feedwater has an extremely low content of dissolved oxygen, which realizes a longer life of the boiler and requires less amount of chemicals to be injected.



3 Nitrogen gas type deoxygenation device

Utilizes a method to blow in nitrogen gas into the water and remove other gases. When water contacts nitrogen gas, dissolved oxygen in the water moves to air bubbles of the nitrogen gas that have a lower oxygen partial pressure. By discharging the air bubbles that have taken in the dissolved oxygen to the air, oxygen is removed in this technique.



4 Chemical feeding equipment

By injecting a water treatment chemical (Thermo Fresh), this device treats scale and a slight amount of substances increasing the water hardness that cannot be treated by the water softener.



5 Pure chemical Thermofresh

Developed based on our many years' experience and accumulated data, this pure chemical for (simplified / compact / large) once-through boilers prevents various failures and troubles caused by water and supports their stable operation for a long period of time.



6 Carbon dioxide pH neutralization device

Delivers superior performance in pH treatment of boiler blow-down water. A proprietary technique of controlling the inside of the pipe provides a high mixing rate, and easy operations and maintenance are realized. In addition, this space-saving device can easily be installed both indoors and outdoors. With the static mixer, thorough mixing and stirring inside the sealed pipe have been enabled.



7 Automatic measurement and multiple unit control panel

For multiple boilers, this device properly controls operation of each boiler according to the steam load.



8 Thermal management and monitoring unit

In combination with the automatic measurement and multiple unit control panel, it provides high-class consolidated boiler management.



S-Navi control / BM control / BL control / V-Navi

S-Navi control "Steaming Navi"



The next-generation Navi performs control and management of the boiler.

Efficient generation, control, management, and maintenance of steam are collectively referred to as steaming. The new navi, named Steaming Navi, serves as the advanced controller of the boiler itself, and has the functions of providing operators with appropriate boiler control information and guiding operation of the boiler. S-Navi is a control system capable of notifying information not only on boiler control but also on the boiler management in an easy-to-understand manner through simple operations.

Control The boiler itself can perform automatic control of each function.

Steam pressure control function

1 Function to reduce combustion frequency

The function reduces the frequency of starting/stopping combustion under low load, thereby reducing heat release loss.

	Conventional control	S-Navi (Function of reducing combustion frequency)
Boiler load ratio	40%	40%
Pressure setting	Combustion OFF 0.8MPa Combustion ON 0.65MPa	0.8MPa 0.65MPa
Intervals between starting and stopping of combustions	74 seconds/cycle	110 seconds/cycle
Effects	The function enables the frequency of starting/stopping combustion to be reduced to about two thirds, thus keeping the operation efficiency high.	

(Result of the test for our small boilers)

2 Purging standby operation function

	Conventional control	S-Navi (Purging standby operation)
Boiler load ratio	40%	40%
Pressure setting	Combustion OFF 0.8MPa Combustion ON 0.65MPa	0.8MPa 0.65MPa
Pressure during re-combustion (Undershoot)	0.57MPa (0.08MPa)	0.62MPa (0.03MPa)
Effects	Pressure undershoot is improved about 60% and the load following capability is enhanced.	

(Result of the test for our small boilers)

Air warming start function

3 Pressure backup function

Pressure keeping function

This function enables the boiler in combustion stop state to be set to the pressure retained state when the unit count control is in place. The load following capability is remarkably enhanced. (Opt.ROM is required for the unit count control panel.) Remote control of setting and cancellation is possible.

4 Boiler water control function

Chemical solution injection control Blow control

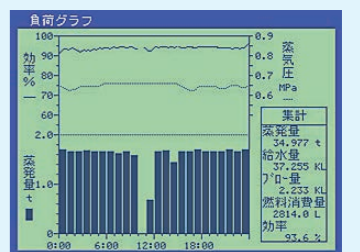
5 Multi-interlock function

Double or triple safety devices are provided for three safety elements of boilers: steam pressure, water level/overheat prevention, and combustion.

Management Self-diagnosis from management data, and then visual appeal.

1 Heat management data

Tabulated data/Graph of load



2 Operation control function

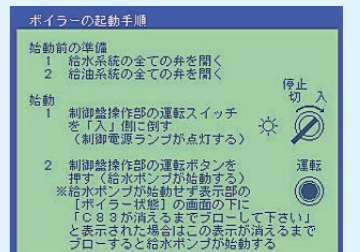
Data on boiler water

Process of operation

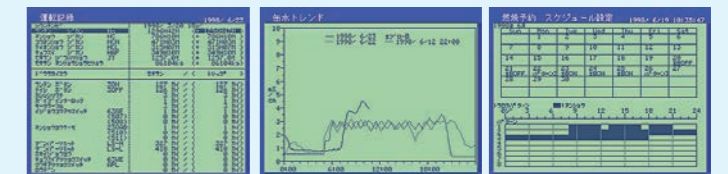
Operation record

3 Guidance function

The large graphic liquid crystal screen displays the procedure of starting and stopping of the boiler operation as well as information on boiler control.



4 Combustion scheduled operation function



5 Information communication function

※ The screens are displayed in English as default.

Mounting the new highly functional "V-Navi"



The LED with backlighting and white outline letters improved the visibility.

Additional contents on the display: Control conditions, error history, and maintenance information are added

Hierarchical selection display: Items and parameters are displayed hierarchically to improve operability

Multiple remote controllers: Installation of multiple remote controllers for a single boiler is enabled

Schedule reservation function: Operation/stoppage on the registered days of week and times is enabled

Boiler water control function: Automatic basic input of the boiler compound.

Operation data recording function: Operating hours, the number of times of operation, operation progress, error history

Communication function: Connection for remote monitoring is enabled

EQOS EQS Series

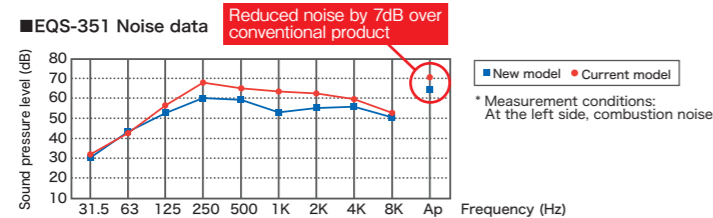
Gas fired EQS-121N/L EQS-161N/L EQS-251N/L EQS-351N/L

Oil fired EQS-101K EQS-201KM/AM EQS-301KM/AM

Silence design and low NOx friendly to the ambient environment

Comfortable silence design **Gas fired** **Oil fired**
(7dB less than conventional product)

More silent by 5dB than our conventional product.
The new type intake silencer has reduced the sound from the blower that makes the largest noise.
Night-time or early-morning operation can be performed without worry.



EQS-121



EQS-101

Low NOx **Gas fired**

[Converted based on 50ppm or less (O₂ = 0%) in the case of LNG Specification]

Low NOx **Oil fired**

[Converted based on 70ppm or less (O₂ = 0%) in the case of EQS-101K type]

Low CO **Oil fired**

[Carbon monoxide (CO) 100ppm or less]

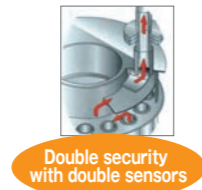
Low soot and dust **Oil fired**

High-performance, safe, secure, and user-friendly

Stable supply of high-quality steam

Steam dryness **99% or more**

High performance steam separator built in main body, which NTEC boasts, is adopted. Compared with the product with an external steam-water separator, this boiler enables reduction of heat release and excellent effective use of energy.



The double low water-level sensors are built in the body to secure safety in the event of an emergency

Use of the body temperature sensor can prevent heating of an empty boiler

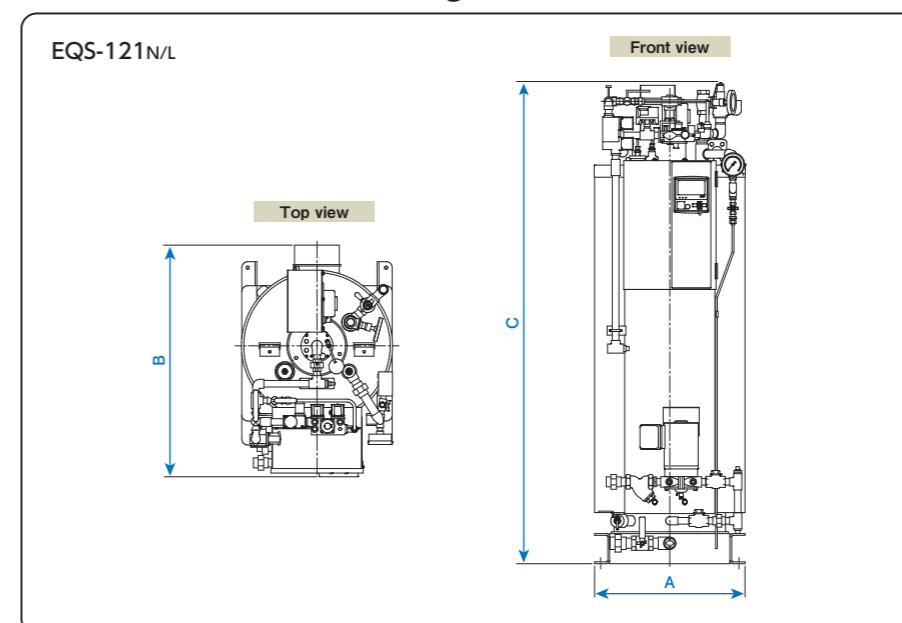
The new type high functional microcomputer "V-Navi" (Value Navi) is incorporated

Specifications

Item	Type ^{*1}	EQS-101 □	EQS-121 □	EQS-161 □	EQS-201 □□	EQS-251 □	EQS-301 □□	EQS-351 □		
Performance	Conversion evaporation	kg/h	100	120	160	200	250	300	350	
	Actual evaporation	kg/h	84	101	134	168	210	251	293	
	Thermal output	kW	63	75	100	125	157	188	219	
	Heating surface area	m ²	2.39		2.74	3.08	3.76	3.81	4.71	
	Maximum working pressure	MPa	0.69			0.98				
	Holding water quantity	L	33		37	42	51		65	
	Boiler efficiency	%	90							
	Fuel consumption	Max combustion capacity (input)	kW	70	84	111	139	174	209	244
		LNG	m ³ (N)/h	—	7.4	9.9	—	15.4	—	21.6
		Propane	m ³ (N)/h	—	3.2	4.3	—	6.7	—	9.4
			kg/h	—	6.5	8.6	—	13.5	—	18.9
		Kerosine	kg/h	5.8	—	—	11.5	—	17.3	—
		L/h	7.2	—	—	14.4	—	21.6	—	
Fuel oil A	kg/h	—	—	—	11.7	—	17.6	—		
	L/h	—	—	—	13.7	—	20.5	—		
Power source		Three phase, AC 200V, 50/60Hz								
Sub - items	Facility electric power	0.4		0.75		0.95				
	Feedwater pump motor	0.2		0.4						
	Blower motor	0.1		0.25		0.45				
	Control box	0.1								
Connecting pipe diameter	Fuel inlet	15		25		15		25		
	Feedwater inlet	20				25				
	Steam outlet	20				25				
	Safety valve discharge outlet	20 (40)				25 (50)				
	Exhaust gas outlet	150		200						
	Product weight	kg	240	235	260	300	365	350	470	

- Notes:
- The actual evaporation is the value for the saturated steam at 15°C feedwater temperature and 0.49MPa steam pressure.
 - The boiler efficiency value is calculated by the heat loss scheme provided in JIS B 8222-1993. However, the calculation is made under the following conditions.
0.49MPa steam pressure, 15°C feedwater temperature, 35°C charge air temperature
 - The margins of error are as follows:
• Boiler efficiency error: ±2% • Combustion capacity error: ±3.5%
 - The fuel consumptions are calculated based on the following fuel lower calorific values:
LNG: 40.6MJ/m³ (N) Fuel oil A: 42.7MJ/kg, density 0.86g/cm³
Propane: 93.7MJ/m³ (N), 46.4MJ/kg Kerosine: 43.5MJ/kg, density 0.80g/cm³
 - As to fuel oil A specification, JIS Class 1, No. 1 fuel (sulfur content not to exceed 0.5 weight percent, kinetic viscosity 3.75 mm²/s (at 50°C) or less) should be used.
 - Install the gas piping so as to ensure a sufficient feed gas pressure, even while the boiler is running, stopped, or other gas equipment is being operated.
Supply gas pressure LNG: 2.0kPa Propane: 2.8kPa
 - If the feedwater temperature is high when, for example, collecting the drain water, fuel consumption may be reduced as the standard of actual evaporation.
 - The diameter of the safety valve discharge outlet shown between parentheses applies piping for blowing outdoors.
 - Only EQS-101, 121, and 161 support single-phase AC 100V, 50/60Hz as an option.
 - Maximum combustion capacity (input) is computed based on the standard lower calorific value.
 - For EQS-101K, a low NOx burner specification (O₂ = 0% conversion value: 70 ppm or less) is applied.
 - In the case of LNG, low NOx burner specification (O₂ = 0% conversion value: 50ppm or less) is applied.
- *1. The type display is as follows
- EQS-121□□
- : Microcomputer specification (V-Navi control)
 - : LNG
 - L: Propane
 - K: Kerosine
 - A: Fuel oil A

External dimensional drawing



Unit: mm

Type	A Overall width	B Overall length	C Overall height
EQS-101 K	505	760	1,635
EQS-201 KM/AM	585	860	1,705
EQS-301 KM/AM	655	920	1,710
EQS-121 N/L	505	770	1,600
EQS-161 N/L	540	800	1,600
EQS-251 N/L	670	925	1,710
EQS-351 N/L	765	1,030	1,710

* The external outline drawing is for reference.

EQOS EQS Series

Gas fired EQS-402NS/LS/NM/LM EQS-502NS/LS/NM/LM
EQSH-502NM/LM
Oil fired EQS-402KS/AS/KM/AM EQS-502KS/AS/KM/AM
EQSH-502KM/AM

Upgraded boiler body and burner improve rated and partial load efficiencies

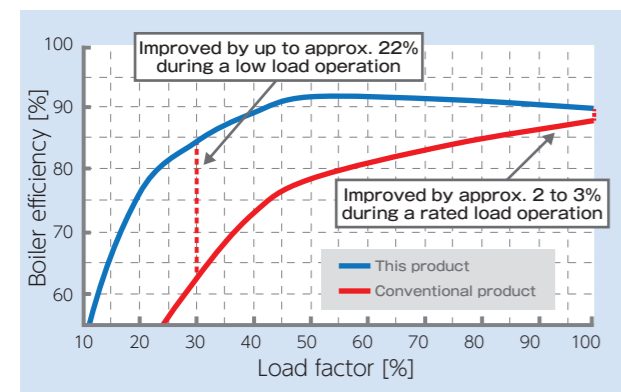
EQS 402 type: **91%** **Gas fired** **Oil fired**
502 type: **90%**

Suppresses energy loss during operation, and improves its efficiency with the economizer

EQSH (with the economizer) **97%** **Gas fired** **Oil fired**

Adopted the three-level control for the combustion control method of the standard model and improved the actual load efficiency

The standard model uses the V-Navi control panel, which realizes higher performance.



Reduces burden to the environment with the low NOx burner

NOx value **LNG** **50ppm** or less **Gas fired**
(O₂=0% conversion value)

Package with a simple and compact design that also offers maintainability

With a compact design that enables the equipment to be disassembled and carried through a narrow door, the package has a simple external appearance and improved the ease of maintenance work.



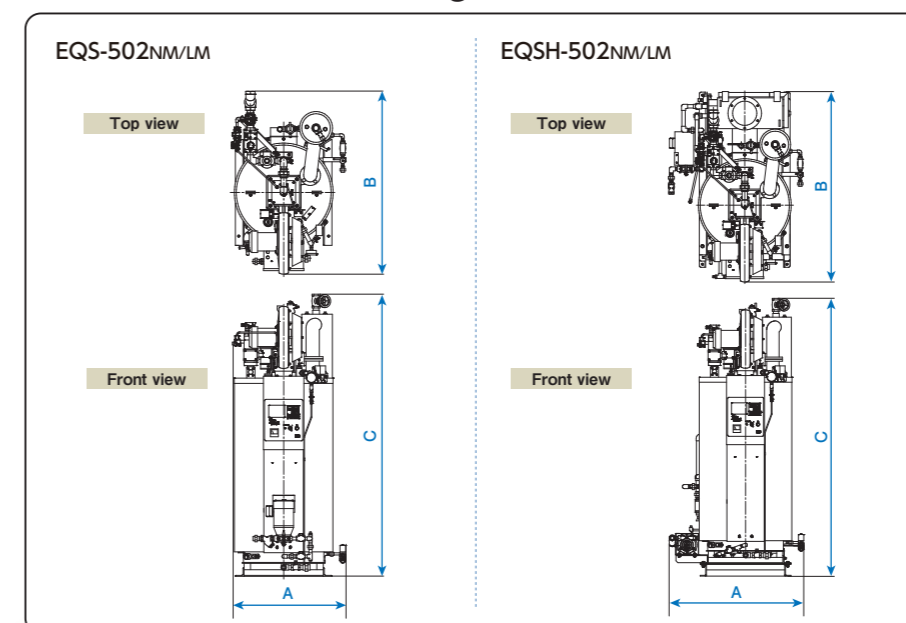
Specifications

Item	Type ^{*1}	EQS-402 □□	EQS-502 □□	EQSH-502 □□	
Conversion evaporation	kg/h	400	500		
Actual evaporation	kg/h	335	419		
Thermal output	kW	251	313		
Heating surface area	m ²	4.97			
Maximum working pressure	MPa	0.98			
Holding water quantity	L	79			
Boiler efficiency	%	91	90	97	
Max combustion capacity (input)	kW	276	348	323	
Fuel consumption	LNG	m ³ (N)/h	24.4	30.9	28.7
	Propane	m ³ (N)/h	10.6	13.4	12.4
		kg/h	21.4	27.0	25.1
	Kerosine	kg/h	22.8	28.8	26.7
		L/h	28.5	36.0	33.4
	Fuel oil A	kg/h	23.2	29.4	27.2
L/h		27.0	34.2	31.7	
Power source		Three phase, AC 200V, 50/60Hz			
Sub-items	Facility electric power	1.6			
	Feedwater pump motor	0.75			
	Blower motor	0.75			
	Control box	0.1			
Connecting pipe diameter	Fuel inlet	40 (15) ^{*2}			
	Feedwater inlet	A			
	Steam outlet	32			
	Safety valve discharge outlet	25 (50)			
	Exhaust gas outlet	φmm 200			
Product weight	NS/LS	610	—		
	NM/LM	620	835		
	KS/KS	590	—		
	KM/KM	600	820		

- Notes: 1. The actual evaporation is the value for the saturated steam at 15°C feedwater temperature and 0.49MPa steam pressure.
2. The boiler efficiency value is calculated by the heat loss scheme provided in JIS B 8222-1993. However, the calculation is made under the following conditions:
0.49MPa steam pressure, 15°C feedwater temperature, 35°C charge air temperature
3. The margins of error are as follows:
• Boiler efficiency error: ±1% • Combustion capacity error: ±3.5%
4. The fuel consumptions are calculated based on the following fuel lower calorific values:
LNG: 40.6MJ/m³ (N) Fuel oil A: 42.7MJ/kg, density 0.86g/cm³
Propane: 93.7MJ/m³ (N), 46.4MJ/kg Kerosine: 43.5MJ/kg, density 0.80g/cm³
5. As to fuel oil A specification, JIS Class 1, No. 1 fuel (sulfur content not to exceed 0.5 weight percent, kinetic viscosity 3.75 mm²/s (at 50°C) or less) should be used.
6. Install the gas piping so as to ensure a sufficient feed gas pressure, even while the boiler is running, stopped, or other gas equipment is being operated.
Supply gas pressure LNG: 2.0kPa Propane: 2.8kPa
7. EQSH-series boilers come with an economizer. Be sure to set the feedwater temperature to 50°C or higher.
8. If the feedwater temperature is high when, for example, collecting the drain water, fuel consumption may be reduced as the standard of actual evaporation.
9. The diameter of the safety valve discharge outlet shown between parentheses applies piping for blowing outdoors.
10. Maximum combustion capacity (input) is computed based on the standard lower calorific value.
11. In the case of LNG, low NOx burner specification (O₂ = 0% conversion value : 50ppm or less) is applied.

*1. The type display is as follows
M: S-Navi specification
S: V-Navi specification
E Q S H - 4 0 2 □ □
N: LNG
L: Propane
K: Kerosine
A: Fuel oil A
H: High efficiency (with the economizer)
None: Standard
*2. Values of the fuel outlet shown inside the () are for the oil fired (Kerosine / Fuel oil A) type boilers.

External dimensional drawing



Unit: mm

Type	A Overall width	B Overall length	C Overall height
EQS-402 • 502KS/AS	745	1,190	2,135
EQS-402 • 502KM/AM	845	1,205	2,135
EQSH-502KM/AM	1,085	1,505	2,235
EQS-402 • 502NS/LS	765	1,385	2,135
EQS-402 • 502NM/LM	865	1,385	2,135
EQSH-502NM/LM	1,085	1,505	2,235

* The external outline drawing is for reference.

EQOS EQS Series

Gas fired EQS-751NS/LS/NM/LM
EQSH-751NM/LM

Oil fired EQS-751KS/KM
EQSH-751KM
EQS-751KS/KM (II)

Suppresses energy loss during operation, and improves its efficiency with the economizer

EQSH (with the economizer) **96%** | Gas fired |
95% | Oil fired |

Adoption of the high performance steam-water separator ensures stable supply of high quality steam

Steam dryness **99% or more**

Adopts the high performance steam separator incorporated in the main body

The unique combustion system delivers excellent environment performance

NOx value **LNG 60ppm or less is realized!** | Gas fired |
(O₂=0% conversion value)

Adopts a layout and design improving safety and maintainability

The front covering panel is mounted to satisfy both safety and maintenance and also realize a simple outer design



EQS-751

Specifications

Item	Type ¹⁾	EQS-751 □□	EQS-751K □ (II)	EQSH-751 □□	
Performance	Conversion evaporation	750	712 (675) ^{*2}	750	
	Actual evaporation	629	597 (566) ^{*2}	629	
	Thermal output	470	446 (423) ^{*2}	470	
	Heating surface area	7.69			
	Maximum working pressure	0.98			
	Holding water quantity	99			
	Boiler efficiency	88			
	Max combustion capacity (input)	534	507 (481) ^{*2}	490 (495) ^{*3}	
	Fuel consumption	LNG	m ³ (N)/h	47.4	—
		Propane	m ³ (N)/h	20.5	—
			kg/h	41.5	—
		Butane	m ³ (N)/h	16.2	—
			kg/h	42.1	—
		Kerosine	kg/h	44.2	39.8
L/h			55.3	49.8	
Fuel oil A	kg/h	45.0	42.8		
	L/h	52.4	49.8		
Power source		Three phase, AC 200V, 50/60Hz			
Sub-items	Facility electric power	3.2			
	Feedwater pump motor	1.5			
	Blower motor	1.5			
	Control box	0.2			
Connecting pipe diameter	Fuel inlet	50 (20) ^{*3}			
	Feedwater inlet	A			
	Steam outlet	32			
	Safety valve discharge outlet	25 (50)			
	Exhaust gas outlet	φmm 256			
Product weight	NS/LS	1,190	—	—	
	NM/LM	1,195	—	1,435	
	KS/KS (II)	1,175		—	
	KM/KM (II)	1,180		1,420	

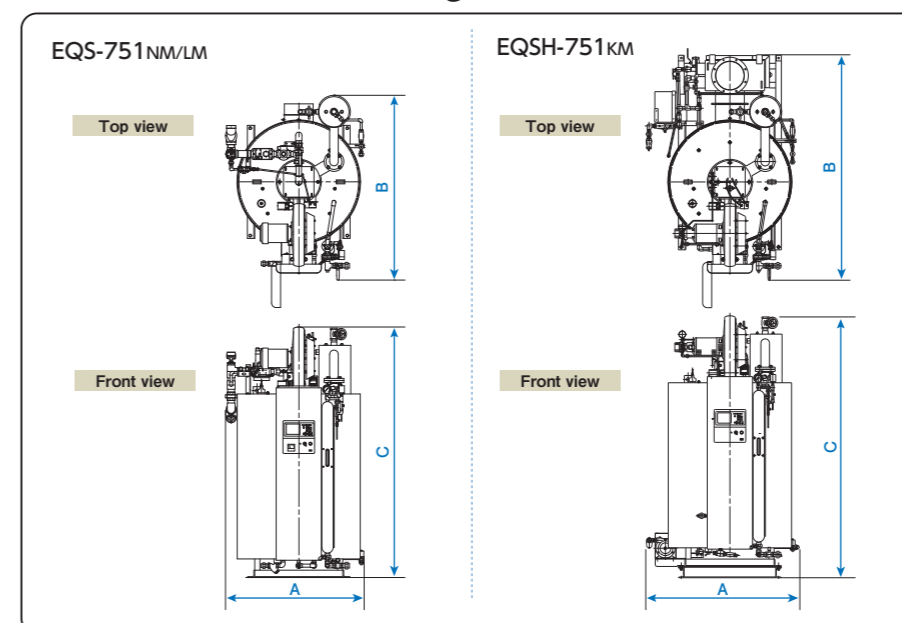
- Notes:
- The actual evaporation is the value for the saturated steam at 15°C feedwater temperature and 0.49MPa steam pressure.
 - The boiler efficiency value is calculated by the heat loss scheme provided in JIS B 8222-1993. However, the calculation is made under the following conditions:
0.49MPa steam pressure, 15°C feedwater temperature, 35°C charge air temperature
 - The margins of error are as follows:
• Boiler efficiency error: ±1% • Combustion capacity error: ±3.5%
• Fuel consumption error: ±1% • Fuel oil A: 42.7MJ/kg, density 0.86g/cm³
LNG: 40.6MJ/m³ (N) Propane: 93.7MJ/m³ (N), 46.4MJ/kg Kerosine: 43.5MJ/kg, density 0.80g/cm³
Butane: 118.9MJ/m³ (N), 45.7MJ/kg
 - As to fuel oil A specification, JIS Class 1, No. 1 fuel (sulfur content not to exceed 0.5 weight percent, kinetic viscosity 3.75 mm²/s (at 50°C) or less) should be used.
 - Install the gas piping so as to ensure a sufficient feed gas pressure, even while the boiler is running, stopped, or other gas equipment is being operated.
Supply gas pressure LNG: 2.0kPa Propane/Butane: 2.8kPa
 - EQSH-series boilers come with an economizer. Be sure to set the feedwater temperature to 50°C or higher.
 - If the feedwater temperature is high when, for example, collecting the drain water, fuel consumption may be reduced as the standard of actual evaporation.
 - The diameter of the safety valve discharge outlet shown between parentheses applies piping for blowing outdoors.
 - Maximum combustion capacity (input) is computed based on the standard lower calorific value.
 - In the case of LNG, low NOx burner specification (O₂ = 0% conversion value : 60ppm or less) is applied.

- ¹⁾ The type display is as follows
- EQSH-751□□
- M: S-Navit specification
 - S: Semi-microcomputer specification (BM control)
 - N: LNG
 - L: Propane/Butane
 - K: Kerosine/Fuel oil A
 - H: High efficiency (with the economizer)
 - None: Standard

²⁾ Values inside the | | for the evaporation amounts, calorific value, and maximum combustion capacity (input) are for the Kerosine fired type boilers.

³⁾ Values inside the | | for the boiler efficiency, maximum combustion capacity (input), and fuel inlet are for the oil fired (Kerosine / Fuel oil A) type boilers.

External dimensional drawing



Unit: mm

Type	A Overall width	B Overall length	C Overall height
EQS-751KS · KS (II)	1,090	1,620	2,223
EQS-751KM · KM (II)	1,130	1,635	2,223
EQSH-751KM/NM/LM	1,325	1,995	2,323
EQS-751NS/LS	1,195	1,620	2,223
EQS-751NM/LM	1,235	1,635	2,223

* The external outline drawing is for reference.

EQOS EQS Series

Gas fired EQS-1002NS/LS/NM/LM EQSH-1002NM/LM EQS-1502NS/LS/NM/LM EQSH-1502NM/LM EQSH-2002NM/LM
Oil fired EQS-1002KS/KM EQSH-1002KM EQS-1502KS/KM EQSH-1502KM EQSH-2002KM

Suppresses energy loss during operation, and improves its efficiency with the economizer

EQSH (with the economizer) **96%** Gas fired | **95%** Oil fired

Adoption of the high performance steam-water separator ensures stable supply of high quality steam

Steam dryness **99% or more**

Adopts the high performance steam separator incorporated in the main body

The unique combustion system delivers excellent environment performance

NOx value **LNG 60ppm or less is realized!** Gas fired | (O₂=0% conversion value)

Adoption of hybrid heat exchange body

The heat exchange at the convection heating portion of the body has been thoroughly analyzed. The optimum combination of 3 kinds of fins and slit swirl has accomplished highly efficient body. High-speed combustion gases vigorously generate vortexes between the water pipes, thus enhancing the heat transfer effect and producing the self-cleaning effect for preventing adhesion and growth of soot. The new body has realized both improved high heat transfer efficiency and durability/safety.

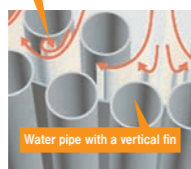
Water pipe with a vertical angle fin



Water pipe with radial fins



Slit swirl



Water pipe with a vertical fin



EQS-1502



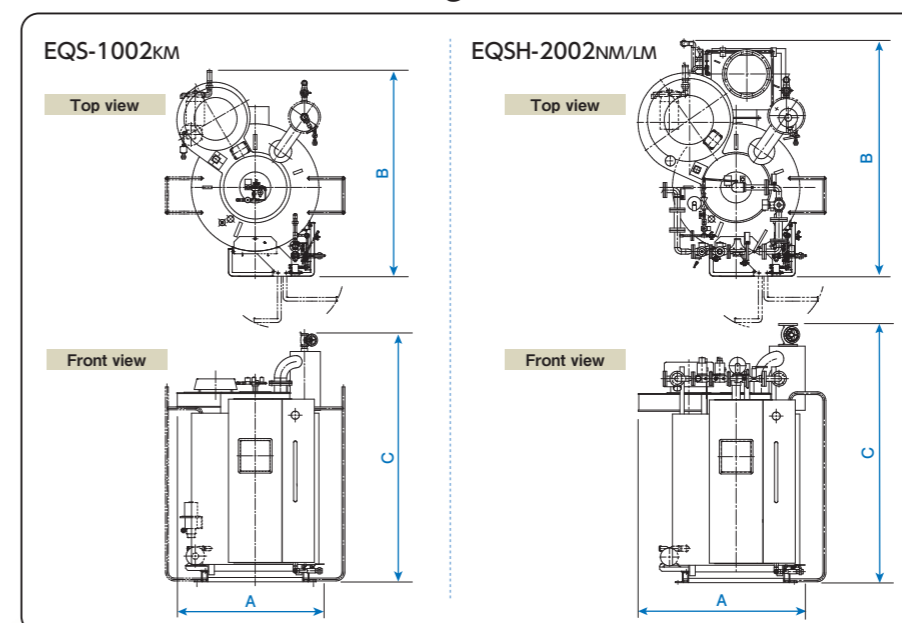
EQS-1002

Specifications

Item	Type ^{*1}	EQS-1002 □□	EQSH-1002 □□	EQS-1502 □□	EQSH-1502 □□	EQSH-2002 □□	
Conversion evaporation	kg/h	1,000		1,500		2,000	
Actual evaporation	kg/h	838		1,257		1,676	
Thermal output	kW	627		940		1,254	
Heating surface area	m ²			9.96			
Maximum working pressure	MPa			0.98			
Holding water quantity	L	180		160		150	
Boiler efficiency	%	90	96 (95) ^{*2}	90	96 (95) ^{*2}	96 (95) ^{*2}	
Max combustion capacity (input)	kW	697	653 (660) ^{*2}	1,045	980 (990) ^{*2}	1,306 (1,320) ^{*2}	
Performance Fuel consumption	LNG	m ³ (N)/h	61.8	57.9	92.7	86.9	115.8
	Propane	m ³ (N)/h	26.8	25.1	40.1	37.6	50.2
		kg/h	54.0	50.7	81.1	76.0	101.3
	Butane	m ³ (N)/h	21.1	19.8	31.6	29.7	39.5
		kg/h	54.9	51.4	82.3	77.2	102.9
	Kerosine	kg/h	57.7	54.6	86.5	81.9	109.2
L/h		72.1	68.3	108.1	102.4	136.5	
Fuel oil A	kg/h	58.7	55.6	88.1	83.5	111.3	
	L/h	68.3	64.7	102.5	97.1	129.5	
Power source		Three phase, AC 200V, 50/60Hz					
Sub - items	Facility electric power	3.9 (4.1) ^{*2}		7.9 (8.3) ^{*2}		10.3 (10.7) ^{*2}	
	Feedwater pump motor	1.5		2.2		3.1	
	Blower motor	2.2		5.5		7.0	
	Fuel oil burning pump motor	(0.2) ^{*2}		(0.4) ^{*2}		(0.4) ^{*2}	
	Control box			0.2			
Connecting pipe diameter	Fuel inlet	50[40](15) ^{*2}		40[50](15) ^{*2}		40 (20) ^{*2}	
	Feedwater inlet			25		32	
	Steam outlet	40		50		65	
	Safety valve discharge outlet			32 (65)		40 (80)	
	Exhaust gas outlet	φmm	256		306		380
Product weight	NS/LS	1,615		1,785		—	
	NM/LM	1,625		1,850		2,105	
	KS/KS	1,590		1,720		—	
	KM/KM	1,600		1,835		2,160	

- Notes: 1. The actual evaporation is the value for the saturated steam at 15°C feedwater temperature and 0.49MPa steam pressure.
2. The boiler efficiency value is calculated by the heat loss scheme provided in JIS B 8222-1993. However, the calculation is made under the following conditions:
0.49MPa steam pressure, 15°C feedwater temperature, 35°C charge air temperature
3. The margins of error are as follows:
• Boiler efficiency error: ±1% • Combustion capacity error: ±3.5%
4. The fuel consumptions are calculated based on the following fuel lower calorific values:
LNG: 40.6MJ/m³ (N) Fuel oil A: 42.7MJ/kg, density 0.86g/cm³
Propane: 93.7MJ/m³ (N), 46.4MJ/kg Kerosine: 43.5MJ/kg, density 0.80g/cm³
Butane: 118.9MJ/m³ (N), 45.7MJ/kg
5. As to fuel oil A specification, JIS Class 1, No. 1 fuel (sulfur content not to exceed 0.5 weight percent, kinetic viscosity 3.75 mm²/s (at 50°C) or less) should be used.
6. Install the gas piping so as to ensure a sufficient feed gas pressure, even while the boiler is running, stopped, or other gas equipment is being operated.
Supply gas pressure
1002 type: Low-pressure supply as standard
1502/2002 types: Medium-pressure supply as standard (intermediate-pressure supply for 1502 type is supported as an option)
7. EQSH-series boilers come with an economizer. Be sure to set the feedwater temperature to 50°C or higher.
8. If the feedwater temperature is high when, for example, collecting the drain water, fuel consumption may be reduced as the standard of actual evaporation.
9. The diameter of the safety valve discharge outlet shown between parentheses applies piping for blowing outdoors.
10. Dimension values inside the [] of the fuel inlet are those when the supply gas pressure is medium for the 1002 type and intermediate for the 1502 type.
11. Maximum combustion capacity (input) is computed based on the standard lower calorific value.
12. In the case of LNG, low NOx burner specification (O₂ = 0% conversion value : 60ppm or less) is applied. Note that the EQS-1502NM type with intermediate pressure supply is excluded.
- *1. The type display is as follows
E Q S H - 1 5 0 2 □ □
□ : Microcomputer specification (S-Navit control)
□ : Semi-microcomputer specification (BL control)
N : LNG
L : Propane/Butane
K : Kerosine/Fuel oil A
H : High efficiency (with the economizer)
None : Standard
*2. Values inside the () are for the oil fired (Kerosine / Fuel oil A) boilers.

External dimensional drawing



Unit: mm

Type	A Overall width	B Overall length	C Overall height
EQS-1002KS/KM/NS/LS/NM/LM	1,366	1,933	2,316
EQSH-1002KM/NM/LM	1,366	1,962	2,316
EQS-1502KS/KM/NS/LS/NM/LM	1,553	1,938	2,398
EQSH-1502KM/NM/LM	1,553	2,081	2,398
EQSH-2002KM/NM/LM	1,563	2,213	2,429

* The external outline drawing is for reference.

Gas fired | EQR (H) -502NM/LM EQR (H) -750NM/LM EQRH-1001NM/LM
Oil fired | EQR (H) -502KM/AM EQR (H) -750KM/AM EQR-750KM/AM (II)
 EQRH-1001KM/AM

With a slim body enabling multiple units to be connected and installed, this simplified once-through boiler saves much more space and energy consumption

Improved the operation management capability with the highly functional microcomputer "S-Navi" (EQR-750)
 Higher efficiency with a new boiler body and economizer (EQR(H)-502)

Neither qualification nor inspection is required
 Achieves an eco-friendly low NOx feature with the unique combustion method
 Ensures stably supply of high-quality steam whose steam dryness is **99% or more**
 Equipped with a front-surface covering panel
 Supports various types of operations under microcomputer control
 Realized a compact and slim body with the smallest width in all series



EQRH-502

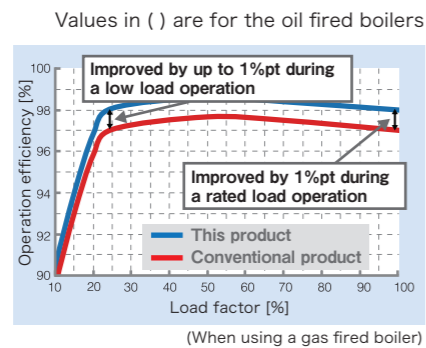
EQRH-1001 Series

The first simplified once-through boiler in the industry (1000kg/h class) that adopted the four-level combustion control. Its high efficiency largely reduced burden to the environment! | Gas fired | Oil fired |

POINT 1 Rated load efficiency 98% (96%)
 Partial load efficiency 98.6% (96.7%) (Load factor: 50%)
 Turndown ratio* 4:1

The four-level combustion control that adjusts the output in four levels of 0, 25, 50, and 100% eliminates unnecessary activations and stops of the burner and largely improves the boiler efficiency during a low load operation to save energy consumption.

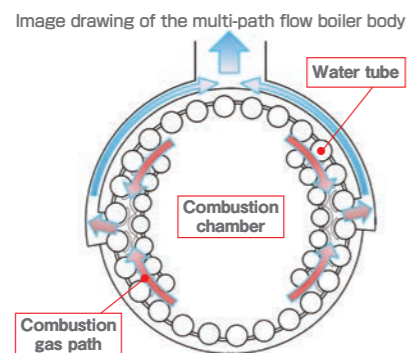
* The ratio between the rated output and smallest output that can be controlled. The turndown ratio of 4:1 means that the smallest output is 25% of the rated output.



EQRH-1001

POINT 2 Newly developed boiler body structure
 Noise and energy consumption of the blower are reduced

The newly developed multi-path flow boiler body improved the boiler efficiency by increasing heat absorption through combustion at a low fuel-air ratio and optimization of the path of gas. Furthermore, by saving the amount of air supplied for combustion and reducing the resistance to the flow of combustion gas, the blower achieved reduction of energy consumption by approx. 40% and became more silent.



POINT 3 The steam dryness of 99.6% or more (when the steam pressure is 0.49MPa)

The water level control according to the steam pressure and combustion capacity ensures stable supply of dried steam in the whole range of load.

Specifications

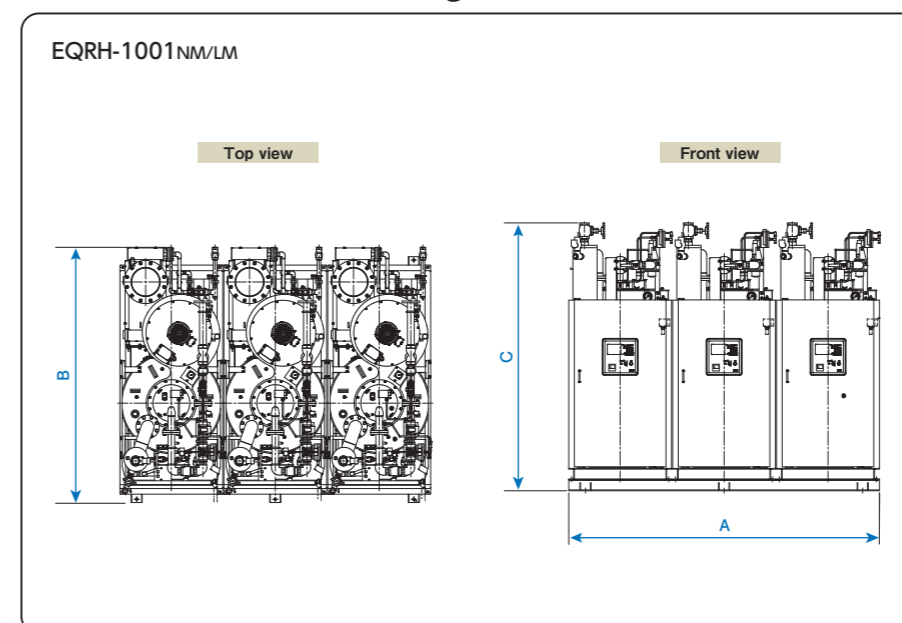
Item	Type ¹⁾	EQR-502 □ M	EQRH-502 □ M	EQR-750 □ M	EQR-750 □ M (II)	EQRH-750 □ M	EQRH-1001 □ M		
Performance	Conversion evaporation	kg/h	500	750	650 (700) ^{*4}	750	1,000		
	Actual evaporation	kg/h	419	629	545 (587) ^{*4}	629	838		
	Thermal output	kW	313	470	408 (439) ^{*4}	470	627		
	Heating surface area	m ²	4.97			4.98			
	Maximum working pressure	MPa	0.98						
	Holding water quantity	L	79			95	130		
	Boiler efficiency	%	90	98 (97) ^{*2}	90	90	96 (95) ^{*2}	98 (96) ^{*2}	
	Max combustion capacity (input)	kW	348	320 (323) ^{*2}	522	453 (488) ^{*4}	490 (495) ^{*2}	640 (653) ^{*2}	
	Fuel consumption	LNG	m ³ (N)/h	30.9	28.4	46.3	—	43.4	56.7
		Propane	m ³ (N)/h	13.4	12.3	20.1	—	18.8	24.6
kg/h			27.0	24.8	40.5	—	38.0	49.6	
Butane		m ³ (N)/h	—	—	15.8	—	14.8	—	
		kg/h	—	—	42.1	—	38.6	—	
Kerosine		kg/h	28.8	26.7	43.2	37.5	41.0	54.0	
	L/h	36.0	33.4	54.0	46.8	51.2	67.6		
Fuel oil A	kg/h	29.4	27.2	44.0	41.1	41.7	55.1		
	L/h	34.2	31.7	51.2	47.8	48.6	64.1		
Power source		Three phase, AC 200V, 50/60Hz							
Sub-items	Facility electric power	1.6		3.2 (3.6) ^{*2}	3.6	3.2 (3.6) ^{*2}	3.9 (4.3) ^{*2}		
	Feedwater pump motor	0.75		1.5					
		Blower motor	0.75		1.5				
		Fuel oil burning pump motor	—		— (0.4) ^{*2}				
Control box	0.1		0.2						
Connecting pipe diameter	Fuel inlet	40 (15) ^{*2}		50<40> ^{*3} (15) ^{*2}	15	50<40> ^{*3} (15) ^{*2}	50 (15) ^{*2}		
	Feedwater inlet	20							
	Steam outlet	32		40					
	Safety valve discharge outlet	25 (50)							
	Exhaust gas outlet	φmm	200		256				
Product weight	NM/LM	695	920	1,020	—	1,250	1,660		
	KM/AM	675	905	1,020	1,020	1,250	1,580		

Notes: 1. The actual evaporation is the value for the saturated steam at 15°C feedwater temperature and 0.49MPa steam pressure.
 2. The boiler efficiency value is calculated by the heat loss scheme provided in JIS B 8222-1993. However, the calculation is made under the following conditions.
 0.49MPa steam pressure, 15°C feedwater temperature, 35°C charge air temperature
 3. The margins of error are as follows:
 • Boiler efficiency error: ±1% • Combustion capacity error: ±3.5%
 4. The fuel consumptions are calculated based on the following fuel lower calorific values:
 LNG: 40.6MJ/m³ (N) Fuel oil A: 42.7MJ/kg, density 0.86g/cm³
 Propane: 93.7MJ/m³ (N), 46.4MJ/kg Kerosine: 43.5MJ/kg, density 0.80g/cm³
 Butane: 118.9MJ/m³ (N), 45.7MJ/kg
 5. As to fuel oil A specification, JIS Class 1, No. 1 fuel (sulfur content not to exceed 0.5 weight percent, kinetic viscosity 3.75 mm²/s (at 50°C) or less) should be used.
 6. Install the gas piping so as to ensure a sufficient feed gas pressure, even while the boiler is running, or other gas equipment is being operated.
 Supply gas pressure LNG: 2.0kPa Propane/Butane: 2.8kPa
 7. EQRH-series boilers come with an economizer. Be sure to set the feedwater temperature to 50°C or higher.
 8. If the feedwater temperature is high when, for example, collecting the drain water, fuel consumption may be reduced as the standard of actual evaporation.
 9. The diameter of the safety valve discharge outlet shown between parentheses applies piping for blowing outdoors.
 10. In the case of LNG, low NOx burner specification (O₂ = 0% conversion value: 60ppm or less) is applied.
 Low NOx burner specifications (O₂=0% conversion value: 50ppm or less) are applied to the LNG types of 502 types.

*1. The type display is as follows
 E Q R H - 1 0 0 1 □ M
 □ : LNG
 L : Propane/Butane
 K : Kerosine
 A : Fuel oil A
 H : High efficiency (with the economizer)
 None: Standard

*2. Values inside the () are for the oil fired (Kerosine / Fuel oil A) boilers.
 *3. Values inside the () are for the Propane / Butane.
 *4. Values inside the () are for the fuel oil A type boilers.

External dimensional drawing (When three units are connected)



Unit: mm

Type	A Overall width	B Overall length	C Overall height
EQR-502NM/LM	2,660	1,445	2,235
EQR-502KM/AM	2,660	1,290	2,235
EQRH-502KM/AM/NM/LM	2,660	1,975	2,235
EQR-750KM/AM/AM/II/NM/LM	2,410	1,700	1,832
EQRH-750KM/AM/AM/NM	2,410	2,100	1,900
EQRH-750LM	2,410	2,100	1,980
EQRH-1001 KM/AM	2,780	2,223	2,297
EQRH-1001 NM/LM	2,780	2,210	2,297

* The external outline drawing is for reference.

EQOS LTE Series

Gas fired | LTE-2002NM/LM

Oil fired | LTE-2002KM

Eco-friendly and highly efficient

Boiler efficiency **96%** | Gas fired |
95% | Oil fired |

High boiler efficiency during rated operation and high operation efficiency under three-level control have been realized

Adoption of the high performance steam-water separator ensures stable supply of high quality steam

Steam dryness **99% or more**

Adopts high performance steam separator incorporated in the main body

Standard equipment of low NOx burner

NOx value **LNG 60ppm or less is realized!** | Gas fired |
(O₂=0% conversion value)

Adoption of the base capable of sliding connection

The square, small footprint boiler design capable of installation of multiple boilers

LTE-2002 NM/LM/KM is a square type boiler designed for small footprint and installation of multiple boilers, thus realizing the compact package



LTE-2002NM



LTE-2002KM

Specifications

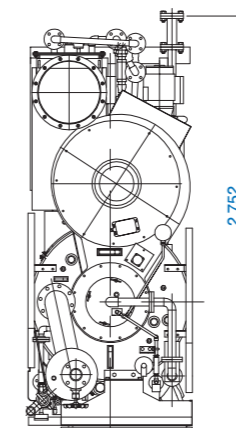
Item	Type ^{*1}	LTE-2002 □ M		
Performance	Conversion evaporation	kg/h	2,000	
	Actual evaporation		1,676	
	Thermal output	kW	1,254	
	Heating surface area	m ²	9.91	
	Maximum working pressure	MPa	0.98	
	Holding water quantity	L	150	
	Boiler efficiency	%	96 (95) ^{*2}	
	Max combustion capacity (input)	kW	1,306 (1,320) ^{*2}	
	Fuel consumption	LNG	m ³ (N)/h	115.8
		Propane	m ³ (N)/h	50.2
			kg/h	101.3
		Butane	m ³ (N)/h	39.5
			kg/h	102.9
		Kerosine	kg/h	109.2
Fuel oil A	L/h	136.5		
	kg/h	111.3		
	L/h	129.5		
Power source		Three phase, AC 200V, 50/60Hz		
Sub - items	Facility electric power		10.3 (10.7) ^{*2}	
	Feedwater pump motor		3.1	
	Blower motor	kW	7.0	
	Fuel oil burning pump motor		(0.4) ^{#2}	
	Control box		0.2	
Connecting pipe diameter	Fuel inlet		40 (20) ^{#2}	
	Feedwater inlet		32	
	Steam outlet	A	65	
	Safety valve discharge outlet		40 (80)	
	Exhaust gas outlet	φmm	380	
Product weight	NM/LM	kg	2,110	
	KM		2,065	

- Notes: 1. The actual evaporation is the value for the saturated steam at 15°C feedwater temperature and 0.49MPa steam pressure.
 2. The boiler efficiency value is calculated by the heat loss scheme provided in JIS B 8222-1993. However, the calculation is made under the following conditions:
 0.49MPa steam pressure, 15°C feedwater temperature, 35°C charge air temperature
 3. The margins of error are as follows:
 • Boiler efficiency error: ±1% • Combustion capacity error: ±3.5%
 4. The fuel consumptions are calculated based on the following fuel lower calorific values:
 LNG: 40.6MJ/m³ (N) Fuel oil A: 42.7MJ/kg, density 0.86g/cm³
 Propane: 93.7MJ/m³ (N), 46.4MJ/kg Kerosine: 43.5MJ/kg, density 0.80g/cm³
 Butane: 118.9MJ/m³ (N), 45.7MJ/kg
 5. As to fuel oil A specification, JIS Class 1, No. 1 fuel (sulfur content not to exceed 0.5 weight percent, kinetic viscosity 3.75 mm²/s (at 50°C) or less) should be used.
 6. Install the gas piping so as to ensure a sufficient feed gas pressure, even while the boiler is running, stopped, or other gas equipment is being operated.
 Supply gas pressure: medium-pressure supply
 7. The main unit of the boiler come with an economizer. Be sure to set the feedwater temperature to 50°C or higher.
 8. If the feedwater temperature is high when, for example, collecting the drain water, fuel consumption may be reduced as the standard of actual evaporation.
 9. The diameter of the safety valve discharge outlet shown between parentheses applies piping for blowing outdoors.
 10. Maximum combustion capacity (input) is computed based on the standard lower calorific value.
 11. In the case of LNG, low NOx burner specification (O₂ = 0% conversion value : 60ppm or less) is applied.
- *1. The type display is as follows
 L T E - 2 0 0 2 □ M
 □ : N: LNG
 L: Propane/Butane
 K: Kerosine/Fuel oil A
- *2. Values inside the () are for the oil fired (Kerosine / Fuel oil A) boilers.

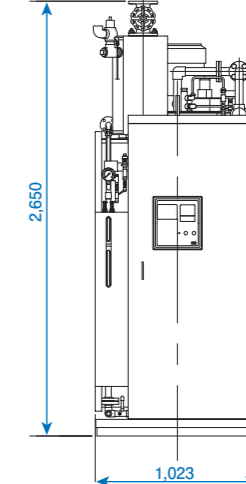
External dimensional drawing

LTE-2002NM/LM

Top view



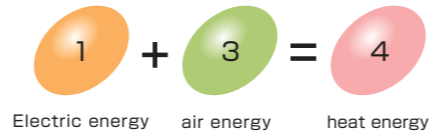
Front view



* The external outline drawing is for reference.

While utilizing existing facility, the steam boiler feedwater preheating system builds a highly efficient system environment.

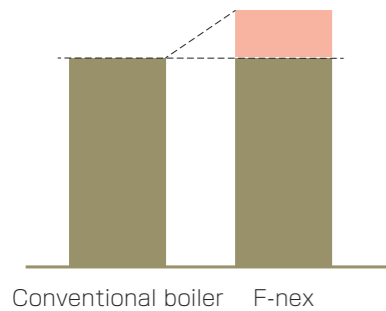
F-nex demonstrates a great performance in systems whose drain recovery rate is relatively low, such as food and confectionery related systems, and builds small- to large-scale highly efficient systems for various industries, business types and scales. This system heats feedwater with the heat pump unit that is able to extract more heat energy with less electric energy. The most appropriate heat source equipment can be selected according to various facility scales, realizing improvement in the system efficiency.



Highly efficient boiler evolves into highly efficient boiler system

The efficiency of the combustion type boiler itself has already been improved to the highest level. F-nex, which utilizes a combination of a highly efficient heat pump and conventional boiler system, evolves into a highly efficient boiler system.

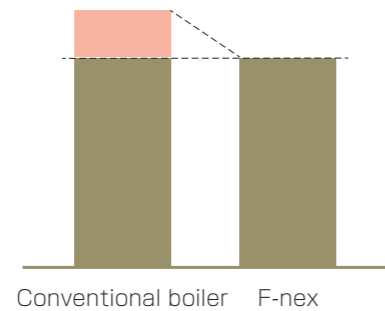
Comparison of highly efficient systems



Improves daily running costs

Heating low-temperature feedwater by its own steam causes a large energy loss. F-nex supports the sensible heating range up to 60°C to enable the facility to improve its efficiency.

Comparison of running costs



Reduces CO₂ emissions, contributing to improvement of the environment

The electric type heat pump technique realizes over three times higher efficiency than that of the combustion type. In addition to this, it reduces CO₂ emissions and provides eco-friendly energy.

Comparison of CO₂ emissions

