

IDENTIFICATION OF THERMAL COMFORT ZONE ON RESIDENTIAL PREMISES IN THE DRY HOT CLIMATE OF CENTRAL ASIA

Comfort inside buildings is dependent on temperature, humidity and other parameters. Usually the higher the temperature and humidity, the more people feel discomfort. However, if the internal relative humidity is low, the inhabitant also feels uncomfortable as a result. Headache, eye irritation, sore throat and dry skin are the symptoms of these dry conditions. Dry air reduces natural protection from bacteria, infections, and makes people vulnerable to attacks of viruses and other micro-organisms. In addition to the problems associated with low humidity, excessively high humidity can also cause problems. The optimal level of humidity in the room contributes significantly to the comfortable environment. Chill may be perceived differently at the same temperature with different values of air humidity in the room. Comfort is determined by the ratio of room temperature to humidity. The temperature perceived inside and dependent on the moisture content, is measured by the Humidex index.

European regulations define a desirable range of relative humidity and comfort. The humidity-dependent zone of comfort rests within this range. High temperatures are less tolerable in the high humidity environment. Modeling results obtained before and after the renovation and modernization of a five-story residential building (105 series) in Khujand, Tajikistan, helped to define the ideal parameters of relative humidity and comfort. The author proposes an ideal ratio of relative humidity to comfort and demonstrates that the optimum humidity and temperature values contribute significantly to the comfort of a person in the hot, dry climate of Central Asia.

Key words: relative humidity, comfort zone, perceptible temperature, heating period, reconstruction, modernization, hot dry climate, Central Asia.

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