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AIR CONDITIONING PERFORMANCE MONITORING IMPROVEMENT VIA REGRESSION MODELLING

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As a result of system operation complexity owing to the huge number of dynamic factors influencing the system's operation, air conditioning (AC) performance monitoring has been a fastidious task. These influencing factors cut across the environmental, human and system behavioural variation. Trying to monitor performance based on predictors from one major influencer will compromise monitoring accuracy. This paper elaborates on the development of four multiple linear regression models that can be used to monitor the heating and cooling performance of a domestic split-type AC. The predictors used cut across the three main performance influencers and include performance ratio (PR), ambient temperature and room temperature. These models correlate system heating and cooling thermodynamic (COPc and COPh) and electrical (energy) performance to afore mentioned predictors. Data used to develop these models was obtained from an experimental set up installed in a residential home in Alice, Eastern Cape Province, South Africa. The developed models had correlation and determination coefficient in the range 0.90 – 0.95, thus indicating a strong connexion between the predictors, modelled and actual responses. This goes to show that afore mentioned predictors do not only greatly influence system performance but can also be used to improve on the accuracy of monitoring and predicting the performance of a domestic split-type AC with an eminent degree of accuracy.

Apply to be
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Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

MSc

Main supervisor (name and email)
and his / her institution

Dr. Michael Simon
msimon@ufh.ac.za
Institute of Technology
University of Fort Hare

Would you like to <br> submit a short paper <br> for the Conference
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Yes

Primary author: Ms BANTAN MAFOR, GLORY (UNIVERSITY OF FORT HARE)

Co-authors: Dr SIMON, Michael (FHIT); Mr TANGWE, Stephen Loh (Fort Hare Institute of Technology, University of Fort Hare)

Presenter: Ms BANTAN MAFOR, GLORY (UNIVERSITY OF FORT HARE)

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