

validation have been done using short term measurements.

The proposed algorithm proved to be more effective, in this case study, for the correction of measurements of outdoor air relative humidity than of outdoor air temperature. The difference between spot measurements of the outdoor air temperature and BAS trend data have not constant high variation (Figure 4) due to some physical factors such as the influence of solar radiation on the sensor. As a consequence the use of a constant correction value for the entire data set does not allow for a larger reduction of the CV-RMSE value. However, the CV-RMSE values are less than 10% (Table 3), which can be accepted for practical purposes. The reduction of CV-RMSE between the spot measurements and corrected BAS trend data is larger for the outdoor air relative humidity because the difference between the spot measurements and the uncorrected BAS trend data is almost constant over the entire data set (Figure 3), due to the constant bias error of the sensor.

The proposed self-correction algorithm could be integrated into AHU control strategies implemented by the BAS. If faulty measurements are detected, the proposed algorithm would produce corrected values, which would be used by the BAS instead of the directly measured faulty ones. At the same time, information on eventual detected abnormal values would be sent to building operators, supporting them in scheduling maintenance and calibration strategies and inspections. Until the human intervention would not recalibrate the faulty sensor, the proposed algorithm would supply corrected values to the BAS.

In conclusion, the proposed self-correction algorithm proved to be effective in the case study for the correction of measurements of outdoor air relative humidity and temperature.

Results presented in this paper concern a 17 days long data set of measurements during the fall season (September 2015). Future investigations should use larger data sets from different periods of the year. The algorithm should be tested with other case studies. Also, the effectiveness of using variable correction values instead of a constant correction values, as presented in the paper, should be tested. For instance, correction values could be evaluate independently per each hour of the day or bin of values, depending on the sensor error profile.

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