

외부공기질 변화를 고려한 Gain Scheduling 기반 실내환기제어

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A fixed fan speed rate on the manual ventilation system in subway stations does not consider the indoor air quality (IAQ) dynamics variation due to the outdoor air quality (OAQ). This study aims to analyze the behavior of the IAQ dynamics at different OAQ conditions for the design of a new ventilation control system. The proposed method consists of the implementation of a gain scheduling control strategy over OAQ variations at a D-Subway Station complemented with a set of feedback and feedforward controllers. Results of this study showed that the proposed ventilation control system can save the energy consumption of up to 9% in comparison to the manual ventilation system while the IAQ level is maintained below the limit considered to be unhealthy for sensitive groups. Acknowledgements: This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government(MSIT). (No. NRF-2017R1E1A1A03070713).