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TH29 PCM Used for Cooling in Electronic Enclosures Capital Cost & Energy Saving Analysis

The following example uses a 26-PCM panels for the new system design of electronic enclosure for an international client, incorporating TEAP TH29 PCM to make the system more efficient and more cost effective over the existing system. The installation and testing of the system is currently being implemented.

The heat storage of the current system is 12,000Btu (12,660kJ).

Parameters	Existing System (No PCM)	PCM New Design System
Equipment used for cooling	Air conditioner (A/C)	TH29 PCM (via a small DC fan)
Cooling load required	1500Btu/hr	1500Btu/hr
No. of days required cooling per year	180 days	180 days
Capital cost		
¹ Equipment cost - estimates only	US\$1,000 (A/C unit)	US\$285 [² TH29 PCM (26 panels) included DC Fan]
Capital cost	US\$1,000	US\$285
Capital cost saving for PCM system		US\$715
Energy saving		
³ Electricity cost tariff	US6.5 cents/kWh	US6.5 cents/kWh
Total electricity required for 8 hours/day, 180 days per year	421.9 kWh/yr (operating A/C unit)	28.8 kWh/yr (operating a small DC fan)
Running cost of electricity per year	US\$27.4	US\$1.9
Maintenance cost per year	US\$150.0	Nil
Total operating costs	US\$177.4	US\$1.9
Cost saving in operating for PCM system per year		US\$175.5
Simple payback for PCM system		1.6 yrs
Per TH29 PCM electronic enclosure		
Total cost saving (capital + operating) in 1st year		US\$890.5
Saving of on-going operating costs per year		US\$175.5

Notes:

1. All costs are in US dollars.
2. Cost of TH29 PCM @ US\$7.5 per panel (PCM 2.4kg, dimensions: 140mm L. x 1m H. x 16mm D.) with complete filling & sealing .
3. Cost of electricity assumes at US6.5 cents/kWh.