

# **REDUCTION OF HUMIDITY IN TUNNELS OF KIEV METROPOLITEN, BY CHANGING THE OPERATION MODES OF VENTILATION INSTALLATIONS**

**Deineko A.I.**

*Institute of Engineering Thermophysics of NAS of Ukraine, Kyiv  
tel.: +380444569281, e-mail: [kruk\\_2@ukr.net](mailto:kruk_2@ukr.net)*

**The goal of the work.** On the basis of the analysis of the experimental values of the relative and absolute humidity of the external and tunnel air coming from the stations of the Kiev subway in the tunnel of the service connecting branches (SCB), suggest and verify the way of reducing the relative humidity of the tunnel air SCB below the normalized value of 75% during the summer period.

**Results.** On the basis of the experimental values of the parameters of the microclimate of the SCB it was established that during the implementation of the operating modes of the ventilation installations in accordance with the schedules of the tunnel ventilation of the service connecting branches of the KP "Kyiv Metro" between the Klovska-Maidan Nezalezhnosti-Khreshchatyk stations from 2004 to 2018 in the period from April to August, the injection of air into the tunnel from the stations was carried out, while the relative humidity of the tunnel air exceeded the permissible value of 75% and sometimes reached 100%.

The main reason for the high humidity of SCB tunnels in the summer, as evidenced by the experimental data, is that the tunnel air from metro stations is, on average, larger by an absolute humidity of 2 g / kg compared with air drawn, which is pumped from the ventilation tunnels in the SCB tunnel. Therefore, to reduce the relative humidity of tunnel air SCB proposed injection of air from the environment in the tunnel, and not from metro stations.

The analysis of the change in the average monthly value of the relative humidity of tunnel air from April to August when air is pumped from the environment in the tunnel has been carried out and it has been established that the relative humidity of the tunnel air SCB will not exceed the permissible value of 75%.

**Conclusions.** In the operating schedules of the tunnel ventilation of the service connecting branches of the Kyiv Metro, KP during the summer period from April to August, it is recommended to change the operating modes of the ventilation installations in such a way that the extraction of the ambient air in the tunnel of the SCB was carried out by the overheating ventilation installations, and the removal of air from the tunnels was carried out station fans. The testing of recommended operating modes of ventilation installations from August 15 to November 13, 2018 has led to a decrease in the humidity of tunnel air in the range from 50 to 75%.