PROTECTION OF LIVESTOCK BUILDINGS AGAINST INFILTRATION OF ANIMAL MANURE IN CONDITIONS OF WELFARE AND HYGIENE

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Abstract

In modern livestock farms, controlling the infiltration of animal manure into floors, platforms, channels and other construction surfaces is an essential condition for both environmental protection and animal welfare and maintaining the durability of buildings. Animal manure, wastewater and permanent humidity are aggressive factors that affect structures through chemical, physical and biological processes, favoring the degradation of materials, the loss of hygienic and sanitary conditions and the emergence of risks of soil and groundwater contamination.

The paper analyses the main categories of construction materials used in livestock farms, both prefabricated and in situ, with a focus on their ability to limit infiltration, withstand aggressive environments and support suitable conditions for animals. Special concretes, prefabricated reinforced concrete elements, waterproof mortars and screeds, membranes and sealing layers, epoxy and polyurethane coatings, prefabricated gratings, as well as composite construction systems are discussed. The role of heat recovery ventilation and air conditioning in humidity control, material protection and maintaining a microclimate favorable to animal welfare is also analysed.

The results highlight that the correct choice of materials and execution technologies must be made depending on the breeds housed, the operating regime, the mechanical loads and the aggressiveness of the environment, so as to simultaneously ensure hygiene, animal welfare, environmental protection and the durability of the constructions.

Key words: *livestock buildings, animal manure, infiltration, precast concrete, in situ concrete, durability, animal welfare, ventilation*