

## **PREDICTION OF TEMPERATURE INSIDE A REFRIGERATED CONTAINER IN THE PRESENCE OF PERISHABLE GOODS.**

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**Abstract:** This paper presents an alternative method to predict the temperature profile in a spatial point of the interior of a refrigerated container with the aim of improving the logistics of perishable goods. A SISO gray-box model in which the organic heat is represented by a non-linear feedback system and the cooling process represented by a linear system is proposed. Parameter adaptation and prediction algorithms for the model are modified to reduce the matrix dimensions, implemented in Matlab and applied to experimental data for validation. Apart from being highly accurate, the predictions comply with the desired figures of merit for the implementation in wireless sensor nodes, such as high robustness against quantization and environmental noise. Simulation results concludes that if the cargo emits organic heat, the proposed model is faster and more accurate than the linear models.