

Numerical simulation of transient moisture and temperature distribution in polycarbonate and aluminum electronic enclosures - DTU Orbit (09/11/2017)

Numerical simulation of transient moisture and temperature distribution in polycarbonate and aluminum electronic enclosures

The challenge of developing a reliable electronic product requires huge amounts of resources and knowledge. Temperature and thermal features directly affect the life of electronic products. Furthermore, moisture can be damaging for electronic components. Nowadays, computational fluid dynamics (CFD) analysis has been proven as a useful tool to exploit the detailed and visualized information about the fluid flows; and hence it can be helpful for predicting local climate inside the electronic enclosures. In this study, the temperature and moisture distributions inside an idealized electronic enclosure with some heat producing components are investigated. It is shown how the enclosure material can influence local climate inside the enclosure using transient numerical simulations. The effect of heat transfer coefficient and wall thickness of the enclosure is also investigated. The enclosure material and the heat transfer coefficient of the enclosure with the environment are found to be influential on the mean temperature and relative humidity; however, the significance of their effects are not the same at different levels. Natural convection plays a key role in RH and temperature distribution.

General information

State: Published

Organisations: Department of Mechanical Engineering, Manufacturing Engineering

Authors: Shojaee Nasirabadi, P. (Intern), Jabbaribehnam, M. (Intern), Hattel, J. H. (Intern)

Number of pages: 6

Publication date: 2016

Host publication information

Title of host publication: Proceedings of the 17th International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems (EuroSimE)

Publisher: IEEE

ISBN (Electronic): 978-15090-2106-2

Main Research Area: Technical/natural sciences

Conference: 17th International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, Montpellier, France, 18/04/2016 - 18/04/2016

DOIs:

10.1109/EuroSimE.2016.7463382

Source: FindIt

Source-ID: 2304136785

Publication: Research - peer-review › Article in proceedings – Annual report year: 2016