

## **Design of Membership Ranges for Fuzzy Logic Control of Refrigeration Cycle Driven by a Variable Speed Compressor**

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**Abstract :** Design of membership function ranges in fuzzy logic control (FLC) is presented for robust control of a variable speed refrigeration system (VSRS). The criterion values of the membership function ranges can be carried out from the static experimental data, and two different values are offered to compare control performance. Some simulations and real experiments for the VSRS were conducted to verify the validity of the designed membership functions. The experimental results showed good agreement with the simulation results, and the error change rate and its sampling time strongly affected the control performance at transient state of the VSRS.

**Keywords :** variable speed refrigeration system, fuzzy logic control, membership function range, control performance

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