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Repair and Modernisation of Butt Joints in Enclosing Constructions

Vilen KHOMENKO
Department Chief of the R&D
Inst. of Building Constructions
Kiev, Ukraine

Vilen Khomenko, born 1938, received his civil engineering degree from the Kiev Construction Institute in 1962 and PhD in 1973. He is a corresponding member of the Construction Academy of Ukraine & author of more than 200 scientific works

Summary

In this work described technical concepts on the repair and modernization of butt joints and their elements in enclosing constructions with the help of magnetic materials and magnetic pseudo-fluids (such as magnetic paste, powder and fluid). There is also given the results of testing and showed the advantages of these technical concepts in comparison with the traditional.

In the NDIBC of Ukrainian urban building state committee there are elaborated and tested constructive decisions, could widely developed in a repair, especially on the constructions of inicial house - building period.These decisions touched on window's, and door's apertures canning, reinforced construction joints, sectional houses and container-houses. They have certificated and patended.

The butt joints canning with magnetic materials are realized by the sealing gasket installation in a gap. The gaskets close magnetic field in a whole joint length or in a gap perimeter after the consequent gap containing with a magnetic pseudo-fluid (MPF).

MPF is a very dispersed material in a state of paste, powder or fluid. It is prepared on the base of material, connected with magnetic phase by essential adhesion interaction: bor nitride, molybdenum diselenide, graphite. MPF reduces pore sizes because of their optimum consists in 0.05 - 0.1mm. The water - repellence of MPF ensures repulsion of a moisture.

The magnetic attraction takes preference over the gravitation more than one order, it allows for MPF to be on the magnetic material surface.

For example, in wooden window or door, having an old design, could sealed off, it would for such technical decision been executed. On one of the door-frame or window-frame surface a magnetic circuit material could be fixed normally to this surface with the a projection above it. In the same time these have foresaw recess on the door or window linen, that docks complactly with a corresponding frame. A magnetic-elast is fastened on both sides of recess, having function of a magnetic field steam. MPF has put over magnetic-elast in a created clearance.

If a door linen or a window leaf has came through, the magnetic circuits, fastened in its perimeter, having been joined themselves on the same surface. So, a magnetic field has been closed by this way. The aperture sealing has taken place as a result of it. MPF hasn't been removed because of its deeping.

There are passed bult butt joints of the guard structures and their fragments study, that sealed off according to proposed technical decision. In comparison with widely extended sealing gaskets (wool, polyurethane foam, sponge rubber and others) magnetic gaskets have prevalences in specific waste of heat (0.14-0.59 Wt/ sm^3) and laweringof air - penetration more than five times.

So butt joints canning in a guard structure or in a window's aperture or in a door's aperture with the help of magnetic materials and MPF allows heat qualities for bettering and air-penetrability for lawering. Its result is economy of the fuel-heat resources.

The magnetic materials and MPF can be explored in the wide diapason of temperature - from 70 to 700 K in the simultaneous preserving of their physical and mechanical properties. They have a long term of action (demagnetizing consists 0.01% per year). These materials aren't toxical owing to their nature, they have slight cost. Every MPF has high elasticity and quickly recovers after breacking of wholity.

The NDIBC has elaborated albums of the technical decisions in the guard structures and their parts canning with the help of magnetic materials and MPF, the methodical recommendances in their producing and inculcation, the program in magnetic field computation before giving magnetic properties for materials.