Abstract

This paper presents an adaptive decoupling temperature and humidity control for neonatal incubator process by exploiting an active humidification system. The neonatal incubator is a Two-Input Two-Output process (TITO) with characteristics of strong coupling and time variation. The coupling problem is treated by the weight adjustment of the output error to reduce the effect of coupling and to enhance control performance. In addition, an Adaptive Decoupling strategy based on Generalized Predictive Control (ADGPC) with Multivariable Recursive Extended Least-Squares (MVRELS) parameters estimator is used. The simulation and real results demonstrate that the decoupling by error dependent tuning of the weighting factor can eliminate the coupling influence with better control performance and can be easily generalized to the Multiple-Input – Multiple-Output (MIMO) systems.
Decoupling Control Approach for Neonate Incubator System

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- M. A. Zermani, E. Feki and A. Mami, ”Application of Genetic Algorithms in

**Index Terms**

Computer Science  Applied Sciences

**Keywords**

Incubator Process  Tito  Gpc  Decoupling  Adaptive Control