

Apparent Temperature Distribution on Scaffoldings during Construction Works

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Abstract : People on construction scaffoldings work in dynamically changing, often unfavourable climate. Additionally, this kind of work is performed on low stiffness structures at high altitude, which increases the risk of accidents. It is therefore desirable to define the parameters of the work environment that contribute to increasing the construction worker occupational safety level. The aim of this article is to present how changes in microclimate parameters on scaffolding can impact the development of dangerous situations and accidents. For this purpose, indicators based on the human thermal balance were used. However, use of this model under construction conditions is often burdened by significant errors or even impossible to implement due to the lack of precise data. Thus, in the target model, the modified parameter was used – apparent environmental temperature. Apparent temperature in the proposed Scaffold Use Risk Assessment Model has been a perceived outdoor temperature, caused by the combined effects of air temperature, radiative temperature, relative humidity and wind speed (wind chill index, heat index). In the paper, correlations between component factors and apparent temperature for facade scaffolding with a width of 24.5 m and a height of 42.3 m, located at south-west side of building are presented. The distribution of factors on the scaffolding has been used to evaluate fitting of the microclimate model. The results of the studies indicate that observed ranges of apparent temperature on the scaffolds frequently results in a worker's inability to adapt. This leads to reduced concentration and increased fatigue, adversely affects health, and consequently increases the risk of dangerous situations and accidental injuries

Keywords : apparent temperature, health, safety work, scaffoldings

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