

Water-cooled Screw Heat Pump

Professional HVAC Fan & Motors Manufacturer

Product Display



Water-cooled Screw Heat Pump

Product Characteristic

Water-cooled screw heat pump is a heat pump system that uses water as the cooling medium. It consists of a screw compressor and a heat exchanger, which utilize the cooling characteristics of water to convert low-temperature heat sources into high-temperature heat sources.

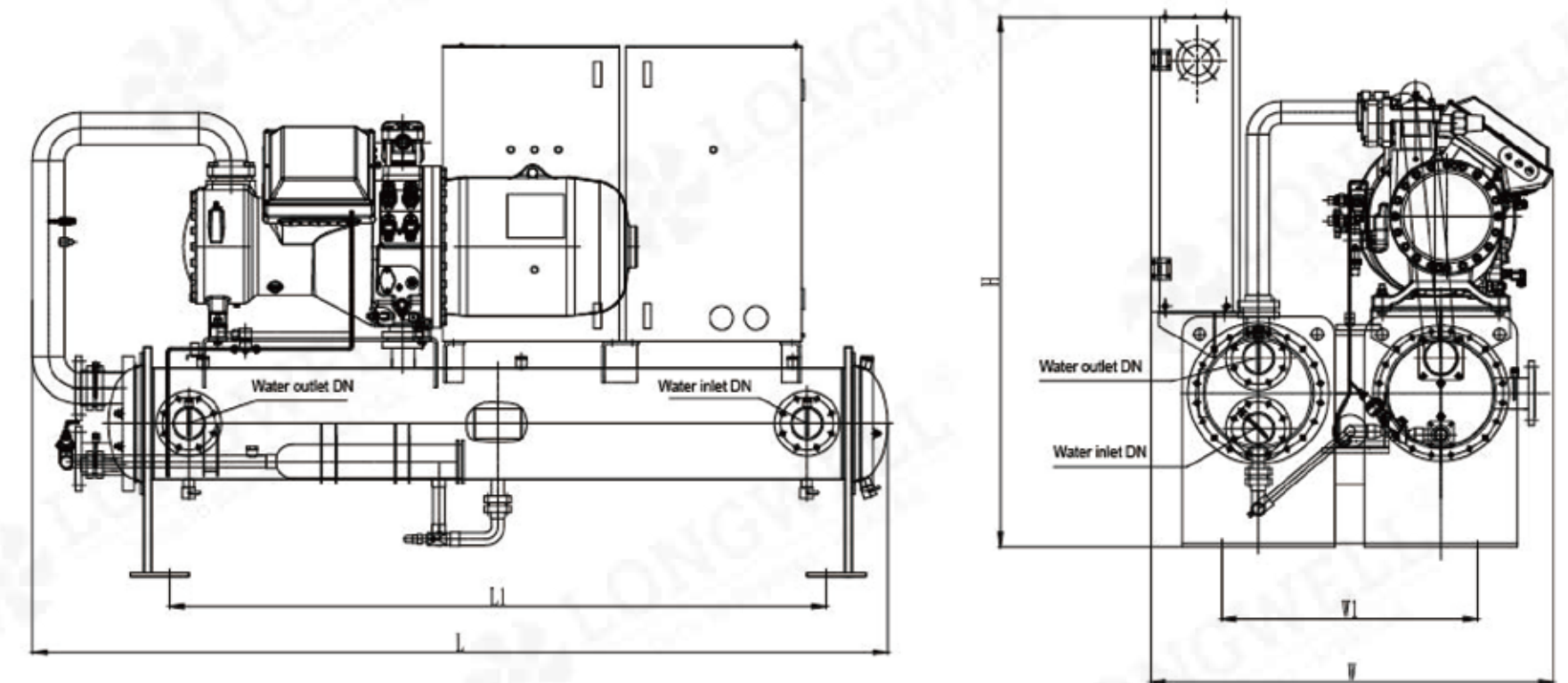
Water-cooled screw heat pump has the following features:

1. High efficiency and energy saving: The water-cooled screw heat pump system transfers heat between the heat source and cooling water through the heat exchanger, maximizing the utilization of water's cooling characteristics, improving energy utilization efficiency, and saving energy consumption.
2. Environmentally friendly and energy efficient: The water-cooled screw heat pump system uses water as the cooling medium, eliminating the need for chemical refrigerants and reducing environmental pollution.
3. Stable and reliable: The water-cooled screw heat pump system uses a screw compressor and has high stability and reliable operation, suitable for long-term operation and high-load conditions.
4. Multi-functionality: The water-cooled screw heat pump system can be used for air conditioning cooling, heating, and hot water supply, among other applications, providing flexibility and versatility.
5. Wide range of applications: The water-cooled screw heat pump is suitable for large buildings, industrial refrigeration, and heating, among other fields, meeting the different needs of various locations.

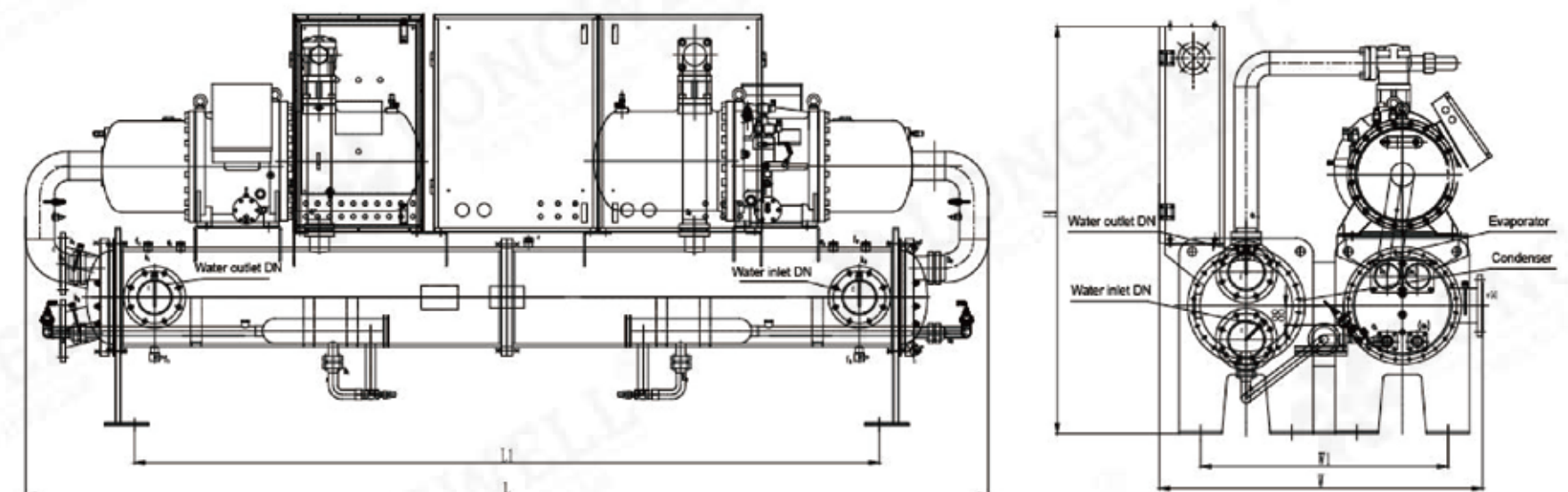


Structure Diagram

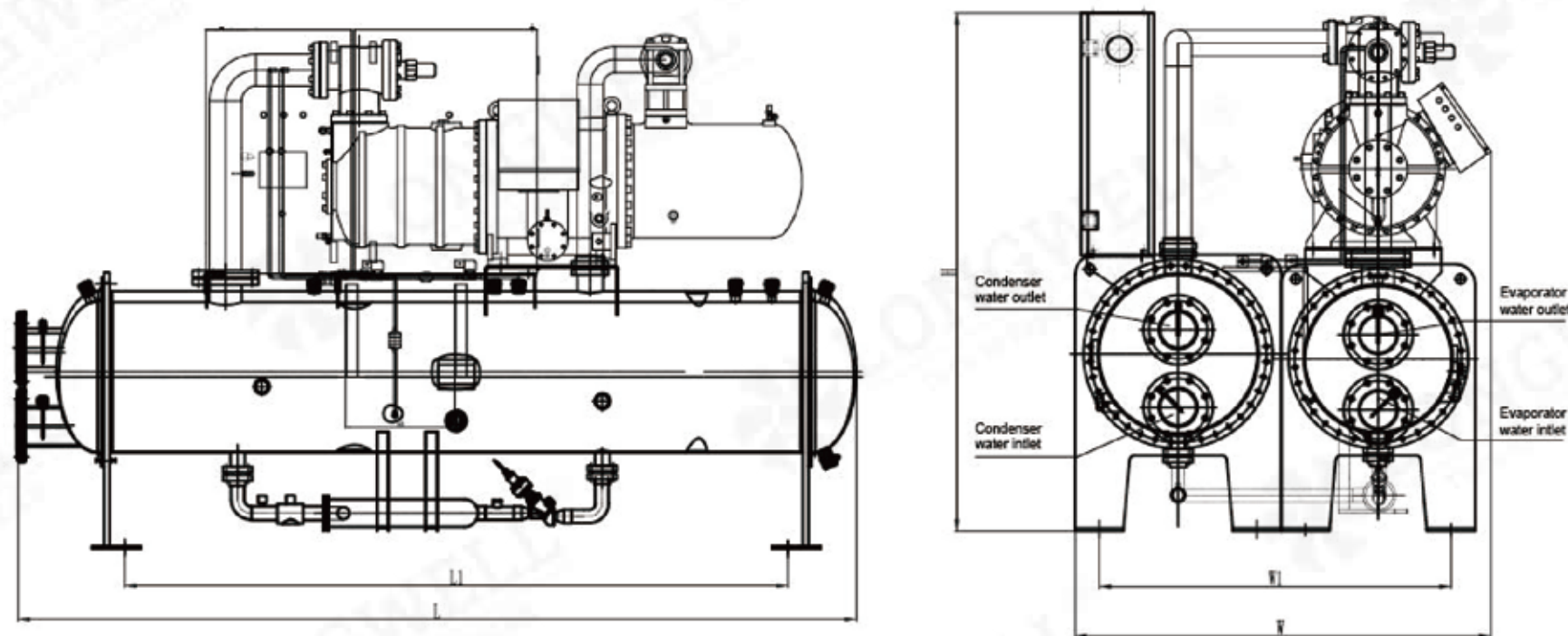
With single compressor



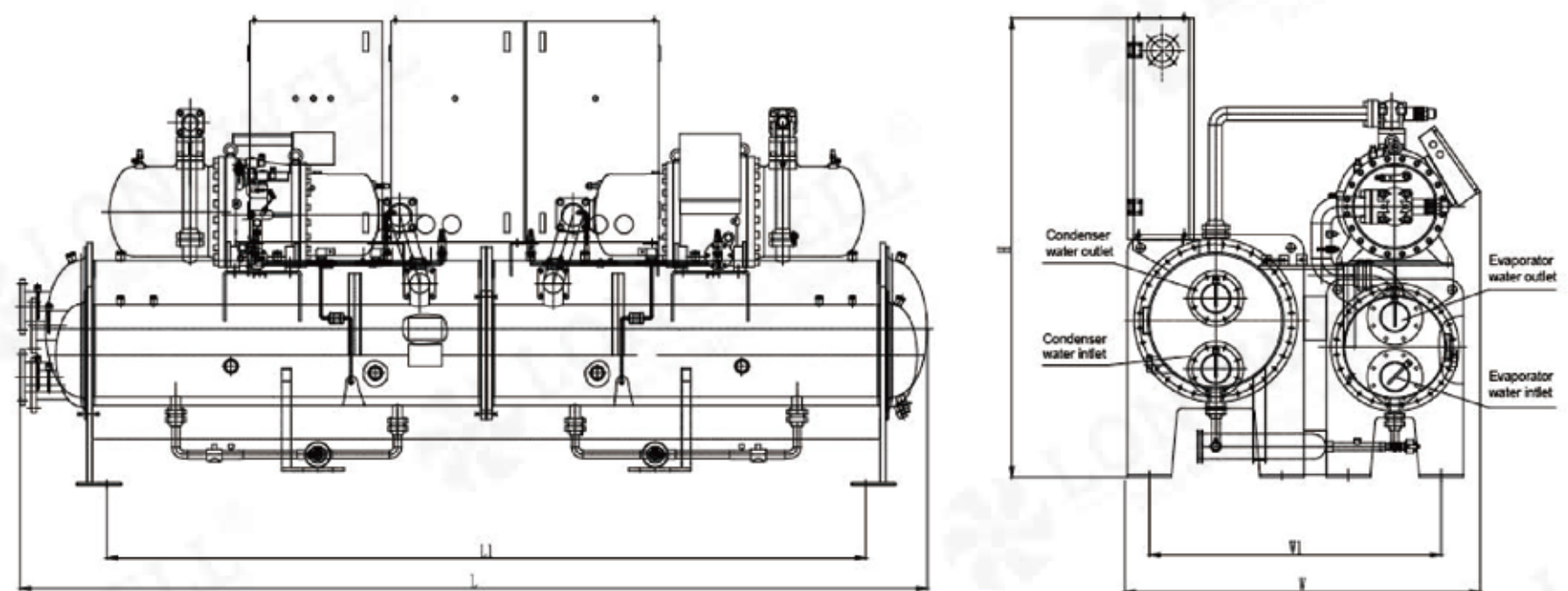
With double compressors



Flooded screw type with single compressor



Flooded screw type with double compressors



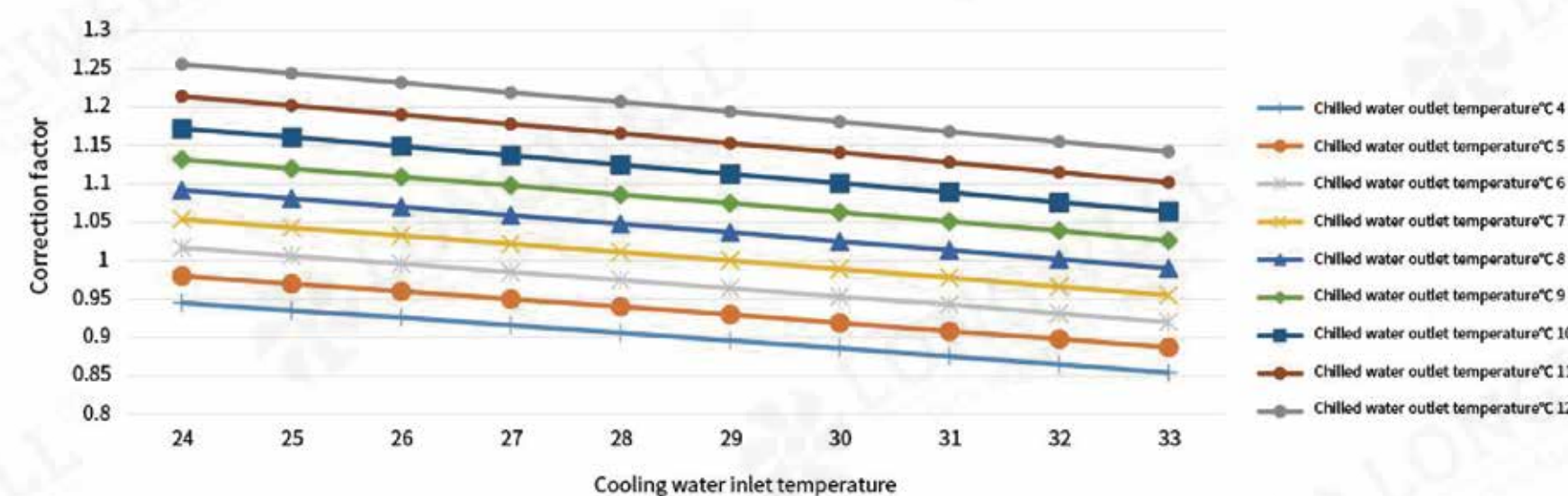
Unit model	RLSG-AR	520	580	640	740	860	940	1200
Nominal cooling capacity(Kw)		529	590	632	738	850	930	1080
Input power(Kw)		84.9	92.8	100.8	114.8	133	144.9	164.9
Nominal heating capacity(Kw)		550	616	668	770	901	996	1146
Running current(A)		115	125.7	136.5	155.6	180.2	196.3	223.5
Max.running current(A)		280.3	306.1	332.5	378.8	451.8	490	548.4
Cable diameter(copper wire distance ≤ 20 meters) mm ²		3×150+2×70	3×185+2×95	3×185+2×95	3×240+2×120	3×240+2×120	2×(3×150+2×70)	2×(3×150+2×70)
Power voltage	3-380V-50Hz							
Starting mode	Y-△							
Refrigerant	R134a							
Refrigerant charge		102	110	119	140	160	174	201
Refrigerant control device	Electronic expansion valve(EXV)							
Compressor	Type	Semi-hermetic screw						
	Qty	1						
Evaporator	Type	Shell & tube type						
	Water pressure drop(Kpa)	70-90						
	Water pipe Dia.DN	125	125	125	150	150	150	150
	Chilled water(m ³ /h)	91	101	109	127	146	160	186
Condenser type	Well water(m ³ /h)	54	61	65	76	88	96	111
	Type	Shell & tube type						
	Water pressure drop(Kpa)	70-90						
	Water pipe Dia.DN	125	125	125	150	150	150	150
	Hot water(m ³ /h)	91	101	109	127	146	160	186
	Well water(m ³ /h)	54	61	65	76	88	96	111
Noise(dBA)		87.1	87.3	87.6	88.4	89.2	90	91
Protection device		High and low voltage protection, antifreeze protection, temperature control,reverse phase and phase loss protection,high and low voltage protection,high pressure exhaust temperature protection,built-in motor overheat protection, overcurrent protection,check valve, safety valve						
Unit structure		Horizontal type						
Dimensions (mm)	L	3400	3400	3500	3500	3500	3500	3500
	W	1450	1600	1600	1600	1600	1600	1600
	H	1800	1800	1850	1850	1850	1950	1950
Install dimensions (mm)	L1	2735	2735	2735	2735	2735	2735	2735
	W1	880	1300	1300	1300	1300	1300	1300
Net weight(kg)		2650	2850	3100	3300	3500	3700	4300
Running weight(kg)		3950	4250	4350	4600	4900	5300	5900

Remarks:

Cooling conditions: user side inlet/outlet temperature is 12 C/7 C , well water inlet/outlet temperature is 18 C/29 C .

Heating conditions: user side inlet/outlet temperature is 40 C/- C , well water inlet/outlet temperature is 15 C/- C .

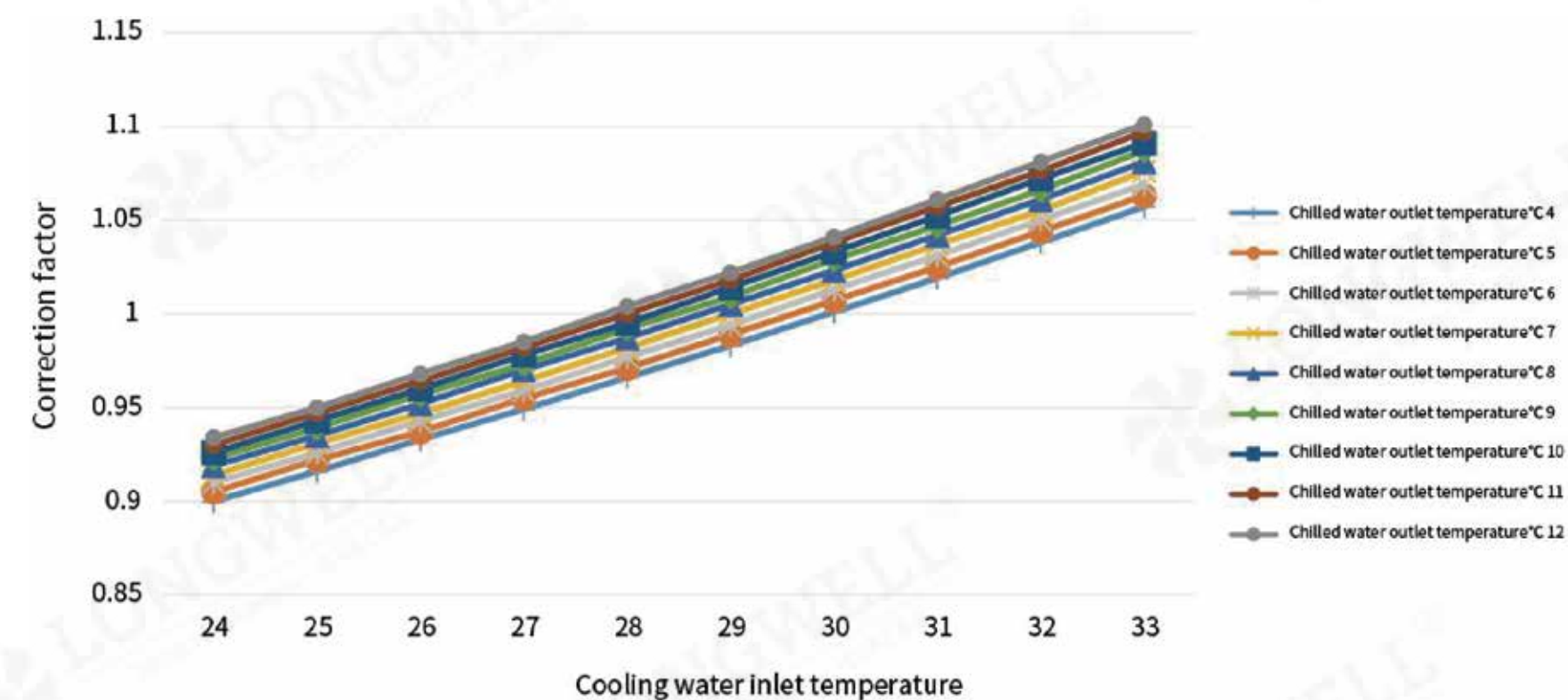
Correction factor curve of dry type water source heat pump cooling capacity-R22



Correction factor

		Cooling water inlet temperature									
		24	25	26	27	28	29	30	31	32	33
Chilled water outlet temperature	4	0.945	0.935	0.926	0.916	0.906	0.896	0.886	0.875	0.865	0.854
	5	0.98	0.97	0.96	0.95	0.94	0.93	0.919	0.908	0.898	0.887
	6	1.017	1.006	0.996	0.985	0.975	0.964	0.953	0.943	0.931	0.92
	7	1.054	1.043	1.033	1.022	1.011	1	0.989	0.978	0.966	0.955
	8	1.092	1.081	1.07	1.059	1.048	1.037	1.025	1.014	1.002	0.99
	9	1.132	1.12	1.109	1.098	1.086	1.075	1.063	1.051	1.039	1.026
	10	1.172	1.161	1.149	1.137	1.125	1.113	1.101	1.089	1.076	1.064
	11	1.214	1.202	1.19	1.178	1.166	1.153	1.141	1.128	1.115	1.102
	12	1.256	1.244	1.232	1.219	1.207	1.194	1.181	1.168	1.155	1.142

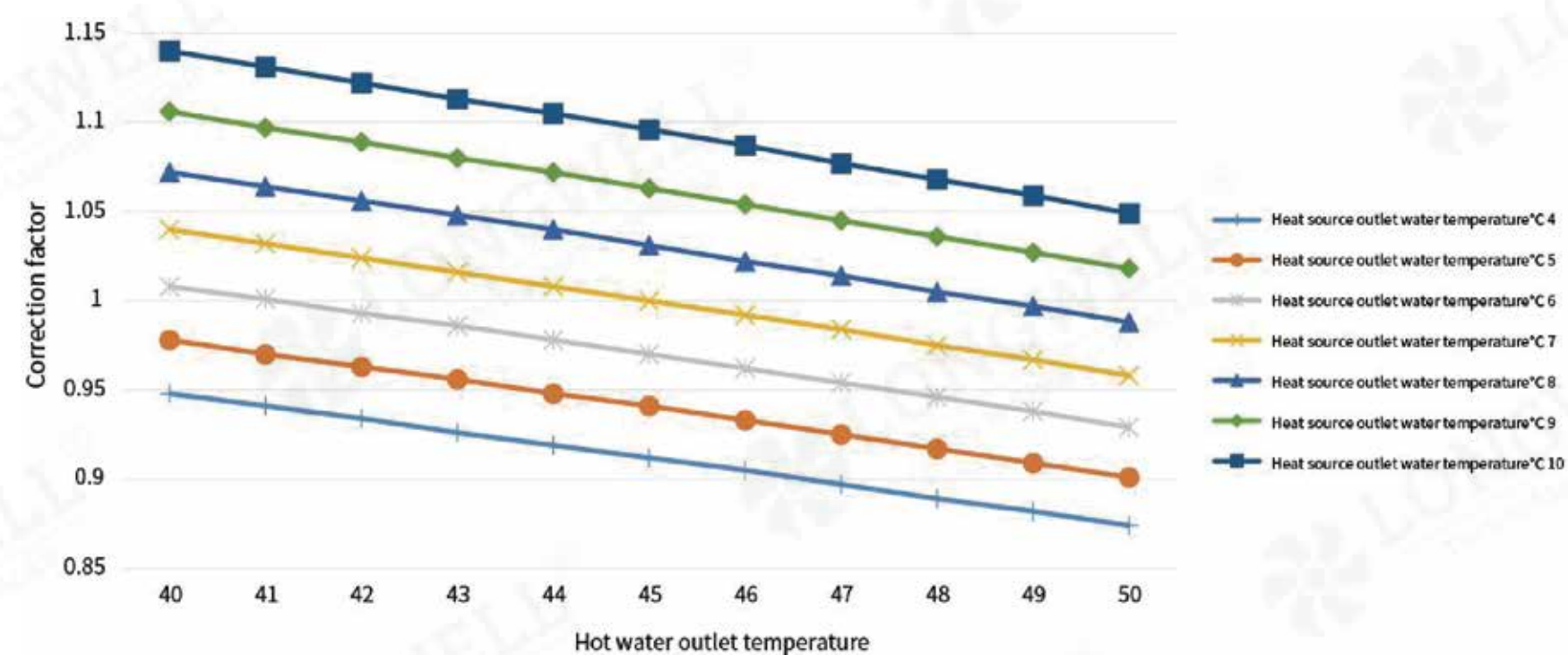
Correction factor curve of dry type water source heat pump cooling input power-R22



Correction factor

		Cooling water inlet temperature									
		24	25	26	27	28	29	30	31	32	33
Chilled water outlet temperature	4	0.9	0.916	0.933	0.949	0.966	0.983	1.001	1.019	1.038	1.057
	5	0.905	0.922	0.937	0.955	0.971	0.989	1.007	1.025	1.044	1.063
	6	0.91	0.926	0.943	0.959	0.977	0.994	1.013	1.031	1.05	1.069
	7	0.914	0.931	0.947	0.964	0.982	1	1.018	1.037	1.055	1.076
	8	0.919	0.935	0.952	0.97	0.987	1.005	1.023	1.042	1.061	1.081
	9	0.923	0.939	0.957	0.973	0.992	1.009	1.029	1.047	1.066	1.087
	10	0.926	0.943	0.96	0.978	0.995	1.014	1.033	1.052	1.072	1.091
	11	0.93	0.947	0.964	0.982	1	1.018	1.038	1.057	1.076	1.097
	12	0.934	0.95	0.968	0.985	1.004	1.022	1.041	1.061	1.081	1.101

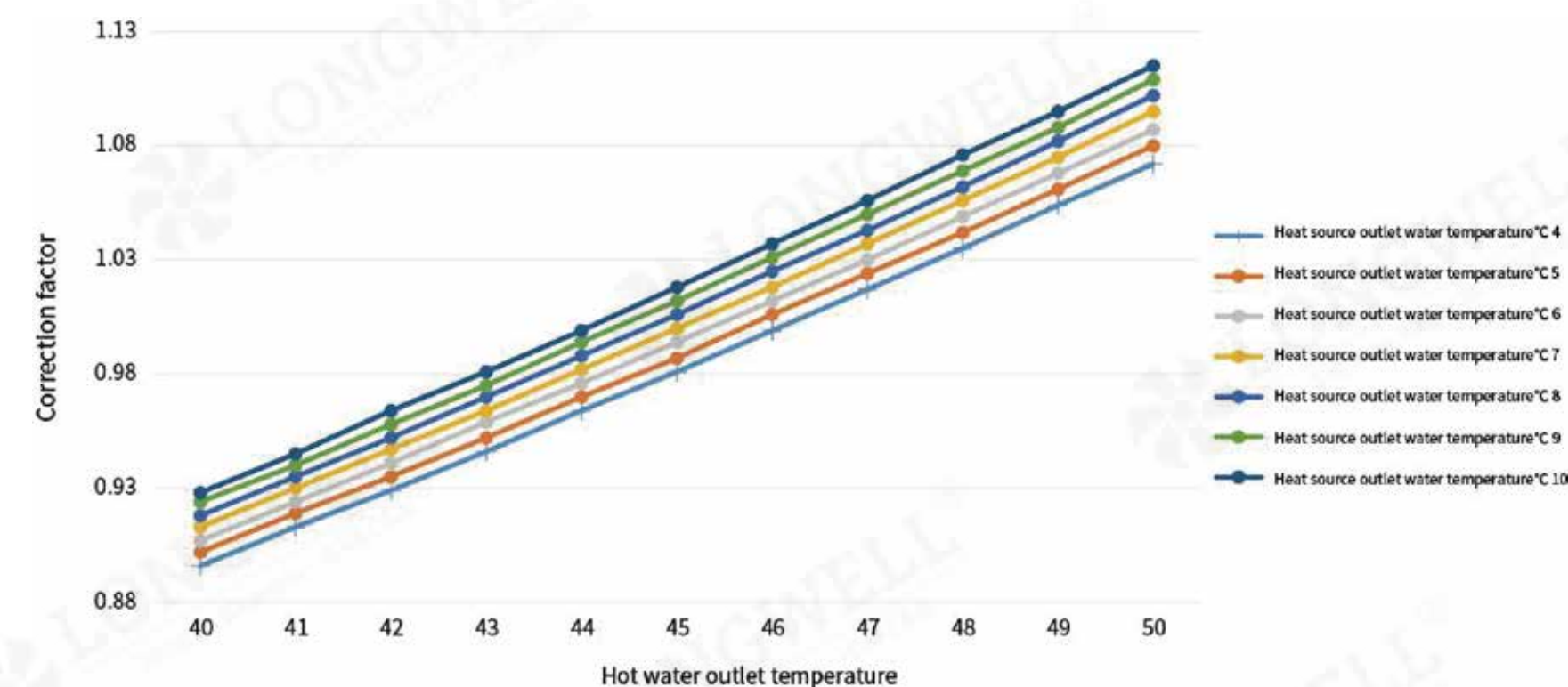
Correction factor curve of dry type water source heat pump heating capacity-R22



Correction factor

		Hot water outlet temperature										
		40	41	42	43	44	45	46	47	48	49	50
Heat source outlet water temperature	4	0.948	0.941	0.934	0.926	0.919	0.912	0.905	0.897	0.889	0.882	0.874
	5	0.978	0.97	0.963	0.956	0.948	0.941	0.933	0.925	0.917	0.909	0.901
	6	1.008	1.001	0.993	0.986	0.978	0.97	0.962	0.954	0.946	0.938	0.929
	7	1.04	1.032	1.024	1.016	1.008	1	0.992	0.984	0.975	0.967	0.958
	8	1.072	1.064	1.056	1.048	1.04	1.031	1.022	1.014	1.005	0.997	0.988
	9	1.106	1.097	1.089	1.08	1.072	1.063	1.054	1.045	1.036	1.027	1.018
	10	1.14	1.131	1.122	1.113	1.105	1.096	1.087	1.077	1.068	1.059	1.049

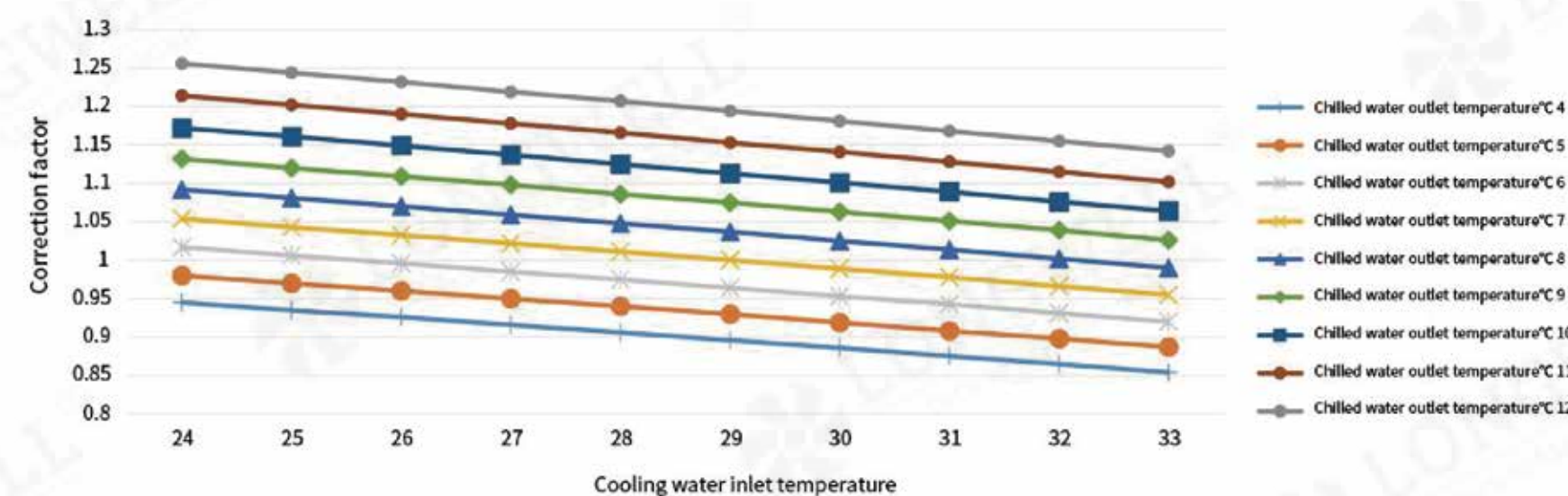
Correction factor curve of dry type water source heat pump heating input power-R22



Correction factor

		Hot water outlet temperature										
		40	41	42	43	44	45	46	47	48	49	50
Heat source outlet water temperature	4	0.896	0.913	0.929	0.946	0.964	0.981	0.999	1.017	1.035	1.054	1.072
	5	0.902	0.919	0.935	0.952	0.97	0.987	1.006	1.024	1.042	1.061	1.08
	6	0.907	0.924	0.941	0.959	0.976	0.994	1.012	1.03	1.049	1.068	1.087
	7	0.913	0.930	0.947	0.964	0.982	1	1.018	1.037	1.056	1.075	1.095
	8	0.918	0.935	0.952	0.97	0.988	1.006	1.025	1.043	1.062	1.082	1.102
	9	0.924	0.94	0.958	0.975	0.994	1.012	1.031	1.05	1.069	1.088	1.109
	10	0.928	0.945	0.964	0.981	0.999	1.018	1.037	1.056	1.076	1.095	1.115

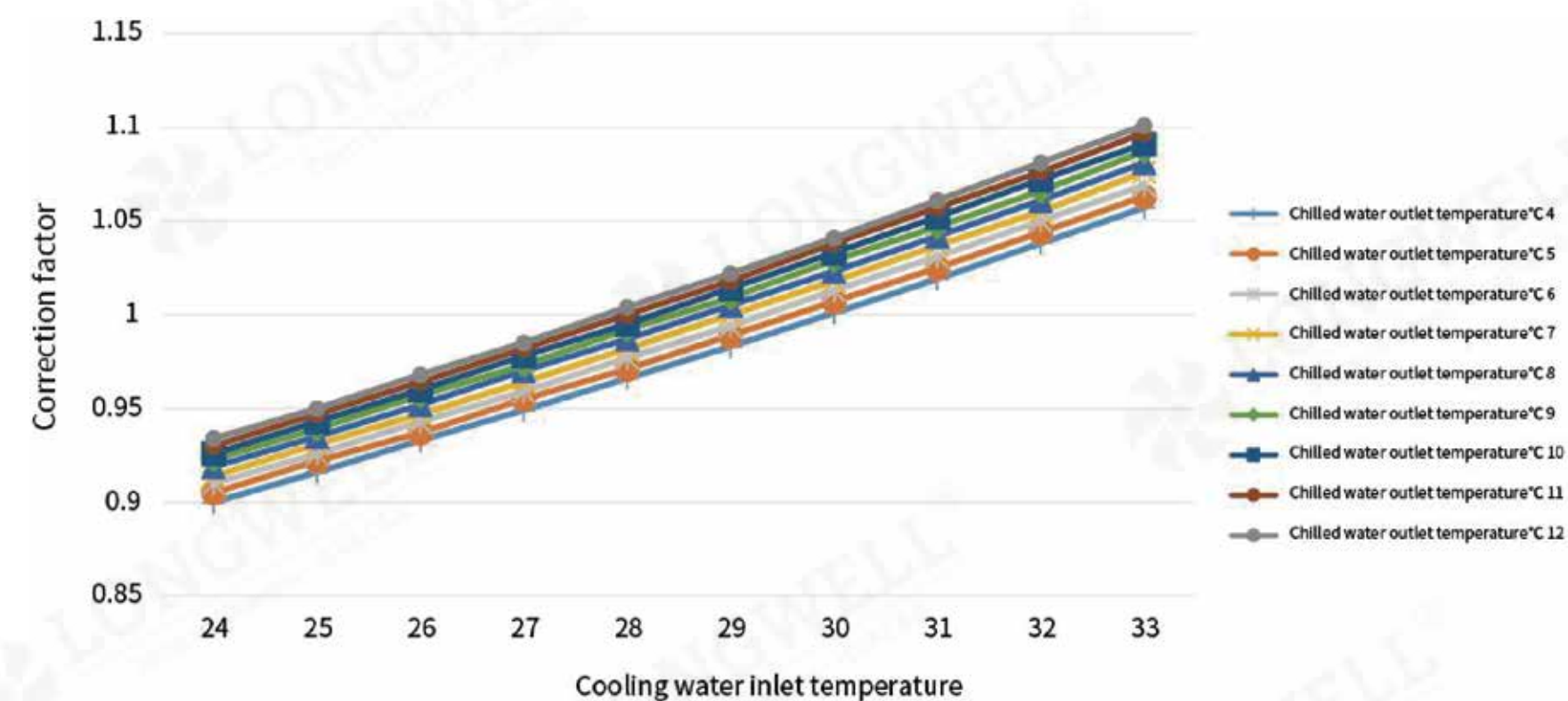
Correction factor curve of dry type water source heat pump cooling capacity-R134a



Correction factor

		Cooling water inlet temperature									
		24	25	26	27	28	29	30	31	32	33
Chilled water outlet temperature	4	0.932	0.923	0.914	0.905	0.895	0.885	0.876	0.866	0.856	0.846
	5	0.971	0.961	0.952	0.942	0.932	0.922	0.912	0.902	0.892	0.881
	6	1.011	1.001	0.991	0.981	0.971	0.96	0.95	0.94	0.929	0.918
	7	1.052	1.042	1.031	1.021	1.011	1	0.989	0.978	0.967	0.956
	8	1.094	1.084	1.073	1.062	1.052	1.041	1.029	1.018	1.007	0.995
	9	1.138	1.127	1.117	1.105	1.094	1.083	1.071	1.06	1.048	1.036
	10	1.184	1.172	1.161	1.149	1.138	1.126	1.114	1.102	1.09	1.078
	11	1.23	1.219	1.207	1.195	1.183	1.171	1.159	1.146	1.133	1.121
	12	1.279	1.267	1.255	1.242	1.23	1.217	1.204	1.192	1.178	1.165

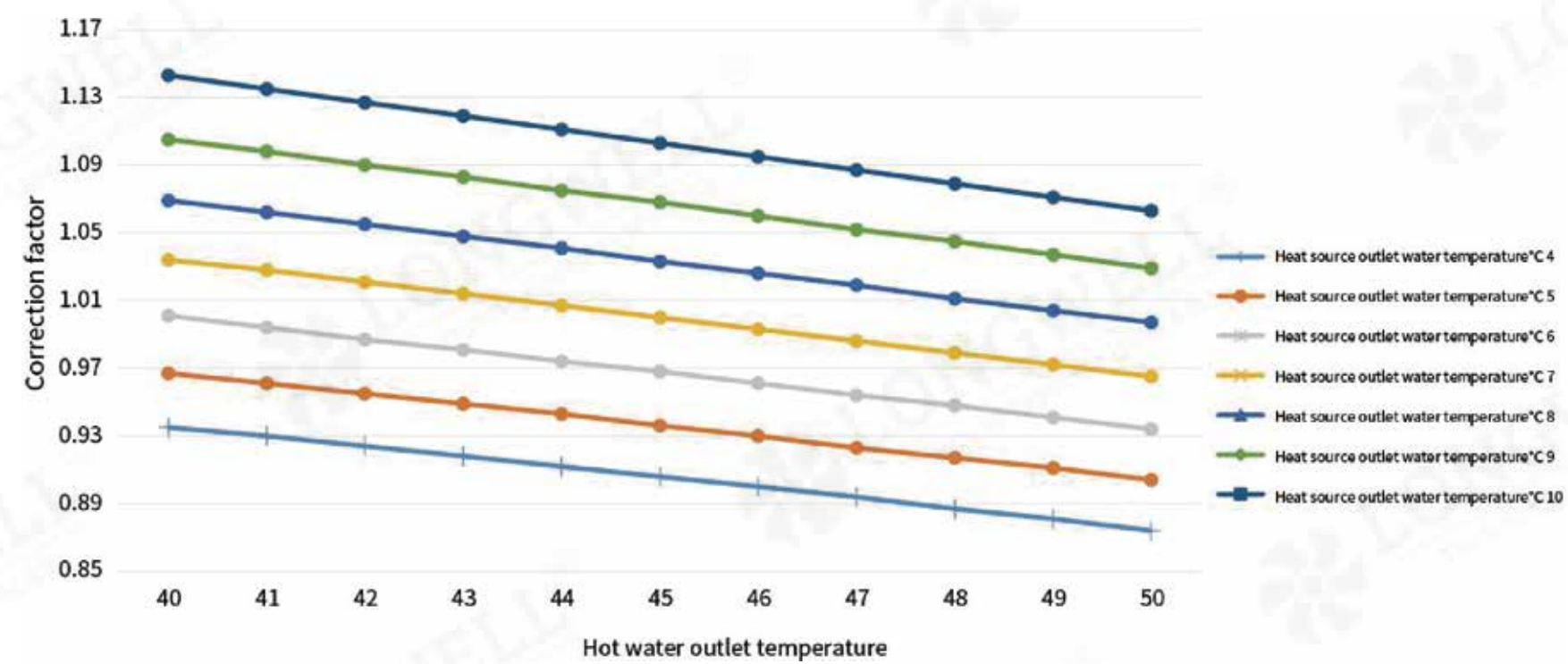
Correction factor curve of dry type water source heat pump cooling input power-R134a



Correction factor

		Cooling water inlet temperature									
		24	25	26	27	28	29	30	31	32	33
Chilled water outlet temperature	4	0.905	0.92	0.935	0.952	0.968	0.986	1.005	1.024	1.044	1.065
	5	0.91	0.923	0.94	0.956	0.973	0.991	1.009	1.029	1.048	1.069
	6	0.913	0.928	0.944	0.961	0.977	0.995	1.014	1.033	1.053	1.074
	7	0.917	0.932	0.947	0.964	0.982	1	1.018	1.038	1.057	1.078
	8	0.92	0.935	0.952	0.968	0.985	1.003	1.023	1.042	1.062	1.083
	9	0.925	0.940	0.955	0.971	0.989	1.008	1.026	1.045	1.066	1.087
	10	0.928	0.943	0.959	0.976	0.992	1.011	1.030	1.05	1.069	1.090
	11	0.932	0.947	0.962	0.979	0.997	1.015	1.033	1.053	1.074	1.095
	12	0.935	0.95	0.967	0.983	1	1.018	1.038	1.057	1.077	1.098

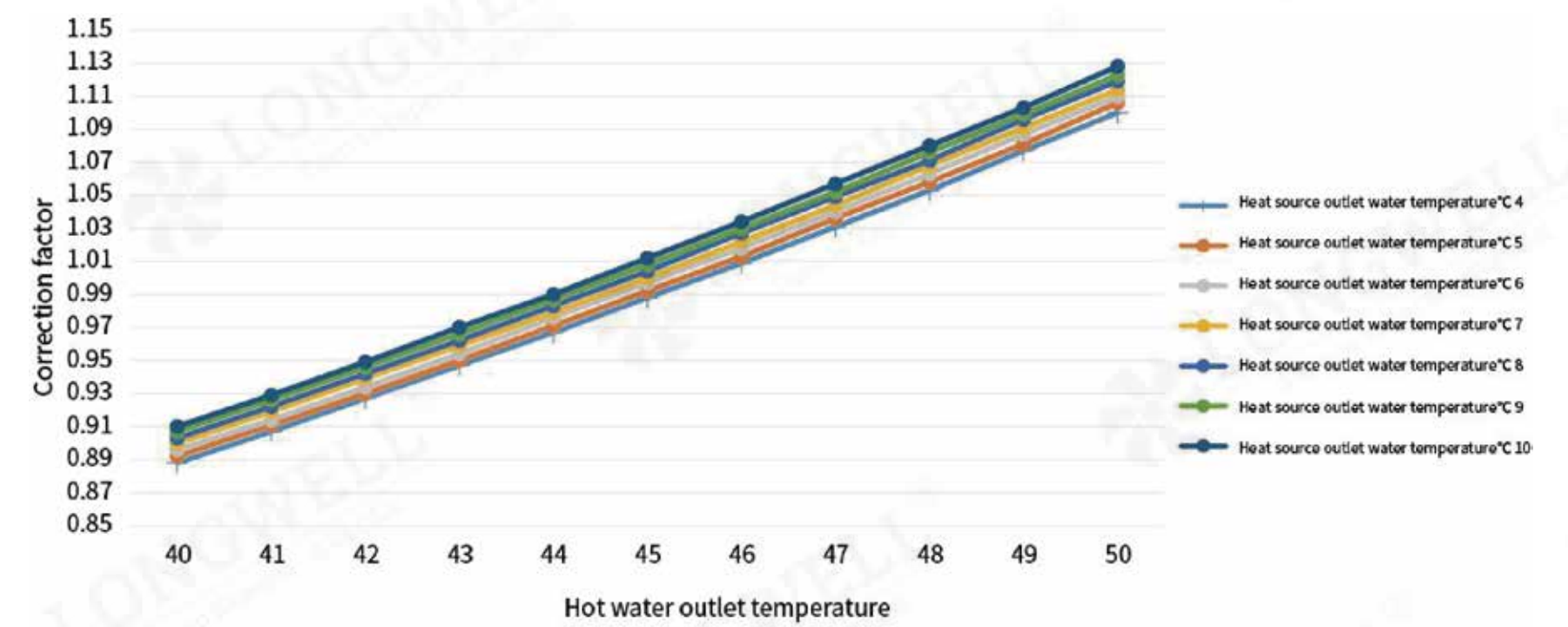
Correction factor curve of dry type water source heat pump heating capacity-R134a



Correction factor

		Hot water outlet temperature										
		40	41	42	43	44	45	46	47	48	49	50
Heat source outlet water temperature	4	0.935	0.930	0.924	0.918	0.912	0.906	0.9	0.894	0.887	0.881	0.874
	5	0.967	0.961	0.955	0.949	0.943	0.936	0.93	0.923	0.917	0.911	0.904
	6	1.001	1.994	0.987	0.981	0.974	0.968	0.961	0.954	0.948	0.941	0.934
	7	1.034	1.028	1.021	1.014	1.007	1	0.993	0.986	0.979	0.972	0.965
	8	1.069	1.062	1.055	1.048	1.041	1.033	1.026	1.019	1.011	1.004	0.997
	9	1.105	1.098	1.09	1.083	1.075	1.068	1.06	1.052	1.045	1.037	1.029
	10	1.143	1.135	1.127	1.119	1.111	1.103	1.095	1.087	1.079	1.071	1.063

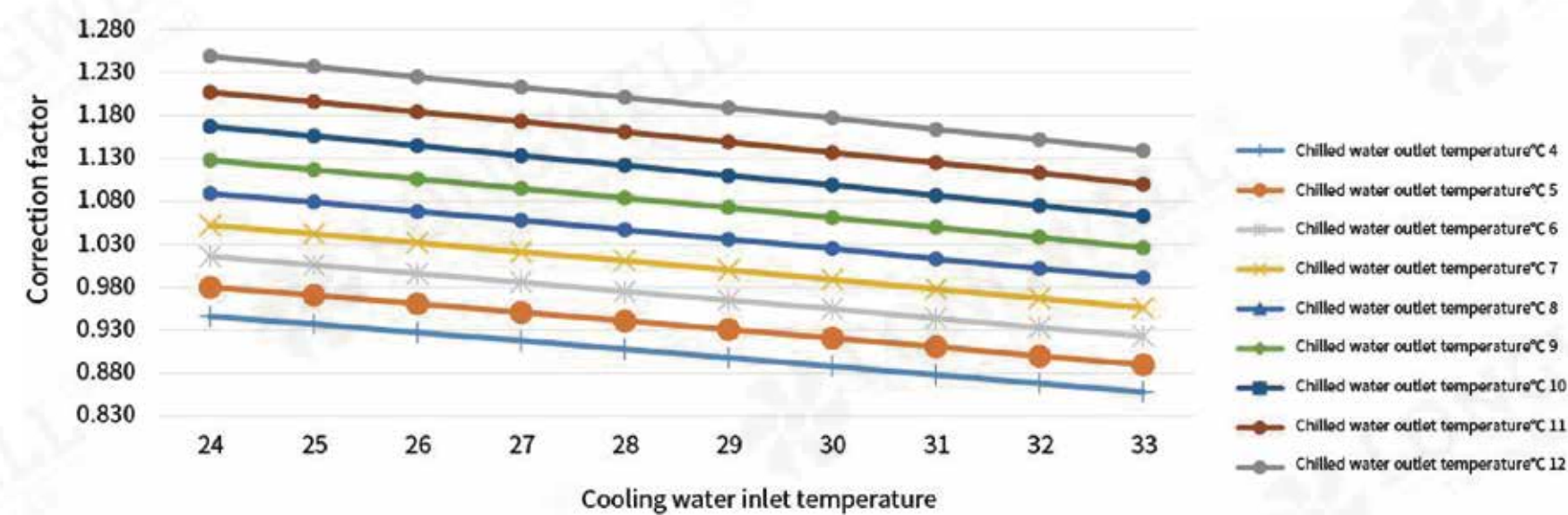
Correction factor curve of dry type water source heat pump heating input power-R134a



Correction factor

		Hot water outlet temperature										
		40	41	42	43	44	45	46	47	48	49	50
Heat source outlet water temperature	4	0.888	0.907	0.927	0.947	0.967	0.988	1.009	1.031	1.053	1.077	1.1
	5	0.892	0.911	0.93	0.95	0.971	0.992	1.013	1.036	1.058	1.081	1.106
	6	0.896	0.914	0.934	0.954	0.976	0.997	1.018	1.04	1.063	1.087	1.11
	7	0.9	0.919	0.959	0.959	0.979	1	1.022	1.044	1.068	1.091	1.114
	8	0.903	0.922	0.962	0.962	0.983	1.004	1.027	1.049	1.071	1.096	1.119
	9	0.907	0.926	0.966	0.966	0.987	1.008	1.03	1.052	1.076	1.099	1.123
	10	0.91	0.929	0.97	0.97	0.99	1.012	1.034	1.057	1.08	1.103	1.128

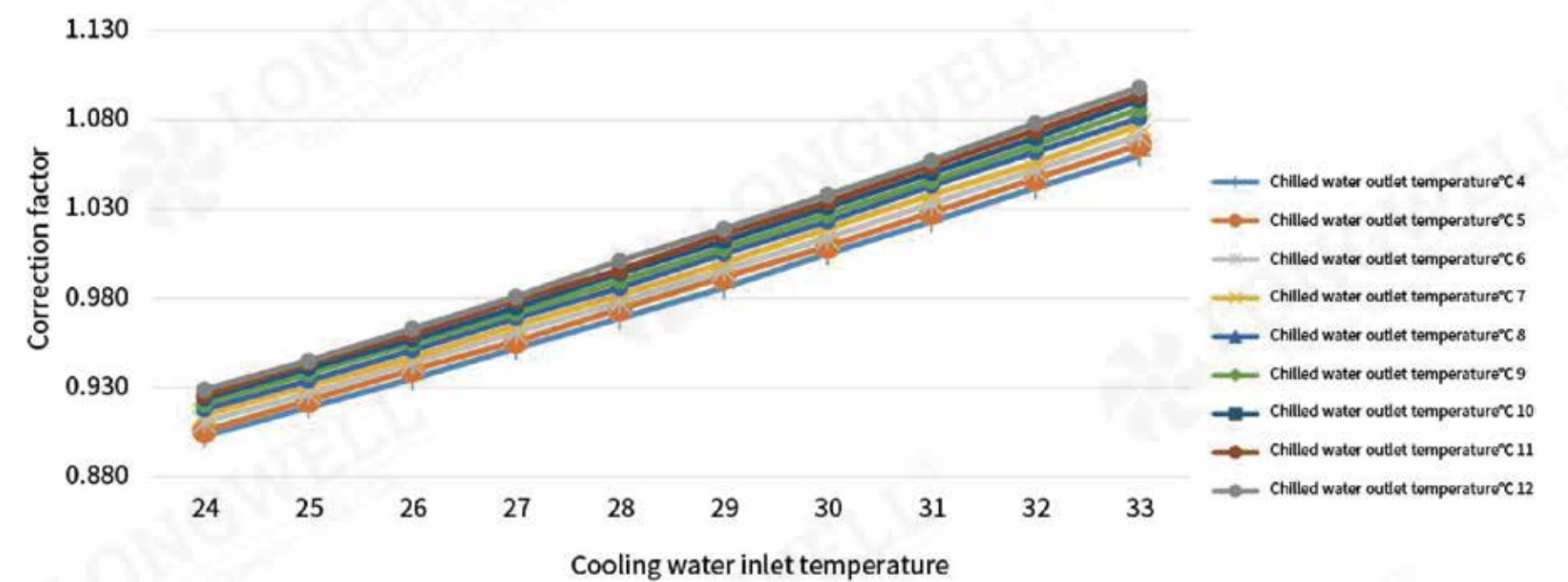
Correction factor curve of flooded type watersource heat pump cooling capacity-R22



Correction factor

		Cooling water inlet temperature									
		24	25	26	27	28	29	30	31	32	33
Hilled water outlet temperature	4	0.946	0.937	0.927	0.918	0.908	0.898	0.888	0.878	0.868	0.858
	5	0.98	0.971	0.961	0.951	0.941	0.931	0.921	0.911	0.9	0.89
	6	1.016	1.006	0.996	0.986	0.975	0.965	0.955	0.944	0.933	0.923
	7	1.052	1.042	1.032	1.021	1.011	1	0.989	0.978	0.967	0.956
	8	1.089	1.079	1.068	1.058	1.047	1.036	1.025	1.013	1.002	0.991
	9	1.128	1.117	1.106	1.095	1.084	1.073	1.061	1.05	1.038	1.026
	10	1.167	1.156	1.145	1.133	1.122	1.11	1.099	1.087	1.075	1.063
	11	1.207	1.196	1.184	1.173	1.161	1.149	1.137	1.125	1.113	1.1
	12	1.249	1.237	1.255	1.213	1.201	1.189	1.177	1.164	1.152	1.139

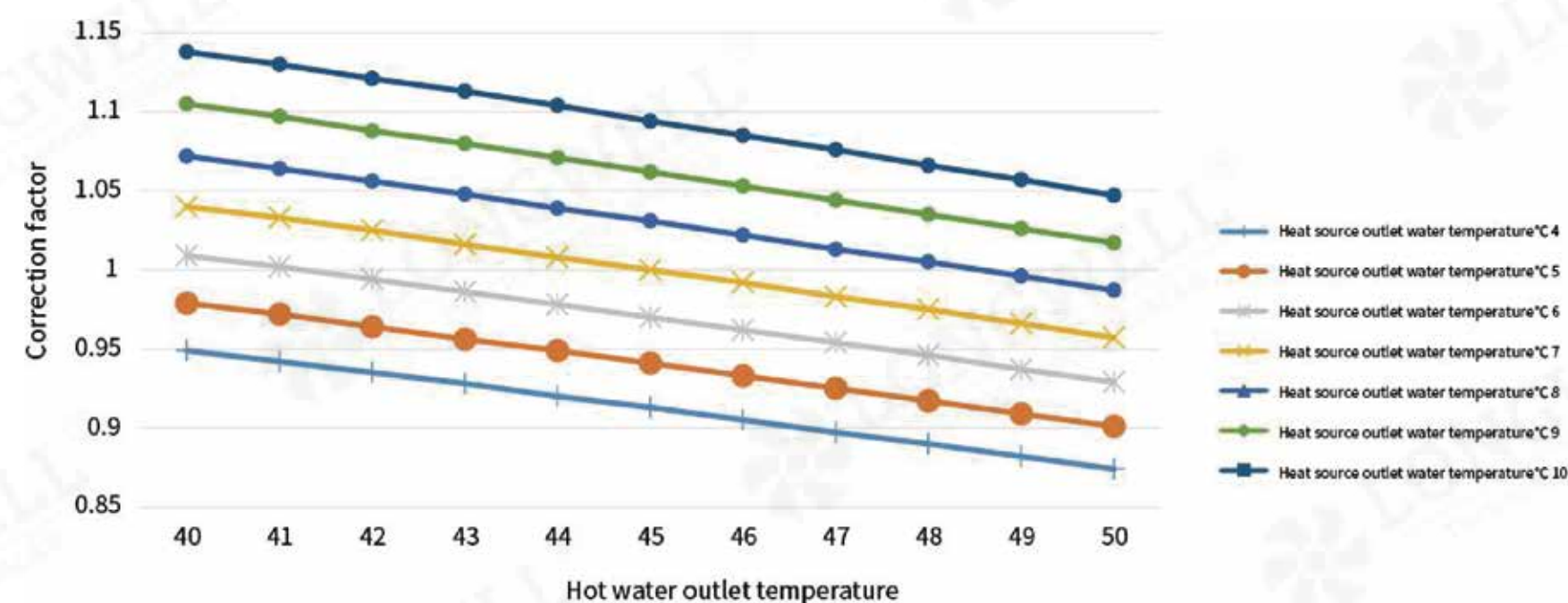
Correction factor curve of flooded type water source heat pump cooling input power-R22



Correction factor

		Cooling water inlet temperature									
		24	25	26	27	28	29	30	31	32	33
Hilled water outlet temperature	4	0.903	0.919	0.935	0.952	0.969	0.986	1.005	1.023	1.042	1.06
	5	0.906	0.923	0.94	0.956	0.974	0.992	1.009	1.028	1.047	1.066
	6	0.911	0.927	0.944	0.961	0.978	0.996	1.014	1.033	1.052	1.071
	7	0.915	0.931	0.947	0.965	0.982	1	1.019	1.038	1.056	1.077
	8	0.918	0.934	0.951	0.969	0.986	1.005	1.023	1.043	1.062	1.081
	9	0.921	0.938	0.955	0.972	0.99	1.008	1.027	1.046	1.066	1.086
	10	0.924	0.941	0.957	0.975	0.994	1.012	1.031	1.05	1.07	1.091
	11	0.926	0.944	0.96	0.979	0.996	1.016	1.034	1.054	1.074	1.094
	12	0.929	0.945	0.963	0.981	1.001	1.019	1.038	1.057	1.078	1.098

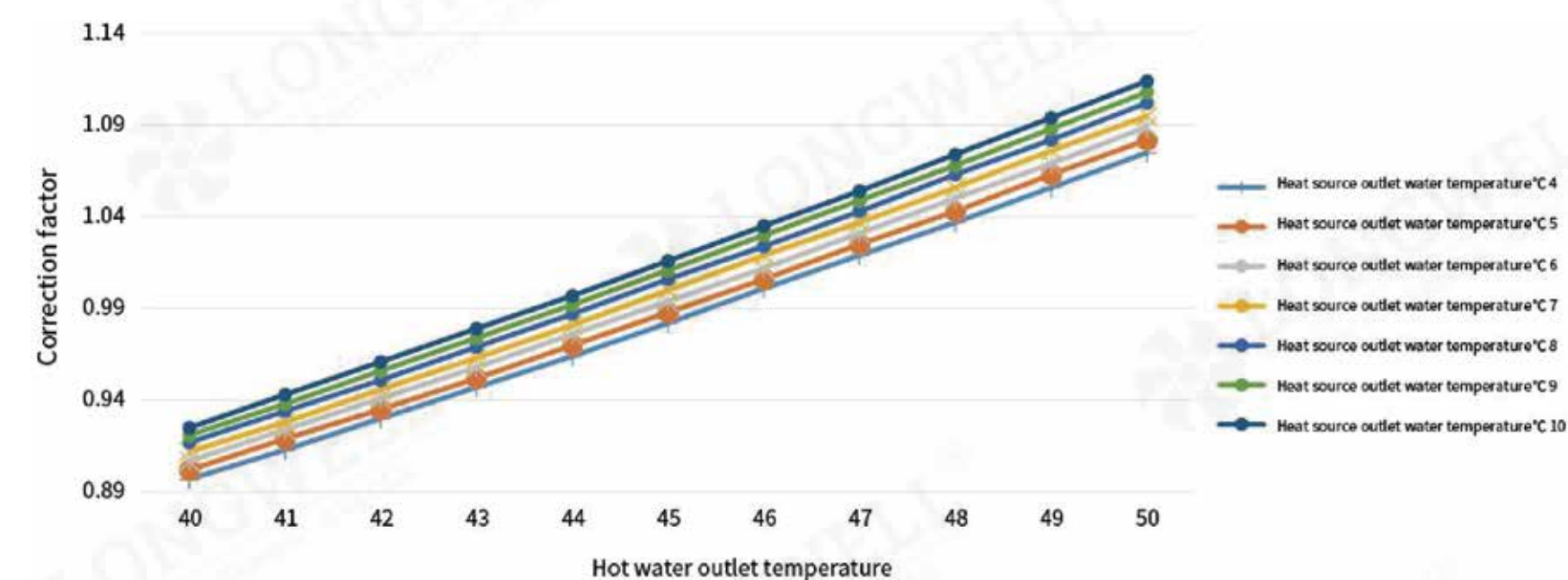
Correction factor curve of flooded type watersource heat pump heating capacity-R22



Correction factor

		Hot water outlet temperature										
		40	41	42	43	44	45	46	47	48	49	50
Heat source outlet water temperature	4	0.949	0.942	0.935	0.928	0.92	0.913	0.905	0.897	0.89	0.882	0.874
	5	0.979	0.972	0.964	0.956	0.949	0.941	0.933	0.925	0.917	0.909	0.901
	6	1.009	1.002	0.994	0.986	0.978	0.970	0.962	0.954	0.946	0.937	0.929
	7	1.04	1.033	1.025	1.016	1.008	1	0.992	0.983	0.975	0.966	0.957
	8	1.072	1.064	1.056	1.048	1.039	1.031	1.022	1.013	1.005	0.996	0.987
	9	1.105	1.097	1.088	1.08	1.071	1.062	1.053	1.044	1.035	1.026	1.017
	10	1.138	1.130	1.121	1.113	1.104	1.094	1.085	1.076	1.066	1.057	1.047

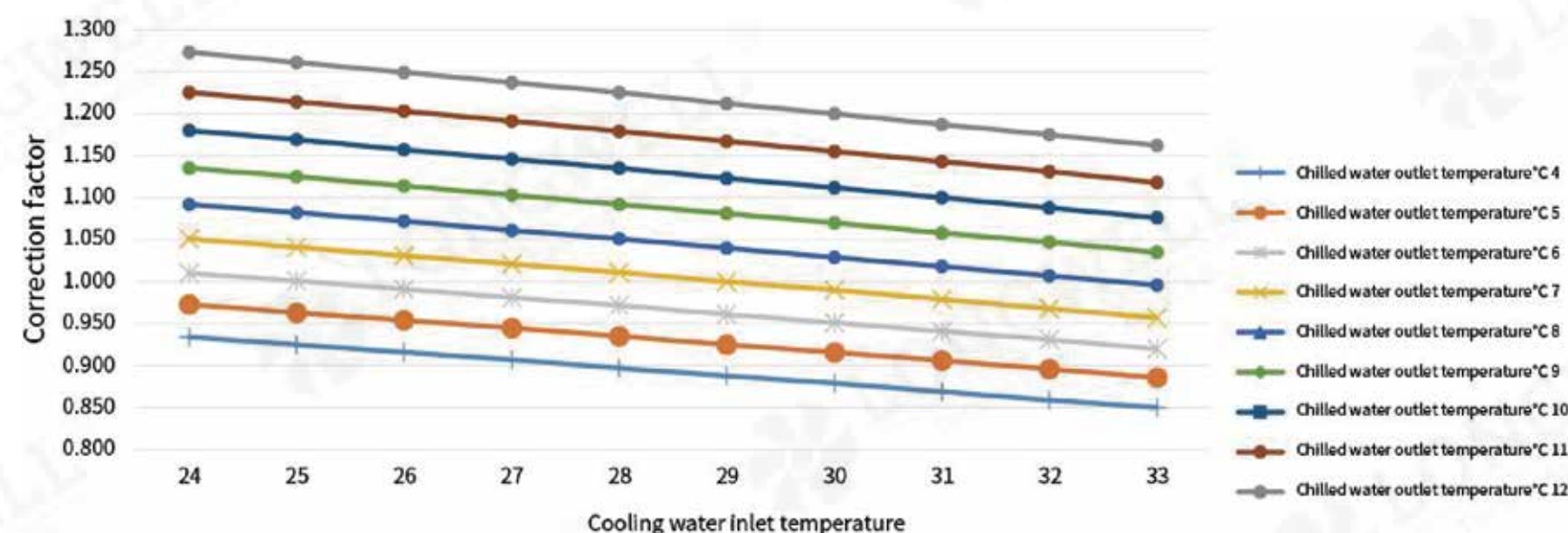
Correction factor curve of flooded type water source heat pump heating input power-R22



Correction factor

		Hot water outlet temperature										
		40	41	42	43	44	45	46	47	48	49	50
Heat source outlet water temperature	4	0.897	0.913	0.930	0.947	0.964	0.982	1.001	1.019	1.037	1.056	1.075
	5	0.902	0.919	0.935	0.952	0.97	0.988	1.006	1.025	1.043	1.063	1.082
	6	0.907	0.924	0.941	0.958	0.976	0.994	1.012	1.031	1.05	1.069	1.089
	7	0.912	0.928	0.946	0.963	0.981	1	1.019	1.037	1.056	1.076	1.095
	8	0.917	0.934	0.951	0.969	0.987	1.006	1.024	1.043	1.063	1.082	1.102
	9	0.921	0.938	0.956	0.974	0.992	1.011	1.03	1.049	1.068	1.088	1.108
	10	0.925	0.943	0.961	0.979	0.997	1.016	1.035	1.054	1.074	1.094	1.114

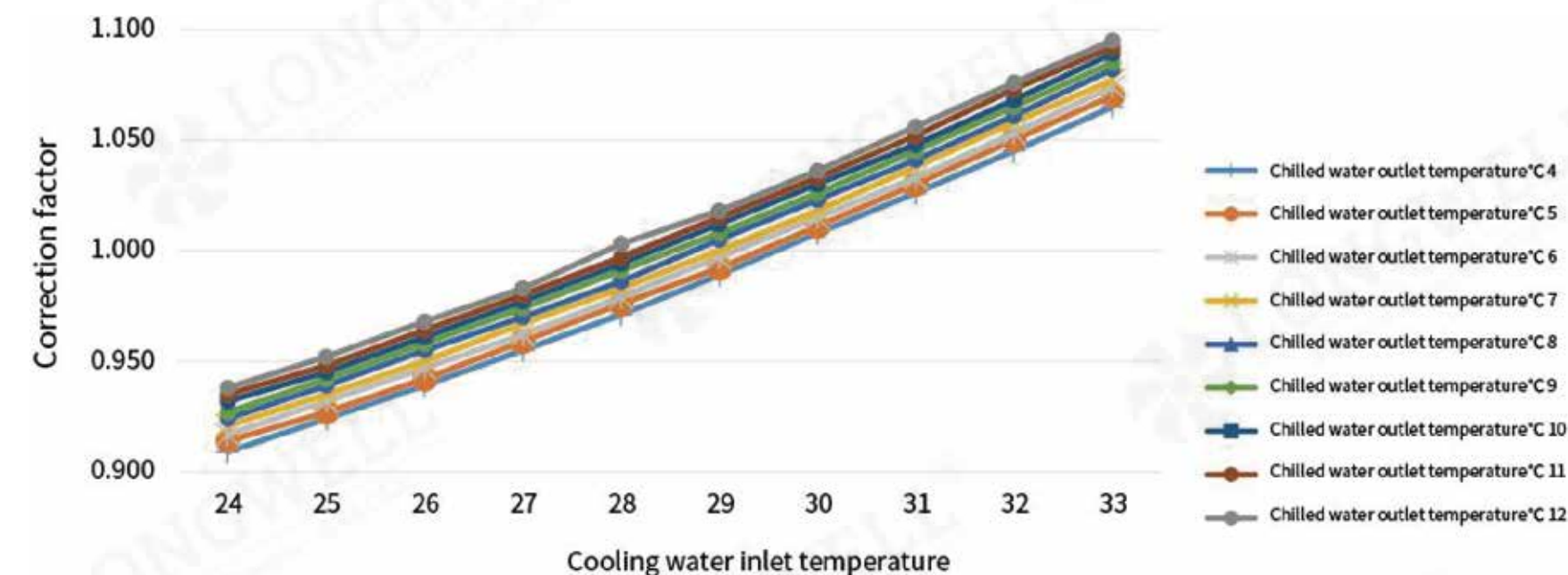
Correction factor curve of flooded type water source heat pump cooling capacity-R134a



Correction factor

		Cooling water inlet temperature									
		24	25	26	27	28	29	30	31	32	33
Chilled water outlet temperature	4	0.934	0.925	0.916	0.907	0.897	0.888	0.879	0.869	0.859	0.85
	5	0.973	0.963	0.954	0.945	0.935	0.925	0.916	0.906	0.896	0.886
	6	1.01	1.001	0.991	0.981	0.972	0.961	0.951	0.941	0.931	0.920
	7	1.051	1.041	1.031	1.021	1.011	1	0.990	0.979	0.968	0.957
	8	1.092	1.082	1.072	1.061	1.051	1.04	1.029	1.018	1.007	0.996
	9	1.135	1.125	1.114	1.103	1.092	1.081	1.07	1.058	1.047	1.035
	10	1.18	1.169	1.157	1.146	1.135	1.123	1.112	1.1	1.088	1.076
	11	1.225	1.214	1.203	1.191	1.179	1.167	1.155	1.143	1.131	1.118
	12	1.273	1.261	1.249	1.237	1.225	1.212	1.2	1.187	1.175	1.162

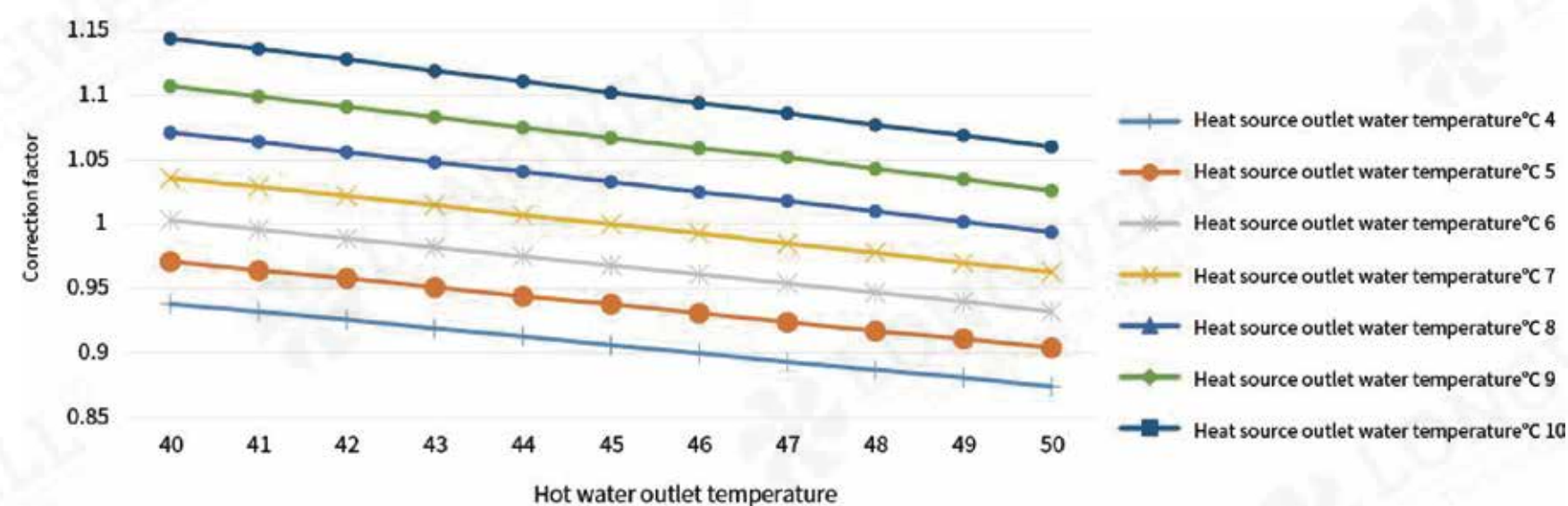
Correction factor curve of flooded type water source heat pump cooling input power-R134



Correction factor

		Cooling water inlet temperature									
		24	25	26	27	28	29	30	31	32	33
Chilled water outlet temperature	4	0.909	0.924	0.939	0.955	0.971	0.989	1.008	1.026	1.045	1.065
	5	0.914	0.927	0.942	0.959	0.976	0.992	1.011	1.03	1.05	1.07
	6	0.917	0.932	0.947	0.962	0.979	0.997	1.015	1.033	1.053	1.074
	7	0.921	0.935	0.95	0.967	0.983	1	1.018	1.038	1.058	1.077
	8	0.924	0.939	0.955	0.97	0.986	1.005	1.023	1.041	1.061	1.082
	9	0.927	0.942	0.958	0.974	0.991	1.008	1.026	1.045	1.065	1.085
	10	0.932	0.945	0.961	0.977	0.994	1.012	1.03	1.048	1.068	1.089
	11	0.935	0.948	0.964	0.98	0.997	1.015	1.033	1.052	1.073	1.092
	12	0.938	0.952	0.968	0.983	1.003	1.018	1.036	1.056	1.076	1.095

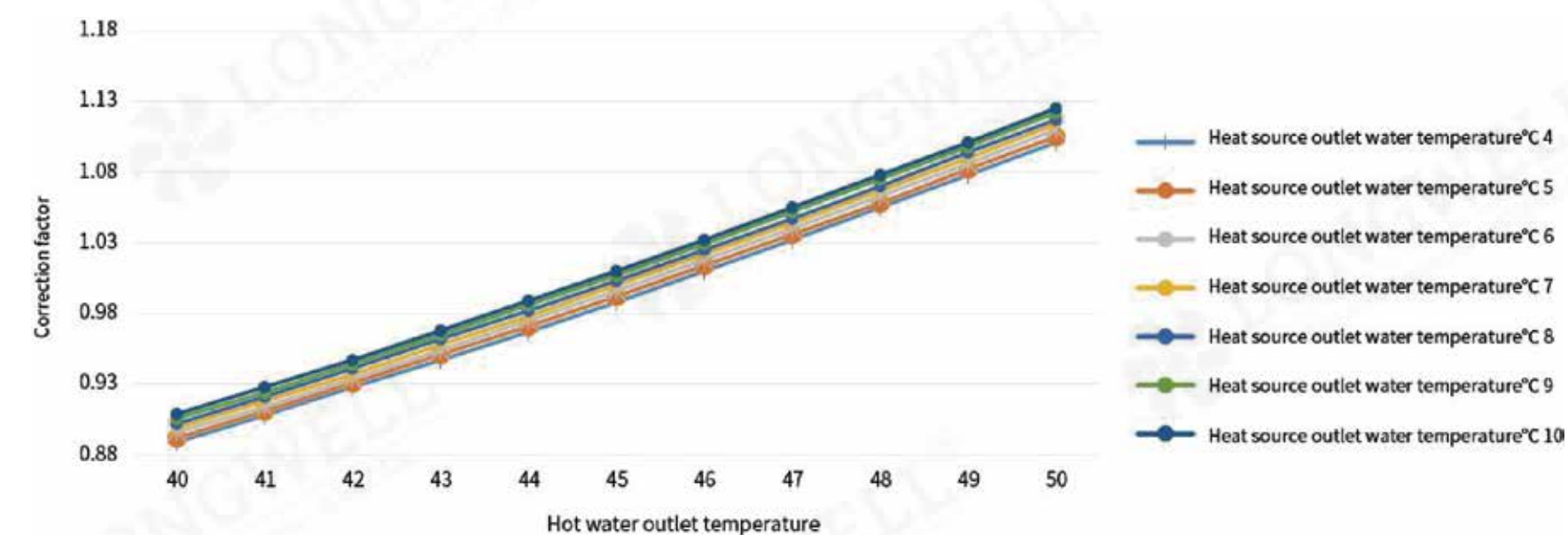
Correction factor curve of flooded type water source heat pump heating capacity-R134a



Correction factor

		Hot water outlet temperature										
		40	41	42	43	44	45	46	47	48	49	50
Heat source outlet water temperature	4	0.938	0.932	0.926	0.919	0.913	0.906	0.9	0.893	0.887	0.881	0.874
	5	0.971	0.964	0.958	0.951	0.944	0.938	0.931	0.924	0.917	0.911	0.904
	6	1.003	0.996	0.989	0.982	0.975	0.968	0.961	0.954	0.947	0.94	0.932
	7	1.036	1.029	1.022	1.015	1.007	1	0.993	0.985	0.978	0.97	0.963
	8	1.071	1.064	1.056	1.048	1.041	1.033	1.025	1.018	1.01	1.002	0.994
	9	1.107	1.099	1.091	1.083	1.075	1.067	1.059	1.052	1.043	1.035	1.026
	10	1.144	1.136	1.128	1.119	1.111	1.102	1.094	1.086	1.077	1.069	1.06

Correction factor curve of flooded type water source heat pump heating input power-R134a



Correction factor

		Hot water outlet temperature										
		40	41	42	43	44	45	46	47	48	49	50
Heat source outlet water temperature	4	0.889	0.908	0.928	0.947	0.967	0.988	1.01	1.032	1.055	1.078	1.101
	5	0.892	0.911	0.931	0.951	0.971	0.992	1.014	1.036	1.058	1.082	1.105
	6	0.896	0.914	0.934	0.954	0.975	0.996	1.018	1.04	1.063	1.086	1.11
	7	0.899	0.918	0.937	0.958	0.978	1	1.022	1.044	1.067	1.09	1.114
	8	0.902	0.921	0.941	0.962	0.982	1.003	1.025	1.047	1.07	1.094	1.117
	9	0.906	0.924	0.944	0.965	0.986	1.007	1.029	1.052	1.075	1.098	1.122
	10	0.909	0.928	0.947	0.968	0.989	1.01	1.032	1.055	1.078	1.101	1.125

Accessories

Compressor

The semi-closed double-screw design compressor, the compression part is composed of two mutually meshing spiral rotors, the female rotor is driven by the male rotor, and the double torsion positive displacement constitutes a pure rotation action, so that the vibration is very small and the operating range is wide. The process from editing to exhaust has the characteristics of high efficiency and smooth air flow. The compressor uses differential pressure oil supply for lubrication and air tightness without the need for a lubricating oil pump.

The capacity control system can facilitate partial load operation, and the compressor can achieve 25%-100% segmented adjustment. Stepless energy adjustment can also be used to fully match the building load. Semi-hermetic screw compressors have the following advantages: less moving parts are only 1/4 of piston compressors, simple structure, fewer wearing parts, high reliability and long life. The suction and exhaust are uniform and continuous, without pulsation, the exhaust temperature is low, the running vibration is small, it is not sensitive to wet compression, and the ability to resist liquid shock is strong.



Shell and tube evaporator

Shell: Special high-quality steel plate for pressure vessel, made and tested in compliance with the requirements of JBT47012-2010 "Pressure Vessel for Refrigeration Equipment". The outer surface is made of flame-retardant and waterproof thermal insulation materials. The evaporator baffle is made of PVC engineering plastic, which has strong corrosion resistance and tight sealing. The chilled water moves up and down along the baffle to flow back, increasing the turbulence effect and improving the heat exchange capacity of the evaporator. The refrigerant inlet is specially equipped with a flow-equalizing device to make the refrigerant evenly distributed in each heat exchange copper tube and improve the heat exchange efficiency of the entire unit.

Copper tube: High-efficiency DAC corrugated internally threaded heat exchange copper tube, which greatly strengthens the heat exchange capacity of the refrigerant side and improves the heat transfer coefficient to ensure good cooling and heating effects of the unit.



Shell and tube condenser

High-efficiency DAC corrugated internally threaded heat exchange copper tube, which greatly strengthens the heat exchange capacity of the refrigerant side and improves the heat transfer coefficient to ensure good cooling and heating effects of the unit.



Expansion valve

The electronic expansion valve control system has a control accuracy of up to 2600 steps. According to the suction superheat and saturation pressure, the electronic control system can accurately control the refrigerant flow, so that the unit will always be kept in the best operating state and maximize the capacity of the unit.



Microcomputer controller

Cold water temperature setting and display.
Automatic energy control and start-stop function touch screen operation mode.
Display current (optional) and its set value, operating status, reporting status, compressor operating hours.
Accept remote start and stop signals.
If an external line fails and the power is cut off, the unit can automatically resume operation after the power supply is restored.
With password setting protection function.



Mobile phone APP function

It can realize the functions of mobile phone to remotely control the start and stop of the unit, parameter setting, status inquiry, fault inquiry, monitoring operation data and so on.

Safety equipment

High and low pressure switch, antifreeze temperature control, oil heater, high pressure exhaust gas check valve, replaceable filter drier, pressure gauge, emergency stop switch, overload protector, power protector, refrigerant injection device.