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THE USE OF METALLIC TILES AS PART OF LIGHTNING PROTECTION SYSTEMS OF STRUCTURES

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Abstract: Metallic tiles used as rooftop covering buildings over metallic structures may be used as part of the capturing and bonding system for protecting buildings against lightning. When hit by a lightning stroke, the metallic tiles can be perforated depending upon the thickness and the material used. In case of a double metal sheet tile filled with some thermal insulating material, it may start a burning process or even has its weight increased due to water penetration leading to a structure collapse.

In a first work [1], presented at the 26th ICLP (o International Conference on LIghtning Protection - 2002), some aspects on metallic rooftop buildings were studied, whose tiles had the folJowing characteristics: single upper metal painted sheet 1,2mm thickness; 3cm wool rock thermal insulation under the metal sheet.

In this work, other types of tiles and other materiais are studied and tested on the IEE-USP Laboratories. Standardized impulslve currents and continuous currents are simulated. The damages are analyzed and compared wlth several types of materiais, taking into account the current values and the I't used in each testo The use of air terminais as preferred points of discharge is also studied in the meaning of the damages caused by lightning in metallic tiles.