WSH-XEE WSHN-XEE

82÷802

Water chiller
WSH-XEE: cooling only
WSHN-XEE: reversible heat pump
Water cooled
Indoor installation
Capacity from 38 to 328 kW

ELFOEnergy Ground Medium

ELFOEnergy Ground Medium *is a water cooled heat pump for indoor installation, ideal for multi-family and commercial buildings.*
The main features are:

- ***HIGH SEASONALEFFICIENCY*** *- The combination of different size compressors allows to gain more control steps, to provide the energy actually required by the system, to reduce the consumption and to achieve the high seasonal efficiency. The unit reaches the Eurovent Class A heating and cooling for use with underfloor heating.*
- ***VERSION GROUND WATER OR GEOTHERMAL*** *- The use of heat exchangers for specific applications with ground water or geothermal closed loop maximize the energy efficiency.*
- ***ENERGY RECOVERY*** *- The partial or full recovery meets the demand of thermal loads and the production of hot water depending on the type of system.*
- ***PREASSEMBLED UNIT*** *- All major components are provided on the unit, ensuring maximum reliability and ease of installation.*
- ***MODULARITY AND MANAGEMENT OF MORE UNITS IN WATERFALL*** *- The compact construction with upflow water connections allows to combine multiple units in confined spaces, realizing a high power system. The control allows to coordinate up to 6 units managing automatically the operation with maximum efficiency.*

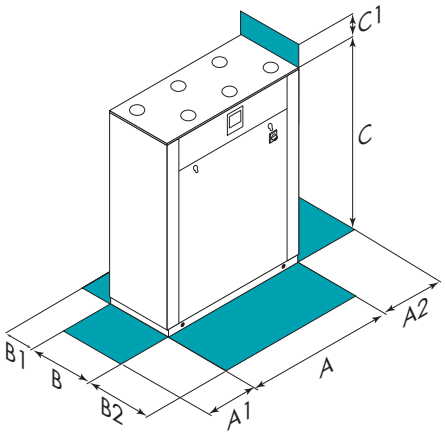
EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Unit listed on
www.eurovent-certification.com
(WSHN-XEE)

functions and features

Cooling only (WSH-XEE) | Heat pump (WSHN-XEE) | Water cooled | Indoor installation | R-410A | Hermetic Scroll | ELFOControl²

dimensions and clearances



CAUTION!For trouble-free operation of the unit it is essential to maintain the safety distances indicated by the green areas.

Size – WSH-XEE		82	102	122	162	182	222	262	302	352	402	432	452	502	552	602	702	802
A - Length	mm	1200	1200	1200	1200	1200	1200	1200	1200	1966	1966	1966	1966	1966	1966	1966	1966	1966
B - Width	mm	656	656	656	656	656	656	656	656	980	980	980	980	980	980	980	980	980
C - Height	mm	1430	1430	1430	1430	1430	1430	1430	1430	1624	1624	1624	1624	1624	1624	1624	1624	1624
A1	mm	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
A2	mm	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
B1	mm	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
B2	mm	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
C1	mm	300	300	300	300	300	300	300	300	200	200	200	200	200	200	200	200	200
Operating weight	kg	382	400	427	476	489	503	513	579	977	1007	1132	1142	1156	1186	1216	1260	1288

Size – WSHN-XEE		82	102	122	162	182	222	262	302	352	402	432	452	502	552	602	702	802
A - Length	mm	1200	1200	1200	1200	1200	1200	1200	1200	1966	1966	1966	1966	1966	1966	1966	1966	1966
B - Width	mm	656	656	656	656	656	656	656	656	948	948	948	948	948	948	948	948	948
C - Height	mm	1430	1430	1430	1430	1430	1430	1430	1430	1620	1620	1620	1620	1620	1620	1620	1620	1620
A1	mm	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
A2	mm	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
B1	mm	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
B2	mm	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
C1	mm	300	300	300	300	300	300	300	300	200	200	200	200	200	200	200	200	200
Operating weight	kg	407	425	453	504	517	531	545	611	1011	1042	1169	1179	1193	1228	1258	1306	1333

The above mentioned data are referred to standard units.
For units with the Hydraulic unit option and/or Built-in valves (larger unit) or other configurations, refer to the relative Technical Bulletin.

versions and configurations

VERSION:
- **GW** Groundwater version (Standard)
- **GEO** Version for Geothermal application

CONSTRUCTIONAL CONFIGURATION:
- **VS** Standard Version (Standard)
- **MOBMAG** Larger units

ENERGY RECOVERY:
- **-** Energy recovery: not required (Standard)
- **D** Partial energy recovery
- **R** Total energy recovery

technical data

Size – WSH-XEE			82	102	122	162	182	222	262	302	352	402	432	452	502	552	602	702	802
Standard (S)																			
Cooling capacity (EN14511:2011)	(1)	kW	38,8	45,6	55,5	63,6	75,5	89,4	98,2	127	145	165	183	193	216	234	265	295	328
Total power input (EN14511:2011)	(1)	kW	6,65	8,21	9,94	11,5	13,3	16,1	18,5	20,7	24,1	28,1	31,1	32,7	36,5	40,6	45,6	51,4	58,4
EER (EN 14511:2011)	(1)	-	5,83	5,55	5,58	5,52	5,67	5,56	5,29	6,13	6,05	5,88	5,87	5,89	5,91	5,77	5,81	5,74	5,62
Heating capacity (EN14511:2011)	(2)	kW	34,8	40,8	49,5	57,6	68,0	81,9	93,5	112	126	143	156	168	186	205	232	263	302
Total power input (EN14511:2011)	(2)	kW	6,69	7,90	9,46	11,0	12,8	15,6	17,8	20,5	23,2	26,8	29,5	31,5	34,6	38,2	42,9	48,7	55,6
COP (EN 14511:2011)	(2)	-	5,21	5,17	5,24	5,22	5,30	5,25	5,26	5,46	5,45	5,35	5,27	5,34	5,39	5,36	5,41	5,40	5,43
Water flow rate (Utility Side)	(1)	l/s	1,86	2,19	2,67	3,05	3,63	4,30	4,72	6,08	6,98	7,94	8,77	9,26	10,4	11,2	12,7	14,2	15,8
Water flow rate (Source Side)	(1)	l/s	2,16	2,56	3,11	3,57	4,22	5,01	5,55	7,01	8,10	9,20	10,2	10,7	12,0	13,0	14,7	16,5	18,3
Geothermal (G)																			
Cooling capacity (EN14511:2011)	(1)(5)	kW	39,7	47,3	56,1	65,6	77,6	88,2	114	132	151	172	193	205	225	245	278	310	339
Total power input (EN14511:2011)	(1)(5)	kW	6,80	8,52	10,2	11,9	13,7	16,5	19,7	21,6	25,0	29,4	32,5	34,4	38,2	42,6	47,9	53,6	61,2
EER (EN 14511:2011)	(1)(5)	-	5,84	5,55	5,49	5,51	5,67	5,35	5,78	6,10	6,04	5,85	5,94	5,97	5,90	5,75	5,80	5,78	5,54
Heating capacity (EN14511:2011)	(3)	kW	27,7	32,6	38,1	44,8	52,9	63,7	73,3	85,4	94,2	112	123	131	143	158	177	202	229
Total power input (EN14511:2011)	(3)	kW	6,50	7,45	8,77	10,4	12,1	14,6	16,9	19,2	21,7	25,4	27,9	29,5	32,2	35,8	40,0	45,6	51,7
COP (EN 14511:2011)	(3)	-	4,27	4,38	4,35	4,33	4,37	4,35	4,34	4,44	4,34	4,41	4,42	4,44	4,42	4,42	4,42	4,43	4,44
Water flow rate (Utility Side)	(1)(5)	l/s	1,91	2,27	2,70	3,15	3,73	4,24	5,46	6,31	7,24	8,25	9,26	9,84	10,8	11,7	13,3	14,9	16,3
Water flow rate (Source Side)	(1)(5)	l/s	2,21	2,65	3,15	3,68	4,34	4,97	6,34	7,27	8,35	9,54	10,7	11,4	12,5	13,6	15,4	17,2	18,9
Refrigerant circuits		Nr	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No. of compressors		Nr	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Type of compressors		-	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Standard power supply		V	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Max water outlet temperature		°C	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Sound pressure level	(4)	dB(A)	44	44	45	49	49	49	49	49	58	58	60	58	60	60	61	63	63

Size – WSHN-XEE			82	102	122	162	182	222	262	302	352	402	432	452	502	552	602	702	802
Standard (S)																			
Cooling capacity (EN14511:2011)	(1)	kW	40,1	46,9	58,1	64,4	76,7	92,3	108	123	141	161	179	191	208	229	256	289	319
Total power input (EN14511:2011)	(1)	kW	6,86	8,20	10,3	12,3	13,9	16,7	18,8	21,8	25,5	28,8	32,8	34,1	38,2	41,5	47,0	52,6	58,0
EER (EN 14511:2011)	(1)	-	5,85	5,72	5,64	5,25	5,50	5,52	5,75	5,65	5,51	5,60	5,47	5,60	5,45	5,51	5,44	5,49	5,51
Heating capacity (EN14511:2011)	(6)	kW	35,0	42,3	48,1	56,1	66,6	79,3	93,8	107	122	139	154	165	179	197	222	252	282
Total power input (EN14511:2011)	(6)	kW	6,23	7,42	8,74	10,3	12,2	14,2	16,8	19,1	22,0	25,0	27,6	29,5	32,3	35,3	40,1	46,3	52,7
COP (EN 14511:2011)	(6)	-	5,61	5,70	5,51	5,46	5,47	5,58	5,58	5,59	5,53	5,58	5,56	5,59	5,55	5,58	5,53	5,44	5,35
Water flow rate (Utility Side)	(1)	l/s	1,94	2,26	2,80	3,10	3,70	4,44	5,21	5,92	6,80	7,70	8,60	9,20	10,0	11,0	12,3	13,9	15,4
Water flow rate (Source Side)	(1)	l/s	2,24	2,63	3,26	3,65	4,32	5,19	6,06	6,91	7,90	9,00	10,1	10,7	11,7	12,9	14,4	16,3	18,0
Geothermal (G)																			
Cooling capacity (EN14511:2011)	(5)	kW	39,6	47,2	56,4	63,9	76,4	91,5	108	122	139	160	177	194	206	226	254	284	312
Total power input (EN14511:2011)	(5)	kW	7,05	8,28	10,4	12,6	14,3	17,3	19,4	22,5	26,3	29,6	33,7	35,1	39,3	42,6	48,3	54,5	60,6
EER (EN 14511:2011)	(5)	-	5,61	5,70	5,44	5,08	5,35	5,30	5,56	5,43	5,31	5,40	5,26	5,53	5,25	5,31	5,25	5,21	5,15
Heating capacity (EN14511:2011)	(7)	kW	26,3	30,6	36,4	43,3	51,8	60,8	73,2	81,8	93,7	108	119	126	138	153	172	199	228
Total power input (EN14511:2011)	(7)	kW	6,11	7,10	8,43	10,0	11,9	14,0	16,6	18,7	21,4	24,6	27,2	28,7	31,4	34,6	39,0	44,9	51,3
COP (EN 14511:2011)	(7)	-	4,30	4,30	4,32	4,31	4,34	4,33	4,43	4,37	4,37	4,41	4,39	4,40	4,41	4,41	4,40	4,44	4,44
Water flow rate (Utility Side)	(5)	l/s	1,91	2,26	2,71	3,06	3,67	4,38	5,16	5,86	6,68	7,66	8,49	9,30	9,88	10,9	12,2	13,6	15,0
Water flow rate (Source Side)	(5)	l/s	2,36	2,79	3,35	3,84	4,56	5,47	6,40	7,30	8,34	9,54	10,6	11,6	12,4	13,6	15,2	17,0	18,8
Refrigerant circuits		Nr	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No. of compressors		Nr	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Type of compressors		-	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Standard power supply		V	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Max water outlet temperature		°C	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Sound pressure level	(4)	dB(A)	49	49	49	52	53	53	53	53	59	60	62	60	62	62	62	64	65

Notes

(1) Data referred to the following conditions: Internal exchanger water = 23/18°C; External exchanger water = 30/35°C

(2) Data referred to the following conditions: Water to internal exchanger 30/35°C; External exchanger inlet water = 10°C; The water flow in the external exchanger is the same of the cooling operation. The unit can operate in cooling-only or in heating-only mode. To be able to operate in both modes, the system must be designed with a reversible hydraulic circuit.

(3) Data referred to the following conditions: Water to internal exchanger 30/35°C; water temperature to external exchanger 0/-3 °C; Data refer to operation with a mix of water and propylene glycol at 30% on the source side; The unit can operate in cooling-only or in heating-only mode. To be able to operate in both modes, the system must be designed with a reversible hydraulic circuit.

(4) The sound levels refer to the unit at full load, in the rated test conditions. The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field. Data referred to the following conditions : Utility side exchanger water inlet/outlet 12/7°C; Source side exchanger water inlet/outlet 30/35

(5) Data referred to the following conditions: Internal exchanger water = 23/18°C; External exchanger water = 30/35°C; Data refer to operation with a mix of water and propylene glycol at 30% on the source side

(6) Data referred to the following conditions: Water to internal exchanger 30/35°C; External exchanger inlet water = 10°C; The water flow in the external exchanger is the same of the cooling operation.

(7) Data referred to the following conditions: Water to internal exchanger 30/35°C; water temperature to external exchanger 0/-3 °C; Data refer to operation with a mix of water and propylene glycol at 30% on the source side

accessories

- **HYGR1V** Recovery side hydronic unit with 1 inverter pump
- **HYGR2V** Recovery side hydronic unit with 2 inverter pumps
- **MF2** Multi-function phase monitor
- **CMSC10** Serial communication module to LonWorks supervisor
- **CMSC8** Serial communication module to BACnet supervisor
- ■ **SPCX** Set point compensation with outside temperature probe
- ■ **IFWX** Water steel mesh strainer
- **SFSTR** Disposal for inrush current reduction
- **PFCP** Power factor correction capacitors (cosfi > 0.9)

WSH-XEE only:

- **HYGC1** Cooling side hydronic unit with an on-off pump
- **HYGC2** Cooling side hydronic unit with two on-off pumps
- **HYGC1V** Cooling side hydronic unit with an inverter pump
- **HYGC2V** Cooling side hydronic unit with two inverter pumps
- **VS2C** Cooling side two-way on-off valve
- ■ **VS2CX** Cooling side two-way on-off valve
- **VS2MC** Cooling side two-way modulating valve
- ■ **VS2MCX** Cooling side two-way modulating valve
- **VS3MC** Cooling side three-way modulating valve
- ■ **VS3MCX** Cooling side three-way modulating valve
- **HYGH1** Heating side hydronic unit with an on-off pump
- **HYGH2** Heating side hydronic unit with two on-off pumps
- **HYGH1V** Heating side hydronic unit with an inverter pump
- **HYGH2V** Heating side hydronic unit with two inverter pumps
- **VS2H** Heating side two-way on-off valve
- ■ **VS2HX** Heating side two-way on-off valve
- **VS2MH** Heating side two-way modulating valve
- ■ **VS2MHX** Heating side two-way modulating valve
- **VS3MH** Heating side three-way modulating valve
- ■ **VS3MHX** Heating side three-way modulating valve
- **VACSH** Heating side DHW switching valve
- ■ **VACSHX** Heating side DHW switching valve

WSHN-XEE only:

- **VACSU** Utility side DHW switching valve
- ■ **VACSUX** Utility side DHW switching valve
- **VACSR** Total recovery side DHW switching valve
- ■ **VACSRX** Total recovery side DHW switching valve
- **HYGU1** Utility side hydronic unit with 1 ON/OFF pump
- **HYGU2** Utility side hydronic unit with 2 ON/OFF pumps
- **HYGU1V** Utility side hydronic unit with 1 inverter pump
- **HYGU2V** Utility side hydronic unit with 2 inverter pumps
- **HYGS1** Source side hydronic unit with 1 ON/OFF pump
- **HYGS2** Source side hydronic unit with 2 ON/OFF pumps
- **HYGS1V** Source side hydronic unit with 1 inverter pump
- **HYGS2V** Source side hydronic unit with 2 inverter pumps
- **VS2** Source side 2-way ON/OFF valve
- ■ **VS2X** Source side 2-way ON/OFF valve
- **VS2M** Source side 2-way modulating valve
- ■ **VS2MX** Source side 2-way modulating valve
- **VS3M** Source side 3-way modulating valve
- ■ **VS3MX** Source side 3-way modulating valve

Key to symbols:

■ Accessories supplied separately.