

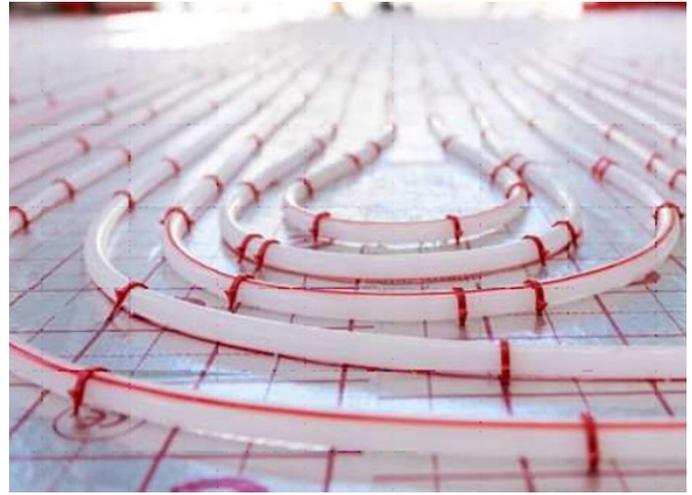


**WHAT IS
THE DIFFERENCE
BETWEEN WALL
HEATING AND
UNDERFLOOR HEATING?**

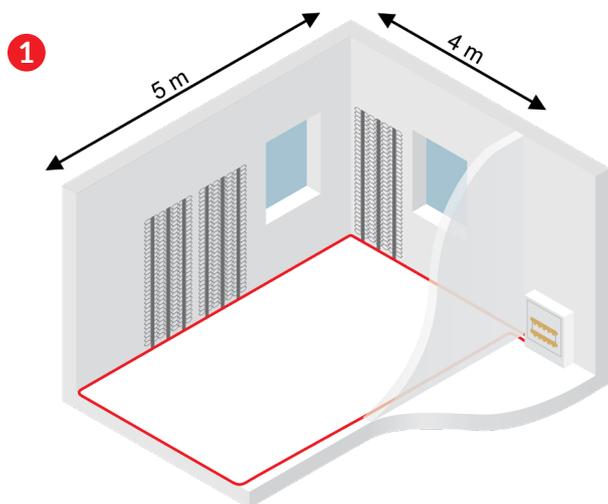
What are the characteristic features of **wall heating**?

The wall heating system is the only surface heating system in which thermal losses may be compensated directly on the building envelope. Therefore, from the moment of implementation of the surface heating systems, external walls were in fact the most desirable surface. Unfortunately, the then available solutions did not allow for the effective, and above all, energy-efficient use of this envelope. The problem was mainly related to the compound that covered the heating system. Its resistance was too high for heat. Such a compound, however, did not matter in the case of internal partitions such as e.g. floor, which only increased the inertia of the system, however, it did not generate direct losses. Unfortunately in the 1980s, buildings had a huge appetite for energy, and as a result of that, the limited power of the "underfloor heating" was not suitable for the heating of uninsulated buildings. Therefore, in those years, there was a strong focus on the ceiling heating. The high temperature of the medium on the ceiling did not seem to be of too much importance, but gave a high heating power. However the transfer of heat to the ceiling caused an unnecessary energy expenditure of the system and had a negative impact on users. The high-temperature radiation from such a large surface was not pleasant in any way, and in the long run, it was even quite harmful. For the above-mentioned reasons, surface heating made its way only a dozen or so years ago, when the standards that determine the thermal insulation of buildings changed. The heat supplied into the floor with a high temperature of the medium significantly limited convection and thus the energy losses for ventilation. It also enabled the use of economic but not necessarily efficient heat sources such as heat pumps. Underfloor heating, however, is not free of disadvantages, and one of the basic disadvantages is its high inertia, i.e. the inability to be controlled effectively.

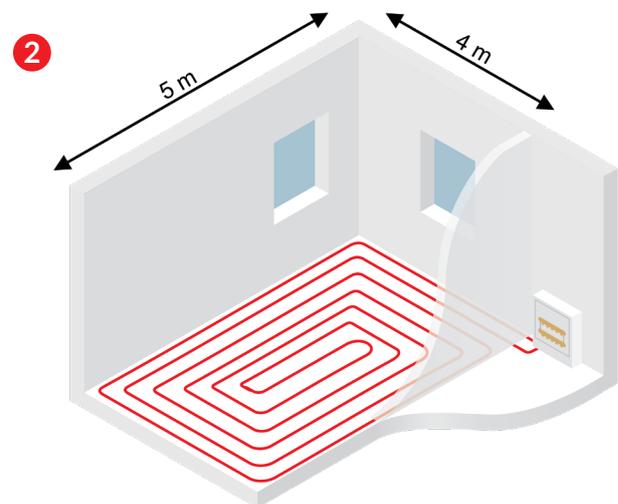
The 3THERMO system has been the first to allow for the effective and energy-efficient use of external walls, and thus also the surface system, however, with minimum inertia. The key issue for this was the reduction of thermal resistance by the minimisation of the plaster thickness. As opposed to the underfloor heating,



the task of the wall is not to accumulate heat, but rather to compensate for the thermal losses on an ongoing basis in accordance with the demand at a given moment. Such a system ensures completely different precision in energy supply and definitely improves the overall performance of the heating system and its energy efficiency. The 3THERMO wall heating also provides a unique comfort, as the equalisation of temperatures takes place on the building envelope. When the "heat" supplied to the external envelope neutralises "cold" to the desired interior temperature, the air has nothing to cool down to, so it remains



① ————— 18 m



② ————— 160 m

at the set level. The thermal radiation wave does not have to reach the inner parts of the room at all, as we often mistakenly imagine. Comfort means also a much smaller radiation surface than in the case of other surface systems. On top of this, it is characterised by low temperature which is not felt by humans, as it does not exceed the body temperature. The low temperature radiation, e.g. from a heater or radiator can be mistakenly regarded as pleasant only when we are cold. However, the longer presence near a hot object, when we reach our thermal balance, becomes uncomfortable. The 3THERMO heating system aims at maintaining the permanent comfort and does not allow for situations which would lead to body cooling or overheating. In an ideal environment, we do not need any additional thermal stimuli. It is difficult to achieve this state even in such a good system as the underfloor heating system and the reason for this is its inertia. By improving the controllability of the surface heating system, not only do we improve our comfort, but we also reduce the consumption of energy, especially at high fluctuations of external temperature.

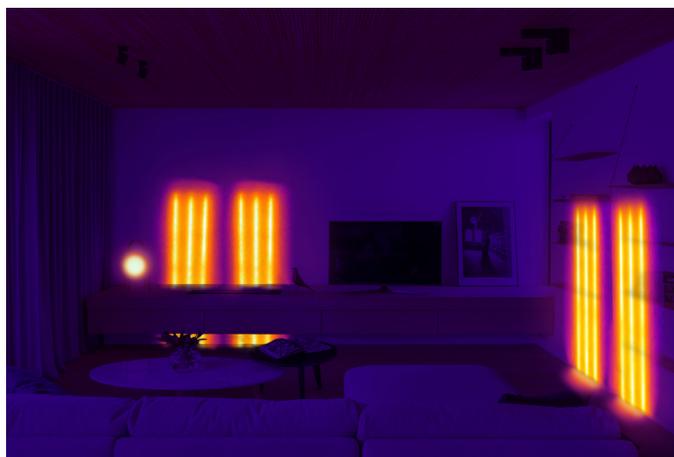
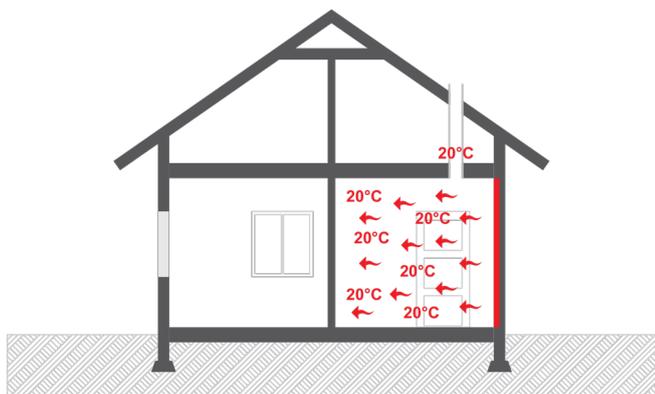
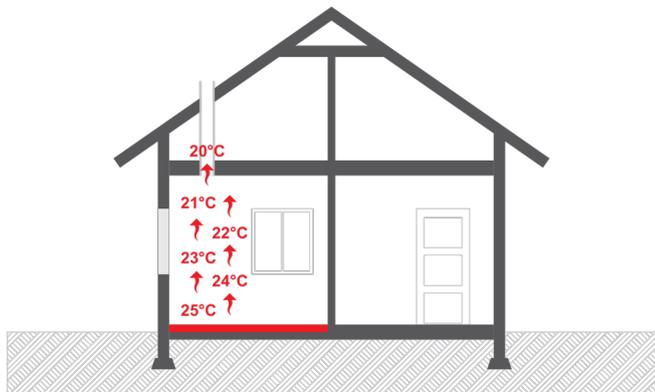
The wall heating also significantly contributes to the improvement of the quality of life as this is undoubtedly **the healthiest heating system**. Why? Because as the only system, it reverses the heat transfer system, this time not from the inside to the external walls but exactly the other way round. Such a reversal prevents air dehumidification during the heating season and at the same time dehumidifies the external envelopes. Water vapour moves together with hot air and its typical motion involves contact with the hot external envelope (hence, moulds can always be found in the largest thermal bridges). In the wall heating system, the heat “goes” from the external wall, and somehow blocks the process of releasing moisture through hot/moist

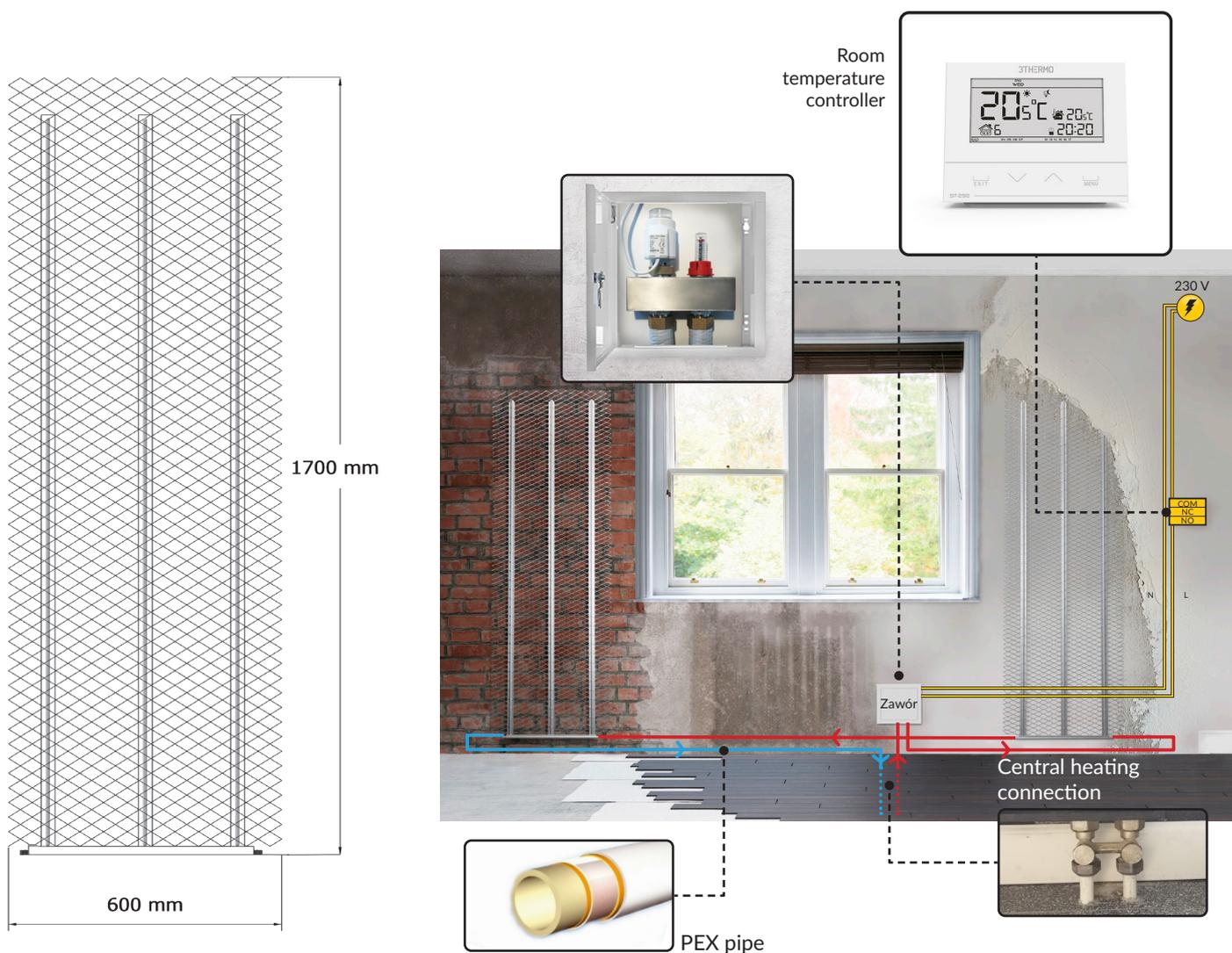


air onto walls. Furthermore, it displaces the moisture accumulated there in the earlier period. Both of these phenomena translate into higher air humidity, which almost has a beneficial effect on our upper airways during the dry heating season. The lack of development of mycelium on walls is also something that needs to be appreciated, and this can be confirmed by any physician who specialises in lung diseases.

How to design properly?

If we design the 3THERMO system as the only heating system, we must remember that in view of the limited number of walls (surfaces), it is necessary to increase its power by means of the higher temperature of the medium. High temperature should not





be a concern, as the wall surfaces will not exceed 25 C one way or another, because the temperature differences will mix in the envelope and not outside of it. Such an electronically controlled system is distinguished by its short operating time and minimum inertia, which is additionally supported by the low amount of water in the 3THERMO system.

The second popular model is the the wall and floor heating system. Such a solution can be applied particularly in combination with the heat pump, but not only. In such a case the 3THERMO radiators arranged strategically mainly in thermal bridges will operate on the same low parameter, taking over only the role of the system that improves comfort and maintains the optimal level of moisture in rooms. Both surface heating systems are in no way mutually exclusive, but they even expose their advantages even more. The heating system designed in this way is

an absolute Rolls-Royce in its category, however human health is of priceless value and the real opportunity to improve the quality of life through a change in the microclimate in our artificial environment is worth such an initiative.

The 3THERMO wall heating is also the only option for existing buildings in which modernisation is planned, taking into account the improvement in energy-efficiency. Just by using a few radiators, and not the entire floor, we can bring such buildings into the 21st century. We can improve the comfort and reduce the energy consumption almost by half. The investment costs are incomparably lower, moreover, it is possible to use the current connections after the dismantled radiators. This is currently the simplest way to replace the old system with a modern and energy-efficient surface heating system with a customised control system compatible with any intelligent building installation.

3THERMO



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