

Saifutdinova N. A., Butko D. A., Saifutdinova S. S. (Rostov-on-Don, Russia) Algorithm for calculating the reliability of the water supply network, taking into account equipment wear

In the design of water supply networks, the main tools are the balance equations in the nodes and the pressure balance equations in the elementary rings of the network. As a result, the designer determines the quantity and quality of fittings, pipe diameter, power and number of pumps, etc. Of particular interest is the study of the reliability of urban ring water supply networks. There are various ways to calculate the reliability of such technical objects, presented in [1], [2], [3].

Over time, the networks wear out, which naturally leads to a change in their reliability. The collected statistics allow us to calculate the reliability of each network element depending on the time of use, while the new one is that the varying performance properties of the reinforcement and pipes are related to the equivalent roughness coefficient. An algorithm has been developed for calculating the reliability of the water network at some given time, based on the structural reliability scheme, which allows us to predict equipment repair and replacement.

REFERENCES

1. *Alekseev M.I., Ermolin J.A.* Probabilistic characteristics of operating time between failures of restored objects of water supply and drainage facilities. Water supply and sanitary equipment, 2009, № 5, p.26-28.
2. *Butko D.A., Danekyants A.G., Melnikov I.S.* Selection of the optimal scheme of the water supply system for a high-rise building. Water supply and sanitary equipment, 2018, № 6, p.38-43.
3. *Galperin E.A.* On the procedure for determining the reliability of water supply and wastewater facilities. Herald SGAS. Urban planning and architecture, 2014, № 1(14), p.52-56.