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PROBLEMS OF OPERATION OF INDUSTRIAL BUILDINGS IN AN AGGRESSIVE ENVIRONMENT

In CIS countries, which has a significant industrial and economic complex, the physical aging and deterioration of building structures and technological equipment in most industries reaches 70%, most of which is caused by the effects of aggressive environment.

The destructive power of aggressive environment affects the materials of frame structures, enclosing structures and floors most of all. Compared to other constructions, the walls have a much larger surface in contact with aggressive environment, and in some cases, they themselves serve as a protection against such environment for the steel and reinforced concrete structures.

The surface of the walls is rough and collects aggressive dust-like emissions on itself. Reinforced concrete frame structures and masonry joints of buildings of some industries are subject to selective corrosion.

The aggressiveness of the technological environment in relation to the building structures is as follows:

- in the influence of high temperatures;
- to the impact of abrupt changes in high and low temperatures;
- the combination of high temperatures and high humidity;
- to the effects of stray currents;
- chemical reagents contained in aggressive media which react chemically with the structural elements;
- accumulation in pores and microscopic cracks in the structure material of dust or condensation deposits from the corrosive medium, crystallizing in the deposit places and destroying the material and the structure.

It is typical that the impact of the industrial environment of enterprises on the structures is so great that the estimated service life of such structures and buildings as a whole, two or three times less than that of those operated without the impact of industrial aggressive environment.

Concrete and reinforced concrete structures are most quickly destroyed at basic chemistry and non-ferrous metallurgy plants, at coke-chemical enterprises and artificial fiber enterprises, since solutions and gases which are strong aggressive medium in relation to concrete and steel reinforcement take part in technological processes of these productions [2].

Measures to increase the durability of structures working in an aggressive environment should be envisaged in the design of the building and implemented in the course of its operation.

The measures which can considerably extend the durability of structures include:

1) the use in building structures of materials with increased frost resistance that are most resistant to changes in temperature, humidity and corrosion or to direct chemical attack;

2) use of large continuous streamlined cross-sections in more spans;

3) facing of steel and reinforced concrete columns of the frame with brickwork with a hole between the body of the column and the brickwork, the location of the columns in the thick masonry walls, shielding the surface of reinforced concrete structures asbestos or asbestos cement, protection of structures from radiant heating by sealing and shielding, etc;

4) improvement of the internal environment by improving the technology of basic production, strengthening ventilation and the use of appropriate space planning solutions;

5) protection of the material against physical or chemical aggression by a layer of another resistant material;

6) elimination of the possibility of dampening of the construction, which sharply activates the aggressive destructive processes;

7) arrangement of dust collection, wet cleaning of flue gases and proper solution of chutes, drains and collectors of the industrial sewage system.

Protection of structures from the aggressive environment during the operation of the building must consist in maintaining in good condition all the protective structures and elements of the building, special devices and protective layers and coatings of the structures themselves[3].

List of used literature:

1. Law of the Republic of Kazakhstan of April 11, 2014 "On civil protection", (as amended on 07.07.2020)

2. Kiselev A. C. Industrial safety of hazardous production facilities. - M: Alfa-Press, 2017 - 234p.

3. SP RK 3.02-127-2013 "Industrial buildings" (as amended on 01.08.2018). Approved by Order of the Committee for Construction, Housing and Communal Services and Management of Land Resources of the Ministry of National Economy of the Republic of Kazakhstan from December 29, 2014 № 156-N-K