4. Technical data of heat pump

4.1. Technical data of “ONE2”

The latest range of the air-to-water compact design heat pumps for external installation feature advanced design and high heating factor at affordable price.

Basic information :

- Compact dimensions
- Air is the source of heat
- Intended for attendance-free water heating up to 55°C. / 65°C.
- ! Suitable for floor and radiator heating systems
- ! Compressor cooling support
- Hot water for space heating and service hot water supply central control by means of supplied regulation system
- Choice from two regulators and an option for further extension
- Wired or wireless control
- Powder coat, unpainted finish
- Wide range of accessories

Advantages :

- Ideal for new objects without internal spaces.
- State-of-the-art technology with a front-end electronics for affordable price.

Installation position :

Intended for outdoor installation next to a building structure or on its roof

Characteristics

Heat source: Air

Noise suppression:
- Use of scroll compressor design eliminates traditional pistons and valves
- Compressor and cooling circuit multiple spring suspension
- Solid and compact foundation slab
- Multiple layer noise-proof insulation on covers
- Low speed, 630mm large diameter serrated blades fan

Control units:
- AVS37 (standard) control panel in switchboard without space temperature sensing (resolved with the use of an external thermostat)
- QAA75 (standard) combined space and service device
- QAA78 wireless unit (optional) combined space and service device

- **QAA78 advantages**:
- the heat pump and the hot water for space heating and service hot water supply can be controlled from anywhere in the house/building
- space thermostat function, informs the regulator of the local unit’s temperature status

Heating system connection support / alternatives:
- direct connection to the heating system without using a storage reservoir
- Two or four-point connection to the storage reservoir
- Storage reservoir support by means of a floating boiler

Storage reservoir (accumulation tank):
- is not required (subject to evaluation)
- equithermal charging availability
- availability of so-called forced charging, when the required temperature is reached through charging. The function’s initiation can be linked to time or command controlled switching between electricity tariffs. The advantage is the possibility of heat “collection” during favourable weather conditions, e.g. during higher air temperatures

Bivalent source:
- electrical cartridges support in the flow or in the reservoir
- External sources support (existing gas, electricity and other energy driven boilers)
- Three or single-stage bivalent control

Heating system :

- Purely equithermal control (by the external temperature only)
- Control according to space temperature
- Equithermal coupled with space control
- One regulator manages up to two mixing heat circuits and one pump circuit
- Each heating circuits can be controlled fully independently with the use of its own space unit
- The existing ON/OFF switching mode thermostats can be used
- Addition of more heating circuits with the use of zone regulators RVS
- Integration with a higher level regulators, e.g. individual rooms temperature control through separate heating circuits can be achieved
- Hot service water heating
- Reservoir heating with an independent boiler
- Storage reservoir heating with the use of floating boiler
- Internal or external boiler heat exchangers without internal exchanger or in case of inadequate size
- flow heating
- forced heating
- combined with solar heating
- Hot service water heating external source or boiler electrical heating element adjustment
- function of heat transfer between the storage reservoir and the boiler (a typical case when the reservoir heating is supplied by a solid fuel boiler or a fireplace water heating insert)

Solar system :
- over 50 connecting methods
- definition of 3 take-offs (hot service water, storage reservoir, swimming pool)
- integration with a heat pump (hp functions as a second hot service water)

Swimming pool heating
Is supported

Fireplace water heating insert:
- the heat pump is switched off when the reservoir is supplied by the fireplace water heating insert
- Overheated reservoir cool-down function
  A fireplace or solid fuel boiler circulating pump can be directly controlled in combination with RVS63, including other functions such as monitoring of burning intensity to prevent a fire going out.

Cooling:

- cooling support
- heating as well as cooling supportin two-pipe and four- pipe distribution systems
- support of interchangeable cooling and hot service water heating or swimming pool heating
- dew-point check
- dehumidifier control

Cascade :
- The standard regulation supports connecting of up to 16 heat pumps or other sources is available already at the standard regulation level
- Various type of sources are supported in a cascade (gas, electrical and solid fuel boilers)
- Gas boilers with Siemens regulation can be cascade connected with our heat pumps. On the Czech market this applies to the trade marks Geminox, Brötje, Baxi and Viadrus, equipped with the LMU units.

Additional functions :
- Centralised ripple control input (blocking electrical heating)
- External 0-10V heat requirement input, mode changeover switching, heat pump start.

4.1.1. Data sheet

MODEL	HOTJET 10ONE2	HOTJET 15ONE2	HOTJET 20ONE2	HOTJET 25ONE2	HOTJET 35ONE2	HOTJET 45ONE2
Performance data	**Topný výkon [kW] / příkon [kW] / Topný faktor [COP]**					
Heating: A7/W35 1)	11,34 / 2,68 / 4,23	13,25 / 3,10 / 4,26	18,81 / 4,18 / 4,50	30,10 / 6,99 / 4,30	33,6 / 7,34 / 4,58	40,2 / 9,1 / 4,42
Heating: A2/W35 2)	8,71 / 2,61 / 3,33	11,07 / 3,16 / 3,50	15,62 / 4,21 / 3,71	25,20 / 6,97 / 3,62	28,0 / 7,29 / 3,84	33,6 / 8,85 / 3,74
Heating: A-7/W35	6,48 / 2,63 / 2,46	9,34 / 3,20 / 2,91	13,01 / 4,21 / 3,09	20,64 / 6,95 / 2,97	22,83 / 7,23 / 3,16	27,35 / 8,87 / 3,08
Heating: A7/W55	9,88 / 3,69 / 2,68	14,05 / 4,98 / 2,82	18,87 / 6,58 / 2,87	29,99 / 10,99 / 2,73	33,47 / 11,66 / 2,87	40,10 / 14,32 / 2,80
Heating: A2/W55	8,89 / 4,09 / 2,18	11,41 / 4,83 / 2,37	16,15 / 6,53 / 2,47	25,73 / 10,90 / 2,36	28,67 / 11,47 / 2,50	34,35 / 14,08 / 2,44
Heating: A-7/W55	7,34 / 4,08 / 1,80	9,94 / 4,87 / 2,04	13,71 / 6,44 / 2,13	21,94 / 10,74 / 2,04	24,38 / 11,14 / 2,19	29,21 / 13,66 / 2,14
Energy efficiency class 35°C	A+	A++	A++	A++	A++	A++
Energy efficiency class 55°C	A+	A+	A+	A++	A+	A+
Cooling: A35/W7 4)	8.50 / 3.40 / 2.50	10.20 / 4.20 / 2.40	14.00 / 5.80 / 2.40	18.00 / 7.50 / 2.40	23,87 / 9,61 / 2,48	28,32 / 11,79 / 2,4
Technical data						
Temperature operating limits for air [°C]	-22°C to 40°C					
Temperature limit of heating system min./max. [°C]	20°C to 62°C (to -10°C)					
Heating and reversing water communication pipe	Outside G 5/4”					
Nominal flow rate on the heating side of Δt = 5 °C [m3 . h-1]	1,95	2,34	3,37	5,18	6,1	7,64
Minimum flow rate on the heating side of Δt = 7 °C [m3 . h-1]	1,39	1,67	2,4	3,69	4,36	5,46
Pressure loss [kPa]	5,5	6	7	9	X	X
Flow coefficient Kvs [-]	8,3	9,4	12,7	17,2	X	X
Protection against freezing water heating	Yes (must be switched on power supply)					
Air flow rate [m3 . h-1]	4 000	4 500	5 000	8 400	X	X
Refrigerant circuit						
Expansion valve	Electronic controlled: 1x Main 1 x Refrigerant injection EVI					
Coolant injection system EVI	Yes					
Refrigerant type	R407C					
Defrosting	Automatic or on-demand					
Refrigerant quantity [kg]	4	4,5	5	11,5	14,5	15,4
Type of defrosting	Hot refrigerant (reversing circuit)					
Heating the condensate pan	By residual heat of the refrigerant					
Condensate drain [mm]	⌀ 30					
Heating the condensate drain pipe	Optimized functions in regulating prepared					
Tripping the low-pressure pressure pressure switch [MPa]	0,05					
Cut-off pressure of high pressure pressurestat [MPa]	3,2					

MODEL	HOTJET 10ONE2	HOTJET 15ONE2	HOTJET 20ONE2	HOTJET 25ONE2	HOTJET 35ONE2	HOTJET 45ONE2
Technical information, weight						
Width x Depth x Height [mm]	1 271 x 500 x 1 211			1 621 x 600 x 1 483	1 721 x 700 x 1 680	
Weight [kg]	200	205	205	250	X	X
Installation site	Outdoor					
Cabinet	Powder coat					
Color	RAL 7016 (color on demand)					
Electrical connection						
Nominal voltage	400V / 3 phase / 50Hz					
Compressor	Scroll EVI					
Nominal current A7/W35 [A]	5,2	5,8	8,4	11,2	14,7	16,4
Maximum current [A]	7,9	9	16,5	22	27	30
Starting current [A]	66	66	73	80	96	96
Starting current with soft starter	39,6	39,6	43,8	48	58	58
Compressor fuse with soft starter	10C/3	10C/3	20C/3	25C/3	32C/3	32C/3
Fusing	20B/3 nebo 16C/3	20B/3 nebo 16C/3	25B/3	32B/3	40C/3	40C/3
Compressor supply line CYKY [n x mm2]	5 x 4	5 x 4	5 x 6	5 x 10	5 x 10 5)	5 x 10 5)
Electrical data with Hydroboxe						
Main for Heat Pump with Hydrobox	20C/3	20C/3	25C/3	32C/3	X	X
Supply distributor for HP with Hydroboxes CYKY [n x mm2]	5 x 4	5 x 4	5 x 4	5 x 6	X	X
Degree of protection IPX (EN 60 529)	With the installed control panel IP40					
Sound level	**according to EN 12102 at A7 / W55 (the highest)**					
Sound power level Lwa [dB]	max: 67			max: 71,5	max 73,5	max 76,5
Sound pressure level at Lpa 5 m [dB]	48			52,5	X	X
EC FAN	630mm			800mm	900mm	900mm
Change fan speed	Plynulé, z regulace 0-10V signálem. Funkce: dle teploty, noční útlum atd..					
Equipment						
Electric Switchboard	External (398x647x166 - w/d/h) 16 kg				Internal	
Operator panel	remote AVS37 or AVS74					
Electric cable (between outdoor unit and control box)	5m satandard (up tp 25m, above 25m change cable type)					
Siemens regulator	RVS21+ AVS55.199 + AVS75.370			RVS21 + AVS55.196		
Drive expansion valves	By RVS21			Carel or emerson		
Phase control	Yes (for RVS21 external, RVS61 internal)					
Room wired controller	QAA75 (wired), QAA78 (wireless)					
Outside sensor	QAC34					
Control via internet	es (via web-server for 1, 4 or 16 regulators)					
Cascade	Yes, up-to 16 HPs (RVS21 with OCI345 , RVS61 standard)					
MODBUS communication	Yes (With extension Modbus communication module)					

**1) According to European standard EN 14511

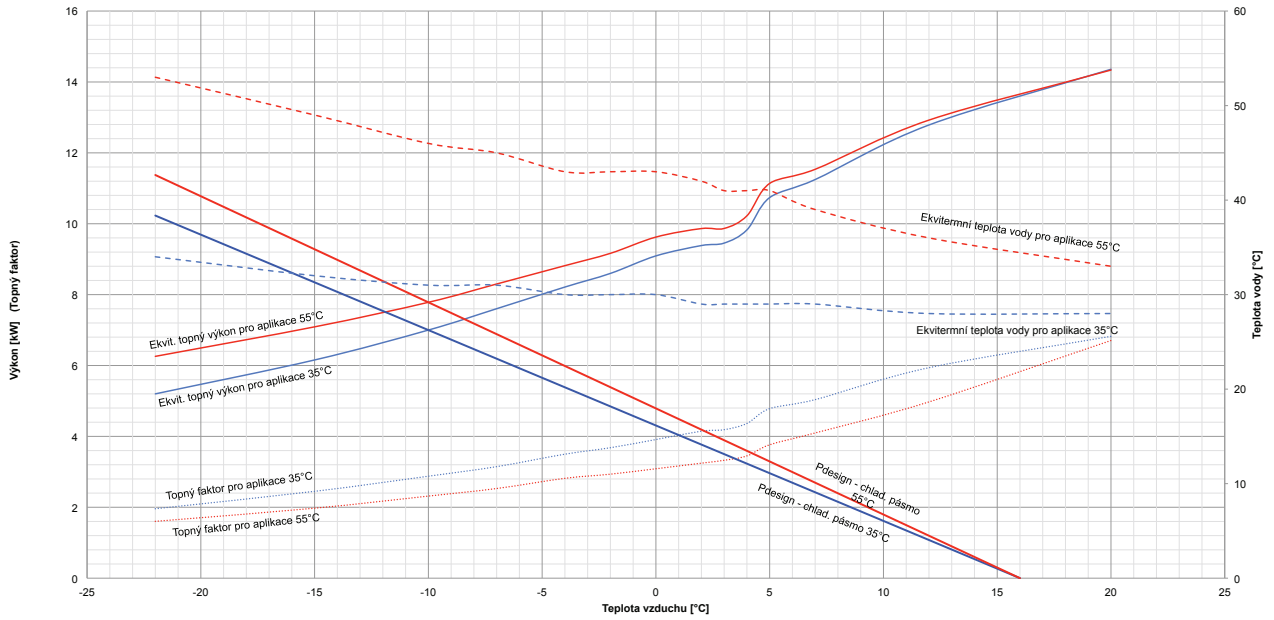
2) According to European standard EN 14825 for mid climate.

3) Dimensions of cable and size circuit breakers are designed for basic configuration of the heat pump compressor, fan, circulation pump and control.

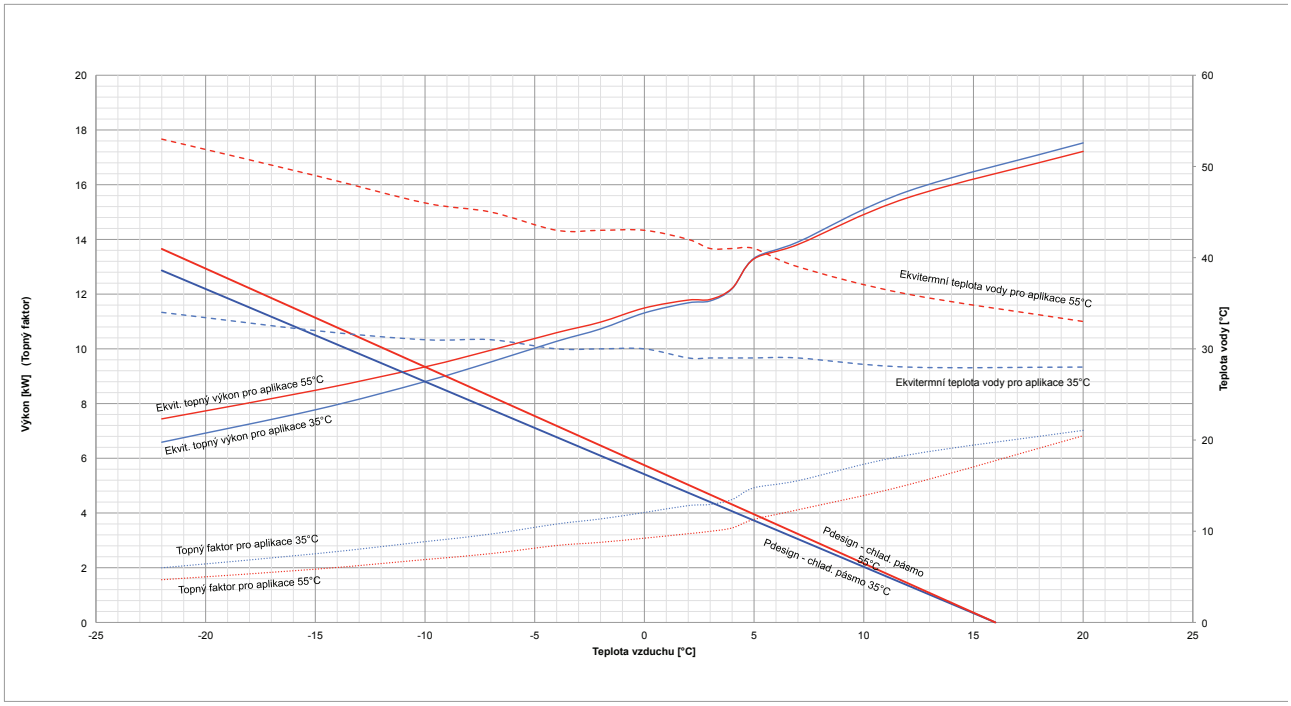
In the case of installation of circuit breakers and contactors electrical heater and other appliances must be recalculated according to the planned collection

4.1.2. Characteristic Curves

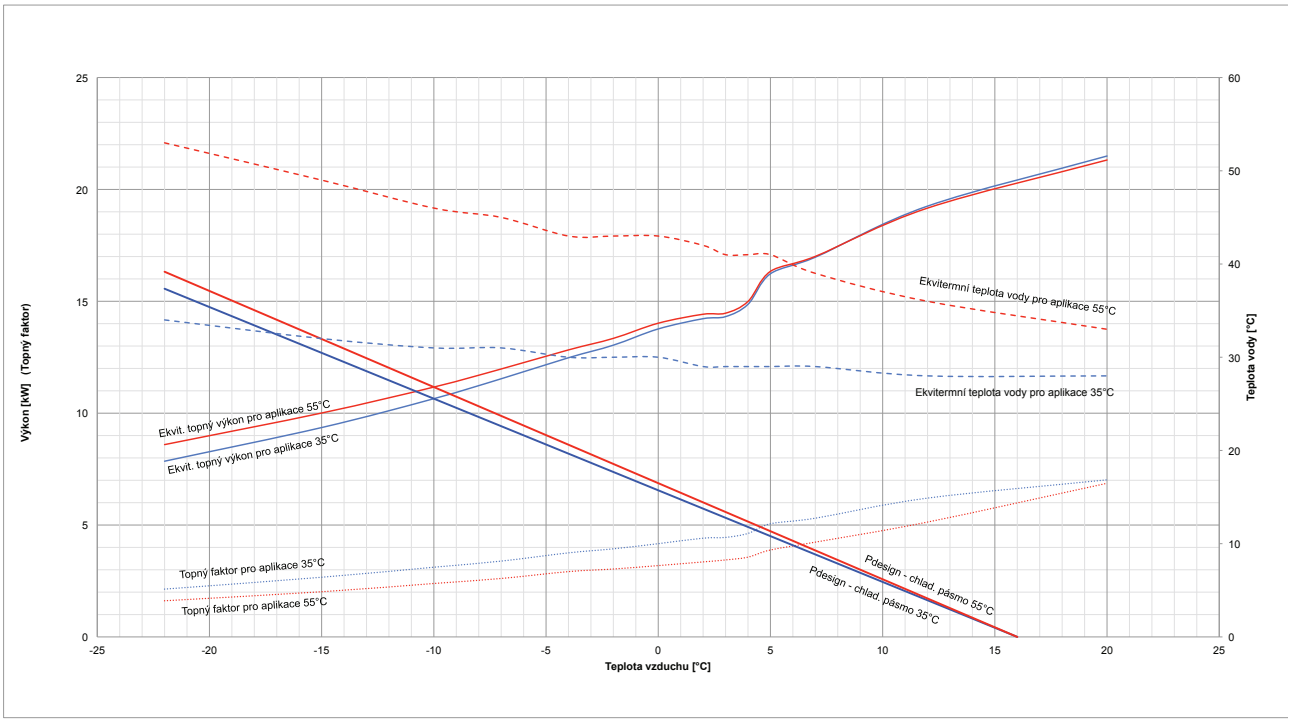
Výkonové křivky HOTJET 10ONE2 - vzduch/voda



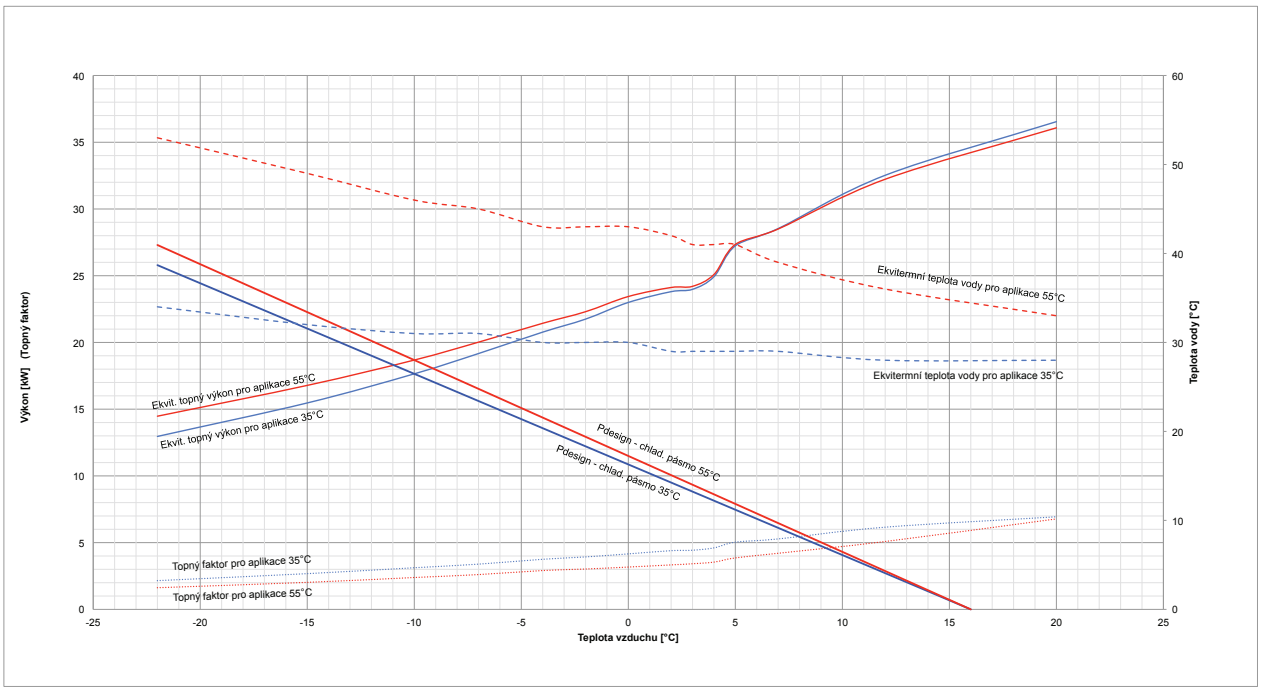
Výkonové křivky HOTJET 15ONE2 - vzduch/voda



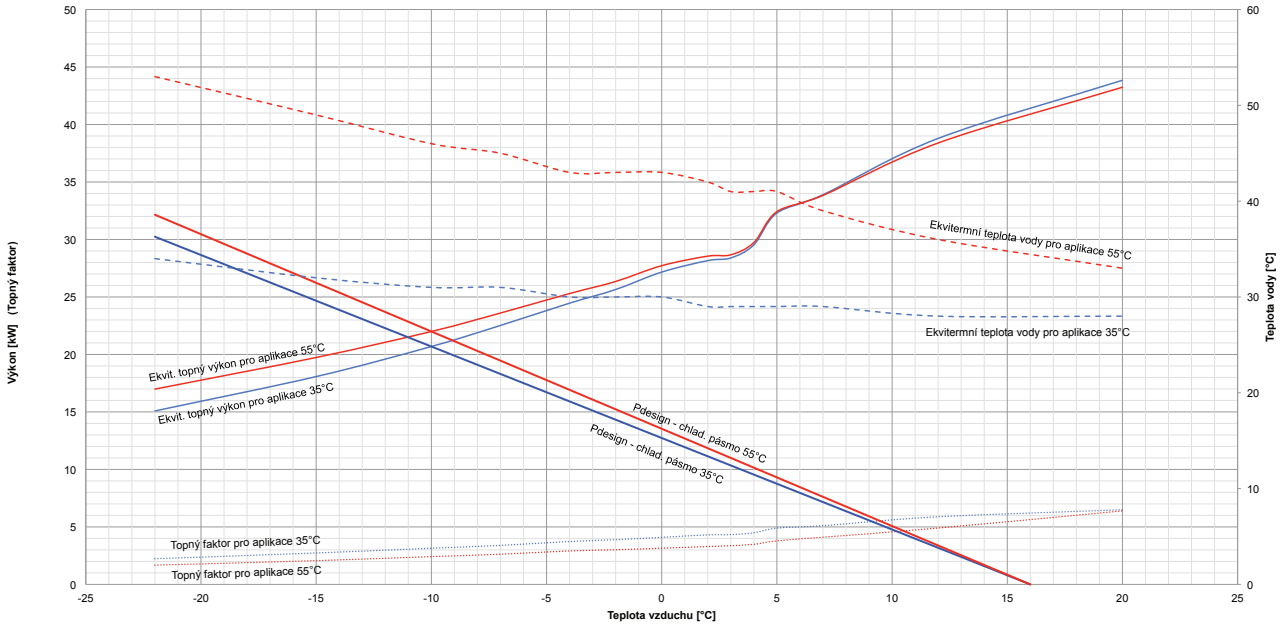
Výkonové křivky HOTJET 20ONE2 - vzduch/voda



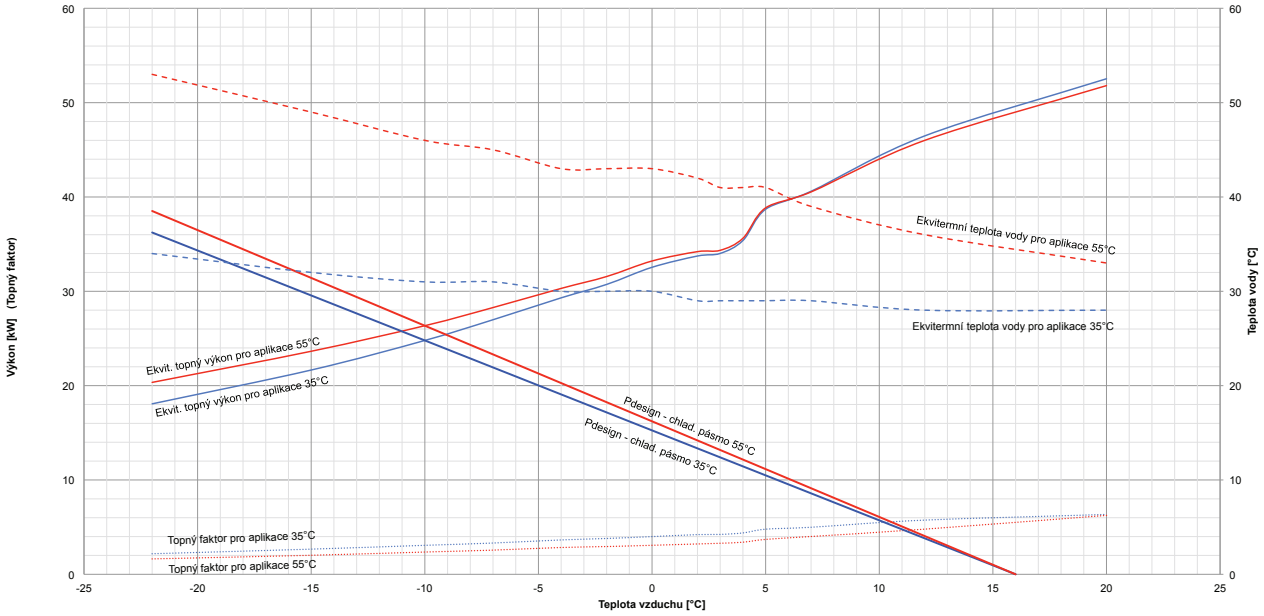
Výkonové křivky HOTJET 25ONE2 - vzduch/voda



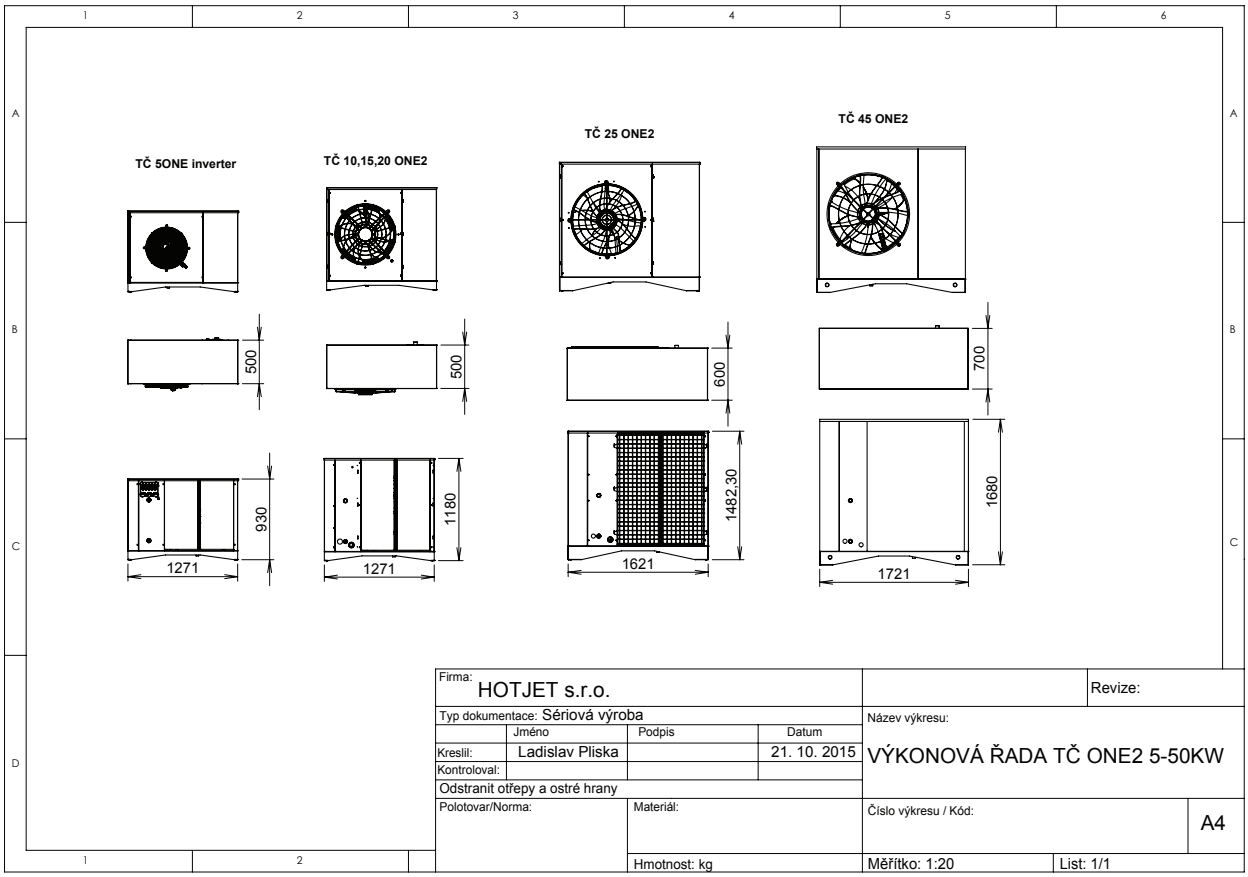
Výkonové křivky HOTJET 35ONE2 - vzduch/voda

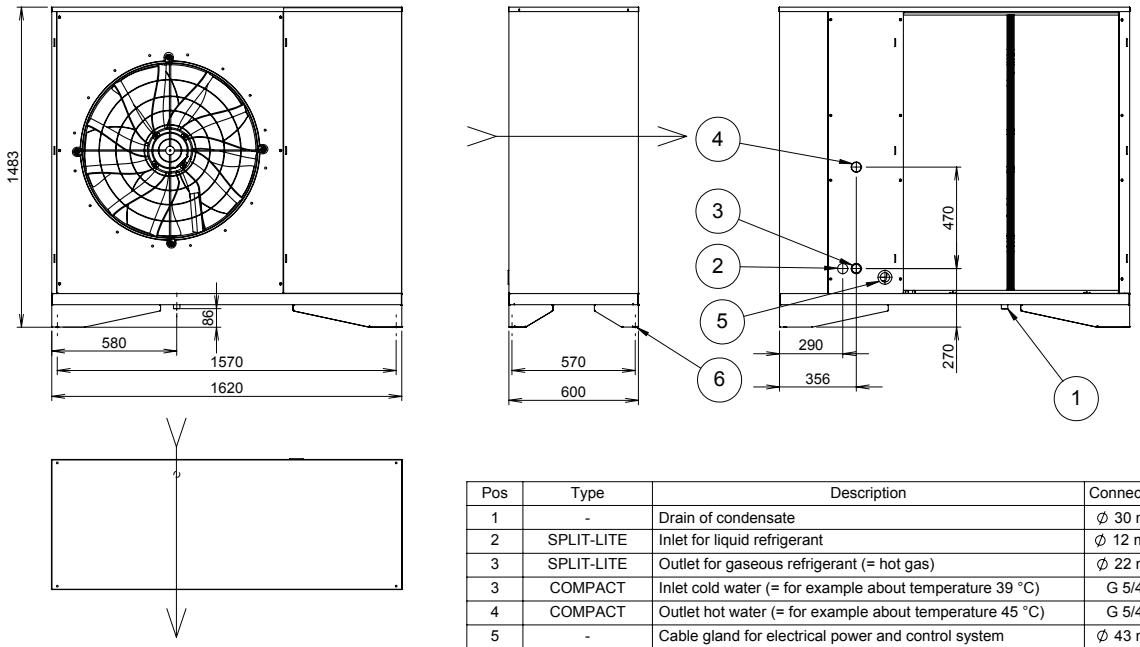


Výkonové křivky HOTJET 45ONE2 - vzduch/voda



4.1.3.Dimension Drawing





Pos	Type	Description	Connection
1	-	Drain of condensate	∅ 30 mm
2	SPLIT-LITE	Inlet for liquid refrigerant	∅ 12 mm
3	SPLIT-LITE	Outlet for gaseous refrigerant (= hot gas)	∅ 22 mm
3	COMPACT	Inlet cold water (= for example about temperature 39 °C)	G 5/4"
4	COMPACT	Outlet hot water (= for example about temperature 45 °C)	G 5/4"
5	-	Cable gland for electrical power and control system	∅ 43 mm
6	-	Fixing base	M8

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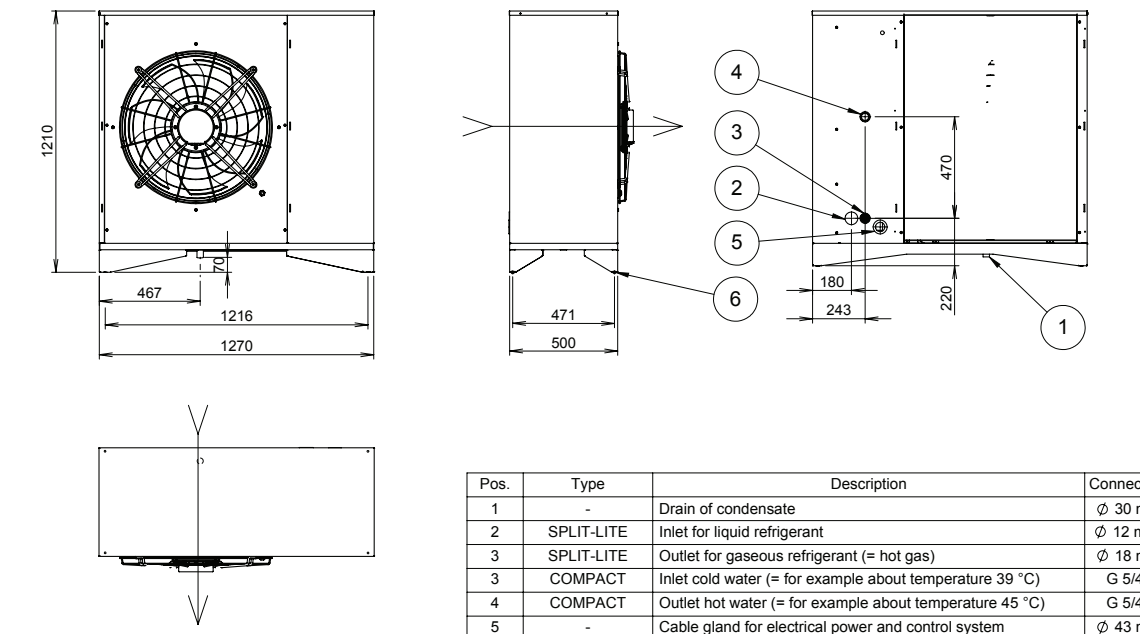
Průmyslová 966/21
747 23 Bolatice

NAME	HEAT PUMP 25 ONE2
PREPARED BY	HOTJET
DATE	03/2016



Pos.	Type	Description	Connection
1	-	Drain of condensate	∅ 30 mm
2	SPLIT-LITE	Inlet for liquid refrigerant	∅ 12 mm
3	SPLIT-LITE	Outlet for gaseous refrigerant (= hot gas)	∅ 18 mm
3	COMPACT	Inlet cold water (= for example about temperature 39 °C)	G 5/4"
4	COMPACT	Outlet hot water (= for example about temperature 45 °C)	G 5/4"
5	-	Cable gland for electrical power and control system	∅ 43 mm
6	-	Fixing base	M8

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NAME	HEAT PUMP 10-20 ONE2
PREPARED BY	HOTJET
DATE	03/2016