

## PANEL RADIATORS IN AN INTEGRATED NATURAL OR MECHANICAL VENTILATION SYSTEM

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### Abstract

The nozzle attached to the hole in the outer wall is attached to the bottom of the radiator is attached to the wall. The prefix allows the inflow of outside air, which heats up when passing between the radiator panels. Due to this, direct heating of the ventilation air is possible. This increases the heat output of the radiator compared to standard parameters.

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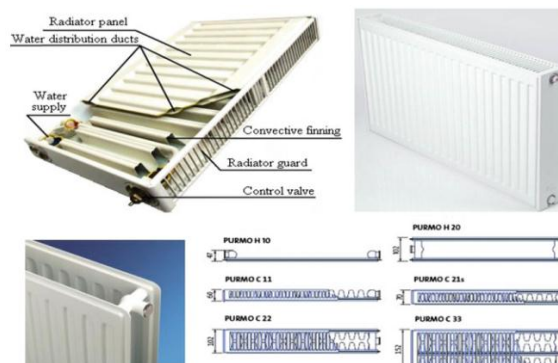
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**Introduction:** A wide range of panel radiator options can be made with different sizes and in different colors. The general principle of panel radiator Marking concerns the number of panels and fins, as well as the height of the radiator. As a rule, the first digit indicates the number of panels, and the second – the number of panels with fins (on one side). The next digit, usually preceded by a dash, indicates the height of the panel in centimeters. For example, a radiator marked 22-50 has two panels, both with ribs (on one inner side), the height of the panel is 50 cm.

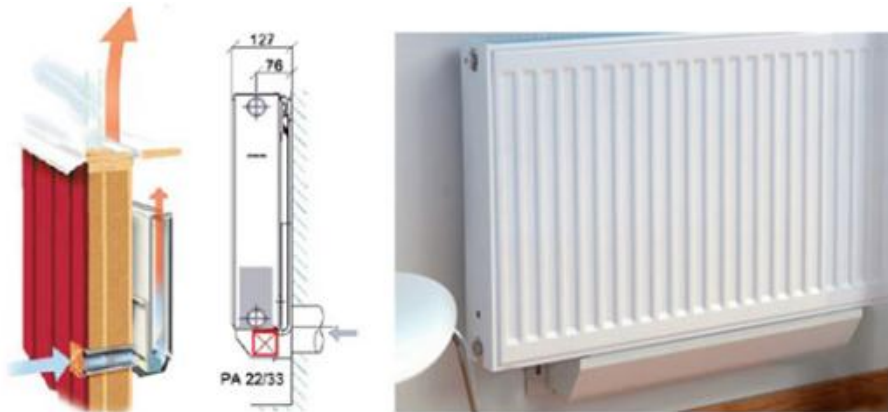
Panel radiators can also be manufactured in special designs that provide increased resistance to corrosion of the external surface. This makes it possible to use them in rooms with high humidity or in places where the device can be in direct contact with water.

**Main body:** Usually the kit is equipped with air filters and, if necessary, an electric fan.



**Fig. 1. The device of panel and convectors-panel radiators on the example of the selected Purmo. Products**

Figure 1 shows the design of panel and panel-convector heating radiators and the typical marking of the most common models of such devices. A panel radiator with a ventilation attachment is shown in Fig. 2



**Fig. 2 Panel radiator operating in a complex ventilation system**

Panel radiators have many advantages, the most important of which are:

- low specific gravity,
- low water capacity (about 3-4 times less than that of a cast-iron column radiators) and low thermal inertia,
- the possibility of obtaining any surface finish and shape,
- small geometric dimensions of the unit (according to a given heating capacity),
- the possibility of achieving thermal power with a high proportion of thermal power is formed due to radiation heat transfer,
- Easy access to heating surfaces and ease of cleaning (in the case of radiators without convective fins).

The disadvantages include:

- relatively high hydraulic resistances,
- sensitivity to corrosion.

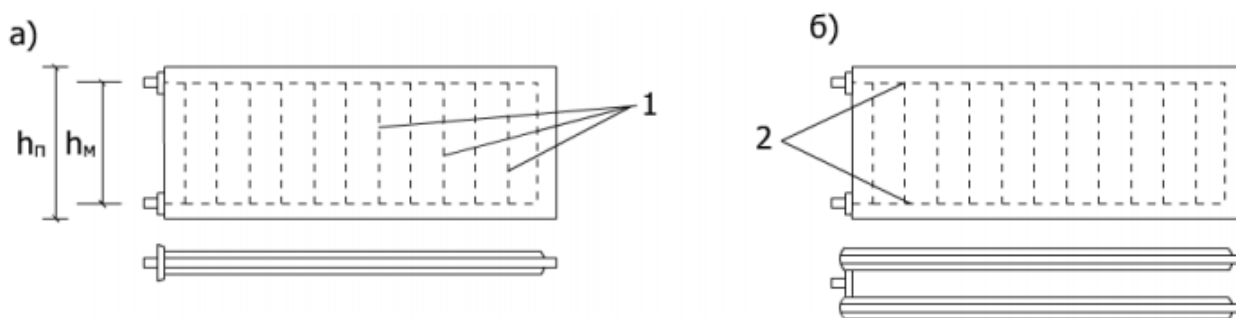
The aforementioned advantages of panel and panel convector radiators have:

Made them very popular - currently they are the most common type of radiators used.

Their disadvantages seem significant only in the case of gravity and open

Installations, which are currently very rare. In typical properly functioning 2 systems, their importance is low.

Panel radiators are welded from two stamped corrosion-resistant sheets with a thickness of 1.4...1.5 mm using contact welding, a device of shallow depth and different lengths is formed. Convective finning is provided to increase the heating surface of the device. The profile of radiator blocks can have flat vertical channels 1, united by horizontal collectors 2 of the RSV-1 type in a single-row version (Fig. 3.a) and a double-row version of the RSV-1 type 2 (Fig. 3.b).



**Fig. 3. RSV type steel panel radiators: a – type RSV-1 in single row design; b – type 2 RSV-1 in double row design; 1 – vertical channels; 2 – horizontal collectors**

There is a variety of RSV type radiators made of low-carbon cold-rolled steel with a thickness of 1.4... 1.5 mm, produced of type RS-9 in single row and type 2 RSV-9 in double row without fins and with fins (2 RSV-9-K, 2 RSV-9-KK)

### Conclusions:

Currently, five types of radiators of RSV-3 type steel panel models are produced 10, 11, 20, 21, 22. For example, a type 22 device has two flat blocks (the first digit is 2) and two rows of fins (the second digit is 2), etc In addition, RSG-type steel panel radiators are produced, made of two stamped steel sheets with a thickness of 1.4 ... 1.5 mm, connected by contact welding and forming horizontal channels. Radiators are manufactured in single-row (RSG-1), double-row (RSG-2) and three-row (RSG-3) versions. Steel panel radiators are manufactured depending on the type with a length from 490 to 1660 mm, a height from 500 and above and are operated at a pressure from 0.6 to 1.9 MPa and a coolant temperature from 95 to 150°C.

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