

# Energy Saving for Air Conditioning System (BoardTek Electronics Corp.)



By: Kidd Feng 2013/11/20



先豐通訊股份有限公司  
BoardTek Electronics Corp



## Case information

**Location:** Taoyuan, Taiwan

**Industry:** Printed circuit board manufacturer

**Employees:** About 1500 employees (Guan-Yin factory)

**Requirement:** Energy saving for chiller (air con.)

**Implementation:** Inverter control system is designed for chiller to reduce power consumption

## ◆ Equipment



### Equipment spec.

**Equipment:** Chiller (air con.)

**Brand:** TRANE

**Model:** CVHE300

**Capability:** 300RT

**Power:** 3Φ, 380V, 60Hz

**Consumed:** 212 KW

**Starting cur.:** 800A

**Running cur.:** 360A

**Notes:** Air conditioning for  
air-comp. room

## ◆ Analysis

Item	Current	Estimate	Guarantee
Capability (RT)	300	300	300
Consumed (KW)	212.0	212.0	212.0
Loading avg.	80%	80%	80%
Energy saving (%)	-	30%	20%
Consumption (KWH)	169.6	118.7	135.7
Operating (hr/day)	24	24	24
Operating (day/month)	30	30	30
Consumption (KWH/month)	122,112	85,464	97,704
Electricity (NT\$/month)	354,125	247,846	283,342
Saving (KWH/month)	-	36,648	24,408
Saving (NT\$/month)	-	106,279	70,783
Implement cost (NT\$)	-		
Return of I.C. (month)	-		

NT\$2.9 /KWH

## ◆ Energy saving system



Energy saving system for chiller



Inside the panel



Engineering distribution

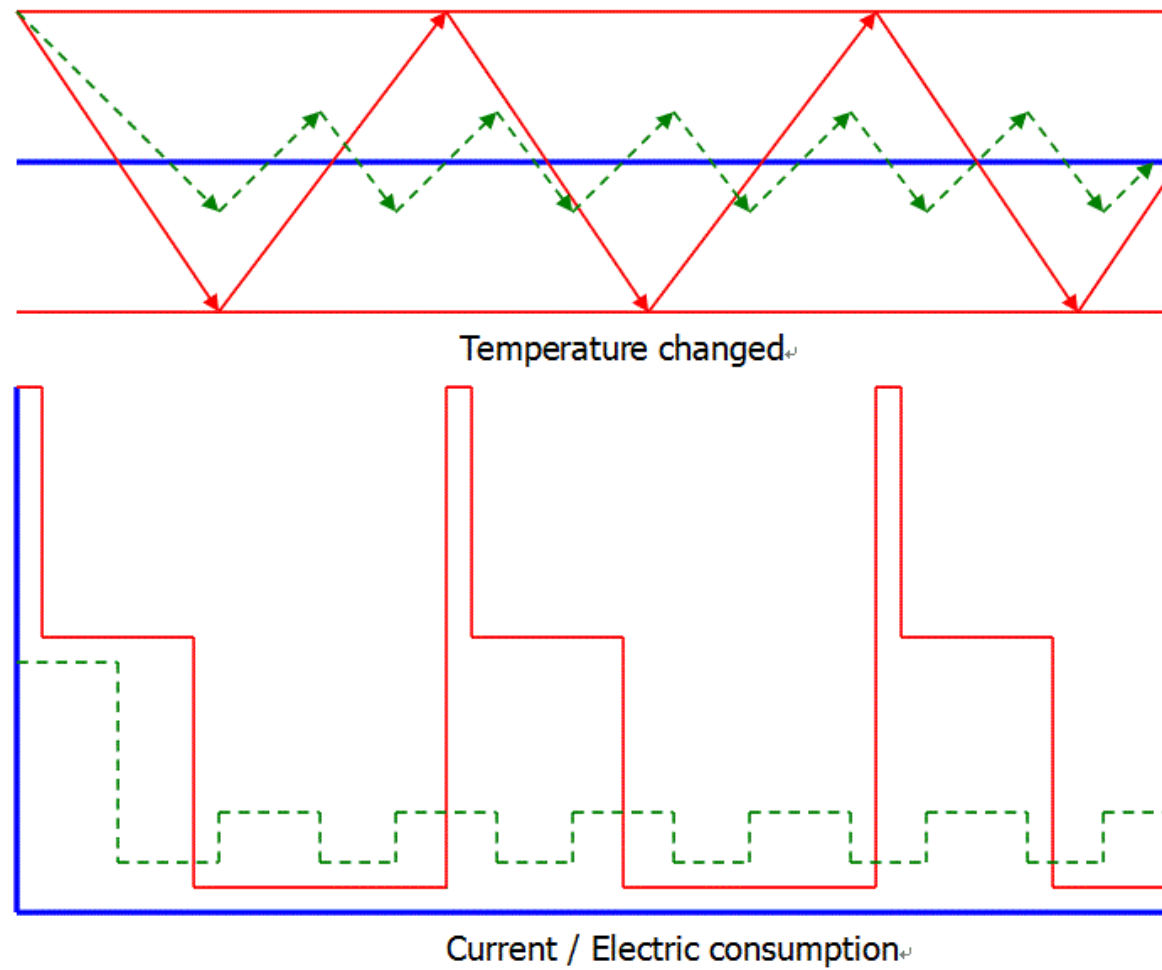


Panel & buttons



## ◆ Theorem

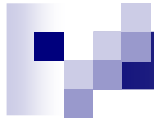
With FCM (green) vs. Without FCM (red)





## ◆ Benefits

Place	Air-comp. room					
Equipment	No. 2 chiller (TRANE 300RT)					
Op. mode	Fixed Hz ( <b>without</b> ES sys.)			Flexible Hz ( <b>with</b> ES sys.)		
Op. period	<b>01/11 19:00 ~ 01/12 18:00</b>			<b>01/10 15:00 ~ 01/11 19:00</b>		
Op. hours	<b>23</b>			<b>28</b>		
KWH meter	Start	End	Accum.	Start	End	Accum.
KWH	<b>160,909</b>	<b>162,551</b>	<b>1,642</b>	<b>159,575</b>	<b>160,909</b>	<b>1,334</b>
Standard	KWH/hr	<b>71.39</b>		KWH/hr	<b>47.64</b>	
Saving(%)	(71.39 - 47.64) / 71.39 = <b>33.27%</b>					
Saving (KWH/month)	(71.39 x 24 x 30) x 33.27% = <b>17,101</b>					
Saving (NT\$/month)	17,101 x 2.9 = <b>NT\$49,593</b>					
Saving (NT\$/year)	49,593 x 12 = <b>NT\$595,116</b>					
Acceptance	<b>Qualified</b>					



<http://www.etern.com.tw>

+886-3-3381838

[kiddfeng@etern.com.tw](mailto:kiddfeng@etern.com.tw)

**Saving your money and our Earth !**