



Energy Saving for Air Conditioning System

(Panasonic Industrial Devices Materials Taiwan)

Etern

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Panasonic®



Case information

Location: Hsinchu, Taiwan

Industry: PCB materials manufacturer

Employees: About 230 employees (Hu-Kou factory)

Requirement: Energy saving for packaged air conditioner

Implementation: Using FCM to reduce power consumption

◆ Equipment

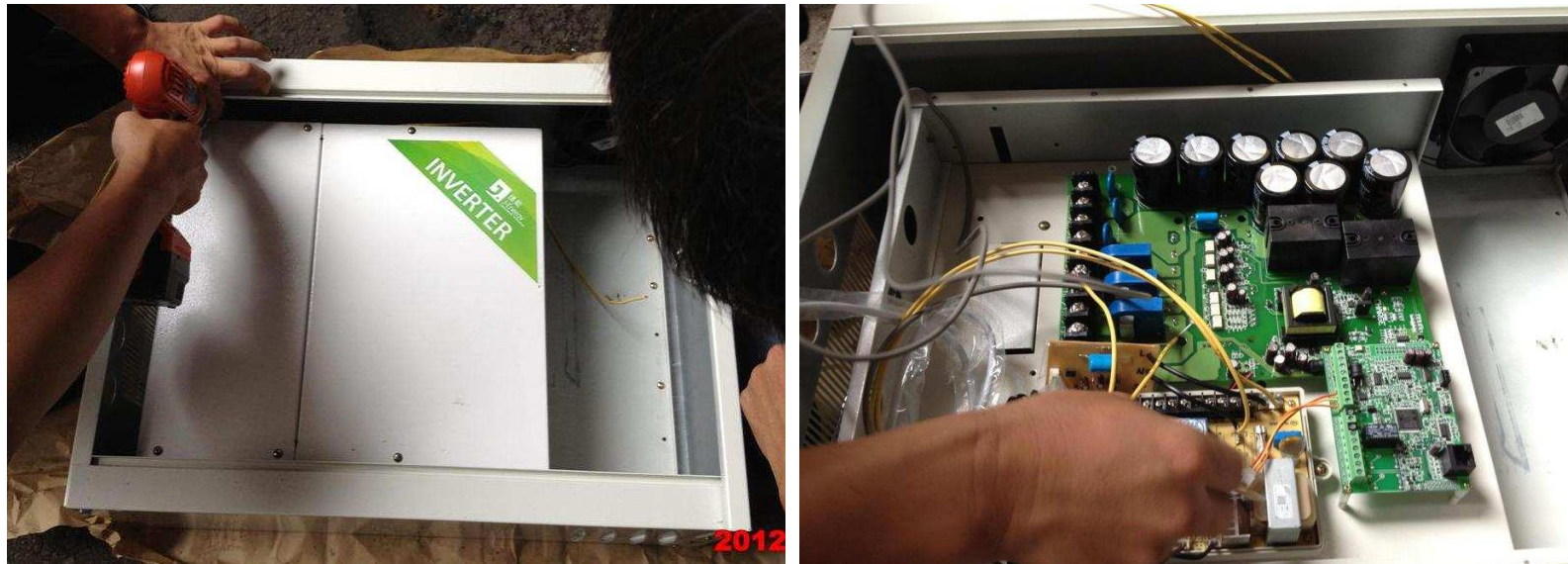


◆ Analysis

Item	Current	Estimate	Guarantee
Capability (RT)	10	10	10
Consumed (KW)	7.9	7.9	7.9
Energy saving (%)	-	30%	20%
Operating (hr/day)	24	24	24
Operating (day/month)	30	30	30
Consumption (KWH/month)	5,688	3,960	4,536
Electricity (NT\$/month)	354,125	247,846	283,342
Saving (KWH/month)	-	1,728	1,752
Saving (NT\$/month)	-	5,184	3,456
Implement cost (NT\$)	-		
Return of I.C. (month)	-		

NT\$3.0 /KWH

◆ Energy saving system

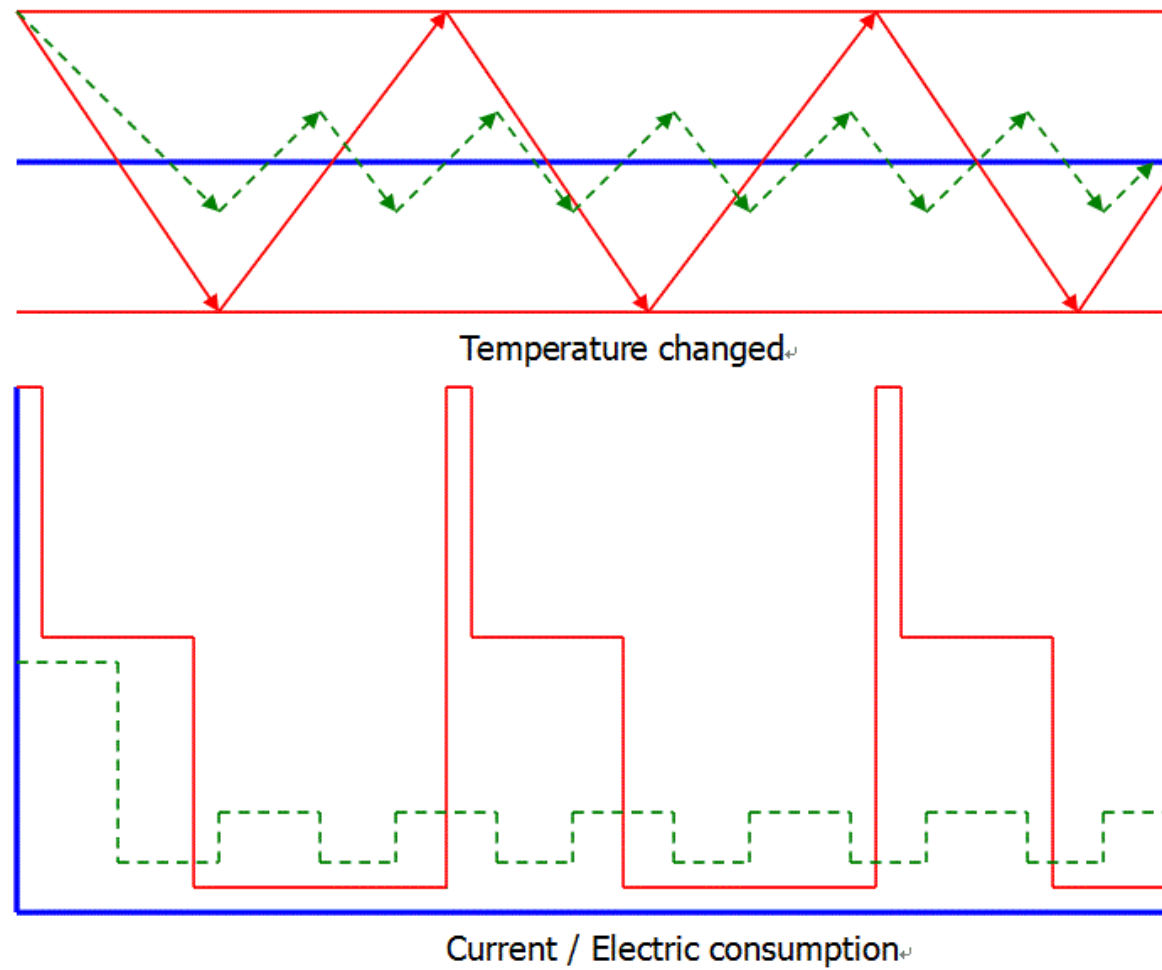


Packaged air conditioner (PAC) → Fixed Hz
PAC + Frequency conversion module (FCM) → Flexible Hz
With FCM, PAC can save energy by 30%



◆ Theorem

With FCM (green) vs. Without FCM (red)



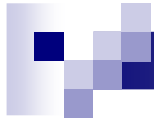
◆ Benefits

Place	Panasonic (Hu-Kou factory)					
Equipment	PAC (Hitachi 10RT)					
Op. mode	Fixed Hz (without FCM)			Flexible Hz (with FCM)		
Op. period	6/5 ~ 6/19			6/21 ~ 7/5		
Op. days	14			14		
KWH meter	Start	End	Accum.	Start	End	Accum.
KWH	0.01	2,085.19	2,085.18	2,307.27	3,648.51	1,341.24
Standard	KWH/day	148.94		KWH/day	95.80	
Saving(%)	(148.94 - 95.80) / 148.94 = 35.68%					
Saving (KWH/month)	(148.94 x 30) x 35.68% = 1,594					
Saving (NT\$/month)	1,594 x 3.0 = NT\$4,782					
Saving (NT\$/year)	4,782 x 12 = NT\$57,384					
Acceptance	Qualified					

◆ More implements



☆ With significantly benefits, more FCMs are implemented.



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