⚠Safety Precautions

Before operating the machine

- The machine should be put into operation only after reading the Operation Manual carefully and consulting with our technical staff.

Before installation

- The machine should not be installed where flammable materials such as gas, gasoline, thinners, etc. are or will be present, or where corrosive gas such as ammonia, chlorine,etc. may be generated.
- Carrying-in, installation, foundation construction, electric wiring and hot-cold insulation (custom types only) should be done at the site by qualified subcontractors. Faulty or improper work in any of these areas can adversely affect the operation of the machine, and can cause electric shocks, fires, water leakage, fuel leakage or burns to the skin.
- Construction work of flues, exhaust gas ducts and chimneys should be done by subcontractors where necessary. Faulty construction work can result in fire and oxygen deficiency in the plant room and burns to the skin.
- A waterproof floor or base should be provided for the machine, with a trench in the floor.
  Faulty waterproofing work can cause damage to other equipment and facilities nearby.
- Installation of the machine should be planned with enough maintenance space around the machine. Narrow working areas can result in injury to personnel.
- The high-temperature generator of the steam fired unit conforms to the Pressure Vessel Construction Code of the Japanese Ministry of Health, Labor and Welfare.

Please kindly fill in the following items in case you wish to have a proposal of our products.

1.Cooling Capacity		kW
2.Chilled Water	Inlet Temp.	℃
	Outlet Temp.	℃
	Flow Rate	m^3/h
	Fouling Factor	m^2K/W
3.Cooling Water	Inlet Temp.	℃
	Outlet Temp.	℃
	Flow Rate	m^3/h
	Fouling Factor	m^2K/W
4.Heating Capacity		kW
5.Hot Water	Inlet Temp.	℃
	Outlet Temp.	℃
	Flow Rate	m^3/h
	Fouling Factor	m^2K/W
6.Power Source		V/Hz
7.Type of Fuel		
Gas	HHV	kJ/m^3_N
Diesel	LHV	kJ/kg
Steam (Saturated)	Inlet Press.	MPa
Waste Hot Water	Inlet Temp.	℃
	Outlet Temp.	℃
	Flow Rate	m^3/h
	Fouling Factor	m^2K/W
8.Annual Operating Hours		h/year
9.Usage		

Kawasaki Thermal Engineering Co., Ltd. is approved by ISO for the ISO 9001 as a manufacturer of chillers and boilers.

We provide our customers with reliable, high-quality products in terms of design, development, manufacturing, installation and after-sales service.

The factory of Kawasaki Thermal Engineering Co., Ltd. is approved by ISO as the factory that conforms to ISO 14001, Environmental Managing System Standard.

We develop the products which are energy saving and environmentally clean. We provide our customers with those products.

Kawasaki
Powering your potential

Efficio

Absorption Chiller

Kawasaki Thermal Engineering Co., Ltd.

Efficio Line-Up

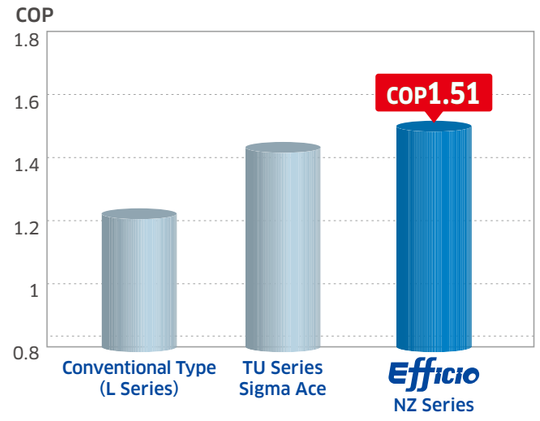
COP	Direct Fired			Gene-Link Gas & Hot Water	Steam
	Gas	Diesel	Dual (Gas & Diesel)		
1.51	NZG	—	—	NZJ	—
1.43	NHG	—	—	NHJ	—
1.39	NUG	NUK	NUC	—	NES 3.8kg/h•RT
1.33	NEG	NEK	NEC	—	—

CONTENTS

Rated Efficiency No.1

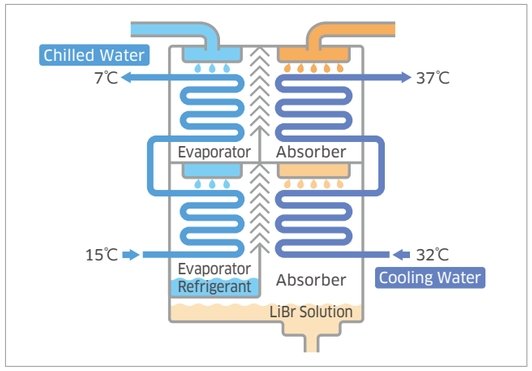
The Efficio "NZ series" has attained a COP of 1.51, making it the highest efficiency double-effect absorption chiller in the world. This outstanding performance was made possible through a combination of enegy-saving technologies, including high-performance plate heat exchanger, 2-stage evaporation/absorption structure, high-efficiency heat exchanger tubes, and exhaust gas heat exchanger.

Comparion with conventional chiller



2-stage Evaporation / Absorption Structure

NZ series employs 2-stage evaporation/absorption structure which has double (higher and lower pressure) evaporator and absorber and optimal tube group arrangement. The structure can make the concentration of solution lower. As a result, the fuel consumption is reduced and the chiller is attaining a more compact design.



High-Performance Plate Heat Exchanger

The efficiency of the heat plate exchanger has been improved by 40% using advanced technology.

High Efficiency Heat Exchanger Tube

High efficiency heat exchanger tubes are used in the evaporator, the absorber and the condenser.

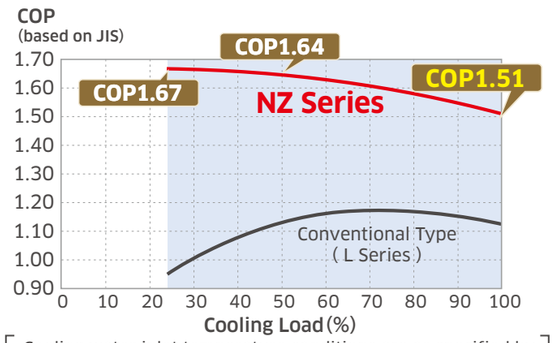
Exhaust Gas Heat Exchanger

The exhaust gas heat exchanger is equipped to recover low-temperature exhaust gas heat (100℃).

Partial Load Efficiency No.1

The Efficio delivers high annual operational efficiency by adopting a parallel-flow, solution inverter control and larger absorbent solution storage tank. These features ensure excellent efficiency across the full range of load conditions, contributing to greater energy savings.

Partial Load Characteristics



Cooling water inlet temperature conditions are as specified by the JIS standards (32℃ at 100% load, 27℃ at 0% load, with the temperature varying proportionally at loads between 0% and 100%).

The Efficio employs below items for highly efficient operation at partial load.

Parallel Flow

The Efficio employs parallel flow which can be operated with high efficiency at partial load.

Solution Pump Inverter Control

The Efficio employs solution pump inverter control so that it can be operated with high efficiency at partial load.

Larger Absorbent Solution Storage Tank

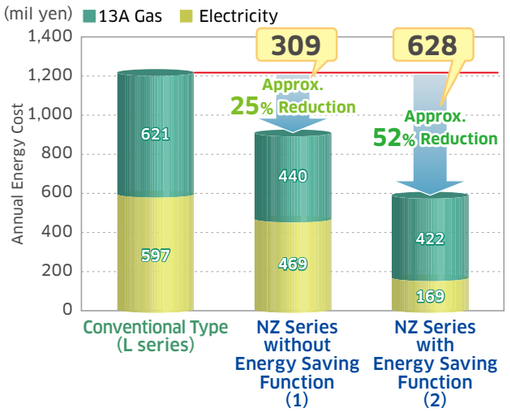
The larger absorbent solution storage tank prevents the heat transfer tubes in the solution at low load. It can keep heat transfer area.

System Efficiency No.1

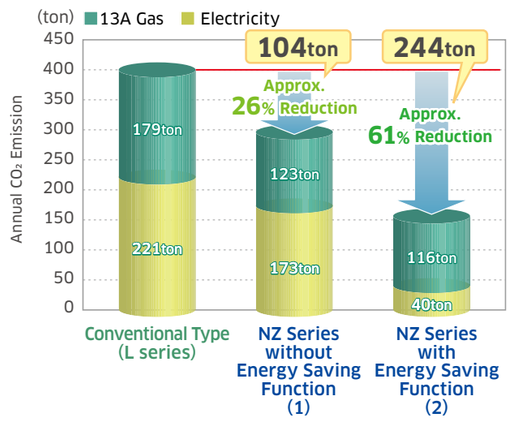
The Efficio's energy-saving features are not limited to the improved efficiency of the absorption chiller itself. The Efficio also comes equipped with enhanced control functionality for boosting the efficiency of the entire system, including auxiliary equipment. Temperature sensors etc. are utilized to optimize the operation of the cooling water pump and other equipment according to load conditions, slashing annual energy consumption by approximately 50% and CO_2 emissions by approximately 60% compared to existing systems.

Annual Cost and CO_2 Emission

Comparison of Annual Energy Cost

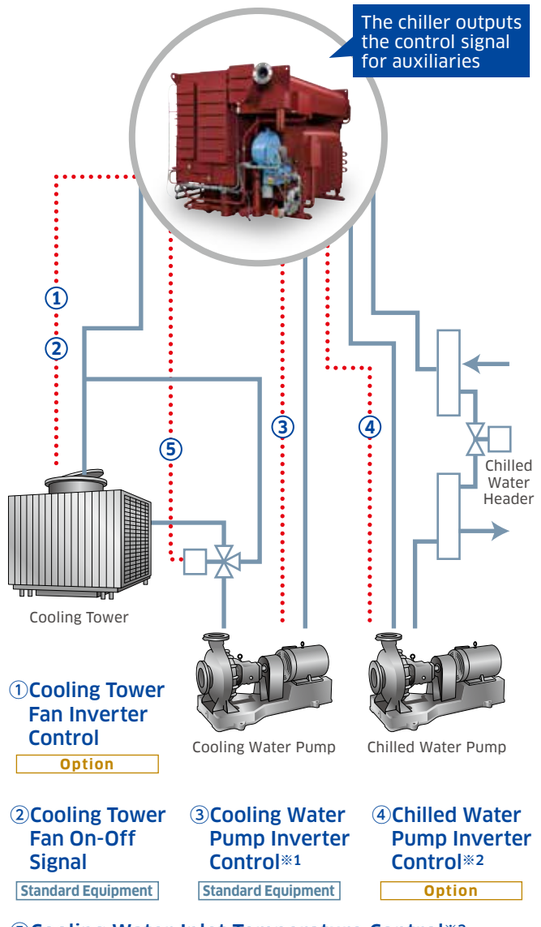


Comparison of CO_2 Emission



Absorption chiller capacity: 739 kW (210RT)
Application:
Hotel air conditioning (7,428 hours of cooling per year; load pattern data obtained from The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan)
Cooling water conditions:
Specified by JIS (Conventional Type and NZ Series(1))
Varies in accordance with the air conditions (NZ series (2))
Electricity rates:
Tokyo Electric Power Company's electricity supply for commercial use (January 2013)
Gas rates:
Tokyo Gas's contract A for air conditioning (January 2013)
CO_2 emission coefficient:
13A Gas···2.29 kg-CO_2kg/m^3_N (Tokyo Gas data)
Electricity···0.69 kg-CO_2kg/kWh (marginal coefficient: thermal power supply coefficient)

Energy Saving Function



①Cooling Tower Fan Inverter Control
Option

②Cooling Tower Fan On-Off Signal
Standard Equipment

③Cooling Water Pump Inverter Control※1
Standard Equipment

④Chilled Water Pump Inverter Control※2
Option

⑤Cooling Water Inlet Temperature Control※3

"••••"is an image of output signal. The wiring is connected between operation board of the chiller and inverter control board in actuality.

※1 Inverter control for Cooling Water : Expand the minimum allowable flow rate 50% ⇒ 30%
※2 Inverter control for Chilled Water : 50%
※3 Cooling water inlet temperature control in accordance with the air conditions

Touch Panel Operation Board

A color 5.7 inch touch panel is equipped on the operation board as a standard.
Operation can be made just following the sequential program control shown on the touch panel, confirming the operation condition, trend graph, pre-alarm and abnormal occurrence according to the displays on the touch panel.

Screen Sample

Temperature indication

Trend graph

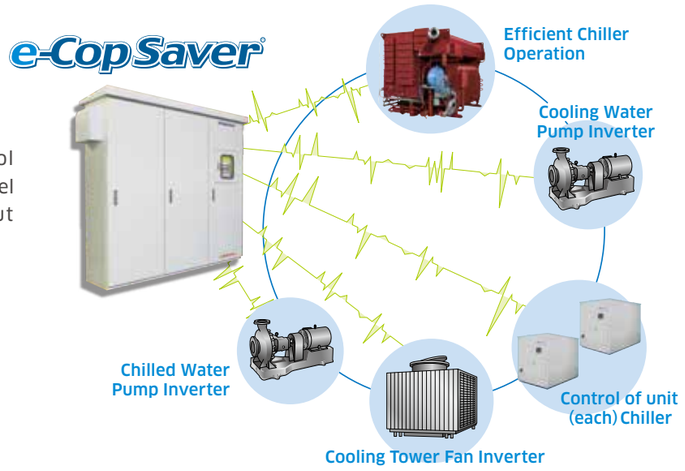
Pre-alarm occurrence

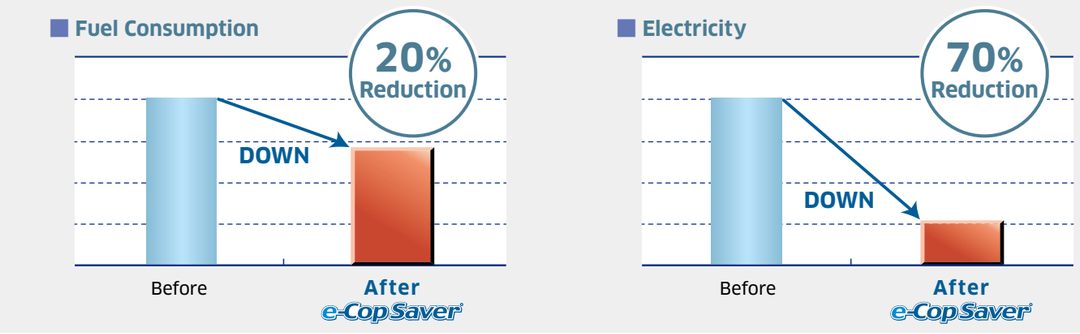
Abnormal occurrence

Energy & CO_2 Saving System

Fearture of "e-CopSaver®"

This is our original inverter control system which contributes to energy & CO_2 saving.
"e-CopSaver®", as a cooperative control system to each auxiliary, can reduce the fuel and the electricity consumptions without additional instruments.

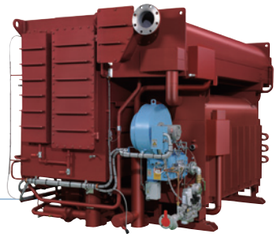




Direct Fired

Supply of Chilled or Hot Water by means of highly efficient fuel combustion energy

NZ



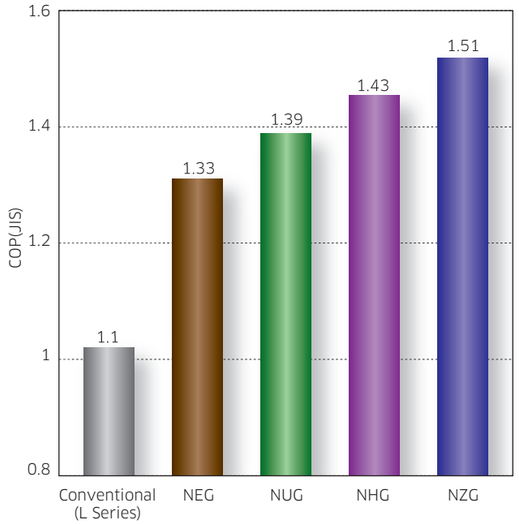
NH/NU/NE

Package Type

With the ideal heat exchanging method of the parallel cycle a higher energy saving rate is achieved.

High COP model

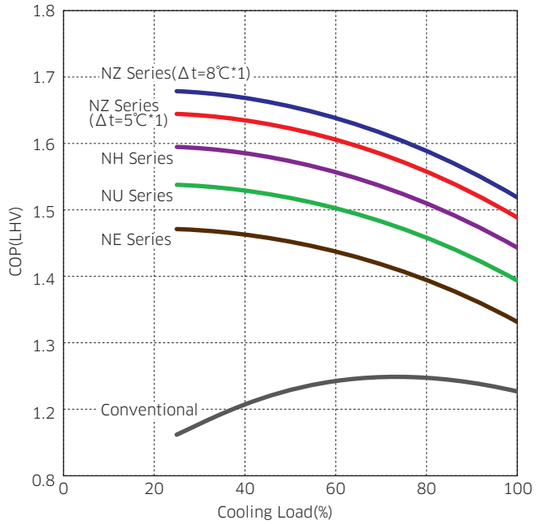
Efficio has various type of COP model. The gas consumption rate can be reduced as follows compared with the conventional model.



Note
COP is calculated in accordance with JIS standard.

Fuel Consumption Rate at Partial Load

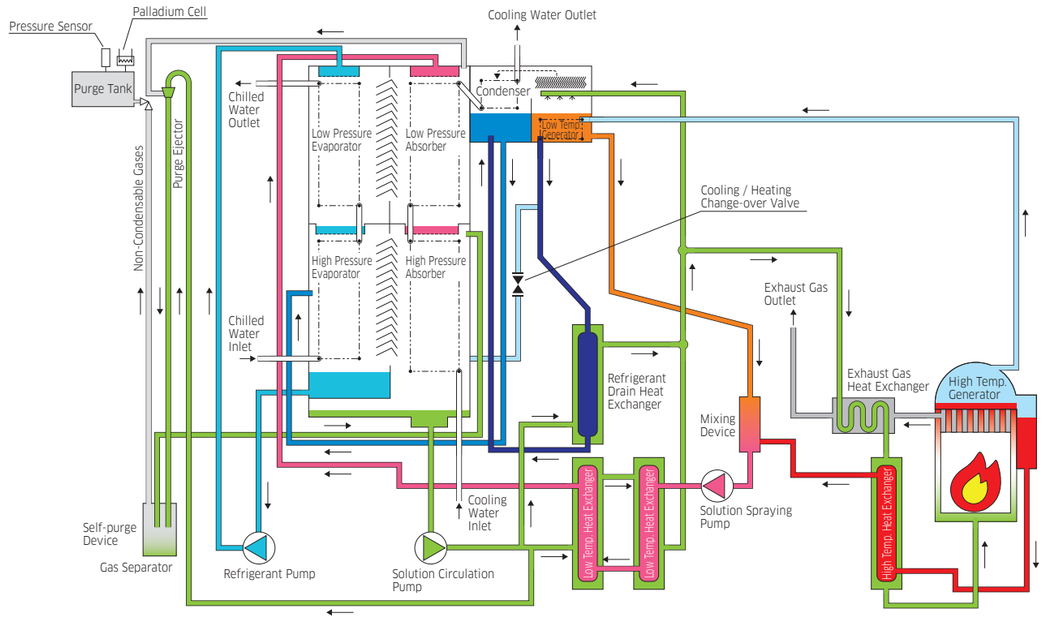
You can save more fuel gas consumption with the inverter control for the solution pump.



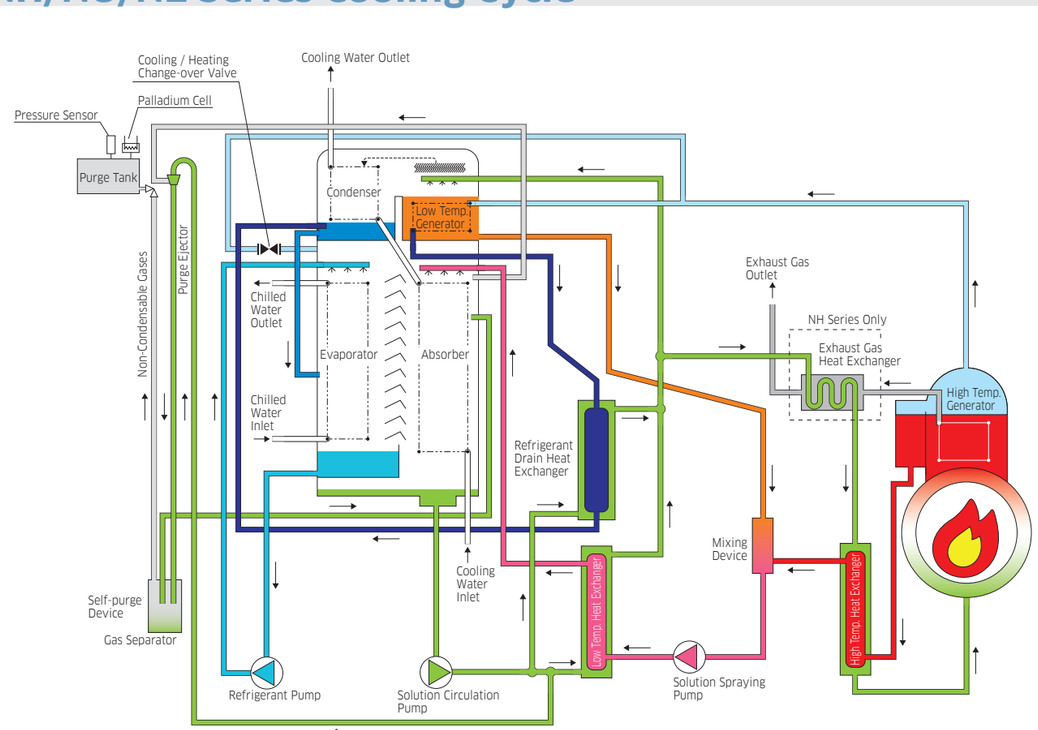
*1 Chilled Water differential temperature between inlet and outlet

Note
1. Efficio series are equipped with the inverter control for the solution pump as standard.
2. Cooling water inlet temperature conditions are as specified by the JIS standards (32℃ at 100% load, 27℃ at 0% load, with the temperature varying proportionally at loads between 0% and 100%).
3. The above graph shows plotted points of maximum COP and the actually measured value might be changed due to machinery and/or site condition.
4. The tolerance of performance is in compliance with JIS B8622-2009.

NZ Series Cooling Cycle



NH/NU/NE Series Cooling Cycle



COP=1.51 (Chilled Water Inlet/Outlet Δ t=8℃)

			NZG-80A	NZG-100A	NZG-120A	NZG-150A	NZG-180A	NZG-210A
Capacity	Cooling	kW	281	352	422	528	633	739
		(USRT)	(80)	(100)	(120)	(150)	(180)	(210)
	Heating	kW	186	232	278	348	417	487
		(Mcal/h)	(160)	(199)	(239)	(299)	(359)	(419)
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	54.7 → 60.0					
	Flow Rate	m^3/h	30.2	37.8	45.4	56.7	68.0	79.4
	Pressure Loss	kPa	70.9	72.5	94.7	90.1	97.0	98.5
	Retained Water Volume	m^3	0.14	0.16	0.19	0.22	0.27	0.30
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.0					
	Flow Rate	m^3/h	80	100	120	150	180	210
	Pressure Loss	kPa	38.1	41.1	71.2	73.8	59.3	64.2
	Retained Water Volume	m^3	0.30	0.34	0.41	0.47	0.66	0.72
Heat Input (Gas Firing)	Cooling	MJ/h	743	927	1,112	1,391	1,670	1,949
		kW	206	258	309	386	464	541
	Heating	MJ/h	743	927	1,112	1,391	1,670	1,949
		kW	206	258	309	386	464	541
	Gas Inlet Pressure	kPa	7.85	7.85	7.85	7.85	7.85	7.85
Electricity	Power Source		50Hz 400V 3 ϕ					
	Capacity	KVA	5.2	5.2	5.7	5.7	7.8	7.8
	Current	A	6.85	6.85	7.5	7.5	10.6	10.6
	Total Motor Power	kW	2.10	2.10	2.45	2.45	3.55	3.55
Connection	Chilled (Hot) Water Inlet/Outlet	A	80	80	100	100	100	100
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150
	Fuel Gas Inlet	A	40	40	40	40	40	40
	Exhaust Gas Outlet	mm	185 × 185	185 × 185	227 × 227	227 × 227	269 × 269	269 × 269
External Dimensions	Length	mm	2,759	2,759	3,662	3,662	3,862	3,862
	Width	mm	2,065	2,065	2,065	2,061	2,340	2,340
	Height	mm	2,154	2,154	2,154	2,154	2,266	2,266
Weight	Operating Weight	ton	5.0	5.3	6.5	7.0	8.9	9.3
	Total Shipping Weight	ton	4.5	4.8	5.9	6.3	7.9	8.2
Delivery Form			One Piece / Solution Charge					

NZG-250A	NZG-300A	NZG-360A	NZG-400A	NZG-450A	NZG-500A	NZG-560A	NZG-630A	NZG-700A	NZG-800A	NZG-900A	NZG-1000A
879	1,055	1,266	1,407	1,583	1,759	1,970	2,216	2,462	2,813	3,165	3,517
(250)	(300)	(360)	(400)	(450)	(500)	(560)	(630)	(700)	(800)	(900)	(1,000)
580	696	835	928	1,044	1,160	1,299	1,461	1,623	1,855	2,087	2,319
(499)	(598)	(718)	(798)	(898)	(997)	(1,117)	(1,257)	(1,396)	(1,596)	(1,795)	(1,995)
15.0 → 7.0											
54.7 → 60.0											
94.5	113.4	136.1	151.2	170.1	189.0	211.7	238.1	264.6	302.4	340.2	378.0
79.3	84.6	84.3	85.6	116.5	68.8	69.6	59.8	60.0	57.0	56.6	75.5
0.36	0.40	0.49	0.54	0.59	0.81	0.89	0.98	1.08	1.31	1.45	1.59
32.0 → 37.0											
250	300	360	400	450	500	560	630	700	800	900	1000
66.6	73.3	57.2	58.7	78.7	55.4	58.7	92.9	95.3	89.5	92.9	121.7
0.82	0.91	1.21	1.30	1.40	1.90	2.05	2.27	2.47	3.02	3.28	3.54
2,318	2,782	3,340	3,713	4,177	4,641	5,194	5,847	6,495	7,422	8,349	9,281
644	773	928	1,031	1,160	1,289	1,443	1,624	1,804	2,062	2,319	2,578
2,318	2,782	3,340	3,713	4,177	4,641	5,194	5,847	6,495	7,422	8,349	9,281
644	773	928	1,031	1,160	1,289	1,443	1,624	1,804	2,062	2,319	2,578
7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	98	98	98
50Hz 400V 3 ϕ											
8.0	8.9	10.4	11.3	11.3	12.6	15.8	15.8	15.8	22.0	22.0	26.4
10.8	12.2	14.3	15.6	15.6	17.5	22.1	22.1	22.1	31.0	31.0	37.4
3.65	4.40	5.40	6.10	6.10	7.50	9.50	9.50	9.50	13.20	13.20	17.00
125	125	150	150	150	200	200	200	200	200	200	250
200	200	250	250	250	250	250	300	300	350	350	350
40	40	40	40	40	40	40	40	40	40	40	40
320 × 320	320 × 320	370 × 370	370 × 370	392 × 392	438 × 438	438 × 438	490 × 490	490 × 490	585 × 585	585 × 585	585 × 585
5,314	5,314	5,516	5,516	6,016	6,166	6,166	7,438	7,438	7,793	7,793	8,505
2,424	2,424	2,743	2,743	2,743	3,129	3,129	3,163	3,163	3,319	3,319	3,319
2,272	2,272	2,643	2,643	2,643	2,795	2,795	2,984	2,984	3,368	3,368	3,368
11.5	12.2	16.1	16.7	18.2	21.9	22.9	27.2	28.4	31.6	36.3	40.1
10.3	10.9	14.3	14.8	16.2	19.2	19.9	24.0	24.8	27.3	31.6	35.0
One Piece / Solution Charge									Two Pieces / Solution Discharge		

COP=1.49 (Chilled Water Inlet/Outlet Δ t=5℃)

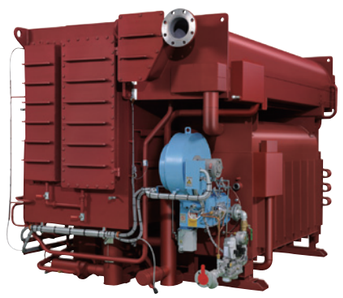
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	12.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	56.7 → 60.0					
	Flow Rate	m^3/h	48.4	60.5	72.6	90.7	108.9	127.0
	Pressure Loss	kPa	78.5	81.9	72.5	75.1	78.2	81.3
	Retained Water Volume	m^3	0.14	0.16	0.19	0.22	0.27	0.30
Heat Input (Gas Firing)	Cooling	MJ/h	756	945	1,134	1,418	1,701	1,985
		kW	210	263	315	394	473	551
	Heating	MJ/h	743	927	1,112	1,391	1,670	1,949
		kW	206	258	309	386	464	541
Connection	Chilled (Hot) Water Inlet/Outlet	A	80	80	100	100	100	100
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150

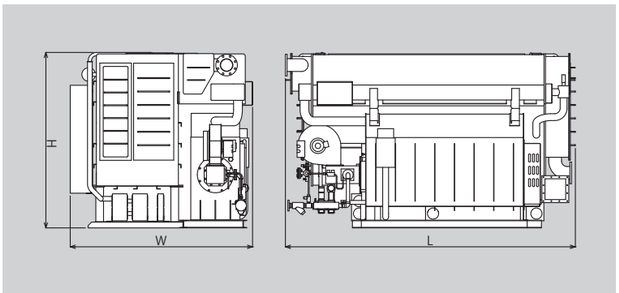
NZG-250A	NZG-300A	NZG-360A	NZG-400A	NZG-450A	NZG-500A	NZG-560A	NZG-630A	NZG-700A	NZG-800A	NZG-900A	NZG-1000A
12.0 → 7.0											
56.7 → 60.0											
151.2	181.4	217.7	241.9	272.2	302.4	338.7	381.0	423.4	483.8	544.3	604.8
85.4	92.4	90.7	92.9	126.0	75.9	77.7	51.5	52.8	46.7	46.2	60.6
0.36	0.40	0.49	0.54	0.59	0.81	0.89	0.98	1.08	1.31	1.45	1.59
2,363	2,836	3,403	3,781	4,253	4,726	5,293	5,955	6,612	7,557	8,502	9,448
656	788	945	1,050	1,182	1,313	1,470	1,654	1,837	2,099	2,362	2,624
2,318	2,782	3,340	3,713	4,177	4,641	5,194	5,847	6,495	7,422	8,349	9,281
644	773	928	1,031	1,160	1,289	1,443	1,624	1,804	2,062	2,319	2,578
125	125	150	150	150	200	200	200	200	200	200	250
200	200	250	250	250	250	250	300	300	350	350	350

NOTE

1. The tolerance of the performance is in compliance with JIS B8622-2009.
2. Operation load range is from 10% to 100%.
3. The maximum operating pressure is 784kPa (gauge) for both Chilled/Hot Water and Cooling Water.
4. The fouling factor of both Chilled/Hot Water and Cooling Water is 8.6×10^{-5} $m^2 \cdot K/W$.
5. The Cooling Water Inlet temperature shall not be lower than 18℃.
6. The total motor power is the total value of the constant operation all the motors, excluding the purging pump motor which operates intermittently.
7. The parameters described in this table list of specification can be changed by the manufacturer for the purpose of technical improvement without notice.
8. The exhaust gas temperature is 100℃.

Item	Unit	NG	Remarks
Heating Value		45.0MJ/m^3_N	Gas : based on Higher Heating Value
Exhaust Gas Volume	m^3/h	19.03	Exhaust gas volume per m^3_N/h of fuel gas at 100℃ of exhaust gas
Required Air Volume for Combustion	m^3/h	14.03	Minimum required air volume per m^3_N/h of fuel as at 25℃ of air temperature





COP=1.43 (Chilled Water Inlet/Outlet Δ t=8℃)

			NHG-80A	NHG-100A	NHG-120A	NHG-150A	NHG-180A	NHG-210A
Capacity	Cooling	kW	281	352	422	528	633	739
		(USRT)	(80)	(100)	(120)	(150)	(180)	(210)
	Heating	kW	195	243	292	365	438	511
		(Mcal/h)	(168)	(210)	(252)	(314)	(377)	(440)
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	54.7 → 60.0					
	Flow Rate	m^3/h	30.2	37.8	45.4	56.7	68.0	79.4
	Pressure Loss	kPa	55.1	55.5	49.4	49.9	49.5	49.7
	Retained Water Volume	m^3	0.12	0.14	0.16	0.19	0.23	0.26
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.1					
	Flow Rate	m^3/h	80	100	120	150	180	210
	Pressure Loss	kPa	43.9	45.5	48.2	54.7	45.2	49.8
	Retained Water Volume	m^3	0.31	0.35	0.39	0.45	0.62	0.68
Heat Input (Gas Firing)	Cooling	MJ/h	779	974	1,169	1,461	1,753	2,045
		kW	216	271	325	406	487	568
	Heating	MJ/h	779	974	1,169	1,461	1,753	2,045
		kW	216	271	325	406	487	568
	Gas Inlet Pressure	kPa	7.85	7.85	7.85	7.85	7.85	7.85
Electricity	Power Source		50Hz 400V 3 ϕ					
	Capacity	KVA	5.1	5.5	5.5	7.7	7.8	7.8
	Current	A	6.65	7.3	7.3	10.4	10.6	10.6
	Total Motor Power	kW	2.00	2.35	2.35	3.45	3.55	3.55
Connection	Chilled (Hot) Water Inlet/Outlet	A	80	80	100	100	100	100
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150
	Fuel Gas Inlet	A	40	40	40	40	40	40
	Exhaust Gas Outlet	mm	100 × 350	100 × 350	135 × 350	135 × 350	150 × 390	150 × 430
External Dimensions	Length	mm	3,027	3,067	3,754	3,754	3,927	4,024
	Width	mm	1,771	1,771	1,771	1,771	2,036	2,036
	Height	mm	1,976	1,976	2,005	1,976	2,188	2,188
Weight	Operating Weight	ton	4.3	4.5	5.5	5.9	7.3	7.7
	Total Shipping Weight	ton	3.9	4.1	4.9	5.2	6.4	6.8
Delivery Form			One Piece / Solution Charge					

NHG-250A	NHG-300A	NHG-360A	NHG-400A	NHG-450A	NHG-500A	NHG-560A	NHG-630A	NHG-700A	NHG-800A	NHG-900A	NHG-1000A
879	1,055	1,266	1,407	1,583	1,759	1,970	2,216	2,462	2,813	3,165	3,517
(250)	(300)	(360)	(400)	(450)	(500)	(560)	(630)	(700)	(800)	(900)	(1,000)
609	730	876	974	1,095	1,217	1,363	1,534	1,704	1,947	2,191	2,434
(524)	(629)	(755)	(839)	(943)	(1,048)	(1,174)	(1,321)	(1,468)	(1,677)	(1,887)	(2,096)
15.0 → 7.0											
54.7 → 60.0											
94.5	113.4	136.1	151.2	170.1	189.0	211.7	238.1	264.6	302.4	340.2	378.0
56.1	59.3	60.2	61.6	83.9	48.2	48.9	88.9	88.9	88.2	89.1	118.9
0.31	0.35	0.43	0.47	0.51	0.71	0.78	0.86	0.95	1.11	1.23	1.36
32.0 → 37.1											
250	300	360	400	450	500	560	630	700	800	900	1000
43.9	49.1	38.8	41.0	55.0	48.1	51.3	75.4	76.8	61.5	65.4	85.3
0.80	0.88	1.18	1.26	1.35	1.84	1.98	2.23	2.41	2.88	3.12	3.38
2,435	2,922	3,506	3,896	4,383	4,870	5,454	6,136	6,818	7,792	8,766	9,740
676	812	974	1,082	1,217	1,353	1,515	1,704	1,894	2,164	2,435	2,705
2,435	2,922	3,506	3,896	4,383	4,870	5,454	6,136	6,818	7,792	8,766	9,740
676	812	974	1,082	1,217	1,353	1,515	1,704	1,894	2,164	2,435	2,705
7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	98	98	98
50Hz 400V 3 ϕ											
10.2	10.2	11.5	12.4	12.4	18.2	19.9	20.0	20.0	23.9	26.3	29.0
14.0	14.0	15.9	17.2	17.2	25.6	28.1	28.2	28.2	33.8	37.2	41.1
5.20	5.20	6.60	7.30	7.30	9.70	11.20	11.30	11.30	15.10	16.90	18.90
125	125	150	150	150	200	200	200	200	200	200	250
200	200	250	250	250	250	250	300	300	350	350	350
40	40	40	40	40	40	40	40	40	40	40	40
180 × 430	200 × 500	220 × 500	250 × 500	280 × 500	310 × 500	310 × 550	350 × 550	360 × 600	410 × 600	460 × 600	510 × 600
5,339	5,339	5,479	5,479	5,979	6,129	6,129	7,409	7,409	7,665	7,665	8,377
2,047	2,214	2,547	2,547	2,547	2,922	2,922	2,929	3,026	3,177	3,216	3,216
2,188	2,188	2,402	2,402	2,402	2,786	2,775	2,745	2,745	3,407	3,407	3,407
9.4	10.2	12.8	13.6	14.9	18.4	19.2	22.1	23.1	27.7	31.3	34.0
8.3	8.9	11.2	11.9	13.0	15.9	16.5	19.0	19.7	23.7	26.9	29.2
One Piece / Solution Charge										One Piece / Solution Discharge	

COP=1.43 (Chilled Water Inlet/Outlet Δ t=5℃)

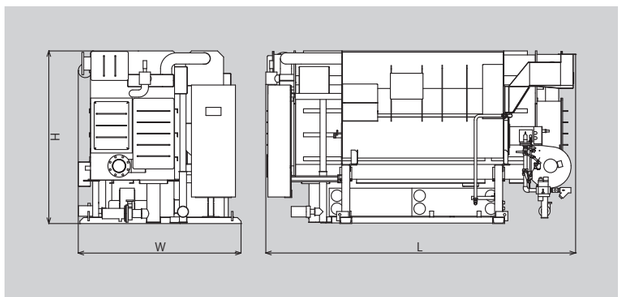
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	12.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	56.7 → 60.0					
	Flow Rate	m^3/h	48.4	60.5	72.6	90.7	108.9	127.0
	Pressure Loss	kPa	78.5	81.9	72.5	75.1	78.2	81.3
	Retained Water Volume	m^3	0.14	0.16	0.19	0.22	0.27	0.30
Connection	Chilled (Hot) Water Inlet/Outlet	A	100	100	100	100	125	125
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150

NHG-250A	NHG-300A	NHG-360A	NHG-400A	NHG-450A	NHG-500A	NHG-560A	NHG-630A	NHG-700A	NHG-800A	NHG-900A	NHG-1000A
12.0 → 7.0											
56.7 → 60.0											
151.2	181.4	217.7	241.9	272.2	302.4	338.7	381.0	423.4	483.8	544.3	604.8
85.4	92.4	90.7	92.9	126.0	75.9	77.7	51.5	52.8	46.7	46.2	60.6
0.36	0.40	0.49	0.54	0.59	0.81	0.89	0.98	1.08	1.31	1.45	1.59
150	150	200	200	200	200	200	250	250	250	250	300
200	200	250	250	250	250	250	300	300	350	350	350

NOTE

1. The tolerance of the performance is in compliance with JIS B8622-2009.
2. Operation load range is from 10% to 100%.
3. The maximum operating pressure is 784kPa (gauge) for both Chilled/Hot Water and Cooling Water.
4. The fouling factor of both Chilled/Hot Water and Cooling Water is 8.6×10^{-5} $m^2 \cdot K/W$.
5. The Cooling Water Inlet temperature shall not be lower than 18℃.
6. The total motor power is the total value of the constant operation all the motors, excluding the purging pump motor which operates intermittently.
7. The parameters described in this table list of specification can be changed by the manufacturer for the purpose of technical improvement without notice.
8. The exhaust gas temperature is 110℃.

Item	Unit	NG	Remarks
Heating Value		45.0MJ/m^3_N	Gas : based on Higher Heating Value
Exhaust Gas Volume	m^3/h	19.03	Exhaust gas volume per m^3_N/h of fuel gas at 110℃ of exhaust gas
Required Air Volume for Combustion	m^3/h	14.03	Minimum required air volume per m^3_N/h of fuel as at 25℃ of air temperature



COP=1.39 (Chilled Water Inlet/Outlet Δ t=8℃)

			NUG-80A	NUG-100A	NUG-120A	NUG-150A	NUG-180A	NUG-210A
Capacity	Cooling	kW	281	352	422	528	633	739
		(USRT)	(80)	(100)	(120)	(150)	(180)	(210)
	Heating	kW	195	244	293	366	439	512
		(Mcal/h)	(168)	(210)	(252)	(314)	(377)	(440)
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	53.3 → 60.0					
	Flow Rate	m^3/h	30.2	37.8	37.8	37.8	37.8	37.8
	Pressure Loss	kPa	55.1	55.5	49.4	49.9	49.5	49.7
	Retained Water Volume	m^3	0.14	0.16	0.19	0.22	0.27	0.30
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.1					
	Flow Rate	m^3/h	80	100	120	150	180	210
	Pressure Loss	kPa	42.3	44.3	47.1	53.6	44.1	48.7
	Retained Water Volume	m^3	0.31	0.35	0.39	0.45	0.62	0.68
Heat Input (Gas Firing)	Cooling	MJ/h	806	1,008	1,211	1,512	1,814	2,120
		kW	224	280	336	420	504	589
	Heating	MJ/h	806	1,008	1,211	1,512	1,814	2,120
		kW	224	280	336	420	504	589
	Gas Inlet Pressure	kPa	7.85	7.85	7.85	7.85	7.85	7.85
Electricity	Power Source		50Hz 400V 3 ϕ					
	Capacity	KVA	5.1	5.5	5.5	7.7	7.8	7.8
	Current	A	6.65	7.3	7.3	10.4	10.6	10.6
	Total Motor Power	kW	2.00	2.35	2.35	3.45	3.55	3.55
Connection	Chilled (Hot) Water Inlet/Outlet	A	80	100	100	100	100	125
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150
	Fuel Gas Inlet	A	40	40	40	40	40	40
	Exhaust Gas Outlet	mm	140 × 324	140 × 324	140 × 324	140 × 324	140 × 324	160 × 383
External Dimensions	Length	mm	2,956	3,067	3,754	3,754	3,927	3,967
	Width	mm	1,771	1,771	1,771	1,771	2,036	2,036
	Height	mm	1,976	1,976	1,976	1,976	2,188	2,188
Weight	Operating Weight	ton	4.2	4.4	5.3	5.7	7.1	7.6
	Total Shipping Weight	ton	3.8	3.9	4.8	5.1	6.2	6.6
Delivery Form			One Piece / Solution Charge					

NUG-250A	NUG-300A	NUG-360A	NUG-400A	NUG-450A	NUG-500A	NUG-560A	NUG-630A	NUG-700A	NUG-800A	NUG-900A	NUG-1000A
879	1,055	1,266	1,407	1,583	1,759	1,970	2,216	2,462	2,813	3,165	3,517
(250)	(300)	(360)	(400)	(450)	(500)	(560)	(630)	(700)	(800)	(900)	(1,000)
609	731	878	975	1,097	1,219	1,365	1,536	1,706	1,950	2,194	2,438
(524)	(629)	(755)	(839)	(943)	(1,048)	(1,174)	(1,321)	(1,468)	(1,677)	(1,887)	(2,096)
15.0 → 7.0											
53.3 → 60.0											
37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8
56.1	59.3	60.2	61.6	83.9	48.2	48.9	88.9	88.9	88.2	89.1	118.9
0.36	0.40	0.49	0.54	0.59	0.81	0.89	0.98	1.08	1.31	1.45	1.59
32.0 → 37.1											
250	300	360	400	450	500	560	630	700	800	900	1000
43.0	48.2	37.8	40.0	53.6	46.5	49.8	72.4	73.8	59.5	63.4	82.7
0.80	0.88	1.18	1.26	1.35	1.84	1.98	2.23	2.41	2.88	3.12	3.38
2,521	3,025	3,632	4,037	4,542	5,046	5,649	6,355	7,062	8,070	9,079	10,091
700	840	1,009	1,121	1,262	1,402	1,569	1,765	1,962	2,242	2,522	2,803
2,521	3,025	3,632	4,037	4,542	5,046	5,649	6,355	7,062	8,070	9,079	10,091
700	840	1,009	1,121	1,262	1,402	1,569	1,765	1,962	2,242	2,522	2,803
7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	98	98	98
50Hz 400V 3 ϕ											
10.2	10.2	11.5	12.4	12.4	18.2	19.9	20.0	20.0	23.9	26.3	29.0
14.0	14.0	15.9	17.2	17.2	25.6	28.1	28.2	28.2	33.8	37.2	41.1
5.20	5.20	6.60	7.30	7.30	9.70	11.20	11.30	11.30	15.10	16.90	18.90
125	150	150	150	200	200	200	200	200	200	250	250
200	200	250	250	250	250	250	300	300	350	350	350
40	40	40	40	40	40	40	40	40	40	40	40
160 × 383	210 × 441	210 × 441	250 × 536	250 × 536	270 × 647	270 × 647	290 × 691	290 × 691	290 × 782	290 × 872	290 × 872
5,339	5,339	5,479	5,479	5,979	6,129	6,129	7,409	7,409	7,665	7,665	8,377
2,047	2,214	2,547	2,547	2,547	2,922	2,922	2,929	3,026	3,177	3,216	3,216
2,188	2,188	2,402	2,402	2,402	2,745	2,745	2,745	2,745	3,407	3,407	3,407
9.2	10.0	12.7	13.5	14.7	18.2	19.0	21.8	22.8	27.1	30.5	33.2
8.1	8.7	11.1	11.7	12.8	15.6	16.2	18.7	19.4	23.1	26.1	28.5
One Piece / Solution Charge										One Piece / Solution Discharge	

COP=1.39 (Chilled Water Inlet/Outlet Δ t=5℃)

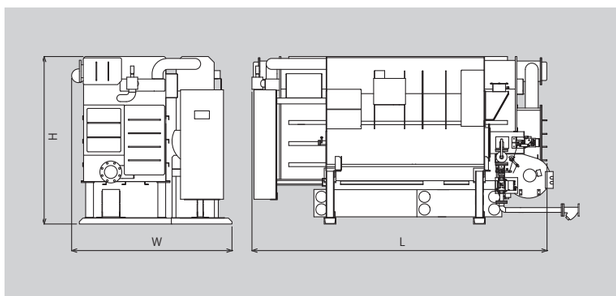
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	12.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	56.5 → 60.0					
	Flow Rate	m^3/h	48.4	60.5	60.5	60.5	60.5	60.5
	Pressure Loss	kPa	120.0	120.8	112.5	113.8	51.7	52.2
	Retained Water Volume	m^3	0.12	0.14	0.16	0.19	0.23	0.26
Connection	Chilled (Hot) Water Inlet/Outlet	A	100	100	100	100	125	125
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150

NUG-250A	NUG-300A	NUG-360A	NUG-400A	NUG-450A	NUG-500A	NUG-560A	NUG-630A	NUG-700A	NUG-800A	NUG-900A	NUG-1000A
12.0 → 7.0											
56.5 → 60.0											
60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5
42.8	45.6	138.1	141.3	65.6	110.7	112.6	70.1	71.1	69.3	71.0	94.2
0.31	0.35	0.43	0.47	0.51	0.71	0.78	0.86	0.95	1.11	1.23	1.36
150	150	200	200	200	200	200	250	250	250	250	300
200	200	250	250	250	250	250	300	300	350	350	350

NOTE

1. The tolerance of the performance is in compliance with JIS B8622-2009.
2. Operation load range is from 10% to 100%.
3. The maximum operating pressure is 784kPa (gauge) for both Chilled/Hot Water and Cooling Water.
4. The fouling factor of both Chilled/Hot Water and Cooling Water is 8.6×10^{-5} $m^2 \cdot K/W$.
5. The Cooling Water Inlet temperature shall not be lower than 18℃.
6. The total motor power is the total value of the constant operation all the motors, excluding the purging pump motor which operates intermittently.
7. The parameters described in this table list of specification can be changed by the manufacturer for the purpose of technical improvement without notice.
8. The exhaust gas temperature is 200℃.

Item	Unit	NG	Diesel	Remarks
Heating Value		45.0MJ/m^3_N	43.5MJ/kg	Gas : based on Higher Heating Value Diesel : based on Lower Heating Value
Exhaust Gas Volume	m^3/h	19.03	16.14	Exhaust gas volume per m^3_N/h of fuel gas at 200℃ of exhaust gas
Required Air Volume for Combustion	m^3/h	14.03	12.07	Minimum required air volume per m^3_N/h of fuel as at 25℃ of air temperature



COP=1.33 (Chilled Water Inlet/Outlet Δ t=8℃)

			NEG-80A	NEG-100A	NEG-120A	NEG-150A	NEG-180A	NEG-210A
Capacity	Cooling	kW (USRT)	281 (80)	352 (100)	422 (120)	528 (150)	633 (180)	739 (210)
	Heating	kW (Mcal/h)	236 (203)	294 (253)	353 (304)	442 (380)	530 (456)	618 (531)
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	53.3 → 60.0					
	Flow Rate	m^3/h	30.2	37.8	37.8	37.8	37.8	37.8
	Pressure Loss	kPa	26.9	27.2	24.2	24.5	24.2	24.5
	Retained Water Volume	m^3	0.14	0.16	0.19	0.22	0.27	0.30
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.2					
	Flow Rate	m^3/h	80	100	120	150	180	210
	Pressure Loss	kPa	42.3	44.3	47.1	53.6	44.1	48.7
	Retained Water Volume	m^3	0.31	0.35	0.39	0.45	0.62	0.68
Heat Input (Gas Firing)	Cooling	MJ/h	842	1,049	1,260	1,575	1,890	2,205
		kW	234	291	350	438	525	613
	Heating	MJ/h	977	1,215	1,463	1,827	2,192	2,557
		kW	271	338	406	508	609	710
	Gas Inlet Pressure	kPa	7.85	7.85	7.85	7.85	7.85	7.85
Electricity	Power Source		50Hz 400V 3 ϕ					
	Capacity	KVA	5.5	5.5	5.5	7.7	7.8	7.8
	Current	A	7.30	7.3	7.3	10.4	10.6	10.6
	Total Motor Power	kW	2.35	2.35	2.35	3.45	3.55	3.55
Connection	Chilled (Hot) Water Inlet/Outlet	A	80	80	100	100	100	100
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150
	Fuel Gas Inlet	A	40	40	40	40	40	40
	Exhaust Gas Outlet	mm	140 × 324	140 × 324	140 × 324	140 × 324	160 × 383	160 × 383
External Dimensions	Length	mm	3,067	3,067	3,754	3,754	3,967	4,044
	Width	mm	1,771	1,771	1,771	1,771	2,036	2,036
	Height	mm	1,976	1,976	1,976	1,976	2,188	2,188
Weight	Operating Weight	ton	4.2	4.4	5.3	5.7	7.1	7.5
	Total Shipping Weight	ton	3.7	3.9	4.8	5.0	6.3	6.5
Delivery Form			One Piece / Solution Charge					

NEG-250A	NEG-300A	NEG-360A	NEG-400A	NEG-450A	NEG-500A	NEG-560A	NEG-630A	NEG-700A	NEG-800A	NEG-900A	NEG-1000A
879 (250)	1,055 (300)	1,266 (360)	1,407 (400)	1,583 (450)	1,759 (500)	1,970 (560)	2,216 (630)	2,462 (700)	2,813 (800)	3,165 (900)	3,517 (1,000)
736 (633)	883 (759)	1,060 (911)	1,178 (1,013)	1,325 (1,139)	1,472 (1,266)	1,649 (1,418)	1,855 (1,595)	2,061 (1,772)	2,355 (2,025)	2,649 (2,278)	2,943 (2,531)
15.0 → 7.0											
53.3 → 60.0											
37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8
27.1	28.9	29.6	30.5	41.3	23.8	24.4	46.9	48.4	46.1	47.9	63.1
0.36	0.40	0.49	0.54	0.59	0.81	0.89	0.98	1.08	1.31	1.45	1.59
32.0 → 37.2											
250	300	360	400	450	500	560	630	700	800	900	1000
43.0	48.2	37.8	40.0	53.6	46.5	49.8	72.4	73.8	59.5	63.4	82.7
0.80	0.88	1.18	1.26	1.35	1.84	1.98	2.23	2.41	2.88	3.12	3.38
2,629	3,151	3,781	4,204	4,731	5,253	5,883	6,621	7,355	8,408	9,457	10,505
730	875	1,050	1,168	1,314	1,459	1,634	1,839	2,043	2,336	2,627	2,918
3,047	3,655	4,388	4,875	5,482	6,094	6,824	7,679	8,529	9,749	10,964	12,180
846	1,015	1,219	1,354	1,523	1,693	1,895	2,133	2,369	2,708	3,046	3,383
7.85	7.85	7.85	7.85	7.85	7.85	7.85	98	98	98	98	98
50Hz 400V 3 ϕ											
10.2	10.2	12.4	12.4	14.1	19.9	19.9	20.0	20.0	26.3	29.0	29.0
14.0	14.0	17.2	17.2	19.7	28.1	28.1	28.2	28.2	37.2	41.1	41.1
5.20	5.20	7.30	7.30	8.80	11.20	11.20	11.30	11.30	16.90	18.90	18.90
125	125	150	150	150	200	200	200	200	200	200	250
200	200	250	250	250	250	250	300	300	350	350	350
40	40	40	40	40	40	40	40	40	40	40	40
210 × 441	210 × 441	250 × 536	250 × 536	270 × 647	270 × 647	290 × 691	290 × 691	290 × 782	290 × 872	290 × 872	290 × 872
5,339	5,339	5,479	5,479	5,979	6,129	6,129	7,409	7,409	7,665	7,665	8,377
2,214	2,214	2,547	2,547	2,627	2,922	2,929	3,026	3,033	3,216	3,216	3,216
2,188	2,188	2,402	2,402	2,473	2,745	2,745	2,745	2,745	3,407	3,407	3,407
9.3	9.9	12.8	13.5	14.9	18.0	18.9	21.6	22.8	28.0	30.2	32.3
8.2	8.7	11.2	11.7	13.0	15.4	16.2	18.5	19.4	24.0	25.8	27.6
One Piece / Solution Charge										One Piece / Solution Discharge	

COP=1.33 (Chilled Water Inlet/Outlet Δ t=5℃)

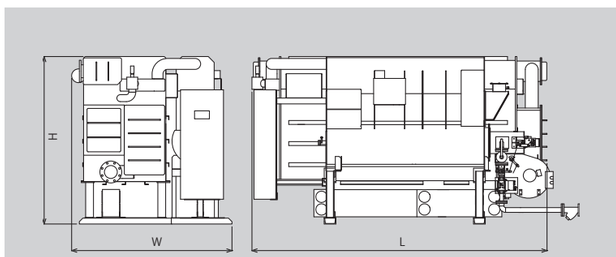
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	12.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	55.8 → 60.0					
	Flow Rate	m^3/h	48.4	60.5	60.5	60.5	60.5	60.5
	Pressure Loss	kPa	61.2	61.9	55.0	55.9	55.1	55.7
	Retained Water Volume	m^3	0.12	0.14	0.16	0.19	0.23	0.26
Connection	Chilled (Hot) Water Inlet/Outlet	A	100	100	100	100	125	125
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150

NEG-250A	NEG-300A	NEG-360A	NEG-400A	NEG-450A	NEG-500A	NEG-560A	NEG-630A	NEG-700A	NEG-800A	NEG-900A	NEG-1000A
12.0 → 7.0											
55.8 → 60.0											
60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5
61.8	65.8	67.4	69.4	94.0	54.1	55.6	35.0	36.1	34.4	35.8	47.1
0.31	0.35	0.43	0.47	0.51	0.71	0.78	0.86	0.95	1.11	1.23	1.36
150	150	200	200	200	200	200	250	250	250	250	300
200	200	250	250	250	250	250	300	300	350	350	350

NOTE

1. The tolerance of the performance is in compliance with JIS B8622-2009.
2. Operation load range is from 10% to 100%.
3. The maximum operating pressure is 784kPa (gauge) for both Chilled/Hot Water and Cooling Water.
4. The fouling factor of both Chilled/Hot Water and Cooling Water is 8.6×10^{-5} $m^2 \cdot K/W$.
5. The Cooling Water Inlet temperature shall not be lower than 18℃.
6. The total motor power is the total value of the constant operation all the motors, excluding the purging pump motor which operates intermittently.
7. The parameters described in this table list of specification can be changed by the manufacturer for the purpose of technical improvement without notice.
8. The exhaust gas temperature is 200℃.

Item	Unit	NG	Diesel	Remarks
Heating Value		45.0MJ/m^3_N	43.5MJ/kg	Gas : based on Higher Heating Value Diesel : based on Lower Heating Value
Exhaust Gas Volume	m^3/h	19.03	16.14	Exhaust gas volume per m^3_N/h of fuel gas at 200℃ of exhaust gas
Required Air Volume for Combustion	m^3/h	14.03	12.07	Minimum required air volume per m^3_N/h of fuel as at 25℃ of air temperature

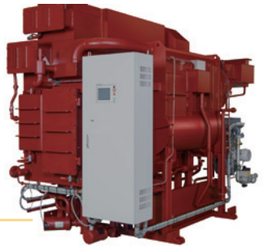


Gene-Link

Combination of Direct Fired and Waste Hot Water Energy has realized higher energy saving rate.

NZJ

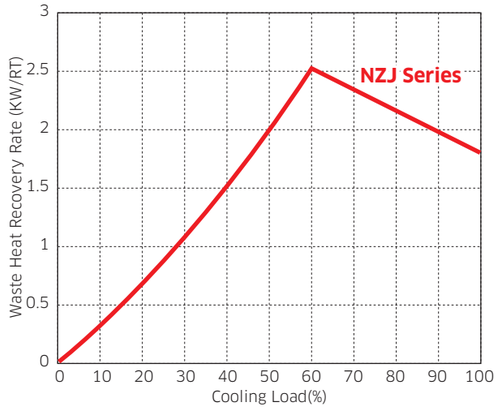
NHJ



Enhancement of energy saving rate by using Waste Hot Water

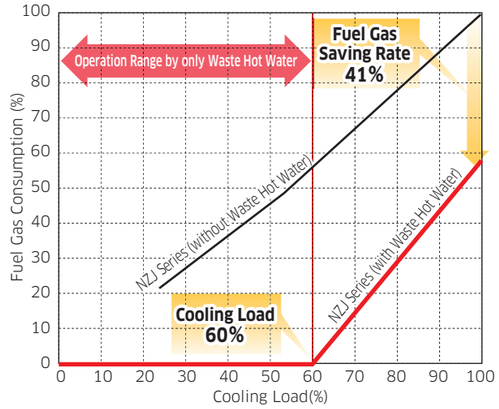
Larger Waste Heat can be utilized at Partial Load

Fig. 1 Waste Heat Recovery Rate



With much Energy Saving no combustion is possible at Partial Load

Fig. 2 Fuel Gas Consumption Rate

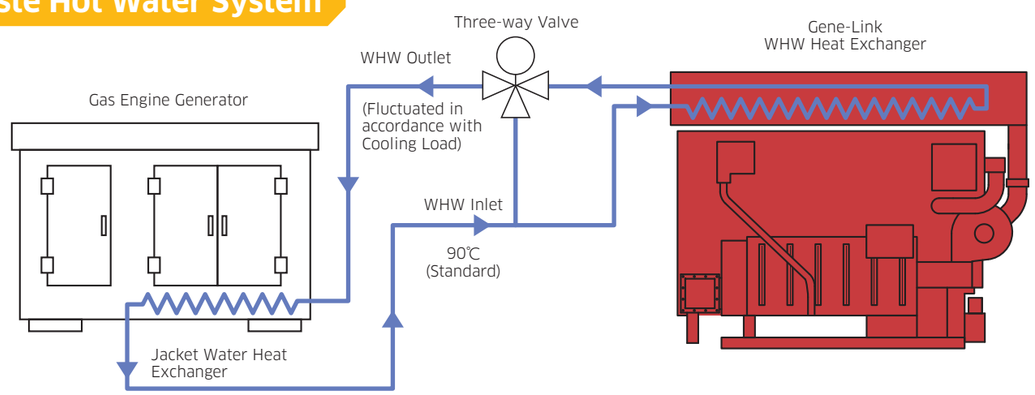


※ With operation range by only Waste Hot Water heating : 60% or less

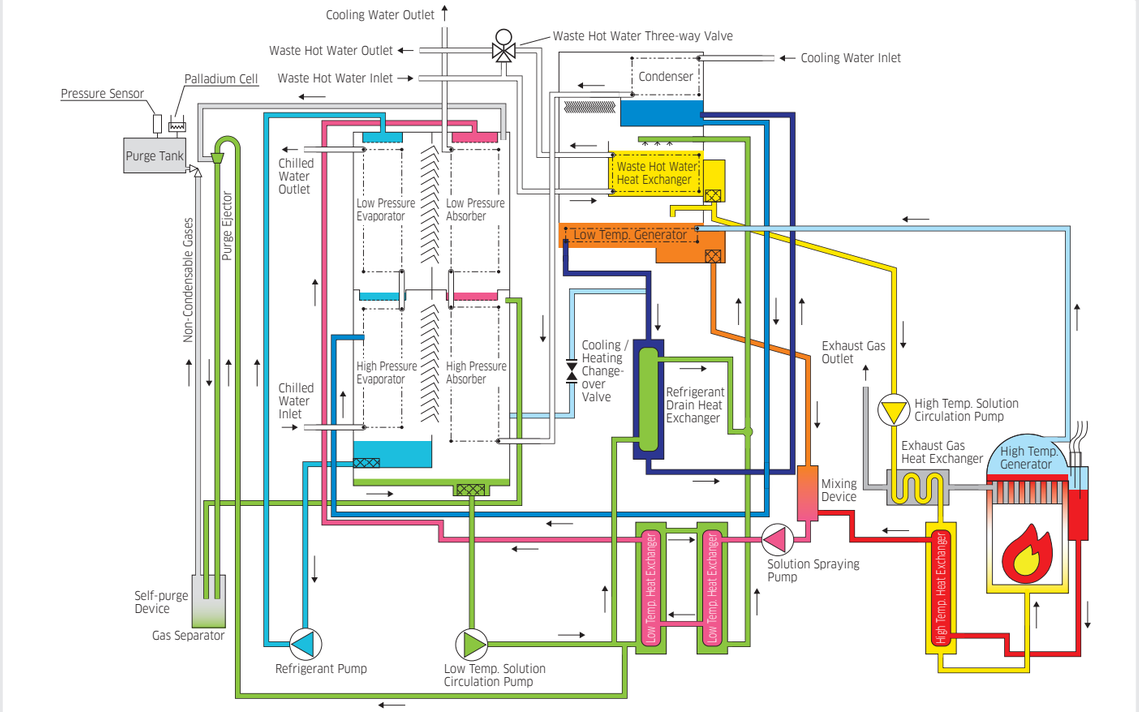
WHW Temp.: 90℃, Co. W.: JIS Standard, Solution Pumps: Inverter Control

The waste heat recovery rate during the partial load operation is higher than that during the full load operation (refer to Fig.1). This is because solution temperature in Waste Hot Water Heat Exchanger is lower and accordingly the recoverable heat is higher during the partial load operation than during the full load operation.
Gene-link has achieved the efficient heat recovery rate and realized the high reduction of fuel gas consumption rate (refer to Fig.2).
Waste Hot Water Outlet Temperature during the partial load operation is different from the full load operation.

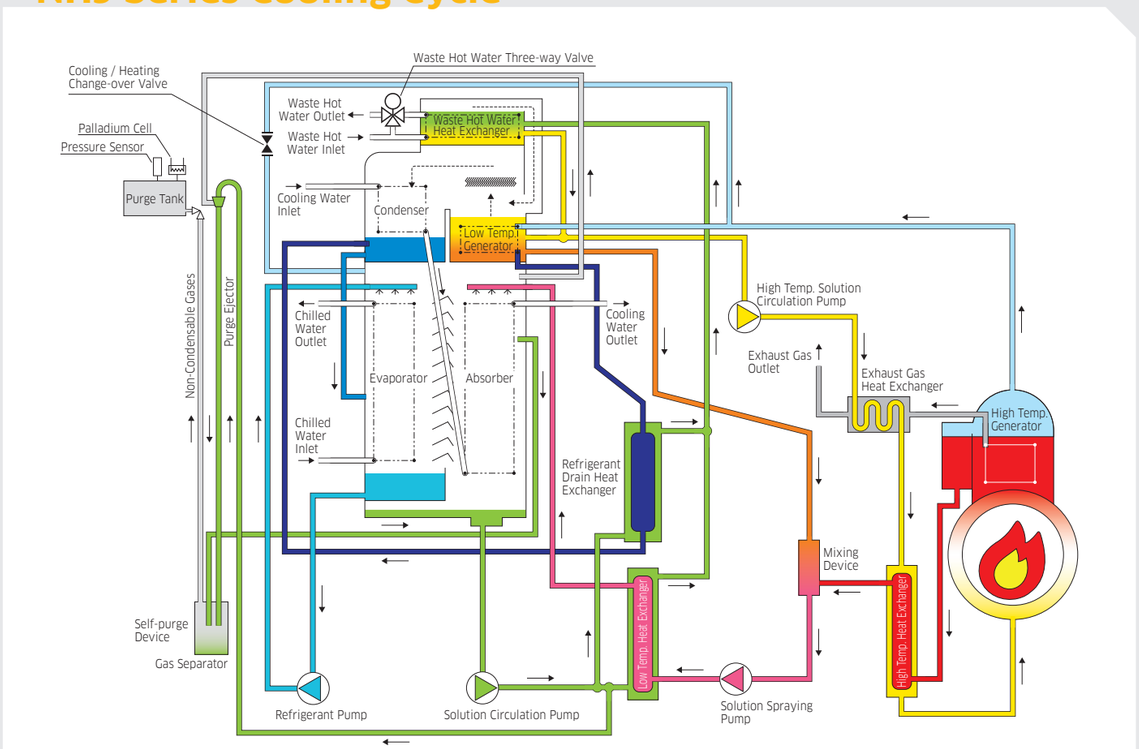
Waste Hot Water System



NZJ Series Cooling Cycle



NHJ Series Cooling Cycle



COP=1.49 (Chilled Water Inlet/Outlet Δ t=8℃)

			NZJ-080	NZJ-100	NZJ-120	NZJ-150	NZJ-180	NZJ-210
Capacity	Cooling	kW	281	352	422	528	633	739
		(USRT)	(80)	(100)	(120)	(150)	(180)	(210)
	Heating	kW	188	234	281	352	422	492
		(Mcal/h)	(161)	(202)	(242)	(302)	(363)	(423)
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	54.7 → 60.0					
	Flow Rate	m^3/h	30.2	37.8	45.4	56.7	68.0	79.4
	Pressure Loss	kPa	70.9	72.5	94.7	90.1	97.0	98.5
	Retained Water Volume	m^3	0.14	0.16	0.19	0.22	0.27	0.30
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.8					
	Flow Rate	m^3/h	80	100	120	150	180	210
	Pressure Loss	kPa	39.4	43.2	74.2	78.4	62.5	68.5
	Retained Water Volume	m^3	0.32	0.36	0.43	0.49	0.69	0.75
Waste Hot Water	Inlet-Outlet Temp.	℃	90.0 → 80.0					
	Flow Rate	m^3/h	12.8	16.0	19.2	24.0	28.8	33.6
	Waste Heat Recovery Rate	kW	144	180	217	271	325	379
		(MJ/h)	(520)	(650)	(780)	(975)	(1,169)	(1,364)
	Pressure Loss	kPa	31.2	45.2	72.7	103.9	49.2	65.8
	Retained Water Volume	m^3	0.04	0.05	0.06	0.07	0.09	0.10
Heat Input (Gas Firing)	Cooling / With Waste Hot water	MJ/h	440	550	660	825	990	1,155
		kW	122	153	183	229	275	321
	Cooling / Without Waste Hot water	MJ/h	750	938	1,125	1,407	1,688	1,969
		kW	208	260	313	391	469	547
	Heating / Without Waste Hot Water	MJ/h	750	938	1,125	1,407	1,688	1,969
		kW	208	260	313	391	469	547
	Gas Inlet Pressure	kPa	7.85	7.85	7.85	7.85	7.85	7.85
Energy Saving Rate		%	41					
Maximum Cooling Capacity by only Waste Hot Water		%	60					
Electricity	Power Source		50Hz 400V 3 ϕ					
	Capacity	KVA	6.5	6.5	6.9	6.9	9.1	9.1
	Current	A	10.6	10.6	11.3	11.3	14.4	14.4
	Total Motor Power	kW	2.65	2.65	3.00	3.00	4.10	4.10
Connection	Chilled (Hot) Water Inlet/Outlet	A	80	80	100	100	100	100
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150
	Waste Hot Water Inlet/Outlet	A	50	50	50	50	65	65
	Fuel Gas Inlet	A	40	40	40	40	40	40
	Exhaust Gas Outlet	mm	185 × 185	185 × 185	227 × 227	227 × 227	269 × 269	269 × 269
External Dimensions	Length	mm	2,911	2,911	3,858	3,858	3,957	3,957
	Width	mm	2,102	2,102	2,102	2,102	2,402	2,402
	Height	mm	2,416	2,416	2,416	2,416	2,517	2,517
Weight	Operating Weight	ton	5.6	5.9	7.3	7.8	9.9	10.3
	Total Shipping Weight	ton	5.1	5.3	6.6	7.0	8.9	9.2
Delivery Form			One Piece / Solution Charge					

NZJ-250	NZJ-300	NZJ-360	NZJ-400	NZJ-450	NZJ-500	NZJ-560	NZJ-630	NZJ-700	NZJ-800	NZJ-900	NZJ-1000
879	1,055	1,266	1,407	1,583	1,759	1,970	2,216	2,462	2,813	3,165	3,517
(250)	(300)	(360)	(400)	(450)	(500)	(560)	(630)	(700)	(800)	(900)	(1,000)
586	703	844	938	1,055	1,172	1,313	1,477	1,641	1,875	2,110	2,344
(504)	(605)	(726)	(806)	(907)	(1,008)	(1,129)	(1,270)	(1,411)	(1,613)	(1,814)	(2,016)
15.0 → 7.0											
54.7 → 60.0											
94.5	113.4	136.1	151.2	170.1	189.0	211.7	238.1	264.6	302.4	340.2	378.0
79.3	84.6	84.3	85.6	116.5	68.8	69.6	59.8	60.0	57.0	56.6	75.5
0.36	0.40	0.49	0.54	0.59	0.81	0.89	0.98	1.08	1.31	1.45	1.59
32.0 → 37.8											
250	300	360	400	450	500	560	630	700	800	900	1000
68.5	76.1	58.9	60.8	81.3	58.6	62.7	97.9	101.5	99.1	105.0	136.6
0.84	0.93	1.30	1.39	1.49	1.97	2.12	2.31	2.50	3.30	3.55	3.82
90.0 → 80.0											
40.0	48.0	57.6	64.0	72.0	80.0	89.6	100.8	112.0	128.0	144.0	160.0
451	541	650	722	812	902	1,011	1,137	1,263	1,444	1,624	1,805
(1,624)	(1,949)	(2,339)	(2,599)	(2,924)	(3,248)	(3,638)	(4,093)	(4,548)	(5,197)	(5,847)	(6,497)
48.6	67.4	35.6	42.4	54.3	65.6	80.0	51.4	59.9	46.6	55.3	69.8
0.13	0.15	0.22	0.23	0.25	0.28	0.30	0.39	0.42	0.56	0.59	0.63
1,375	1,650	1,980	2,201	2,476	2,751	3,081	3,466	3,851	4,401	4,951	5,501
382	458	550	611	688	764	856	963	1,070	1,223	1,375	1,528
2,344	2,813	3,376	3,751	4,220	4,688	5,251	5,907	6,564	7,501	8,439	9,377
651	781	938	1,042	1,172	1,302	1,459	1,641	1,823	2,084	2,344	2,605
2,344	2,813	3,376	3,751	4,220	4,688	5,251	5,907	6,564	7,501	8,439	9,377
651	781	938	1,042	1,172	1,302	1,459	1,641	1,823	2,084	2,344	2,605
7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	98	98	98
41											
60											
50Hz 400V 3 ϕ											
9.2	10.2	12.6	13.5	13.5	14.8	18.0	19.7	19.7	25.8	25.8	30.3
14.6	16.0	19.5	20.8	20.8	22.7	27.3	29.7	29.7	38.6	38.6	45.0
4.20	4.95	6.50	7.20	7.20	8.60	10.60	11.30	11.30	15.00	15.00	18.80
125	125	150	150	150	200	200	200	200	200	200	250
200	200	250	250	250	250	250	300	300	350	350	350
80	80	100	100	100	100	100	125	125	150	150	150
40	40	40	40	40	40	40	40	40	40	40	40
320 × 320	320 × 320	370 × 370	370 × 370	392 × 392	438 × 438	438 × 438	490 × 490	490 × 490	585 × 585	585 × 585	585 × 585
5,412	5,412	5,648	5,648	6,148	6,298	6,298	7,591	7,591	8,165	8,165	8,877
2,442	2,442	2,773	2,773	2,773	3,223	3,223	3,223	3,223	3,413	3,413	3,413
2,593	2,593	3,012	3,012	3,012	3,103	3,103	3,290	3,290	3,817	3,817	3,817
12.9	13.7	18.2	18.9	20.6	24.5	25.6	30.5	31.8	38.2	40.3	44.7
11.6	12.2	16.2	16.7	18.2	21.5	22.3	26.8	27.8	33.4	35.2	39.0
One Piece / Solution Charge							One Piece / Solution Discharge		Two Pieces / Solution Discharge		

Large Amount Hot Water Type

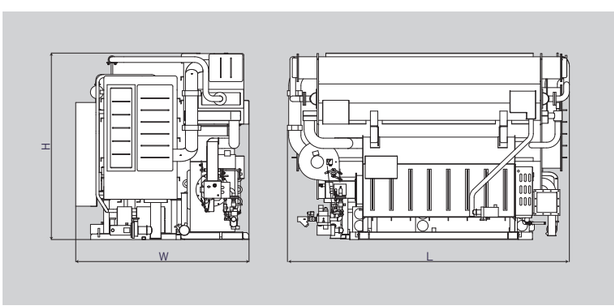
Chilled Water	Chilld Water Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Flow Rate	m^3/h	30.2	37.8	45.4	56.7	68.0	79.4
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.7					
	Flow Rate	m^3/h	80	100	120	150	180	210
Waste Hot Water	Inlet-Outlet Temp.	℃	88.0 → 83.0					
	Flow Rate	m^3/h	24.0	30.0	36.0	45.0	54.0	63.0
	Waste Heat Recovery Rate	kW	135	169	203	254	305	355
		(MJ/h)	(487)	(609)	(731)	(914)	(1,096)	(1,279)
	Pressure Loss	kPa	50.5	70.5	82.5	105.0	30.5	39.1
	Retained Water Volume	m^3	0.05	0.06	0.08	0.09	0.12	0.13
Heat Input (Gas Firing)	Cooling / With Waste Hot water	MJ/h	459	574	689	861	1,034	1,206
		kW	128	160	191	239	287	335
Energy Saving Rate		%	39					
Maximum Cooling Capacity by only Waste Hot Water		%	58					
Connection	Waste Hot Water Inlet/Outlet	A	65	65	80	80	100	100

15.0 → 7.0											
94.5	113.4	136.1	151.2	170.1	189.0	211.7	238.1	264.6	302.4	340.2	378.0
32.0 → 37.7											
250	300	360	400	450	500	560	630	700	800	900	1000
88.0 → 83.0											
75.0	90.0	108.0	120.0	135.0	150.0	168.0	189.0	210.0	※ 1		
423	508	609	677	761	846	947	1,066	1,184	※ 1		
(1,523)	(1,827)	(2,193)	(2,436)	(2,741)	(3,045)	(3,411)	(3,837)	(4,263)	※ 1		
62.1	82.8	56.4	65.3	84.4	64.0	74.6	110.9	126.6	※ 1		
0.17	0.18	0.27	0.28	0.30	0.40	0.41	0.45	0.47	※ 1		
1,436	1,723	2,068	2,297	2,584	2,872	3,216	3,618	4,020	※ 1		
399	479	574	638	718	798	893	1,005	1,117	※ 1		
39											
58											
100	100	125	125	125	150	150	150	150	※ 1		

NOTE

1. The tolerance of the performance is in compliance with JIS B8622-2009.
2. Operation load range is from 10% to 100%.
3. The maximum operating pressure is 784kPa (gauge) for both Chilled/Hot Water and Cooling Water.
4. The fouling factor of both Chilled/Hot Water and Cooling Water is 8.6×10^{-5} $m^2 \cdot K/W$.
5. The Cooling Water Inlet temperature shall not be lower than 18℃.
6. The total motor power is the total value of the constant operation all the motors, excluding the purging pump motor which operates intermittently.
7. The parameters described in this table list of specification can be changed by the manufacturer for the purpose of technical improvement without notice.
8. The exhaust gas temperature is 100℃.
9. Please contact KTE's distributor for specifications of 800RT, 900RT and 1,000RT. (※1)

Item	Unit	NG	Remarks
Heating Value		45.0MJ/m^3_N	Gas : based on Higher Heating Value
Exhaust Gas Volume	m^3/h	19.03	Exhaust gas volume per m^3_N/h of fuel gas to 100℃ at exhaust gas
Required Air Volume for Combustion	m^3/h	14.03	Minimum required air volume per m^3_N/h of fuel as at 25℃ of air temperature



COP=1.43 (Chilled Water Inlet/Outlet Δ t=8℃)

			NHJ-080	NHJ-100	NHJ-120	NHJ-150	NHJ-180	NHJ-210
Capacity	Cooling	kW	281	352	422	528	633	739
		(USRT)	(80)	(100)	(120)	(150)	(180)	(210)
	Heating	kW	195	243	292	365	438	511
		(Mcal/h)	(167)	(209)	(251)	(314)	(377)	(440)
Chilled (Hot) Water	Chilld Water Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Hot Water Inlet-Outlet Temp.	℃	54.5 → 60.0					
	Flow Rate	m^3/h	30.2	37.8	45.4	56.7	68.0	79.4
	Pressure Loss	kPa	55.1	55.5	49.4	49.9	49.5	49.7
	Retained Water Volume	m^3	0.12	0.14	0.16	0.19	0.23	0.26
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.6					
	Flow Rate	m^3/h	80	100	120	150	180	210
	Pressure Loss	kPa	43.9	45.5	48.2	54.7	45.2	49.8
	Retained Water Volume	m^3	0.31	0.35	0.39	0.45	0.62	0.68
Waste Hot Water	Inlet-Outlet Temp.	℃	90.0 → 80.0					
	Flow Rate	m^3/h	10.1	12.6	15.1	18.9	22.6	26.4
	Waste Heat Recovery Rate	kW	114	142	170	213	255	298
		(MJ/h)	(409)	(511)	(613)	(766)	(919)	(1,072)
	Pressure Loss	kPa	26.1	39.2	25.1	34.7	20.8	27.8
	Retained Water Volume	m^3	0.04	0.05	0.06	0.07	0.10	0.11
Heat Input (Gas Firing)	Cooling / With Waste Hot water	MJ/h	530	661	796	995	1,191	1,389
		kW	147	184	221	276	331	386
	Cooling / Without Waste Hot water	MJ/h	779	972	1,170	1,463	1,751	2,043
		kW	216	260	325	406	486	568
	Heating / Without Waste Hot Water	MJ/h	779	972	1,170	1,463	1,751	2,043
		kW	216	260	325	406	486	568
	Gas Inlet Pressure	kPa	7.85	7.85	7.85	7.85	7.85	7.85
Energy Saving Rate		%	32					
Maximum Cooling Capacity by only Waste Hot Water		%	53					
Electricity	Power Source		50Hz 400V 3 ϕ					
	Capacity	KVA	6.3	6.8	6.8	8.9	9.1	9.1
	Current	A	10.4	11.1	11.1	14.2	14.4	14.4
	Total Motor Power	kW	2.55	2.90	2.90	4.00	4.10	4.10
Connection	Chilled (Hot) Water Inlet/Outlet	A	80	80	100	100	100	100
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150
	Waste Hot Water Inlet/Outlet	A	40	40	50	50	65	65
	Fuel Gas Inlet	A	40	40	40	40	40	40
	Exhaust Gas Outlet	mm	100 × 350	100 × 350	100 × 350	135 × 350	150 × 390	150 × 430
External Dimensions	Length	mm	3,027	3,067	3,929	3,929	4,103	4,184
	Width	mm	1,818	1,818	1,799	1,799	2,074	2,074
	Height	mm	2,365	2,365	2,365	2,365	2,592	2,592
Weight	Operating Weight	ton	4.9	5.2	6.2	6.7	8.3	8.8
	Total Shipping Weight	ton	4.4	4.6	5.6	6.0	7.3	7.8
Delivery Form			One Piece / Solution Charge					

NHJ-250	NHJ-300	NHJ-360	NHJ-400	NHJ-450	NHJ-500	NHJ-560	NHJ-630	NHJ-700	NHJ-800	NHJ-900	NHJ-1000
879	1,055	1,266	1,407	1,583	1,759	1,970	2,216	2,462	2,813	3,165	3,517
(250)	(300)	(360)	(400)	(450)	(500)	(560)	(630)	(700)	(800)	(900)	(1,000)
609	730	876	974	1,095	1,217	1,363	1,534	1,704	1,947	2,191	2,434
(523)	(628)	(754)	(837)	(942)	(1,047)	(1,172)	(1,319)	(1,465)	(1,675)	(1,884)	(2,094)
15.0 → 7.0											
54.5 → 60.0											
94.5	113.4	136.1	151.2	170.1	189.0	211.7	238.1	264.6	302.4	340.2	378.0
56.1	59.3	60.2	61.6	83.9	48.2	48.9	88.9	88.9	88.2	89.1	118.9
0.31	0.35	0.43	0.47	0.51	0.71	0.78	0.86	0.95	1.11	1.23	1.36
32.0 → 37.6											
250	300	360	400	450	500	560	630	700	800	900	1000
43.9	49.1	38.8	41.0	55.0	48.1	51.3	75.4	76.8	61.5	65.4	85.3
0.80	0.88	1.18	1.26	1.35	1.84	1.98	2.23	2.41	2.88	3.12	3.38
90.0 → 80.0											
31.4	37.7	45.3	50.3	56.6	62.9	70.4	79.2	88.0	100.6	113.2	125.8
355	426	511	567	638	709	794	894	993	1,135	1,277	1,419
(1,277)	(1,532)	(1,839)	(2,043)	(2,298)	(2,553)	(2,860)	(3,217)	(3,575)	(4,086)	(4,596)	(5,107)
41.9	58.8	42.8	51.8	23.8	28.6	34.5	47.5	56.1	37.3	44.2	56.1
0.13	0.14	0.16	0.17	0.21	0.24	0.26	0.29	0.30	0.37	0.39	0.42
1,656	1,986	2,384	2,650	2,980	3,311	3,709	4,171	4,636	5,297	5,958	6,622
460	552	662	736	828	920	1,030	1,159	1,288	1,471	1,655	1,839
2,435	2,921	3,506	3,897	4,383	4,869	5,454	6,134	6,818	7,790	8,762	9,738
676	811	974	1,083	1,218	1,353	1,515	1,704	1,894	2,164	2,434	2,705
2,435	2,921	3,506	3,897	4,383	4,869	5,454	6,134	6,818	7,790	8,762	9,738
676	811	974	1,083	1,218	1,353	1,515	1,704	1,894	2,164	2,434	2,705
7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	98	98	98	98
32											
53											
50Hz 400V 3 ϕ											
11.4	11.4	13.7	14.6	14.6	20.4	22.2	23.9	23.9	27.8	30.1	32.8
17.8	17.8	21.1	22.4	22.4	30.8	33.3	35.8	35.8	41.4	44.8	48.7
5.75	5.75	7.70	8.40	8.40	10.80	12.30	13.10	13.10	16.90	18.70	20.70
125	125	150	150	150	200	200	200	200	200	200	250
200	200	250	250	250	250	250	300	300	350	350	350
65	65	80	80	100	100	100	100	100	125	125	125
40	40	40	40	40	40	40	40	40	40	40	40
180 × 430	200 × 500	220 × 500	250 × 500	280 × 500	310 × 500	310 × 550	350 × 550	360 × 600	410 × 600	460 × 600	510 × 600
5,365	5,365	5,572	5,572	6,072	6,222	6,222	7,551	7,551	7,882	7,882	8,594
2,162	2,329	2,687	2,687	2,687	3,050	3,050	3,126	3,230	3,500	3,500	3,500
2,592	2,592	2,829	2,829	2,829	3,218	3,218	3,218	3,218	3,925	3,925	3,925
10.7	11.6	14.6	15.5	16.8	20.9	21.8	25.1	26.3	30.4	34.1	36.9
9.5	10.2	12.8	13.6	14.8	18.1	18.8	21.8	22.6	26.0	29.3	31.8
One Piece / Solution Charge									Three Pieces / Solution Discharge		

Large Amount Hot Water Type

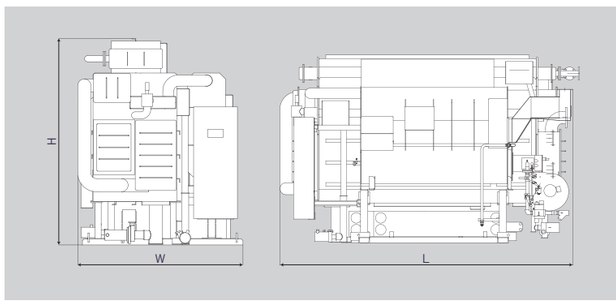
Chilled Water	Chilld Water Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Flow Rate	m^3/h	30.2	37.8	45.4	56.7	68.0	79.4
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.7					
	Flow Rate	m^3/h	80	100	120	150	180	210
Waste Hot Water	Inlet-Outlet Temp.	℃	88.0 → 83.0					
	Flow Rate	m^3/h	23.3	29.1	34.8	43.6	52.4	61.0
	Waste Heat Recovery Rate	kW	131	164	197	246	295	344
		(MJ/h)	(472)	(590)	(707)	(885)	(1,063)	(1,239)
	Pressure Loss	kPa	29.7	39.9	54.9	66.3	20.6	26.0
	Retained Water Volume	m^3	0.04	0.05	0.06	0.07	0.10	0.11
Heat Input (Gas Firing)	Cooling / With Waste Hot water	MJ/h	491	613	738	923	1,104	1,289
		kW	136	170	205	256	307	358
Energy Saving Rate		%	37					
Maximum Cooling Capacity by only Waste Hot Water		%	60					
Connection	Waste Hot Water Inlet/Outlet	A	65	65	80	80	100	100

NHJ-250	NHJ-300	NHJ-360	NHJ-400	NHJ-450	NHJ-500	NHJ-560	NHJ-630	NHJ-700	NHJ-800	NHJ-900	NHJ-1000
15.0 → 7.0											
94.5	113.4	136.1	151.2	170.1	189.0	211.7	238.1	264.6	302.4	340.2	378.0
32.0 → 37.7											
250	300	360	400	450	500	560	630	700	800	900	1000
88.0 → 83.0											
72.7	87.2	104.6	116.3	130.8	145.4	162.8	183.2	203.5	※ 2		
410	492	590	656	738	820	918	1033	1148	※ 2		
(1,476)	(1,771)	(2,124)	(2,361)	(2,656)	(2,951)	(3,305)	(3,719)	(4,132)	※ 2		
43.5	56.9	43.2	49.2	64.1	52.6	60.0	90.5	100.9	※ 2		
0.13	0.14	0.16	0.17	0.21	0.24	0.26	0.29	0.30	※ 2		
1,536	1,843	2,212	2,459	2,766	3,072	3,442	3,870	4,302	※ 2		
427	512	614	683	768	853	956	1,075	1,195	※ 2		
37											
60											
100	100	125	125	125	150	150	150	150	※ 2		

NOTE

1. The tolerance of the performance is in compliance with JIS B8622-2009.
2. Operation load range is from 10% to 100%.
3. The maximum operating pressure is 784kPa (gauge) for both Chilled/Hot Water and Cooling Water.
4. The fouling factor of both Chilled/Hot Water and Cooling Water is 8.6×10^{-5} $m^2 \cdot K/W$.
5. The Cooling Water Inlet temperature shall not be lower than 18℃.
6. The total motor power is the total value of the constant operation all the motors, excluding the purging pump motor which operates intermittently.
7. The parameters described in this table list of specification can be changed by the manufacturer for the purpose of technical improvement without notice.
8. The exhaust gas temperature is 110℃.
9. Please contact KTE's distributor for specifications of 800RT, 900RT and 1,000RT. (※2)

Item	Unit	NG	Remarks
Heating Value		45.0MJ/m^3_N	Gas : based on Higher Heating Value
Exhaust Gas Volume	m^3/h	19.03	Exhaust gas volume per m^3_N/h of fuel gas at 100℃ of exhaust gas
Required Air Volume for Combustion	m^3/h	14.03	Minimum required air volume per m^3_N/h of fuel as at 25℃ of air temperature



Steam Fired

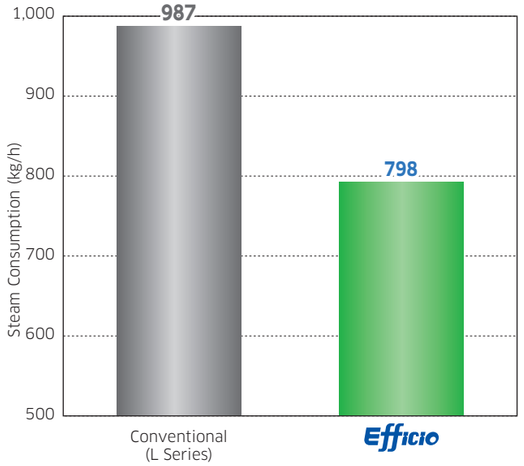
Supply of Chilled Water by means of efficient use of steam heat energy

NES

Proven Technology of Direct Fired Chiller is applied.

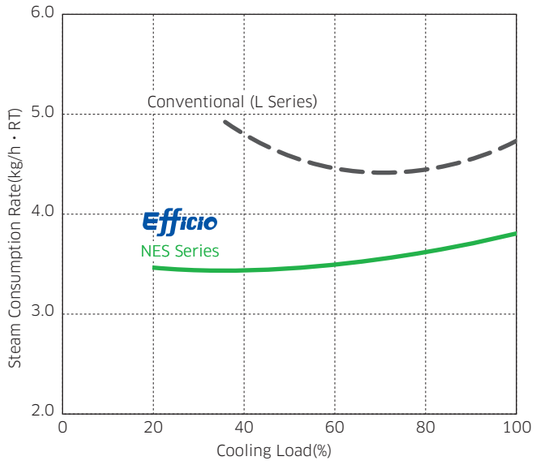
Reduction of Steam Consumption Rate

NES series can save 19% of steam consumption compared with the conventional model.



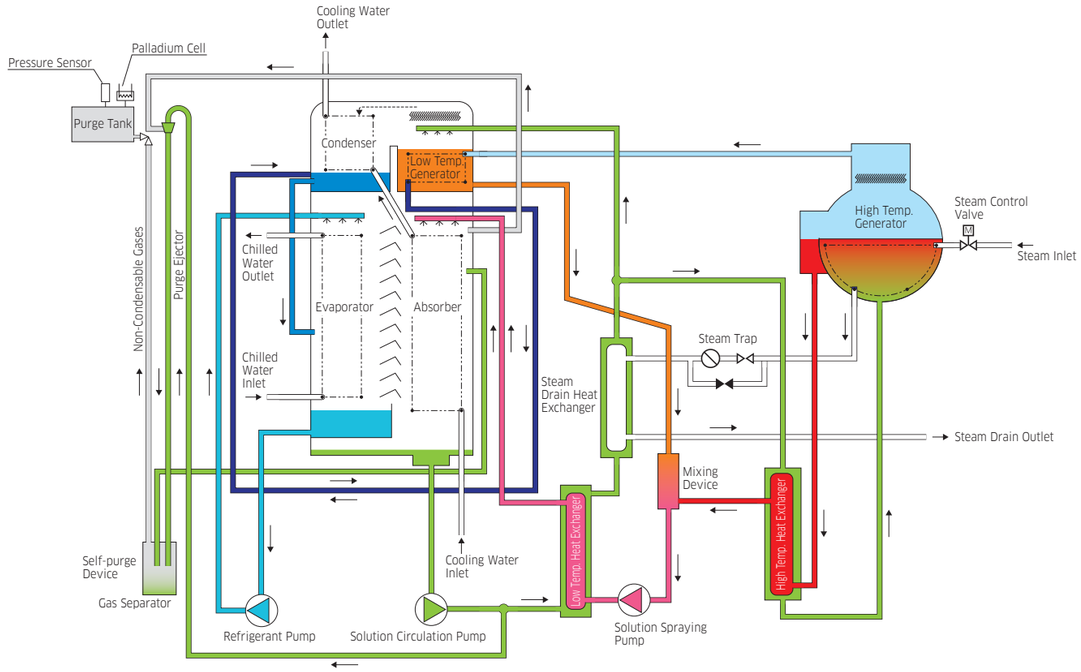
Steam Consumption Rate at Partial Load

You can save more steam consumption rate with the inverter control for the solution pump.

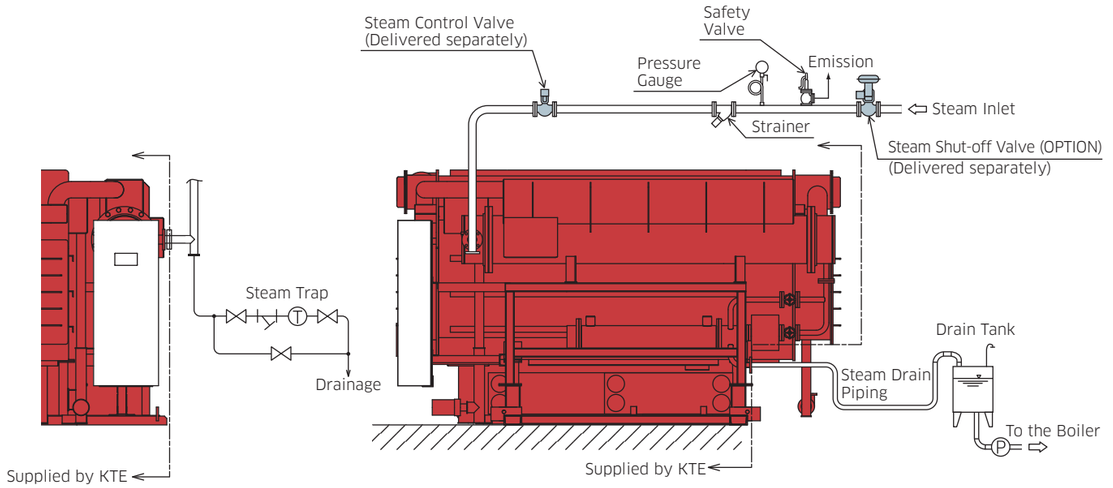


Note
1. The width of the curve in the graph shows the range of variation of steam consumption.
2. Cooling water inlet temperature conditions are as specified by the JIS standards (32℃ at 100% load, 27℃ at 0% load, with the temperature varying proportionally at loads between 0% and 100%).
3. The capacity of the chiller in the above simulation is 210USRT.

NES Series Cooling Cycle



Steam Supply System



Steam Consumption 3.8kg/h·RT (Chilled Water Inlet/Outlet Δ t=8℃)

			NES-080	NES-100	NES-120	NES-150	NES-180	NES-210
Capacity	Cooling	kW (USRT)	281 (80)	352 (100)	422 (120)	528 (150)	633 (180)	739 (210)
Chilled Water	Inlet-Outlet Temp.	℃	15.0 → 7.0					
	Flow Rate	m^3/h	30.2	37.8	45.4	56.7	68.0	79.4
	Pressure Loss	kPa	55.1	55.5	49.4	49.9	49.5	49.7
	Retained Water Volume	m^3	0.12	0.14	0.16	0.19	0.23	0.26
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.2					
	Flow Rate	m^3/h	80	100	120	150	180	210
	Pressure Loss	kPa	42.3	44.3	47.1	53.6	44.1	48.7
	Retained Water Volume	m^3	0.31	0.35	0.39	0.45	0.62	0.68
Steam	Steam Consumption	kg/h	304	380	456	570	684	798
	Steam Inlet Pressure	MPa(G)	0.785					
	Drain Outlet Temperature	℃	90 or less					
Electricity	Power Source		50Hz 400V 3 ϕ					
	Capacity	KVA	4.4	4.4	4.4	6.6	6.7	6.7
	Current	A	7.7	7.7	7.7	10.8	11.0	11.0
	Total Motor Power	kW	1.6	1.6	1.6	2.7	2.8	2.8
Connection	Chilled Water Inlet/Outlet	A	80	80	100	100	100	100
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150
	Steam Inlet	A	50	50	50	50	65	65
	Drain Outlet	mm	25	25	25	25	32	32
External Dimensions	Length	mm	2,699	2,699	3,699	3,699	3,762	3,762
	Width	mm	1,771	1,771	1,771	1,771	2,036	2,036
	Height	mm	1,976	1,976	1,976	1,976	2,188	2,188
Weight	Operating Weight	ton	4.4	4.6	5.6	5.9	7.6	7.8
	Total Shipping Weight	ton	4.0	4.1	5.0	5.3	6.7	6.9
Delivery Form			One Piece / Solution Charge					

NES-250	NES-300	NES-360	NES-400	NES-450	NES-500	NES-560	NES-630	NES-700	NES-800	NES-900	NES-1000
879 (250)	1,055 (300)	1,266 (360)	1,407 (400)	1,583 (450)	1,759 (500)	1,970 (560)	2,216 (630)	2,462 (700)	2,813 (800)	3,165 (900)	3,517 (1,000)
15.0 → 7.0											
94.5	113.4	136.1	151.2	170.1	189.0	211.7	238.1	264.6	302.4	340.2	378.0
56.1	59.3	60.2	61.6	83.9	48.2	48.9	88.9	88.9	88.2	89.1	118.9
0.31	0.35	0.43	0.47	0.51	0.71	0.78	0.86	0.95	1.11	1.23	1.36
32.0 → 37.2											
250	300	360	400	450	500	560	630	700	800	900	1,000
43.0	48.2	37.8	40.0	53.6	46.5	49.8	72.4	73.8	59.5	63.4	82.7
0.80	0.88	1.18	1.26	1.35	1.84	1.98	2.23	2.41	2.88	3.12	3.38
950	1140	1368	1520	1710	1900	2128	2394	2660	3040	3420	3800
0.785											
90 or less											
50Hz 400V 3 ϕ											
8.1	8.1	9.4	9.4	9.4	15.2	15.2	15.3	15.3	19.2	19.2	19.2
13.0	13.0	14.9	14.9	14.9	23.3	23.3	23.4	23.4	29.0	29.0	29.0
3.7	3.7	5.1	5.1	5.1	7.5	7.5	7.6	7.6	11.4	11.4	11.4
125	125	150	150	150	200	200	200	200	200	200	250
200	200	250	250	250	250	250	300	300	350	350	350
65	65	80	80	80	100	100	100	100	125	125	125
32	32	40	40	50	50	50	50	50	65	65	65
5,189	5,189	5,279	5,279	5,779	5,779	5,779	7,059	7,059	7,165	7,165	7,877
2,214	2,214	2,547	2,547	2,627	2,922	2,922	3,026	3,026	3,171	3,171	3,171
2,188	2,188	2,402	2,402	2,403	2,745	2,745	2,745	2,745	3,407	3,407	3,407
9.9	10.4	13.4	13.8	15.2	18.8	19.4	22.4	23.2	27.9	30.2	32.4
8.8	9.1	11.8	12.2	13.3	16.2	16.7	19.3	19.9	23.9	25.9	27.6
One Piece / Solution Charge										One Piece / Solution Discharge	

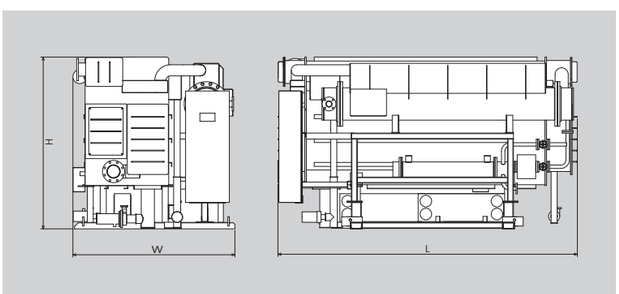
Steam Consumption 3.85kg/h·RT (Chilled Water Inlet/Outlet Δ t=5℃)

Chilled Water	Inlet-Outlet Temp.	℃	12.0 → 7.0					
	Flow Rate	m^3/h	48.4	60.5	72.6	90.7	108.9	127.0
	Pressure Loss	kPa	38.8	39.9	51.6	52.7	51.7	52.2
	Retained Water Volume	m^3	0.12	0.14	0.16	0.19	0.23	0.26
Cooing Water	Inlet-Outlet Temp.	℃	32.0 → 37.3					
	Flow Rate	m^3/h	80	100	120	150	180	210
	Pressure Loss	kPa	42.3	44.3	47.1	53.6	44.1	48.7
	Retained Water Volume	m^3	0.31	0.35	0.39	0.45	0.62	0.68
Steam	Steam Consumption	kg/h	308	385	462	578	693	809
	Steam Inlet Pressure	MPa(G)	0.785					
	Drain Outlet Temperature	℃	90 or less					
Connection	Chilled Water Inlet/Outlet	A	100	100	100	100	125	125
	Cooling Water Inlet/Outlet	A	125	125	125	125	150	150

12.0 → 7.0											
151.2	181.4	217.7	241.9	272.2	302.4	338.7	381.0	423.4	483.8	544.3	604.8
42.8	45.6	46.9	48.6	65.6	38.9	39.5	70.1	71.1	69.3	71.0	94.2
0.31	0.35	0.43	0.47	0.51	0.71	0.78	0.86	0.95	1.11	1.23	1.36
32.0 → 37.3											
250	300	360	400	450	500	560	630	700	800	900	1000
43.0	48.2	37.8	40.0	53.6	46.5	49.8	72.4	73.8	59.5	63.4	82.7
0.80	0.88	1.18	1.26	1.35	1.84	1.98	2.23	2.41	2.88	3.12	3.38
963	1,155	1,386	1,540	1,733	1,925	2,156	2,426	2,695	3,080	3,465	3,850
0.785											
90 or less											
150	150	200	200	200	200	200	250	250	250	250	300
200	200	250	250	250	250	250	300	300	350	350	350

NOTE

1. The tolerance of the performance is in compliance with JIS B8622-2009.
2. Operation load range is from 10% to 100%.
3. The maximum operating pressure is 784kPa (gauge) for both Chilled/Hot Water and Cooling Water.
4. The maximum operating pressure is 980kPa (gauge) for Steam.
5. The fouling factor of both Chilled/Hot Water and Cooling Water is 8.6×10^{-5} m^2·K/W.
6. The Cooling Water Inlet temperature shall not be lower than 18℃.
7. The total motor power is the total value of the constant operation all the motors, excluding the purging pump motor which operates intermittently.
8. The parameters described in this table list of specification can be changed by the manufacturer for the purpose of technical improvement without notice.



After Sales Service

KTE recommend proper maitenance for keeping a good performance and longer life time of the chiller.
KTE and our distributor can provide excellent maintenance service.
1) Maintenance service
2) Remote monitoring system

Detail of maintenance service

General Inspection A

(1) Checking the vacuum condition and purging if necessary (including checking palladium cell)
(2) Confirming the insulation of the pumps and the motors
(3) Checking any leakage from the fuel piping system
(4) Checking the appearance of the components
(5) Testing the correct function of the combustion device
(6) Confirming the setting of the combustion equipment or steam control valve
(7) Checking and confirming the safety devices
(8) Regeneration of refrigerant (only in case of cooling operation)
(9) Recording and checking the operation data
(10) Checking and confirming the automatic control system

Inspection during Cooling Operation B

(1) Checking the appearance of the components
(2) Checking the vacuum condition
(3) Checking any leakage from the fuel piping system
(4) Checking and confirming the combustion data
(5) Recording and checking the operation data
(6) Checking and confirming the automatic control system

LiBr solution analysis C

(1) Analysis of LiBr solution once a year during cooling operation
(2) Supplement of inhibitor based on the result of analysis
(3) Inhibitor dissolving operation (depending on the result of analysis)

Tube brushing for cooling water system D

(1) Checking water chambers and tube sheets
(2) Tube brushing
(3) Replacement of gaskets
(4) Removal of rust and water-proof painting inside the water chambers and the tube sheets to prevent corrosion

Recommended Maitenance Schedule

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Work	A C D			B			B			B		

Remote Monitoring System

KTE monitor chiller operating condition via wireless communication or internet communication.

Advantage of Remote Monitoring System

Prevention of abnormal error

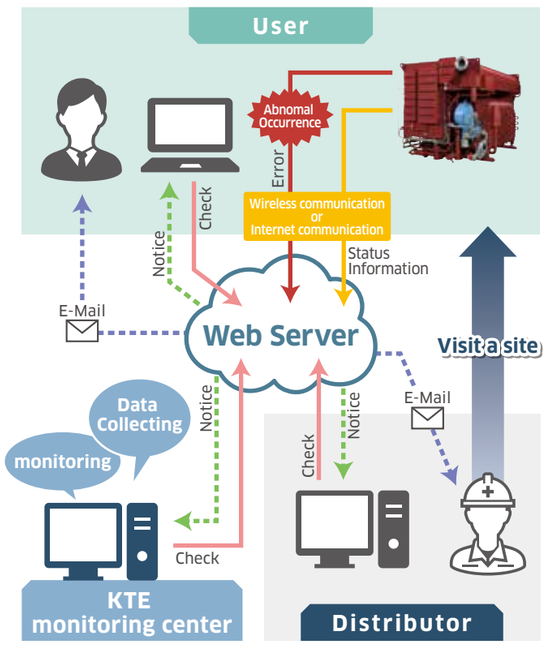
When a chiller detects a sign of "Pre-alarm" will output and the operation data will be sent to the Remote Monitoring System automatically. Then, appropriate measures for the Pre-alarm can be provided to the user before an abnormal stop of the chiller.

Advice for energy saving operation

Remote Monitoring System can collect operation data periodically and the data can be useful information for the better chiller operation.

Quick trouble-shooting

When abnormal error occurs, operation data will be sent to Remote Monitoring System. Our service engineer and distributor analyze the error with the operation data before a site visit. It can reduce the time for trouble-shooting.



Product Line Up / Absorption Chiller & Boiler