KELVIN
Air Conditioning System

Qualified for **Energy Technology List**
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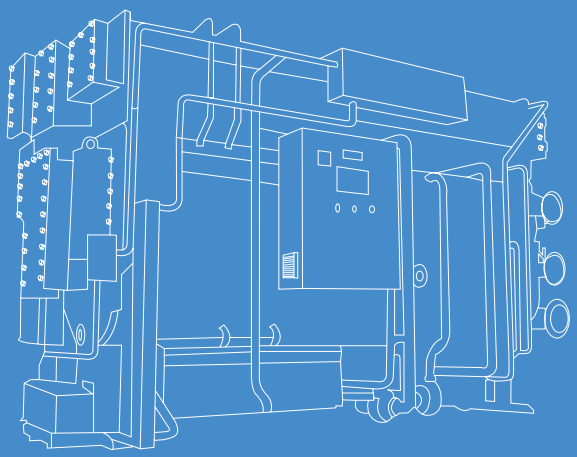
TM

bsi. ISO 9001 Quality Management | ISO 14001 Environmental Management

KELVIN Clim KDL

Cooling Capacity: 75 ~ 1000 USRT



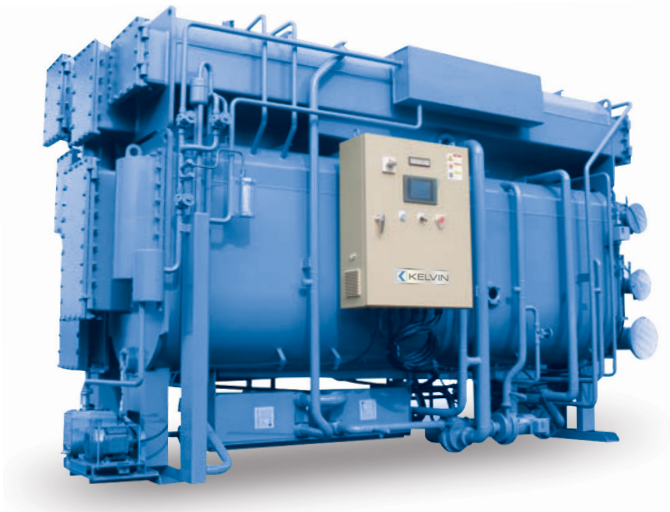
Li-Br Mo | A++ CLASS | INVERTER | 0.8 COP | Anti Crystal

Single Effect Double Lift Hot Water Absorption Chiller

KELVIN AIR CONDITIONING

KELVIN Clim KDL

KELVIN Clim KDL : Single Effect Double Lift Hot Water Absorption Chiller
Cooling Capacity: 75 ~ 1000 USRT



KELVIN AIRCONDITIONING

Non-carbon eco-friendly chiller

- Use of regional heating hot water (Energy useefficiency %84. The ratio of incineration heat of the combined waste heat - %74).
- Use of natural refrigerant water instead of Freon refrigerant destroying ozone layer.
- No C02 and Nox which cause the global warming

Zero explosive danger by vacuum operation

- Internal pressure vacuum .
- No danger of gas explosion by use of hot water
- Safety from the danger of high-pressure damage.

The excellent partial load part-load value

- Auxiliary cycle auto stop if the cooling load is below %80.
- Energy saving by %25 per chilled ton due to the increase in the efficiency by %25.

Low noise & Low vibration

Noise level: Below 75 dB at 1 m distance

Economic air-conditioniong

- Conventional Chiller: 6. 15 ℃ (95 ℃ -> 80℃)

- Insufficient heating hot water
Sing-effect/ Double-lift Chiller: 6. 40 (95 ℃ -> 55℃)
- Saving 60% of the existing hot water use capacity Wide range of the use

Economic air-conditioniong

- Precise control of start-up, stop, capacity control, abnormal stop, etc.
- Easy to handle due to the touch screen.
- Control of auxiliary cycle, self-diagnostic function & other controls

Saving maintenance cost

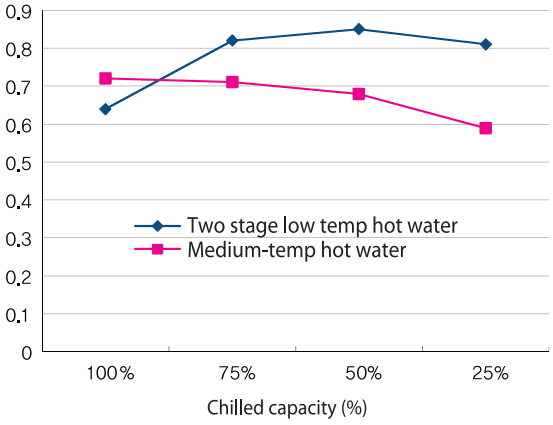
- Leakage per month: 3cc or below. High vacuum condition.
- Auto steam extraction. Non-condensing gas storage.
- Optimal condition of the operation.
- Operating with only minimum purging.

IPLV(Integrated Part-Load Value)

	Chilled water inlet ℃	Cooling capacity	COP	Part Load rate	IPLV
Single effect double lift type	31.0	100%	0.64	0.01	0.83
	29.8	75%	0.82	0.42	
	28.8	50%	0.85	0.45	
	28.0	25%	0.81	0.12	
	Chilled water inlet ℃	Cooling capacity	COP	Part Load rate	IPLV
Single effect type	31.0	100%	0.72	0.01	0.68
	29.9	75%	0.71	0.42	
	29.1	50%	0.68	0.45	
	28.1	25%	0.59	0.12	

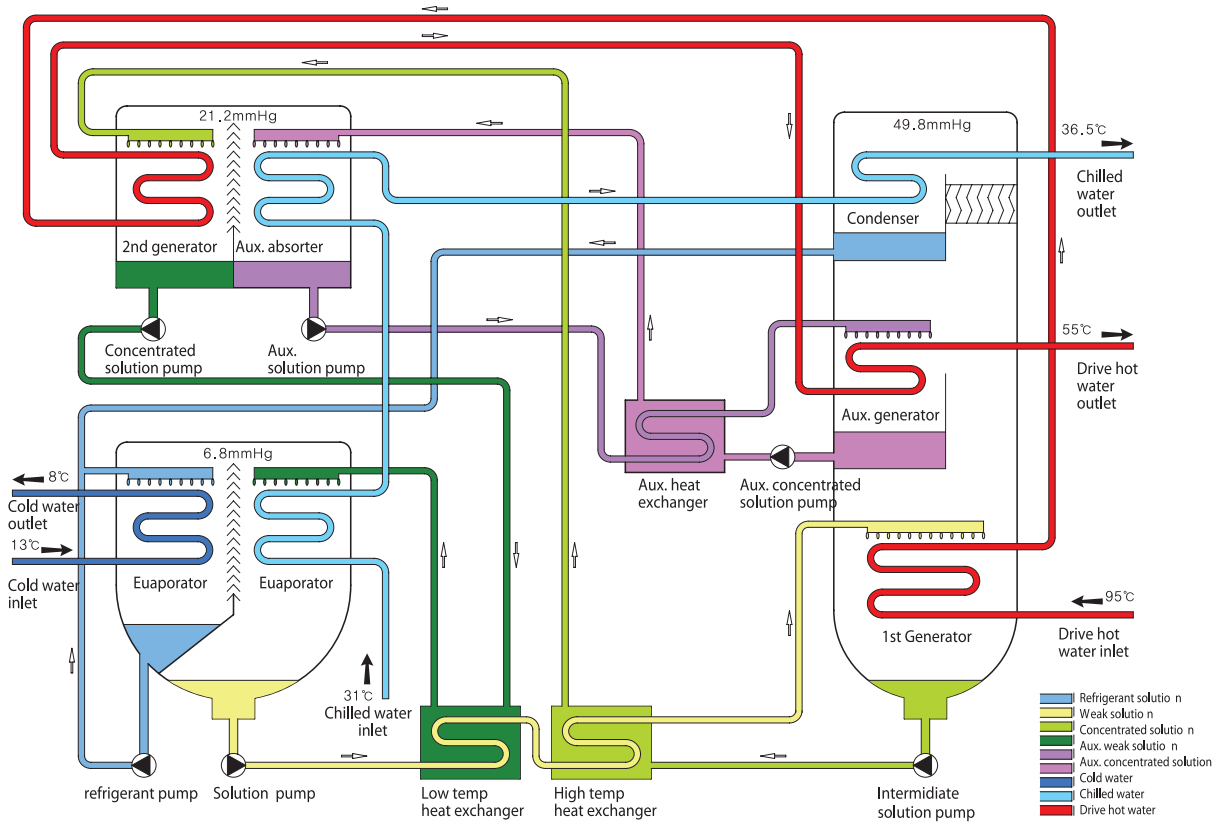
1) Chilled water outlet temp keeps at 8℃ and hot water inlet temp keeps at 95℃
2) Assuming that the ambient humid temp is 27℃ for the chilled water inlet temp, it was designed to be lower depending on the hot water flow rate.
3) Part load rate is subject to the paragraph 5.3.2.2 of AR1560-2000.

Comparison of partial load COP



CYCLE DIAGRAM

Single Effect Double Lift Hot Water Absorption Chiller



As the refrigerant is evaporated from the evaporator, the chilled water flowing inside the heating tube of the evaporator is cooled down and the refrigerant evaporated is absorbed by the concentrated absorbing liquid from the 2nd generator. The concentrated absorbing liquid will become thick absorbing liquid and the heat generate will be absorbed by the chilled water. Toe thick absorbing liquid which absorbed the refrigerant steam from the absorbing unit will go to the 1st generator passing through the low-temp and high-temp heat exchangers. Toe hot water at °95 • • • in the 1 st generator will heat the thick absorbing liquid to generate the refrigerant steam and then it flows to the 2nd generator after passing through the high-temp heat exchanger. The medium concentrated thick absorbing liquid com from the 2nd generator will be heated bythehotwatercomefromthe1stgeneratortogeneratetherefrigerantsteam. The refrigerant steam generated from the 2nd generator will be absorbed by the absorbing liquid flowing outside the heat tube and the thick absorbing liquid which absorbed the refrigerant steam from the aux absorbing unit will flow to the aux generator after passing through aux heat exchanger, so that it is heated by the hot water flowing the heat tube of the aux generator to generate the refrigerant steam. Then, the concentrated absorbing liquid is returned back to the aux absorbing unit after passing through the aux heat exchanger. The refrigerant steam generated from the 1 st generator and the aux generator will condense the refrigerant with the leakage of the chilled water inside the heat tube and then it absorbs the heat generated. That is, the hot water flows the 1st generator-----> 2nd generator-----> aux generator while the chilled water flows absorbing unit -----> aux absorbing unit -----> condenser in order to form a chilled cycle. In addition, the low-temp hot water two stage absorbing chiller has main cycle and aux cycle and the details of the solution Oiquid) flow are as below.

Main cycle solution flow

Absorber → Diluted solution pump → Low-temp heat exchanger → High-temp heat exchanger → 1st generator

Low-temp heat exchanger ← Concentrated solution pump ← 2nd generator ← High-temp heat exchanger ← Intermidiate solution pump

I Aux cycle solution flow

Aux diluted solution pump → Aux heat exchanger → Aux generator

Aux concentrated solution pump ← Aux heat exchanger ← Aux. absorber

SPECIFICATION

Single Effect Double Lift Hot Water Absorption Chiller (KDL)

Hot Water inlet temp 95 ℃

Model		Unit	KDL 2AB75		KDL 2AB90		KDL 2AB110		KDL 2AB135		KDL 2AB155		KDL 2AB180		KDL 2AB210		KDL 2AB240		KDL 2AB270	
Chilled water temp. in-outlet		℃	12-7	13-8	12-7	13.8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8
Cooling capacity		kW	257	264	309	316	376	387	464	474	531	545	619	633	721	738	823	844	928	949
		USRT	73	75	88	90	107	110	132	135	151	155	176	180	205	210	234	240	264	270
Chiled Water	Flow rate	m^3/h	44.2	45.5	53.2	54.4	64.7	9.6	79.8	81.6	91.3	93.7	106	109	124	127	142	145	160	163
	Pressure drop	mH_2O	6.1	6.4	6.6	6.8	9.1	92	10.1	10.5	9.1	9.5	9.3	9.6	9.3	9.7	9.1	9.5	9.8	10.2
	Nozzle size	mm	80				100				125								150	
Cooling Water	in-outlet temp	℃																		
	Flow rate	m^3/h	104	107	125	128	152	156	188	192	215	220	251	256	292	298	333	341	376	383
	Pressure drop	mH_2O	10.0	10.5	10.2	10.6	10.7	11.1	11.8	12.1	11.5	11.9	12.4	21.7	12.2	12.6	12.3	12.8	12.0	12.3
	Nozzle size	mm	150												200					
Hot Water	in-outlet temp	℃																		
	Flow rate	ton/h	8.8	8.9	10.6	10.7	12.9	13.1	15.9	16	18.2	18.4	21.2	21.4	24.7	24.9	28.1	28.5	31.8	32
	Pressure drop Main body	mH_2O	3.5	3.6	3.5	3.6	5.4	5.5	5.9	6.0	5.7	5.8	6.0	6.1	5.5	5.6	5.7	5.9	5.2	5.3
	Pressure drop Control valve	mH_2O	2.3	2.4	3.3	3.4	1.8	1.9	2.8	2.9	1.5	1.5	2.0	2.1	2.7	2.8	1.4	1.4	1.8	1.8
	Nozzle size	mm	65								80									
	Control valve Nazzle size	mm	40				50				65						80			
Electrical power	Power																			
	Solution pump	kW	3.3(12.8)				3.9(14.8)				4.5(15.8)				5.1(16.8)					
	Refrigerant pump	kW	0.2(1.1)				0.3(1.5)								0.4(1.5)					
	Prug pump	kW	0.4(1.4)																	
	Control panel	kW																		
	Maximum ampere@380V	A	15.8				18.2				19.2				20.2					
Demension	Length	mm	2.670				3.690				3.696				4.767				4.852	
	Width	mm	1.736								1.989								2.240	
	Height	mm	2.293								2.428								2.566	
Weight	Rigging weight	ton	4.4		4.6		5.7		6		7.2		7.5		8.8		9.2		11.3	
	Operation weight	ton	5.1		5.3		6.6		7		8.4		8.9		10.4		10.9		31.4	
Tube exchange space		mm	2.400				3.400													

Hot Water inlet temp 115"C

Model		Unit	KDL 2AB75		KDL 2AB90		KDL 2AB110		KDL 2AB135		KDL 2AB155		KDL 2AB180		KDL 2AB210		KDL 2AB240		KDL 2AB270	
Chilled water temp. in-outlet		℃	12-7	13-8	12-7	13.8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8
Cooling capacity		kW	274	285	331	341	404	418	496	513	570	591	661	686	770	798	879	914	988	1.027
		USRT	78	81	94	97	115	119	141	146	162	168	188	195	219	227	250	260	281	292
Chiled Water	Flow rate	m^3/h	47.2	49	56.9	58.7	69.6	72	88.3	88.3	98	102	114	118	132	137	151	157	170	177
	Pressure drop	mH_2O	11.3	12.1	12	12.7	10.3	11	12.1	12.1	9.1	11	10.4	11.1	10.4	11.1	10.2	11	11	11.7
	Nozzle size	mm	80				100				125								150	
Cooling Water	in-outlet temp	℃																		
	Flow rate	m^3/h	105	109	127	130	156	160	191	196	219	226	254	262	296	305	338	350	380	393
	Pressure drop	mH_2O	10.5	11.2	11	11.4	11.2	11.8	12.1	12.7	11.9	12.6	12.8	13.5	12.5	13.2	12.7	13.5	12.3	13
	Nozzle size	mm	150												200					
Hot Water	in-outlet temp	℃																		
	Flow rate	ton/h	5.7	5.9	6.9	7.1	8.5	8.7	10.4	10.6	11.9	12.2	13.8	14.2	16.1	16.5	18.4	18.9	20.7	21.3
	Pressure drop Main body	mH_2O	3	3.1	3.3	3.4	5.3	5.5	5.9	6.2	4.9	5.1	5.4	5.7	4.2	4.4	4.5	4.7	3.7	3.9
	Pressure drop Control valve	mH_2O	1	1.1	1.5	1.6	2.2	2.3	1.2	1.3	1.6	1.7	2.2	2.3	3.1	3.2	4	4.2	2	2.1
	Nozzle size	mm	65																	
	Control valve Nazzle size	mm	40						50											
Electrical power	Power																			
	Solution pump	kW	3.3(12.8)				3.9(14.8)				4.5(15.8)				5.1(16.8)					
	Refrigerant pump	kW	0.2(1.1)				0.3(1.5)								0.4(1.5)					
	Prug pump	kW	0.4(1.4)																	
	Control panel	kW																		
	Maximum ampere@380V	A	15.8				18.2				19.2				20.2					
Demension	Length	mm	2.670				3.690				3.696				4.767				4.852	
	Width	mm	1.736								1.989								2.240	
	Height	mm	2.293								2.428								2.566	
Weight	Rigging weight	ton	4.4		4.6		5.7		6		7.2		7.5		8.8		9.2		11.3	
	Operation weight	ton	5.1		5.3		6.6		7		8.4		8.9		10.4		10.9		31.4	
Tube exchange space		mm	2.400				3.400													

Note

1) Standard pressure : Chilled water and cooling water 1.0MPa(1 Okgf/c_G),Hot water 1.6MPa(16kgf/c_G)
2) Power standard : 380V, 3Phase, 60Hz(220V, 440V, 460V also available)
3) The specification could be changed without any notice.

SPECIFICATION

Single Effect Double Lift Hot Water Absorption Chiller (KDL)

Hot Water inlet temp 95 °C

KDL 2AB300		KDL 2AB340		KDL 2AB375		KDL 2AB420		KDL 2AB470		KDL 2AB525		KDL 2AB600		KDL 2AB675		KDL 2AB750		KDL 2AB825		KDL 2AB900		KDL 2AB975	
12-7	13-8	12-7	13.8	12-7	13-8	12-7	13-8	12-7	13.8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8
1.030	1.054	1.167	1.195	1.287	1.318	1.476	1.476	1.614	1.652	1.652	1.845	2.061	2.110	2.110	2.373	2.574	2.637	2.837	2.901	3.091	3.165	3.347	3.428
293	300	332	340	366	375	410	410	459	470	513	525	586	600	659	675	732	750	806	825	879	900	264	975
177	181	201	206	221	227	248	248	278	284	310	318	354	363	363	408	443	454	487.5	499	532	544	160	590
10.1	10.5	8.9	9.3	9.3	9.7	7.1	7.4	9.8	10.2	4.4	4.5	9.7	10.1	4.3	4.5	5.7	6.0	7.4	7.7	6.3	6.6	7.8	8.2
150		200										250								300			
31 / 36.5																							
418	426	473	483	522	533	584	596	654	667	731	746	835	852	939	959	1.043	1.065	1.149	1.172	1.253	1.278	1.357	1.385
12	12.3	12.0	12.4	12.1	12.5	8.7	9.0	11.3	12.2	15.9	16.3	12.7	13.0	17.1	17.6	12.6	13.0	16.1	16.6	17.6	18.3	21.9	22.8
250						300						350								400			
95 / 55																							
35.2	35.6	39.9	40.4	44	44.5	49.3	49.9	55.2	55.8	61.7	62.3	70.5	71.2	79.3	80.1	88	89	69.9	97.9	106	107	114	116
5.4	5.5	5.5	5.8	5.5	5.6	4.9	5.0	5.1	5.2	3.9	4.0	4.4	4.5	3.2	3.3	4.2	4.3	5.4	5.5	4.3	4.5	5.2	5.5
2.2	2.3	2.8	2.9	1.4	1.4	1.7	1.7	2.1	2.2	2.7	2.7	3.5	3.6	1.7	1.7	2.1	2.1	2.5	2.6	2.9	3.1	3.4	3.6
100												125											
80				100								125											
3Ø 380V 60Hz																							
		6.0(18.8)				6.7(22.2)						10.4(35.0)								14.1(48.0)			
0.4(1.5)												1.5(4.0)											
0.4(1.4)																							
0.2(0.5)																							
20.2		22.2				25.6						40.9								53.9			
4.852		4.866				5.005		5.544		6.045		5.638		6.136		6.661		7.189		6.791		7.291	
2.240		2.350				2.262						3.070								3.374			
2.566		2.963				2.293						3.600								3.931			
11.8		13.5		14		19		20.7		22.2		26.7		28.7		30.7		36.4		9.2		40.8	
14.1		16.2		16.9		23		25		26.9		31.6		34		36.3		43.1		45.5		48.3	
4.600								5.200		5.700		5.200		5.700		6.200		6.700		6.200		6.700	

Hot Water inlet temp 115"C

KDL 2AB300		KDL 2AB340		KDL 2AB375		KDL 2AB420		KDL 2AB470		KDL 2AB525		KDL 2AB600		KDL 2AB675		KDL 2AB750		KDL 2AB825		KDL 2AB900		KDL 2AB975	
12-7	13-8	12-7	13.8	12-7	13-8	12-7	13-8	12-7	13.8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8	12-7	13-8
1.101	1.143	1.245	1.294	1.375	1.428	1.540	1.600	1.723	1.790	1.790	1.923	2.198	2.286	2.475	2.570	2.750	2.855	3.024	3.144	3.298	3.428	3.573	3.713
313	325	354	368	391	406	438	455	490	509	547	569	625	650	704	731	782	812	806	894	938	975	1.016	1.056
189	197	214	223	236	246	265	275	296	308	331	344	378	393	426	442	473	491	520	541	567	590	614	639
11.3	12.1	10	10.7	1.5	11.2	8	8.5	11	11.8	4.8	5.2	5.2	11.4	4.8	5.1	6.3	6.7	4.3	4.6	5.5	5.9	6.8	7.3
		200										250						300					
31 / 36.5																							
423	437	479	495	529	546	592	612	633	684	740	765	845	874	952	983	1.058	1.092	1.163	1.202	1.269	1.311	1.374	1.420
12.3	13	12.3	13.1	12.4	13.2	9.8	10.4	13.4	14.2	17.7	18.9	13.9	14.8	18.8	19.9	13.5	14.3	9.1	9.7	11.6	12.3	14.4	15.3
250						300						350								400			
115 / 55																							
23	23.7	26.1	26.8	28.8	29.6	32.2	33.1	36	37.1	40.3	41	46	47.3	51.8	53.2	57.6	59.1	63.3	65.1	69	71	74.8	76.9
3.9	4.1	4.1	4.3	4.4	4.6	3	3.1	3.9	4.1	5.1	5.4	3.3	3.5	4.4	4.6	5.7	6	4.7	4.9	5.8	6.1	4.9	5.2
2.5	2.6	3	3.2	3.9	4.1	1.9	2	2.4	2.5	2.9	3.1	1.5	1.6	2	2.1	2.4	2.5	2.9	3.1	1.3	1.4	1.5	1.6
80						100												125					
65						80								125									
3Ø 380. 60Hz																							
		6.0(18.8)				6.7(22.2)						10.4(35.0)								14.1(48.0)			
0.4(1.5)												1.5(4.0)											
0.4(1.4)																							
0.2(0.5)																							
20.2		22.2				25.6						40.9								53.9			
4.852		4.866				5.005		5.544		6.045		5.638		6.136		6.661		7.189		6.791		7.291	
2.240		2.350				2.262						3.070								3.374			
2.566		2.963				2.293						3.600								3.931			
11.8		13.5		14		19		20.7		22.2		26.7		28.7		30.7		36.4		9.2		40.8	
14.1		16.2		16.9		23		25		26.9		31.6		34		36.3		43.1		45.5		48.3	
4.600								5.200		5.700		5.200		5.700		6.200		6.700		6.200		6.700	

Option

In different heat source and operation, the conditions can be selected as an option.

1) Non-standard water pressure.
2) Heat tube material is not copper or different thickness.
3) Non-standard temp. conditions for hot, cooling and chilled water.

Note

Note


KELVIN
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