

IMPROVEMENT OF THERMAL INSULATION PROCESSES OF BUILDINGS AND CONSTRUCTIONS - PREPARATION FOR THE WINTER SEASON

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<https://doi.org/10.5281/zenodo.14133630>

Annotation: The article discusses the plan for preparing buildings and structures for the winter season, focusing primarily on heat supply sources, the repair of heat pipelines, and addressing the deficiencies and malfunctions identified in the heating systems, hot and cold water supply, and other engineering systems from the previous heating season.

Keywords: engineering systems, construction and installations, technical operation, sanitary-technical systems, normative temperature.

The technical operation of engineering systems, constructions, and installations in buildings during the winter season is a rather complex period. During this time, sanitary-technical systems operate under maximum strain. The enclosing structures of buildings are subject to variable temperature impacts, and low temperatures combined with strong wind loads can accelerate the cooling of rooms. This, in turn, can lead to a violation of the normative temperature and humidity regime in the rooms under certain conditions.

When drafting a plan for preparing buildings for the winter season, priority should be given to the heat supply sources, the repair of the heating pipelines, and the elimination of the deficiencies and malfunctions found in the heating systems, hot and cold water supply, and other engineering systems during the previous heating season.

The dispatch services of residential exploitation companies, as well as specialized services contracted to carry out technical operation of building elements, should have detailed schemes of the installed engineering-technical systems and structures of the building.

As soon as the heating season ends, local heating systems that do not require major repairs should be conserved. Before conservation, all current repairs necessary to ensure the standard operation of the boiler equipment during the upcoming heating season should be carried out.

Moreover, a schedule for taking the boiler rooms and heating systems out of conservation (two weeks before the start of the heating season) is approved. The schedule for the conservation of gas-fired boilers is agreed upon with the organizations responsible for the operation of the gas infrastructure.

In drawing up the schedules for preparing facilities for the winter season, it is important to focus the workforce and material resources from the earliest days of the preparatory period on more responsible work areas. The preparation of municipal communications and the preparation of heat, gas, and water supplies should be completed by the deadlines set, considering the readiness of the entire city's utility infrastructure. A building is considered ready for winter after all repair and construction work is completed, and the heat, gas, and water supply sources are prepared for operation in winter conditions.

Among the key measures in preparing buildings for winter is ensuring the efficient use of heat, as well as taking steps to economize the consumption of hot, cold water, and electricity.

One must consider that a significant amount of heat loss occurs through the attic. Experience in operating buildings during the autumn-winter season shows that if the temperature difference between the attic and the outside does not exceed 20°C, then snow does not melt, and freezing and icicles do not form.

If the temperature difference between the outside air and the attic exceeds 20°C, the source of heat entering the attic must be identified, for example, insufficient or poor-quality thermal insulation of the attic or the presence of pipes, air collectors, expansion tanks, ventilation, and sewage stacks located in the attic. Additionally, the attic may not be ventilated properly.

Increasing the thickness of the insulation to the required standard is recommended; additional insulation with lightweight materials such as expanded clay, mineral wool, or mineral fiber is advised.

The use of heavy insulation like crushed stone should only be done with prior calculations of the load-bearing capacity of the attic structure by a design organization. Substituting rolled waterproofing is not advisable, as it can disrupt the ventilation of the attic. Settled bulk insulation must be aerated (once every 5 years). To prevent heat transfer from the stairwell to the attic, the attic should be insulated.

The thermal insulation of pipelines and ventilation shafts must be improved to prevent heat losses to the environment.

The inspection of the central heating and hot water pipelines passing through the attic is carried out visually. Areas with exposed or damaged thermal insulation must be repaired. Expansion tanks, air collectors, valves in the heating system, and similar equipment must also be insulated. Sewage stacks running through the attic should have their expanded ends facing upwards, and they must be insulated with a sleeve made of 6-7 cm thick mineral wool or 10-15 cm thick crushed stone to prevent condensation from entering the attic structures.

I have analyzed the systems for building maintenance, their operation, and current repair systems. These systems are essential for keeping buildings functional and creating comfortable living conditions for residents. The abovementioned considerations must be taken into account during the design phase of buildings, incorporating the latest scientific advancements into practice.

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