Humidity build-up in electronic enclosures exposed to different geographical locations by RC modelling and reliability prediction - DTU Orbit (03/11/2019)

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Electronic devices are exposed to a wide range of climatic conditions. This study shows a reliability prediction of electronic devices exposed to different climates (from arid to humid and cold to hot regions). Temperature and humidity probability distribution functions have been calculated to indicate the change of climate exposure along year. While temperature and relative humidity (RH) are important factors in terms of water diffusion and electronic reliability, the internal climatic condition of 25°C and 60% RH is widely used as threshold for electronic safety. Acceleration factors according to this steady state (25°C and 60% RH) have been calculated for the different climates, and the protection offered by the enclosures has been estimated under different casing materials and resistor-capacitor (RC) simulation. This method offers a way to predict the average value of failure rate for electronic devices based on climate information and enclosure material.

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