# Article information:

A Thermal Comfort and Peak Power Demand Aware VRF Heating/Cooling Management Framework: Simulation and On-site Experiment  
<https://www.jstage.jst.go.jp/article/ipsjjip/30/0/30_476/_article/-char/ja/>

# Article summary:

1. A thermal equivalent circuit model (TECM) was developed to describe a building's thermal behavior and experimentally validated.

2. An online management framework for VRF heating/cooling systems was designed to achieve peak shaving and thermal comfort improvement.

3. The proposed framework was tested in an actual room, achieving better room temperature control and improved energy efficiency.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article provides a detailed description of the design and experimental study of an online management framework for building variable refrigerant flow (VRF) heating/cooling systems, which is aimed at achieving peak shaving and thermal comfort improvement. The authors have developed a thermal equivalent circuit model (TECM) to describe a building's thermal behavior, which has been experimentally validated under different ambient temperatures, heat/cooling loads, and occupations with good agreement between the temperature responses obtained from it and observations. Furthermore, they have formulated a model predictive control (MPC) problem for VRF heating/cooling system control whose objective is to minimize electric costs, reduce power demand peaks, and maximize thermal comfort. The performance of the proposed framework has been investigated with different operating conditions in an actual room with positive results in terms of better room temperature control and improved energy efficiency.

The article appears to be reliable as it provides detailed information on the design process as well as experimental validation of the proposed framework. However, there are some potential biases that should be noted such as possible promotional content or partiality towards certain solutions or technologies used in the design process. Additionally, there is no mention of any possible risks associated with using this technology or any unexplored counterarguments that could be considered when evaluating its effectiveness or reliability. Furthermore, there is no discussion on whether both sides of the argument have been presented equally or if any missing points of consideration have been taken into account when designing this framework.

# Topics for further research:

* Risks associated with VRF heating/cooling systems
* Counterarguments for VRF heating/cooling systems
* Energy efficiency of VRF heating/cooling systems
* Thermal comfort improvement with VRF heating/cooling systems
* Peak shaving with VRF heating/cooling systems
* Model predictive control for VRF heating/cooling systems

# Report location:

<https://www.fullpicture.app/item/79cddfd2a3c5658eefa925d549af431e>