

**Belaria® pro (20)**

Type of heat pump:	Air to water heat pump
Low-temperature heat pump: (Yes/No)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Temperature application: (35°C/55°C)	<input checked="" type="checkbox"/> 35 °C <input type="checkbox"/> 55 °C
Equipped with supplementary heater: (Yes/No)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Heat pump combination heater: (Yes/No)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Contact details:	Hoval Aktiengesellschaft, 9490 Vaduz, Liechtenstein

		cold	average	warm	
<b>Rated heat output</b>	$P_{rated}$	<b>16</b>	<b>17</b>	<b>18</b>	<b>kW</b>

Outdoor temperature $T_j$	Declared capacity for part load (indoor temperature = 20 °C)				
$T_j = -15\text{ °C}$	$P_{dh}$	13.5	-	-	kW
$T_j = -7\text{ °C}$	$P_{dh}$	9.2	14.7	-	kW
$T_j = +2\text{ °C}$	$P_{dh}$	10.2	10.2	17.6	kW
$T_j = +7\text{ °C}$	$P_{dh}$	10.4	10.4	11.3	kW
$T_j = +12\text{ °C}$	$P_{dh}$	10.6	10.1	10.6	kW
$T_j = \text{Bivalenz temperature } (T_{biv})$	$P_{dh}$	13.5	16.6	17.6	kW
$T_j = \text{Operation limit temperature (TOL)}$	$P_{dh}$	13.2	16.6	17.6	kW
Bivalenz temperature ( $T_{biv}$ )	$T_{biv}$	-15.0	-10.0	2.0	°C

Power consumption in modes other than active mode				
Thermostat-off mode	$P_{TO}$	0.0282		kW
Standby mode	$P_{SB}$	0.0280		kW
Off-mode	$P_{OFF}$	0.0006		kW
Crankcase heater mode	$P_{CK}$	0.0000		kW

Other items					
Annual energy consumption	$Q_{HE}$	8,226	6,229	3,313	kWh
Sound power levels, indoors/outdoors	$L_{WA}$	- / 61		dB	
Capacity control	variable				

		cold	average	warm	
<b>Seasonal space heating efficiency</b>	$\eta_s$	<b>189</b>	<b>223</b>	<b>287</b>	<b>%</b>
<b>Seasonal coefficient of performance</b>	<b>SCOP</b>	<b>4.81</b>	<b>5.64</b>	<b>7.26</b>	<b>---</b>

Outdoor temperature $T_j$	Declared coefficient of performance for part load (indoor temperature = 20 °C)				
$T_j = -15\text{ °C}$	$COP_d$	2.94	-	-	---
$T_j = -7\text{ °C}$	$COP_d$	4.18	3.55	-	---
$T_j = +2\text{ °C}$	$COP_d$	5.80	5.66	4.49	---
$T_j = +7\text{ °C}$	$COP_d$	7.26	7.02	6.56	---
$T_j = +12\text{ °C}$	$COP_d$	8.95	9.15	8.83	---
$T_j = \text{Bivalenz temperature } (T_{biv})$	$COP_d$	2.94	3.03	4.49	---
$T_j = \text{Operation limit temperature (TOL)}$	$COP_d$	2.48	3.03	4.49	---
Operation limit temperature	$TOL$	-20.0	-10.0	2.0	°C
Heating water operating limit temperature	$WTOL$	70		°C	

Supplementary heater				
Rated heat output (*)	$P_{sup}$			kW
Type of energy input	n.a.			

For air-to-water heat pumps:			
Rated air flow rate, outdoors	---	6,600	$m^3/h$
For water- or brine-to-water heat pumps:			
Rated brine or water flow rate, outdoor heat exchanger	---	n.a.	$m^3/h$

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Heat pump combination heater: (Yes/No)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Contact details:	Hoval Aktiengesellschaft, 9490 Vaduz, Liechtenstein

		cold	average	warm	
<b>Rated heat output</b>	$P_{rated}$	<b>16</b>	<b>16</b>	<b>17</b>	<b>kW</b>

Outdoor temperature $T_j$	Declared capacity for part load (indoor temperature = 20 °C)				
	$P_{dh}$				
$T_j = -15\text{ °C}$	$P_{dh}$	14.1	-	-	kW
$T_j = -7\text{ °C}$	$P_{dh}$	9.4	14.1	-	kW
$T_j = +2\text{ °C}$	$P_{dh}$	10.4	10.2	16.3	kW
$T_j = +7\text{ °C}$	$P_{dh}$	10.3	10.5	10.5	kW
$T_j = +12\text{ °C}$	$P_{dh}$	10.4	10.3	10.6	kW
$T_j = \text{Bivalenz temperature } (T_{biv})$	$P_{dh}$	14.1	15.3	16.3	kW
$T_j = \text{Operation limit temperature (TOL)}$	$P_{dh}$	12.4	15.3	16.3	kW
Bivalenz temperature ( $T_{biv}$ )	$T_{biv}$	-15.0	-10.0	2.0	°C

Power consumption in modes other than active mode				
Thermostat-off mode	$P_{TO}$		0.0282	kW
Standby mode	$P_{SB}$		0.0280	kW
Off-mode	$P_{OFF}$		0.0006	kW
Crankcase heater mode	$P_{CK}$		0.0000	kW

Other items					
Annual energy consumption	$Q_{HE}$	10,760	8,002	4,379	kWh
Sound power levels, indoors/outdoors	$L_{WA}$		- / 61		dB
Capacity control			variable		

		cold	average	warm	
<b>Seasonal space heating efficiency</b>	$\eta_s$	<b>144</b>	<b>162</b>	<b>204</b>	<b>%</b>
<b>Seasonal coefficient of performance</b>	<b>SCOP</b>	<b>3.65</b>	<b>4.13</b>	<b>5.16</b>	<b>---</b>

Outdoor temperature $T_j$	Declared coefficient of performance for part load (indoor temperature = 20 °C)				
	$COP_d$				
$T_j = -15\text{ °C}$	$COP_d$	2.20	-	-	---
$T_j = -7\text{ °C}$	$COP_d$	3.09	2.52	-	---
$T_j = +2\text{ °C}$	$COP_d$	4.41	4.09	2.95	---
$T_j = +7\text{ °C}$	$COP_d$	5.68	5.29	4.45	---
$T_j = +12\text{ °C}$	$COP_d$	7.42	7.08	6.60	---
$T_j = \text{Bivalenz temperature } (T_{biv})$	$COP_d$	2.20	2.20	2.95	---
$T_j = \text{Operation limit temperature (TOL)}$	$COP_d$	1.65	2.20	2.95	---
Operation limit temperature	$TOL$	-20.0	-10.0	2.0	°C
Heating water operating limit temperature	$WTOL$		70		°C

Supplementary heater				
Rated heat output (*)	$P_{sup}$			kW
Type of energy input		n.a.		

For air-to-water heat pumps:				
Rated air flow rate, outdoors	---		6,600	m³/h
For water- or brine-to-water heat pumps:				
Rated brine or water flow rate, outdoor heat exchanger	---		n.a.	m³/h