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HEAT PUMPS

TECHNICAL DATA

INDUSTRIAL GEOTHERMAL HEAT PUMPS **IGLU® Max**

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Technical data of IGLU® Max 24÷90 kW fixed capacity brine/water heat pumps

	Units	24 kW	36 kW	45 kW	70 kW	90 kW
Brine/water used						
Thermal power (B0/W35)[1)]	kW	24,85	35,5	43,98	71,08	87,3
Thermal power (B0/W45)[1)]	kW	23,59	33,7	42,65	66,15	82,5
COP (B0/W35)[1)]	-	4,54	4,65	4,45	4,58	4,53
COP (B0/W45)[1)]	-	3,37	3,74	3,59	3,52	3,48
SCOP (B0/W35)	-	5,71	5,76	5,77	5,75	5,66
SCOP (B0/W45)	-	4,14	4,22	4,30	4,42	4,22
Refrigeration capacity (B24/W10) [2]	kW	26,0	40,1	49,4	80,8	108,0
Brine circuit						
Rated flow (DT = 3K)[3)]	m³/h	8	9	12	17	23
Permissible external pressure drop[3)]	kPa	23	16	16	16	12
Maximum pressure	bar	4				
Volume (internal)	l	7			22	
Operating temperature	°C	from -10 to +20				
Connection (Cu)	mm	28		35	50	
Compressor						
Type		Spiral “Scroll”				
Mass of refrigerant R 410A[4)]	kg	-	-	-	12,8	15,30
Mass of refrigerant R 407C[4)]		2,8	3,5	3,8	-	-
Maximum pressure	bar	45			48	
Rated flow (DT = 7K)	m³/h	4	6	6,4	10	13
Min. flow temperature	°C	15				
Max. flow temperature	°C	65				
Max. permissible operating pressure	bar	4,0				
Connection (Cu)	mm	28		35	50	
Power network connection values						
Electrical connections		3/N/PE 400V/ 50Hz				
External circuit breaker;	A	20	25	32	50	63
RLA – rated load amps	A	15,9	21,6	27,6	44	57
Compressor rated power (B0/W35)	kW	5,2	7,6	10,1	14,65	19,25
Type of protection	IP	IP20				
General information						
Permissible ambient temperatures	°C	from +10 to +35				
Sound power level[5)]	dBA	55	56	56	57	64
Dimensions (height x width x depth)	mm	1400 x 910 x 800			1400 x 910 x 1500	
Weight (without packaging)	kg	150	170	220	475	520

1) With internal pump according to EN 14511
2) On models with an active cooling module
3) With ethylene glycol
4) Greenhouse potential, GWP100 = 1774
5) According to EN 3743-1

Technical data of IGLU® Max 120÷240 kW two-stage brine/water heat pumps

	Units	120 kW	150 kW	180 kW	240 kW
Brine/water used					
Thermal power (B0/W35)[1)]	kW	119,8	145,0	181,9	231,8
COP (B0/W35)[1)]	-	4,69	4,69	4,67	4,75
COP (B5/W35)[1)]	kW	5,39	5,47	5,48	5,46
COP (B0/W45)[1)]	kW	3,57	3,63	3,6	3,8
Refrigeration capacity (B24/W10)[2)]	kW	135,4	163,9	205,6	261,9
Brine circuit					
Rated flow (DT = 3K)[3)]	m^3/h	27,9	35,6	43,5	57,6
Permissible external pressure drop[3)]	kPa	30	34	38	51
Maximum pressure	bar	4			
Volume (internal)	l	29,4	38,6	48,3	62,6
Operating temperature	°C	from -10 to +20			
Connection (Cu)	mm	65			
Compressor					
Type		Spiral “Scroll”			
Mass of refrigerant R 410A[4)]	kg	23,6	27,6	36,0	48,4
Maximum pressure	bar	42			
Rated flow (DT = 7K)	m^3/h	14,1	18,5	23,8	31,9
Min. flow temperature	°C	15			
Max. flow temperature	°C	65			
Max. permissible operating pressure	bar	6			
Connection (Cu)	mm	65			
Power network connection values					
Electrical connections		3/N/PE 400V/ 50Hz			
Compressor rated power (B0/W35)	kW	25,56	30,9	38,9	48,8
External circuit breaker;	A	80	100	125	175
RLA – rated load amps	A	2x36	2x44	2x57	2x76
Type of protection	IP	IP20			
General information					
Permissible ambient temperatures	°C	from +10 to +35			
Sound power level[5)]	dBA	62	65	65	66
Dimensions (width x depth x height)	mm	910x2500x1600			
Weight (without packaging)	kg	830	1160	1220	1380

1) With internal pump according to EN 14511
2) On models with an active cooling module
3) With ethylene glycol
4) Greenhouse potential, GWP100 = 1774
5) According to EN 3743-1

Annex to the technical characteristics according to European Commission Regulation No 813/2013

Technical data of IGLU® Max 24 fixed capacity heat pump

Model	Max 24 FN
Air-to-water heat pump	No
Water-to-water heat pump	No
Ground-to-water heat pump	Yes
Low temperature heat pump	No
Equipped with supplementary heater	No
Supplementary heater is used	No

Parameters applied using average temperature are declared. Parameters are declared under average climatic conditions.

Parameter	Conventional representation	Value	Measurement unit
Rated thermal power	P_{rated}	24,85	kW
Declared part load heating capacity at 20 °C indoor temperature and outdoor temperature T_j			
T_j = – 7 °C	P_{dh}	24,07	kW
T_j = + 2 °C	P_{dh}	24,64	kW
T_j = + 7 °C	P_{dh}	25,18	kW
T_j = + 12 °C	P_{dh}	25,85	kW
T_j= (T_{iv})- bivalent temperature mode	P_{dh}	-	kW
T_j = operating limit temperature	P_{dh}	-	kW
Air-to-water heat pump: **T_j** = -15°C (where TOL <-20°C)	P_{dh}	-	kW
Bivalent temperature	T_{biv}	-	°C
Power in cyclic heating mode	P_{cych}	-	kW
Decreased efficiency in cyclic mode	C_{dh}	0,99	—
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0,009	kW
Thermostat-off mode	P_{TO}	0,009	kW
Standby mode	P_{SB}	0,064	kW
Crankcase heater mode	P_{CK}	-	kW
Other parameters			
Capacity control	fixed		
Sound power level, indoors/outdoors	L_{WA}	55/0	dB
Emissions of nitrogen oxides	NO_x	-	mg/kWh

Parameter	Conventional representation	Value	Measurement unit
Seasonal energy efficiency for space heating	η_s	151	%
Declared efficiency coefficient or ratio of primary energy to radiant heat output at room temperature 20 °C and outdoor temperature T_j			
T_j = – 7 °C	COP_d or PER_d	4,56	–
T_j = + 2 °C	COP_d or PER_d	4,65	–
T_j = + 7 °C	COP_d or PER_d	4,79	–
T_j = + 12 °C	COP_d or PER_d	4,98	–
T_j= (T_{biv})- bivalent temperature mode	COP_d or PER_d	-	–
T_j = operating limit temperature	COP_d or PER_d	-	°C
Air-to-water heat pump: **T_j** = -15°C (where TOL <-20°C)	COP_d arba PER_d	-	
Air-to-water heat pump: operating limit temperature	TOL	-	°C
Cyclical efficiency	COP_{cyc} or PER_{cyc}	-	– or %
Heating water limit operating temperature	WTOL	60	°C
Supplementary heater			
Rated thermal power	P_{sup}	-	kW
Type of energy input	Electricity		
Air-to-water heat pump: rated air flow rate, outdoor	—		m^3/h
Ground-to-water heat pump: water flow, outdoor heat exchanger		8	m^3/h
Contact details	IGLU TECH UAB	Ukmerges st. 364-3, Vilnius, Lithuania	

Technical data of IGLU® Max 36 fixed capacity heat pump

Model	Max 36 FN
Air-to-water heat pump	No
Water-to-water heat pump	No
Ground-to-water heat pump	Yes
Low temperature heat pump	No
Equipped with supplementary heater	No
Supplementary heater is used	No

Parameters applied using average temperature are declared. Parameters are declared under average climatic conditions.

Parameter	Conventional representation	Value	Measurement unit
Rated thermal power	P_{rated}	35,5	kW
Declared part load heating capacity at 20 °C indoor temperature and outdoor temperature T_j			
$\mathbf{T_j}$ = – 7 °C	P_{dh}	35,01	kW
$\mathbf{T_j}$ = + 2 °C	P_{dh}	35,33	kW
$\mathbf{T_j}$ = + 7 °C	P_{dh}	35,54	kW
$\mathbf{T_j}$ = + 12 °C	P_{dh}	35,67	kW
$\mathbf{T_j = (T_{biv})}$- bivalent temperature mode	P_{dh}	-	kW
$\mathbf{T_j}$ = operating limit temperature	P_{dh}	-	kW
Air-to-water heat pump: $\mathbf{T_j}$ = -15°C (where TOL <-20°C)	P_{dh}	-	kW
Bivalent temperature	T_{biv}	-	°C
Power in cyclic heating mode	P_{cych}	-	kW
Decreased efficiency in cyclic mode	C_{dh}	0,99	—
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0,009	kW
Thermostat-off mode	P_{TO}	0,009	kW
Standby mode	P_{SB}	0,064	kW
Crankcase heater mode	P_{CK}	-	kW
Other parameters			
Capacity control	fixed		
Sound power level, indoors/outdoors	L_{WA}	56/0	dB
Emissions of nitrogen oxides	NO_x	-	mg/kWh

Parameter	Conventional representation	Value	Measurement unit
Seasonal energy efficiency for space heating	η_s	154	%
Declared efficiency coefficient or ratio of primary energy to radiant heat output at room temperature 20 °C and outdoor temperature T_j			
$\mathbf{T_j}$ = – 7 °C	COP_d arba PER_d	4,50	–
$\mathbf{T_j}$ = + 2 °C	COP_d arba PER_d	4,61	–
$\mathbf{T_j}$ = + 7 °C	COP_d arba PER_d	4,76	–
$\mathbf{T_j}$ = + 12 °C	COP_d arba PER_d	4,84	–
$\mathbf{T_j = (T_{biv})}$- bivalent temperature mode	COP_d arba PER_d	-	–
$\mathbf{T_j}$ = operating limit temperature	COP_d arba PER_d	-	°C
Air-to-water heat pump: $\mathbf{T_j}$ = -15°C (where TOL <-20°C)	COP_d arba PER_d	-	
Air-to-water heat pump: operating limit temperature	TOL	-	°C
Cyclical efficiency	COP_{cyc} or PER_{cyc}	-	– or %
Heating water limit operating temperature	WTOL	60	°C
Supplementary heater			
Rated thermal power	P_{sup}	-	kW
Type of energy input	Electricity		
Air-to-water heat pump: rated air flow rate, outdoor	—		m^3/h
Ground-to-water heat pump: water flow, outdoor heat exchanger		9	m^3/h

Contact details	IGLU TECH UAB	Ukmerges st. 364-3, Vilnius, Lithuania

Technical data of IGLU® Max 45 fixed capacity heat pump

Model	Max 45 FN
Air-to-water heat pump	No
Water-to-water heat pump	No
Ground-to-water heat pump	Yes
Low temperature heat pump	No
Equipped with supplementary heater	No
Supplementary heater is used	No

Parameters applied using average temperature are declared. Parameters are declared under average climatic conditions.

Parameter	Conventional representation	Value	Measurement unit
Rated thermal power	P_{rated}	43,98	kW
Declared part load heating capacity at 20 °C indoor temperature and outdoor temperature T_j			
T_j = – 7 °C	P_{dh}	44,37	kW
T_j = + 2 °C	P_{dh}	44,78	kW
T_j = + 7 °C	P_{dh}	44,96	kW
T_j = + 12 °C	P_{dh}	45,37	kW
T_j= (T_{biv})- bivalent temperature mode	P_{dh}	-	kW
T_j = operating limit temperature	P_{dh}	-	kW
Air-to-water heat pump: **T_j** = -15°C (where TOL <-20°C)	P_{dh}	-	kW
Bivalent temperature	T_{biv}	-	°C
Power in cyclic heating mode	P_{cych}	-	kW
Decreased efficiency in cyclic mode	C_{dh}	0,99	—
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0,009	kW
Thermostat-off mode	P_{TO}	0,009	kW
Standby mode	P_{SB}	0,064	kW
Crankcase heater mode	P_{CK}	-	kW
Other parameters			
Capacity control	fixed		
Sound power level, indoors/outdoors	L_{WA}	56/0	dB
Emissions of nitrogen oxides	NO_x	-	mg/kWh
Contact details	IGLU TECH UAB		Ukmerges st. 364-3, Vilnius, Lithuania

Parameter	Conventional representation	Value	Measurement unit
Seasonal energy efficiency for space heating	η_s	142	%
Declared efficiency coefficient or ratio of primary energy to radiant heat output at room temperature 20 °C and outdoor temperature T_j			
T_j = – 7 °C	COP_d arba PER_d	4,61	–
T_j = + 2 °C	COP_d arba PER_d	4,72	–
T_j = + 7 °C	COP_d arba PER_d	4,88	–
T_j = + 12 °C	COP_d arba PER_d	4,97	–
T_j= (T_{biv})- bivalent temperature mode	COP_d arba PER_d	-	–
T_j = operating limit temperature	COP_d arba PER_d	-	°C
Air-to-water heat pump: **T_j** = -15°C (where TOL <-20°C)	COP_d arba PER_d	-	
Air-to-water heat pump: operating limit temperature	TOL	-	°C
Cyclical efficiency	COP_{cyc} or PER_{cyc}	-	– or %
Heating water limit operating temperature	WTOL	60	°C
Supplementary heater			
Rated thermal power	P_{sup}	-	kW
Type of energy input	Electricity		
Air-to-water heat pump: rated air flow rate, outdoor	—		m^3/h
Ground-to-water heat pump: water flow, outdoor heat exchanger		12	m^3/h

Technical data of IGLU® Max 70 fixed capacity heat pump

Model	Max 70 FN
Air-to-water heat pump	No
Water-to-water heat pump	No
Ground-to-water heat pump	Yes
Low temperature heat pump	No
Equipped with supplementary heater	No
Supplementary heater is used	No

Parameters applied using average temperature are declared. Parameters are declared under average climatic conditions.

Parameter	Conventional representation	Value	Measurement unit
Rated thermal power	P_{rated}	70	kW
Declared part load heating capacity at 20 °C indoor temperature and outdoor temperature T_j			
T_j = – 7 °C	P_{dh}	70,04	kW
T_j = + 2 °C	P_{dh}	70,60	kW
T_j = + 7 °C	P_{dh}	71,16	kW
T_j = + 12 °C	P_{dh}	71,78	kW
T_j= (T_{biv})- bivalent temperature mode	P_{dh}	-	kW
T_j = operating limit temperature	P_{dh}	-	kW
Air-to-water heat pump: **T_j** = -15°C (where TOL <-20°C)	P_{dh}	-	kW
Bivalent temperature	T_{biv}	-	°C
Power in cyclic heating mode	P_{cych}	-	kW
Decreased efficiency in cyclic mode	C_{dh}	0,99	—
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0,009	kW
Thermostat-off mode	P_{TO}	0,009	kW
Standby mode	P_{SB}	0,064	kW
Crankcase heater mode	P_{CK}	-	kW
Other parameters			
Capacity control	fixed		
Sound power level, indoors/outdoors	L_{WA}	57/0	dB
Emissions of nitrogen oxides	NO_x	-	mg/kWh
Contact details	IGLU TECH UAB		

Parameter	Conventional representation	Value	Measurement unit
Seasonal energy efficiency for space heating	η_s	135	%
Declared efficiency coefficient or ratio of primary energy to radiant heat output at room temperature 20 °C and outdoor temperature T_j			
T_j = – 7 °C	COP_d arba PER_d	4,59	–
T_j = + 2 °C	COP_d arba PER_d	4,64	–
T_j = + 7 °C	COP_d arba PER_d	4,78	–
T_j = + 12 °C	COP_d arba PER_d	4,97	–
T_j= (T_{biv})- bivalent temperature mode	COP_d arba PER_d	-	–
T_j = operating limit temperature	COP_d arba PER_d	-	°C
Air-to-water heat pump: **T_j** = -15°C (where TOL <-20°C)	COP_d arba PER_d	-	
Air-to-water heat pump: operating limit temperature	TOL	-	°C
Cyclical efficiency	COP_{cyc} or PER_{cyc}	-	– or %
Heating water limit operating temperature	WTOL	60	°C
Supplementary heater			
Rated thermal power	P_{sup}	-	kW
Type of energy input	Electricity		
Air-to-water heat pump: rated air flow rate, outdoor	—		m^3/h
Ground-to-water heat pump: water flow, outdoor heat exchanger		17	m^3/h
Contact details	Ukmerges st. 364-3, Vilnius, Lithuania		

Technical data of IGLU® Max 90 fixed capacity heat pump

Model	Max 90 FN
Air-to-water heat pump	No
Water-to-water heat pump	No
Ground-to-water heat pump	Yes
Low temperature heat pump	No
Equipped with supplementary heater	No
Supplementary heater is used	No

Parameters applied using average temperature are declared. Parameters are declared under average climatic conditions.

Parameter	Conventional representation	Value	Measurement unit
Rated thermal power	P_{rated}	87	kW
Declared part load heating capacity at 20 °C indoor temperature and outdoor temperature T_j			
T_j = – 7 °C	P_{dh}	87,03	kW
T_j = + 2 °C	P_{dh}	87,35	kW
T_j = + 7 °C	P_{dh}	87,55	kW
T_j = + 12 °C	P_{dh}	87,63	kW
T_j= (T_{biv})- bivalent temperature mode	P_{dh}	-	kW
T_j = operating limit temperature	P_{dh}	-	kW
Air-to-water heat pump: **T_j** = -15°C (where TOL <-20°C)	P_{dh}	-	kW
Bivalent temperature	T_{biv}	-	°C
Power in cyclic heating mode	P_{cych}	-	kW
Decreased efficiency in cyclic mode	C_{dh}	0,99	—
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0,009	kW
Thermostat-off mode	P_{TO}	0,009	kW
Standby mode	P_{SB}	0,064	kW
Crankcase heater mode	P_{CK}	-	kW
Other parameters			
Capacity control	fixed		
Sound power level, indoors/outdoors	L_{WA}	64/0	dB
Emissions of nitrogen oxides	NO_x	-	mg/kWh
Contact details	IGLU TECH UAB		

Parameter	Conventional representation	Value	Measurement unit
Seasonal energy efficiency for space heating	η_s	131	%
Declared efficiency coefficient or ratio of primary energy to radiant heat output at room temperature 20 °C and outdoor temperature T_j			
T_j = – 7 °C	COP_d arba PER_d	4,51	–
T_j = + 2 °C	COP_d arba PER_d	4,62	–
T_j = + 7 °C	COP_d arba PER_d	4,74	–
T_j = + 12 °C	COP_d arba PER_d	4,81	–
T_j= (T_{biv})- bivalent temperature mode	COP_d arba PER_d	-	–
T_j = operating limit temperature	COP_d arba PER_d	-	°C
Air-to-water heat pump: **T_j** = -15°C (where TOL <-20°C)	COP_d arba PER_d	-	
Air-to-water heat pump: operating limit temperature	TOL	-	°C
Cyclical efficiency	COP_{cyc} or PER_{cyc}	-	– or %
Heating water limit operating temperature	WTOL	60	°C
Supplementary heater			
Rated thermal power	P_{sup}	-	kW
Type of energy input	Electricity		
Air-to-water heat pump: rated air flow rate, outdoor	—		m^3/h
Ground-to-water heat pump: water flow, outdoor heat exchanger		23	m^3/h
Ukmerges st. 364-3, Vilnius, Lithuania			

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