

## Hot water exchanger with the triple pass system



The **triple pass** system, or the **triple passage**, developed by the Romotop company increases the efficiency of the heat exchanger of fireplace inserts and ovens significantly. Simply we can say that the same amount of the gases of combustion evolved by the combustion chamber of the fireplace insert goes through the flue gas section of the exchanger three times. During this way, that is three times longer, the exchanger is able to take much more heat from the gases of combustion than an exchanger with the standard solution. The difference is in the total efficiency of the heater that is about 10% higher.

The basic parameter that influences the ability of the flue gas heat exchanger to take heat from the gases of combustion and to transfer it to a heating medium, is the size of the heat transfer surfaces of the heat exchanger. The bigger these heat transfer surfaces, the more heat the heat exchanger is able to take from the gases of combustion. This forces designers to set the flue gas exchangers with an increasing number of pipes of still smaller diameter. Using a number of pipes of smaller diameter results in higher efficiency of the heater and in higher output proportion in water. When a customer finds out that he must clean such an exchanger regularly, he becomes very angry.

The **triple pass** system has become the solution from this inconclusive situation. The **triple pass** system uses the inner heat transfer surfaces of the pipes of the exchanger much more effectively. Thanks to that the pipes of the heat exchanger can have a generous inside diameter of 60 mm, which is very important for a comfortable cleaning, because it always comes to a settling of products of combustion on the inner walls of the pipes. The smaller the inside diameter of the pipes, the quicker their section becomes smaller during heating due to the settling of particles contained in the smoke, and the more difficult and more frequent their cleaning is.



The flue gas heat exchanger of the fireplace inserts Romotop KV 025 W01 (02) BD using the **triple pass** system includes a total number of 18 pipes with the inside diameter of 60 mm. If we want to achieve the similar efficiency of heat transfer with a flue gas heat exchanger with the standard solution, we would have to use almost **70 !** pipes with the inside diameter of **30 mm**. Such a solution would of course be completely pointless, because you can hardly imagine a user, who would be willing to undergo such a heat exchanger cleaning.

**The basic advantages of the triple pass system can be summarized as follows:**

- **Higher overall efficiency (up to 10%) than with the standard solution = saving in fuel**
- **Higher output of the hot water exchanger than with the standard solution = more heat for the heating system**
- **Larger output proportion in water than with the standard solution = better regulation and heat distribution in the house = higher comfort**
- **Lower production of pollutant emissions than with the standard solution = next step towards the cleaner environment**
- **Generous dimension of the pipes of the flue gas heat exchanger = comfortable maintenance and less demands on regular cleaning of the heat exchanger**

