

ABSTRACT

Thermal comfort as defined by ASHRAE is “*state of mind that expresses satisfaction with existing environment*”. It is also can be stated that the same thermal environment may be perceived differently by different people or different people may perceive same thermal comfort at different thermal environments. The study of thermal comfort is very important because it correlates occupants’ comfort to built environment and thus functioning of building and related energy consumption. In the past few decades, there have been continuous attempts by the researchers to develop a systematic methodology for adapting thermal comfort models in the various parts of the world. The first heat balance model based on laboratory studies was derived by Fanger known as PMV-PPD model which was derived from the experiments conducted on thousands of well acclimated American and European college students exposed to controlled environments. PMV and PPD model became widely accepted worldwide in quantifying indoor thermal environment and integrated in the form of ISO 7730 and ASHRAE 55 standards. However, PMV-PPD method worked fairly well for conditioned buildings and deviated widely when applied to naturally ventilated buildings because the conditions in a building are much more dynamic in terms of both thermal environment and occupants activities. So, there was a need of better understanding that takes into account of both dynamic thermal environment and occupants activities. In this work thermal comfort survey through questionnaire has been carried out in naturally ventilated classrooms of Tezpur university during the months of February and May i.e. during the end of the winter season and the beginning of summer. The thermal sensation and preference of 115 students are taken into account, in terms of the ASHRAE scale and various parameters like indoor and outdoor air temperature, humidity, clothing and metabolic rate are measured. The results reveals that the subjects did not feel extreme levels of thermal discomfort as the most common way of attaining comfort was changing the clothing pattern and a large variation in the clothing pattern has been observed in both the seasons. It is also found that the other adaptive means like switching on and off fans are also used during the discomfort sensations. The PMV, cPMV and PPD values are calculated and the neutral temperatures are obtained for these two seasons. This study need to be extended to large number of subjects to have a generalized neutral temperature in natural ventilated classrooms.