

# 共晶蓄冷式儲能材料於低溫物流系統之研究

## Application of Energy Storage Materials to Cold Logistic Systems

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### Abstract

The purpose of this research is to develop a highly efficiency cold logistic system with energy storage materials which can transform their phase states at different temperatures. In the mean time, this research can improve the design and manufacturing technologies with an energy saving, low pollution and low cost of the cold logistic system. The energy storage materials which can release (or absorb) the thermal energy during freezing (or melting), can be either single inorganic phase change component or multi-inorganic-components with large specific heat capacity, high heat transfer rate, desired transition temperature and repeatable usage. In this research, three kinds of the high latent heat eutectic solutions were used to maintain the multi-temperature cold box within a certain operating time. From the results, the cold box was maintained on the temperature from  $-15^{\circ}\text{C}$  to  $33^{\circ}\text{C}$  within 3 to 14 hours.

**Keywords** : Energy storage materials, Cold logistic system

### 摘要

本計劃之目的在於研究蓄冷式冷凍儲能材料，利用相變化儲能材料，將物質於離峰時間先行蓄冷後，再於適當的時間放出其儲存冷能之目的，並可