

HEAT PUMP AIR–WATER LWRc-8KW

Today, „heat pumps have a green light“. This statement represents the general perception of these low-temperature heat sources that are environmentally friendly and save the consumer's money at the same time.

The principle is rather old and simple; however, the present demand in the Czech Republic is evident today, when the price of energy for heating sharply rises. As it is obvious from its name, the heat pump re-pumps thermal energy from one space to another, while utilizing substances with low boiling points. Thus, energy is removed and transferred from one medium to another. In a sense, it is not an energy transfer because the transfer ratio would be worse than 1:1; however, if 1kWh is added for energy transfer by a heat pump, energy of 3kWh or more in form of heat is obtained. Why more? Because the ratio depends on the difference between temperatures of cooled and heated spaces. From the technical principle, the output temperature from the heat pump cannot be higher than 60°C; however, it is obvious that energy must be added via low-temperature system – preferably ground system, where the average medium temperature is approx. 35 °C. The use of collectors is not excluded. Use of convectors with forced-air circulation, or ventilators, is particularly suitable. On the other hand, the cooled space, the outside environment in this case, can reach variable temperature values. The ground temperature is stable, and according to the experience, the temperature in the area of the borehole usually stabilizes at –2°C. In most cases, air temperature ranges from –10oC to +10oC; however, the average temperature in the heating period is around +3°C. Here, the obvious temperature gain is 5oC different from the indoor and outdoor environment compared to the close area of the borehole. The use of heat pumps is also particularly suitable for water heating of the outdoor pool in the transitory period, when the air temperatures are around +15°C, and water temperatures are around +25°C. In these conditions, the heat pump reaches efficiency of 6:1.

The aforementioned text clearly demonstrates that the world trend leans towards the use of air–water heat pumps. The reason is ecological. The variable air temperature is a common condition in nature; however, the frozen ground is not.

Moreover, drilling together with borehole development and its filling are extremely costly. Heat pump delivered by our company benefits from the newest findings of the coolant research, and in comparison with the spiral compressors, HP LWR-8kW with the use of a rotary compressor achieves better parameters.

REVEL, s.r.o. is one of the most prominent and the biggest domestic manufacturer of plastic piping based on reticulated polyethylene (PE-X), which is the most suitable material for large-area heating systems. At the same time, the company



Heat Pump LWRc-8kW Tech-Data		
Model		LWRc-8kW
Heating Capacity (A+7/W35)	kW	8,2
Heating Capacity (A-7/W35)	kW	5,85
Power Consumption (A+7/W35)	kW	2,05
Power Consumption (A-7/W35)	kW	1,95
Inbuilt El. Heater	kW	3,00
COP (A+7/W35)		4,05
COP (A-7/W35)		2,99
Cooling capacity (A+35/W+16)	kW	6,3
Environment Requirement	°C	-20~43
Air flow rate	m ³ /h	4600
Minimum cooling temperature of air	°C	10
Water supply pressure	Mpa	0,8
Refrigerant/charge weight	Type/kg	R410a/2.8
Sound level	dB(A)	≤51/3m
Power Supply		2x 230V/50Hz
Rated power/ Max power + El. heater	kW	2.05/3.08+3.0
Rated current / Max current	A	9.3/14+13.6 (boiler)
Water pipe in-out spec	Inch	1"
Protection class		IPX4
Net weight kg	Kg	107
Price	PC	3.550 €

supplies copper radiators with accessory ventilators and gradual regulation of output making the products suitable for utilization in low-temperature heating systems in conjunction with heat pumps. REVEL, s.r.o. offers unique and concrete type of a heat pump. In case of larger property size, two heat pumps are planted, and additional electrical and emergency sources are used.

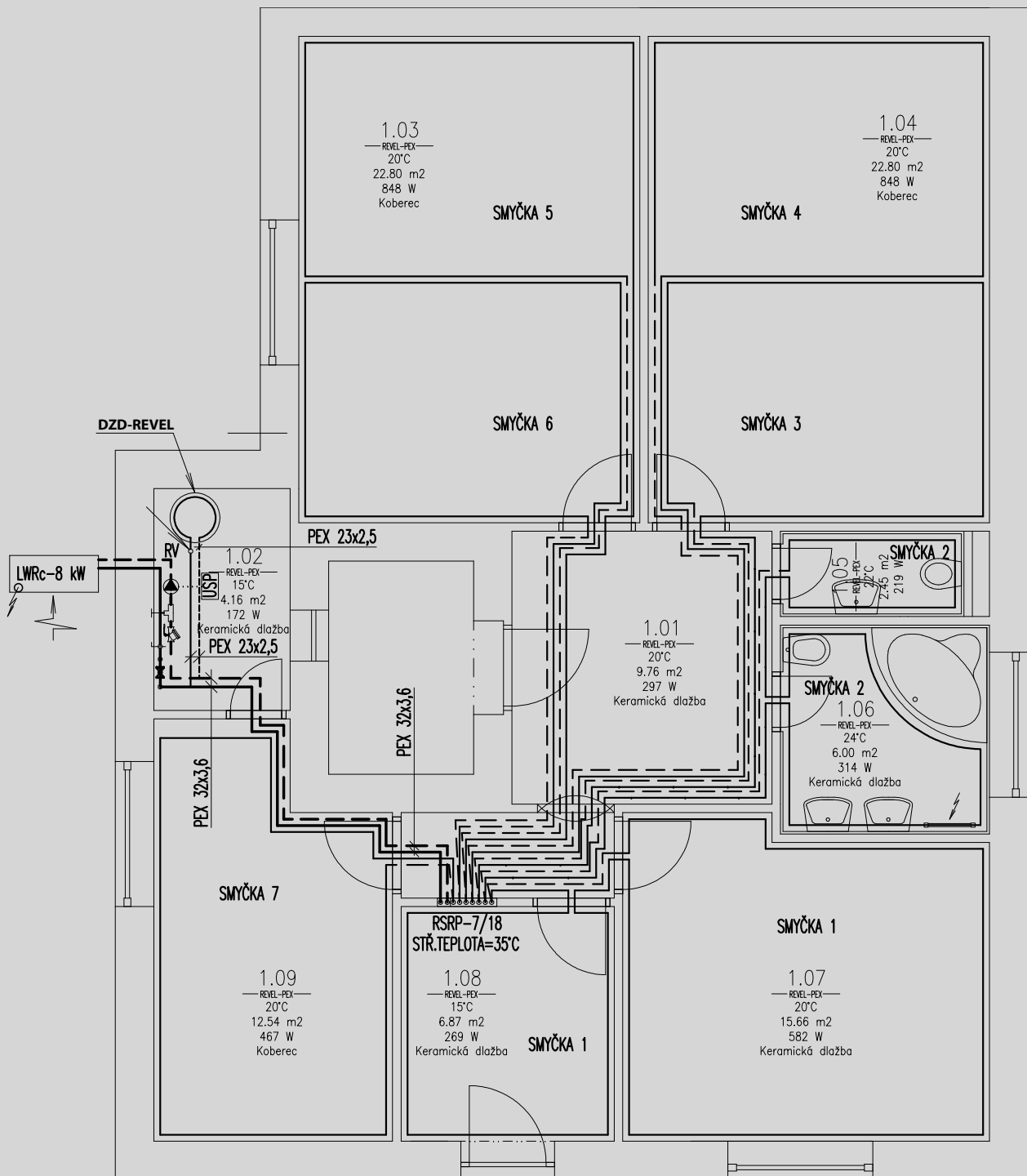
REVEL, s.r.o. manages the project that designs the system including the source. Assembly division of the company is able to provide the whole system turnkey. However, this is not a requirement, and following the project documentation, any further decisions are up to you, or you can turn to another company to provide you with a price quote.

Even though the ventilators are low-noise, we do not recommend their placement under the bedroom window. Low-temperature floor system can be used around the whole house. Heating of the domestic hot water must be two-stage. In other words, the water must be preheated in one boiler, and the subsidiary heating occurs in the second boiler. When considering the summer

mode, we recommend a boiler with larger temperature lining supplied by our company type DZD-REVEL.



en.revel-pex.com



Floor heating and cooling of buildings via a cooled floor with the use of air-water heat pump **LWRc-8kW**

Floor hot-water heating has its specifications and some conditions must be satisfied. For example, if the building has more than one type of flooring material, an attention must be paid to spacing between the pipes. There will be different spacing under a wooden floor than under paving. This implies that before completing a project plan, the designer must receive precise



and unchanging information about the layout of the flooring materials in a particular building. The enormous difference that it can make is evident from the table of floor heating power output and the flooring material corresponding to the repair coefficients, which are used to re-multiply the presented table values.

Why use underfloor heating REVEL with low-lambda polystyrene Grey Floor Plus, which has 15% better thermal properties than white Styrofoam in the whole building? Because it is comfortable, efficient, and therefore ecological, and it provides the possibility of using low-temperature sources, such as heat pumps. Floor system also allows cooling - i.e. air conditioning. This type of heating system has a high self-regulatory capacity and that means that the total power is emitted with a small temperature difference between the floor surface and room air (typically 6 °C). In case of room temperature increase of 2 °C, heating power decreases by 30% without any intervention by the user. And why is it economical? Because the total radiant heating area is large (floor and other reflecting floor surfaces - ceilings, walls), and therefore, one does not notice just the room air temperature, but also the so-called final temperature, which effect is well-known from spring skiing in shorts. The same effect is achieved when cooling through floors. Due to condensation of water vapour, only water which is no colder than 17 °C enters the floor and the cooling capacity does not exceed 40W/m². There is no need to imagine icy floors, on which one cannot stand. Cooling power is transferred by radiation to other structures and air conditioning is very pleasant with minimal danger of catching a cold. Such days in our latitudes are not very numerous; however, thermal insulation of buildings introduces danger of their overheating from the sun or internal sources.

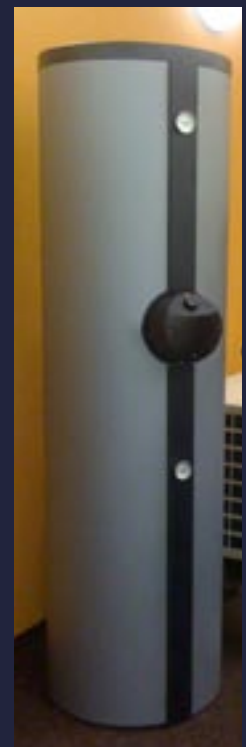


LWRc-8kW - heating, cooling, in-built boiler

DZD-REVEL 2x 160 L



USP box



*Grey Floor Plus
15% better than
white polystyrene*



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LEGEND:

- USP – Universal connection set (depth 160mm)
- LWRC-8kW – Heat pump from the company Revel
- EK-Electric boiler – part of the heat pump unit
- EV-Electric valve
- OČ – Circulating pump CP73 from the company Myson – part of the USP
- KK – Sphere tap
- VTS – Thermostatic mixture valve VTA 322-60 °C
- AOV – Automatic air-outlet valve
- RV – Regulating valve – type CIM 727 – 3/4"
- Š – Screwing
- VK – Drain tap
- PV – Safety valve
- EX – Expansion tank – volume 12dm3
- Supply pipeline
- - - - - Return line
- · - - - SV – Cold water
- · - · - TV – Hot water

The medium will be 5% ethanol.

