

台达机柜解热产品

Apr, 2015

(Telecom & Automobile Fans Business Unit)

(Fans & Thermal Management Business Group)



➤ 台达机柜解热产品

1. 气对气热交换机与散热芯 HEX

2. 半导体致冷器 TEC

3. 加热器 Heater

4. 变频冷气空调 Air conditioner

台达机柜解热产品家族





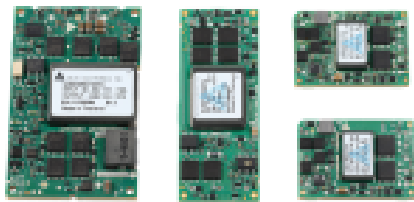


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直流风扇与鼓风机(IP55)



智能电源控制器



风机盒模块
(金属外壳)

热交换芯



主要关键组成因素：

- 专业风扇与鼓风机供应商
- 专业的控制器技术
- 场内自制的金属制造中心
- 先进的核心散热芯设计和制造能力

完整的标准产品范围 10W/ K~175W/ K

- 高的效能小体积
- 体积减少10%相对于传统的热交换器
- 可靠性高，具有IP55防护
- “一触式”的自动测试和清洁功能
- 可通讯连接控制
- 易于安装和维护
- LED状态指示灯

冷却能力需求

选用合适热交换机
芯(数据库)

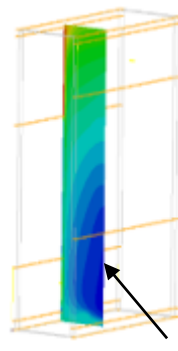
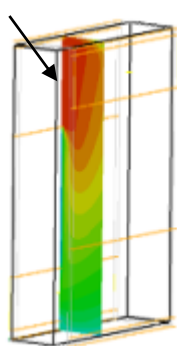
选用合适风扇
(根据操作点需求)

热交换机设计

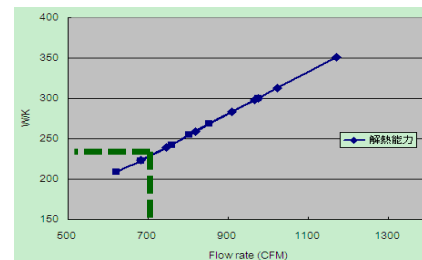
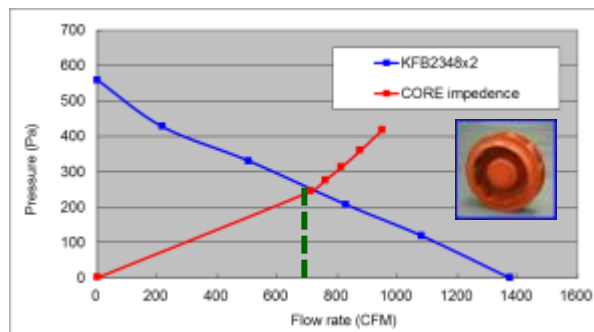
模拟

原型样品测试

hot side in



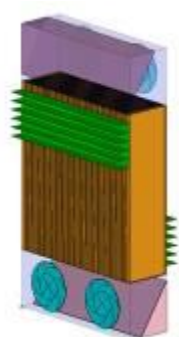
cold side in



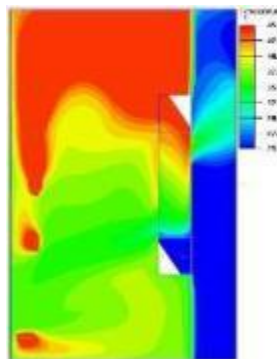
热交换芯选择



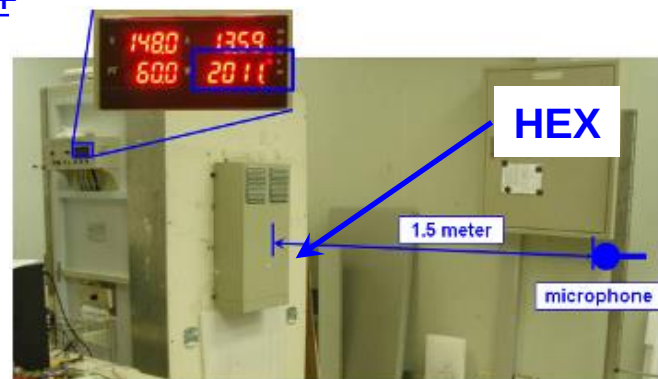
风扇选择



设计

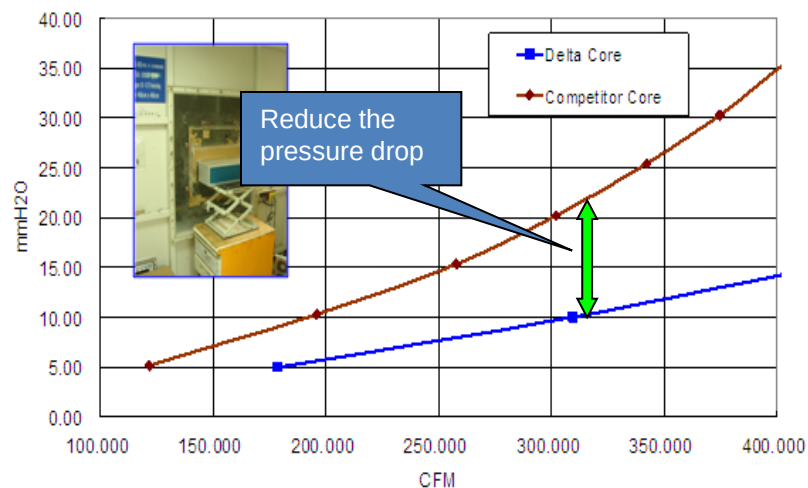
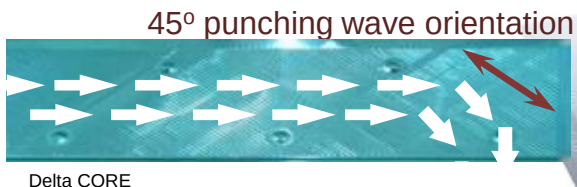


模拟

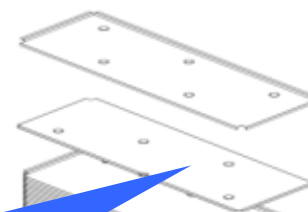
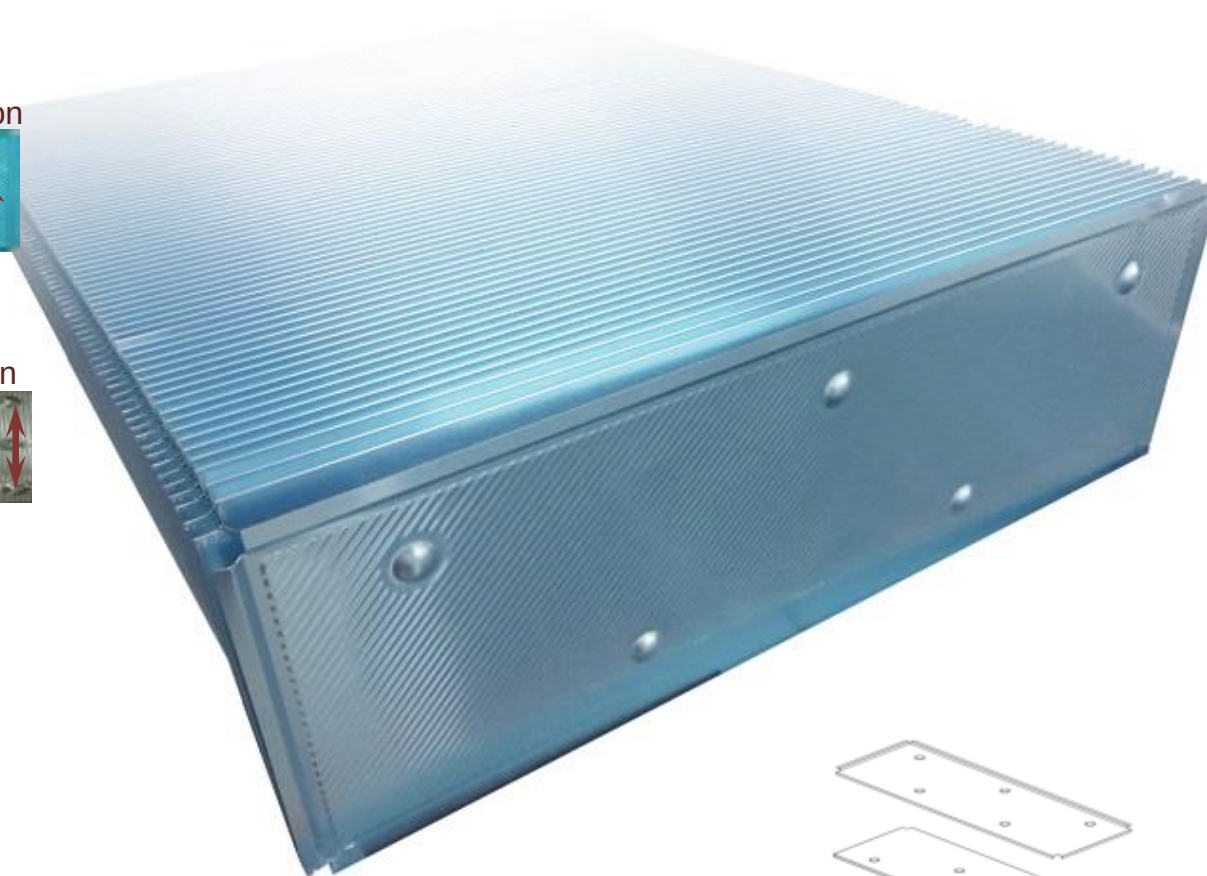


原型样品测试

- 合适的流道设计 L-L type



减少压降

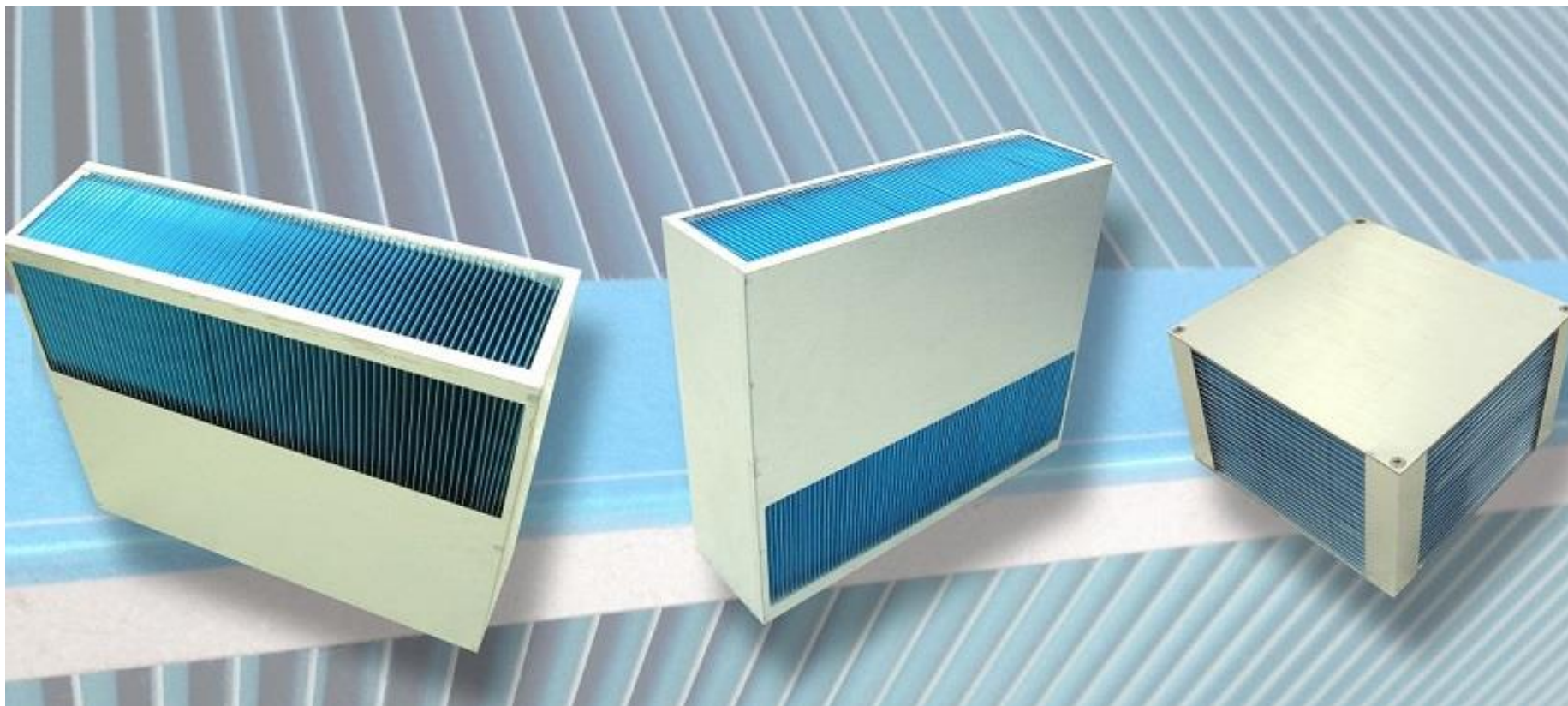


减少凸起数量并增加凸点直径

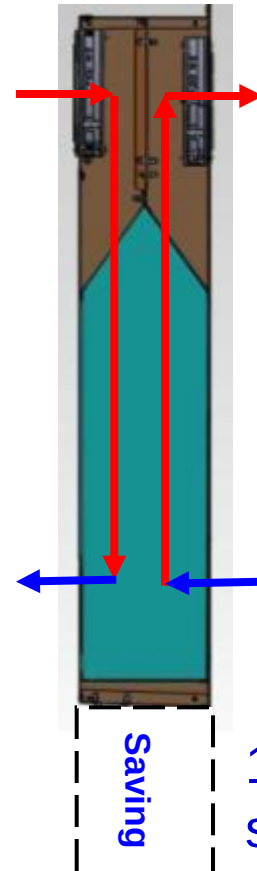
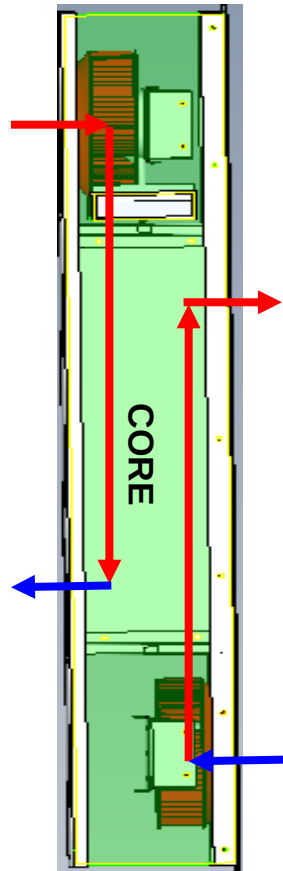
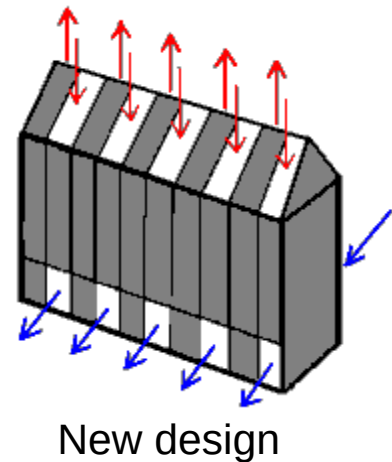
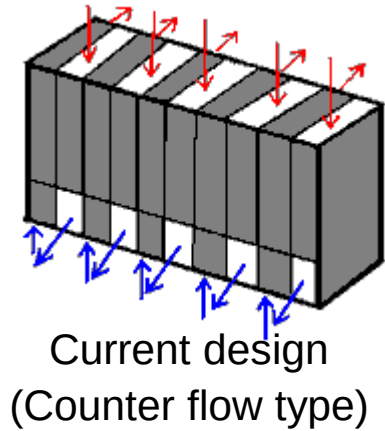
种类	高	深	长	鳍片间距
Counter Flow	400	95/140	< 600	3.0~4.0
	500	140/190		
	600	140/190/240		

种类	高	深	长	鳍片间距
Cross Flow	200	200	< 600	3.0~4.0
	250	250		
	302	302		
	350	350		

Unit : mm



Air flow path



18 %
shorter

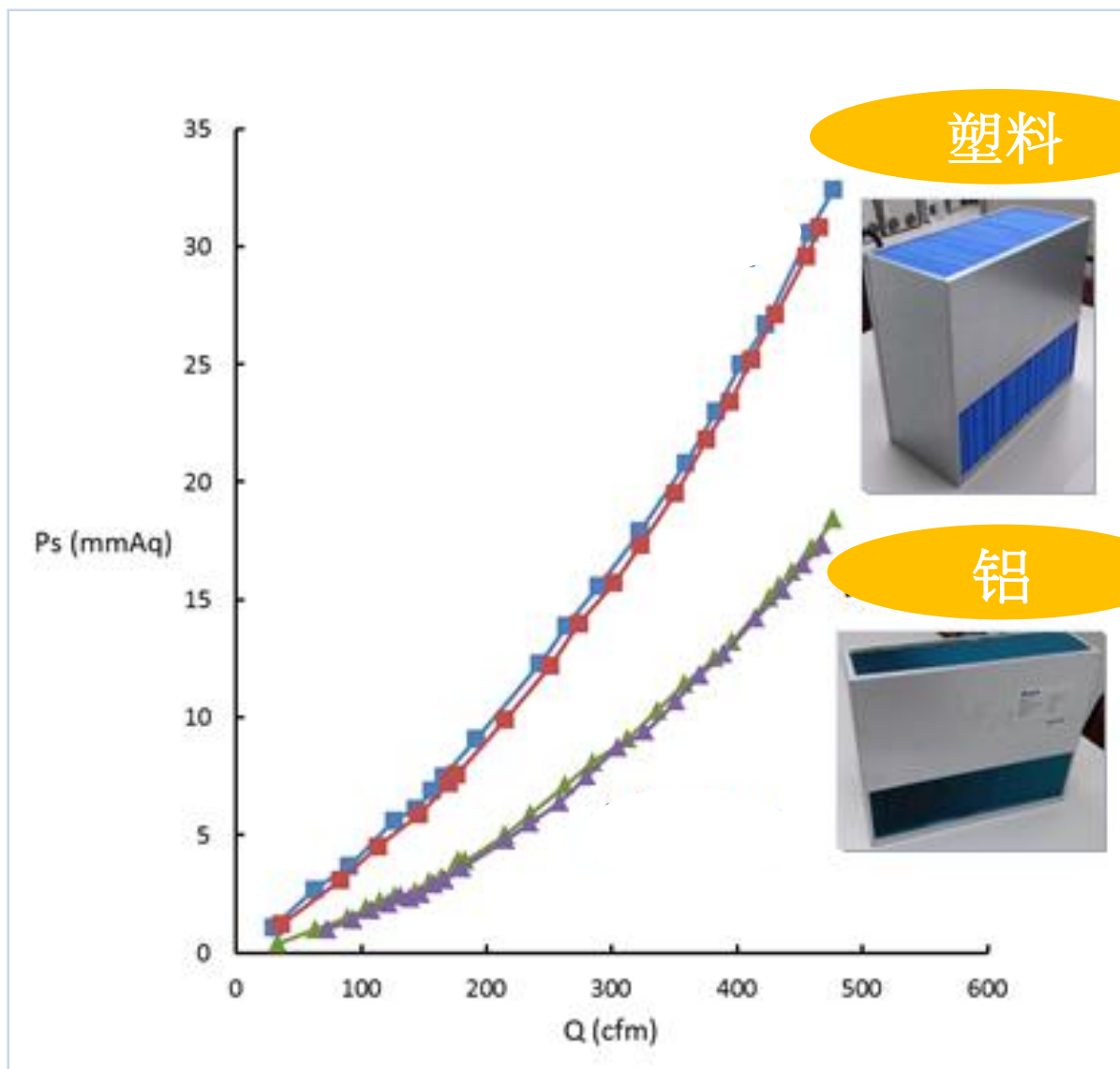
1040x500x160 mm
17 kg

850x500x160 mm
14 kg



- Compact size cabinet
- $\Delta T \leq 7^{\circ}\text{C}$
- Noise (1M) $\leq 60\text{dB-A}$

塑料热交换芯与铝热交换芯的阻抗



	Aluminum	Rail-type plastics
Cooling capacity (W/K)	84	84
Rated voltage (V)	DC48V 1.9A	DC48V 1.9A
Power consumption (W)	91	91
Dimension (mm)	*400*200*190	*400*200*190
Noise(dB)	64 (1.0m)	64(1.0m)
Weight	6.5kg (CORE)	4.5kg(CORE)
		



台达热交换机標準品

型号	冷却量 (W/K)	尺寸 (mm)	额定电压 (V)	额定电流 (A)	工作温度 范围(℃)	噪声 (dB·A)	重量 (Kg)	安规标准
HEX015VA	15	510H X 253W X 78D	24	1.2	-10~+65	65	5	cUL, TUV, CE
HEX020VA	20	590H X 283W X 99D	24	0.8			7	
HEX030VA	30	800H X 305W X 98D	24	1.3			11	
HEX050PA	45	500H X 445W X 152D	48	1.2			10	
HEX060PA	60	850H X 500W X 148D	48	0.6			17	
HEX080PD	80	950H X 450W X 150D	48	2.2			19	
HEX120PA	120	1151H X 471W X 193D	48	4.4			33	
HEX200PB	145	640H X 700W X 278D	48	2.6			24	
HEX160PA	160	1294H X 567W X 243D	48	3.1			40	
HEX260PA	175	1400H X 660W X 260D	48	3.1			37	



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半导体致冷器TEC核心技术概要



直流风扇与鼓风机(IP55)

- 低噪音
- 高效能
- 标准化

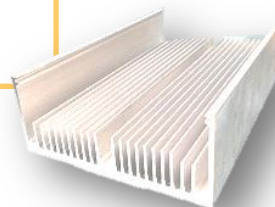
半导体芯片

- 最理想系统整合设计
- 高标准化
- 高效率芯片



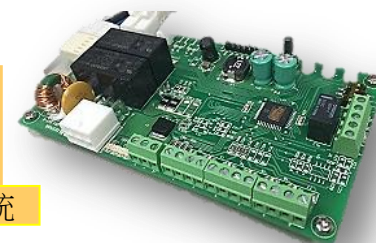
金属外壳及
散热鳍片

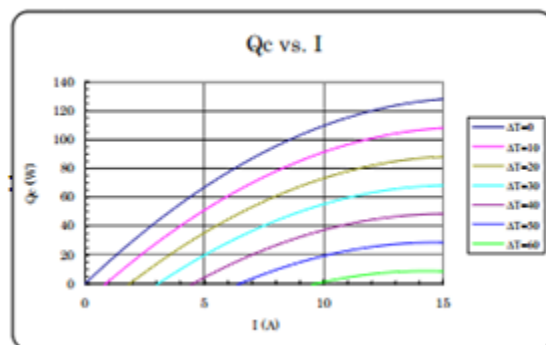
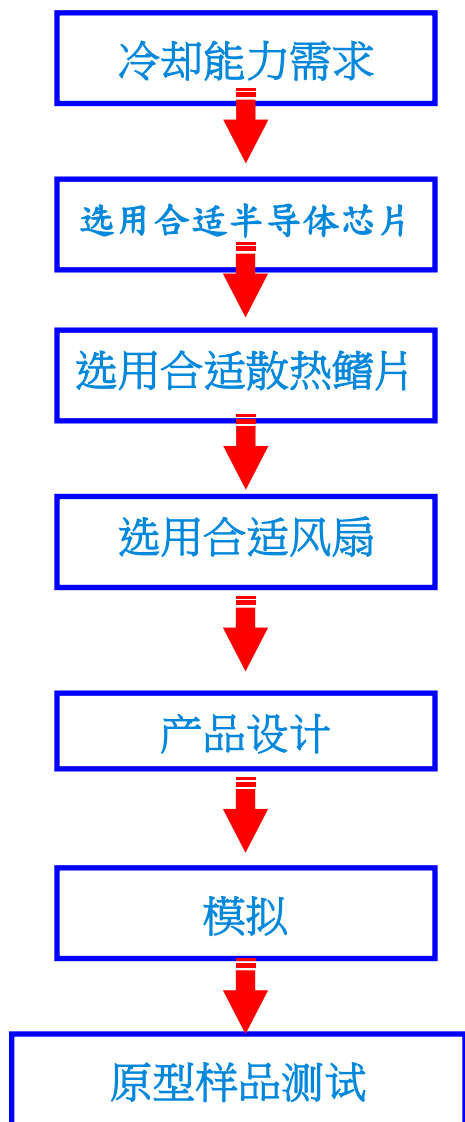
- 高效率散热材质
- 厂内自制
- 标准化



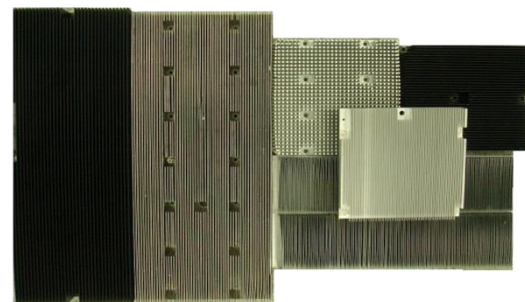
智能控制系统

- 人性化操控界面
- 优良通讯应用 (ex. RS-485)
- 多重安全防护及报警设计





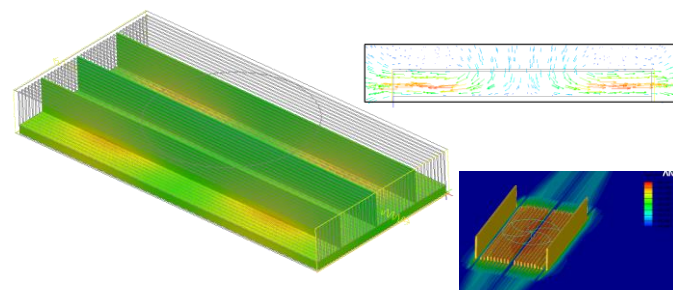
选用合适半导体芯片



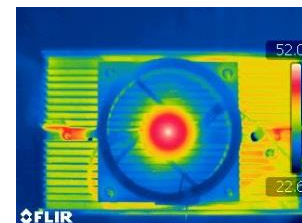
选用合适散热鳍片



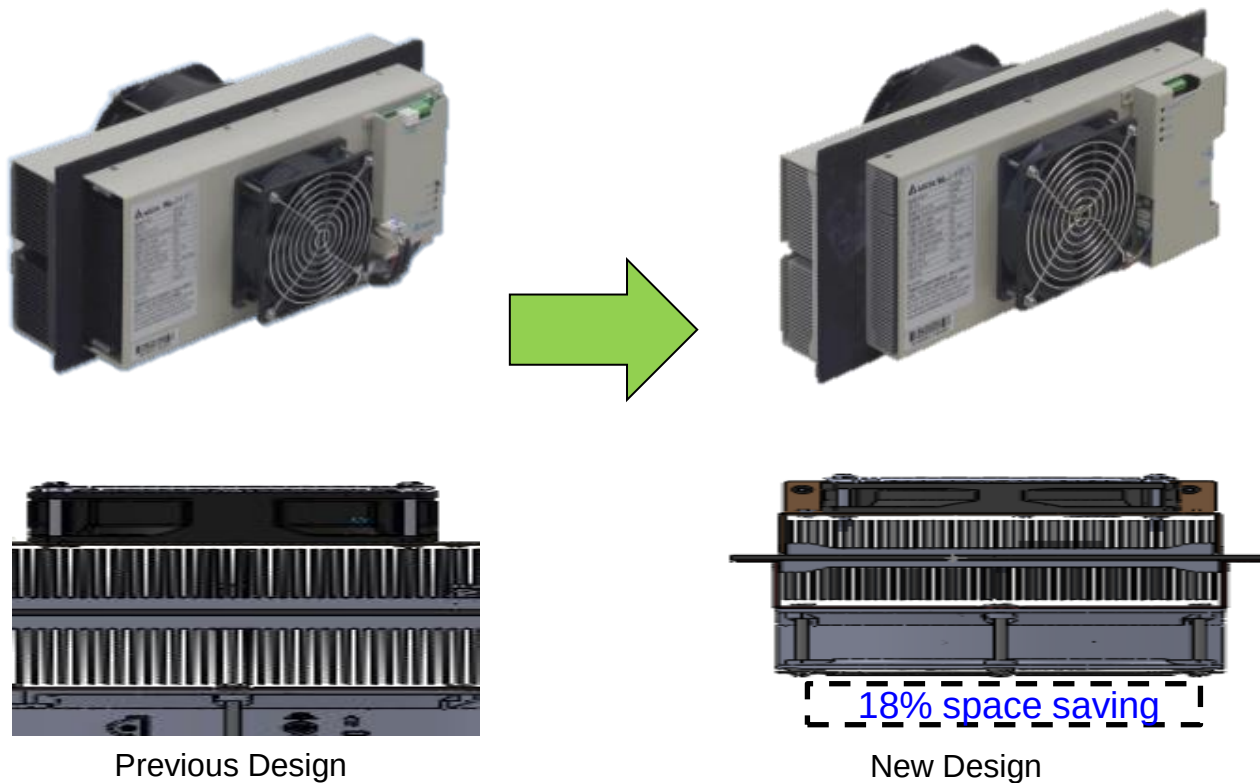
选用合适风扇



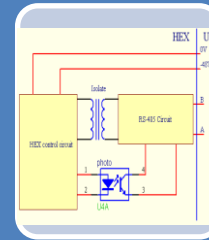
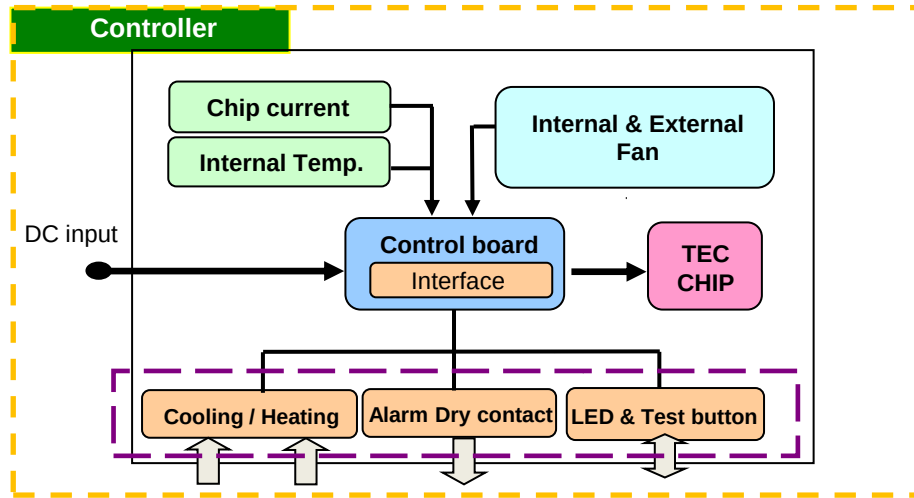
模拟



原型样品测试

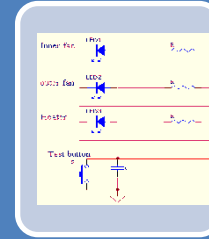


	Dimension (HxWxD) (mm)	Weight (Kg)	Current (A)	Power (W)	Noise
Previous design	400x180x208	8	8	384	62
New design	400x180x 169	6.5	6.3	303	61



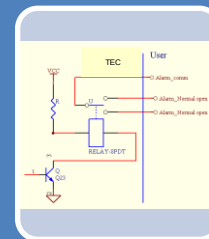
RS 485

- 致冷 / 加熱 溫度控制
- Protocol: MODBUS-RTU



Dry contact output

- 2 contact : normal close/ normal open
- Multiple alarm output



LED lighting and Self test button

- Fan/ TED /Status LED indication
- Self test button

Delta TEC provide flexible control mode and failure detect function



	HET100PA	HET200PB	HET200PC (Slim Type)	HET400PA
Cooling capacity (W)	100	200	200	400

	*HET050VA	*HET060VA
Cooling capacity (W)	50	60



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智能控制:

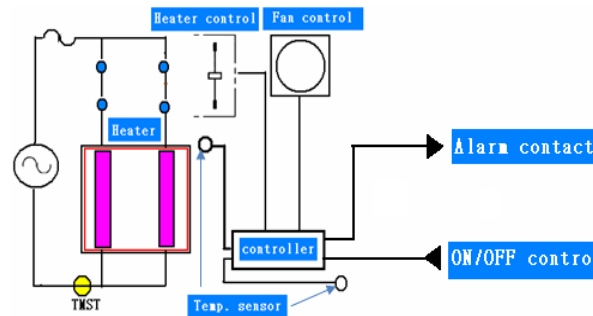
- 具弹性的讯号控制
- **LED** 风扇及加热器异常报警
- 自我检测功能

优良的设计

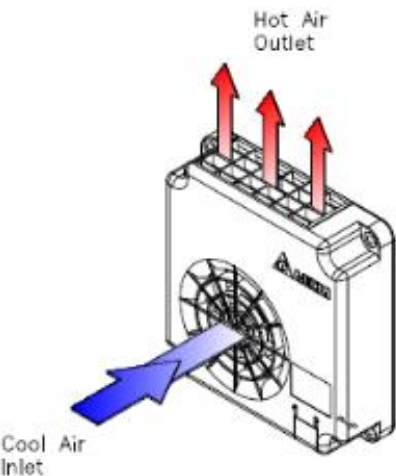
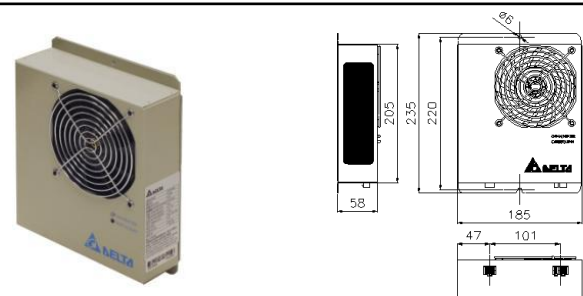
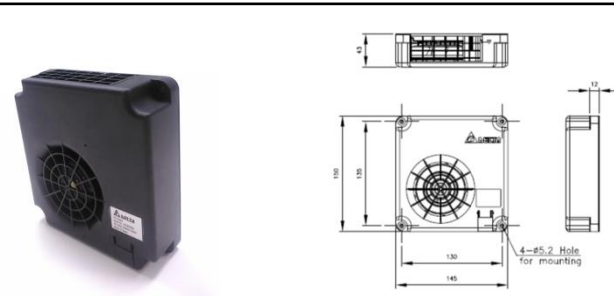
- 1 直流风扇优势
 - a. 多段的速度控制
 - b. 高效率
 - c. 转子死锁停转及自动启动侦测
- 2 分段启动PTC, 启动电流低

保护功能Protection:

- 具双重隔离之PTC
- 安全性三重保护(机构温度切换防护,
- **NTC** 传感器,fuse保险)



● PTC 加热

Item		HEH100BA	HEH050BA
外观尺寸	mm	235 L x 185 W x 58 H	150 L x 145 W x 43 H
加热能力	W	1000 @20°C	500 @20°C
电压	VAC	100~220 (Typ.)	100~220 (Typ.)
电流	A	4.5 @20°C	2.25 @20°C
操作温度	°C	-40~+65	-40~+65
重量	kg	1.5	1.0
 Hot Air Outlet Cool Air Inlet		• PTC heating element • Flexible signal control (on/off control) • LED for fan & heater status • Triple protection (mechanical temp. switch, NTC sensor & fuse)	• PTC heating element • Compact design • Dual protection (mechanical temp. switch & fuse)
		 235 220 185 58 47 101	 150 145 43 4-φ5.2 Hole for mounting

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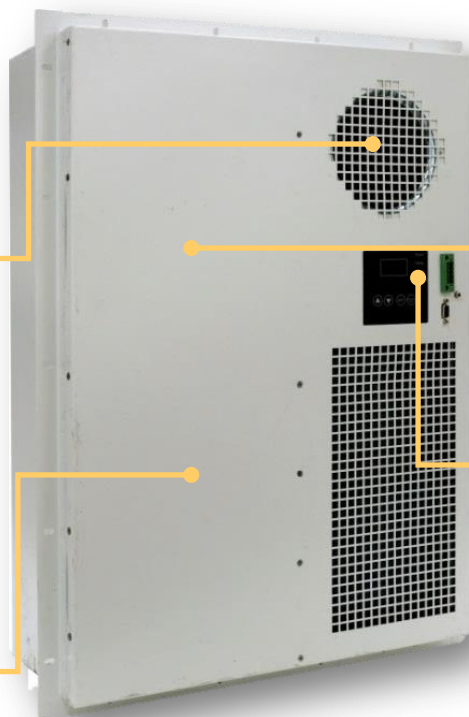
直流风扇与鼓风机(IP55)

- 低噪音
- 高效能
- 标准化



压缩机

- 高信赖性
- 高效能
- 标准化



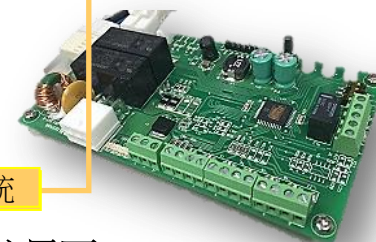
冷凝器及蒸发器

- 高效率
- 小体积
- 简单设计



智能控制系统

- 人性化操控界面
- 优良通讯应用 (ex. RS-485)
- 多重安全防护及报警设计



- ❑ 高效能之鳍片设计
- ❑ 小体积高热传输率
- ❑ 合理的设计与实物验证
- ❑ 在相同的制冷能力下减少30%的产品体积

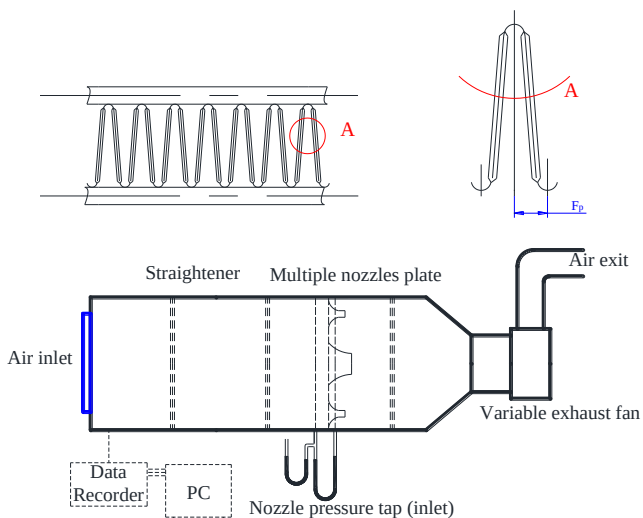
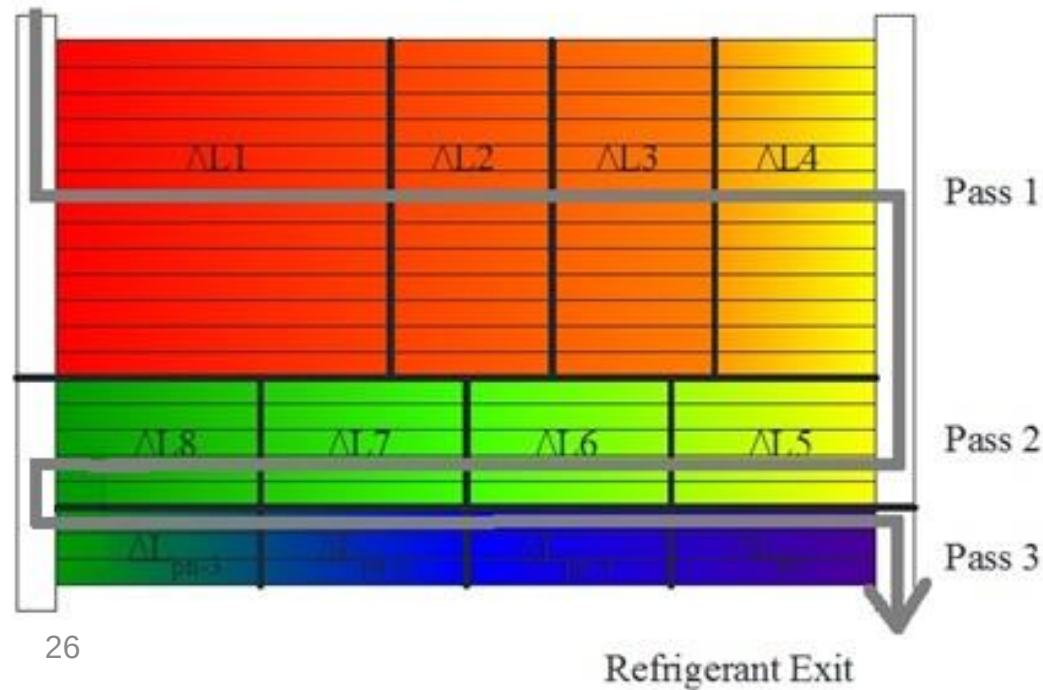


Condenser

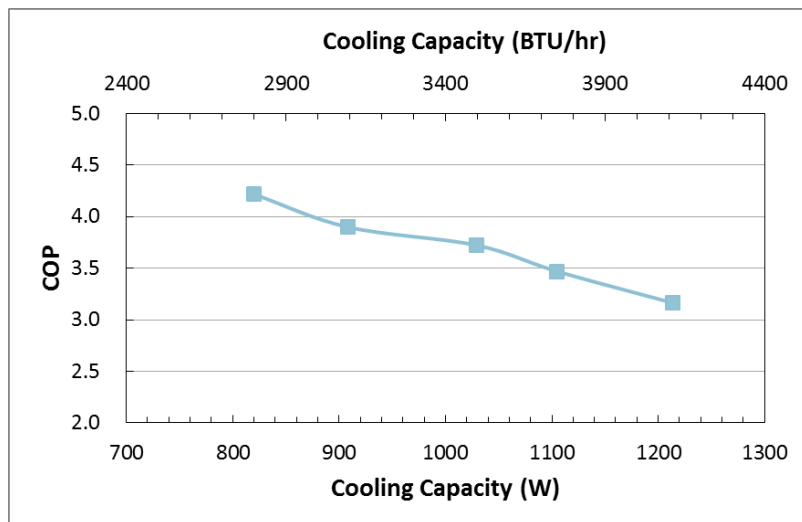


Evaporator

Refrigerant Inlet

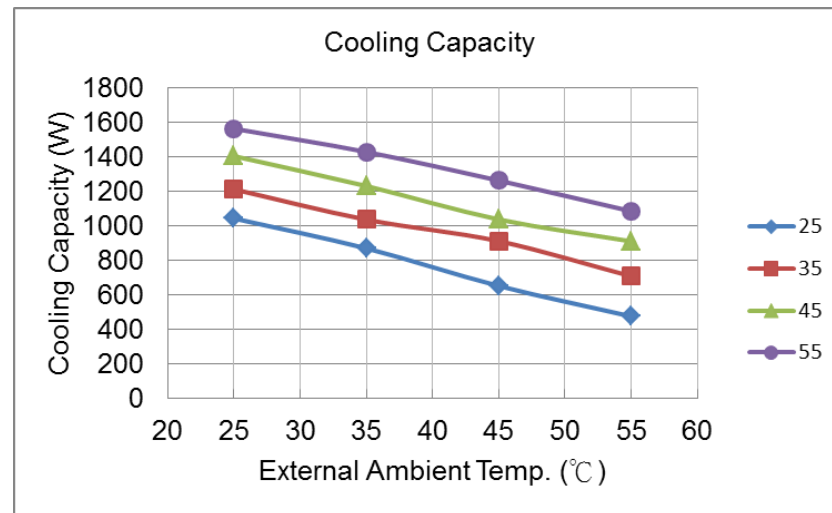
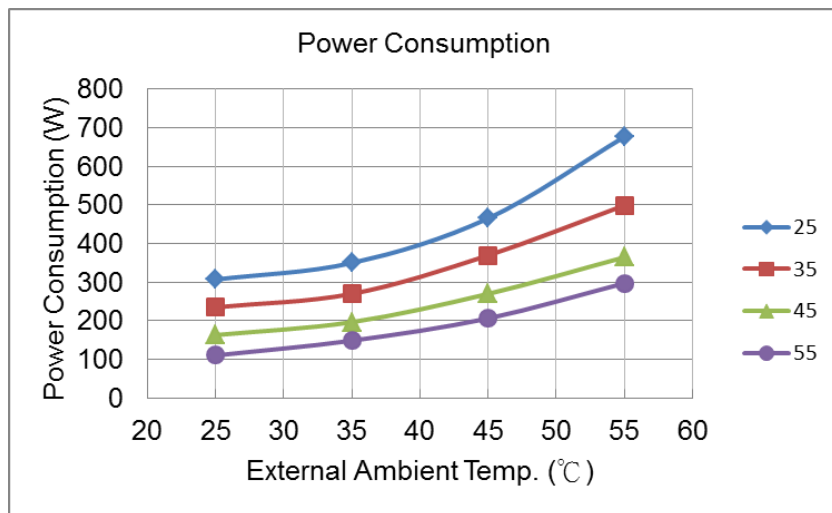


致冷能力与功率消耗



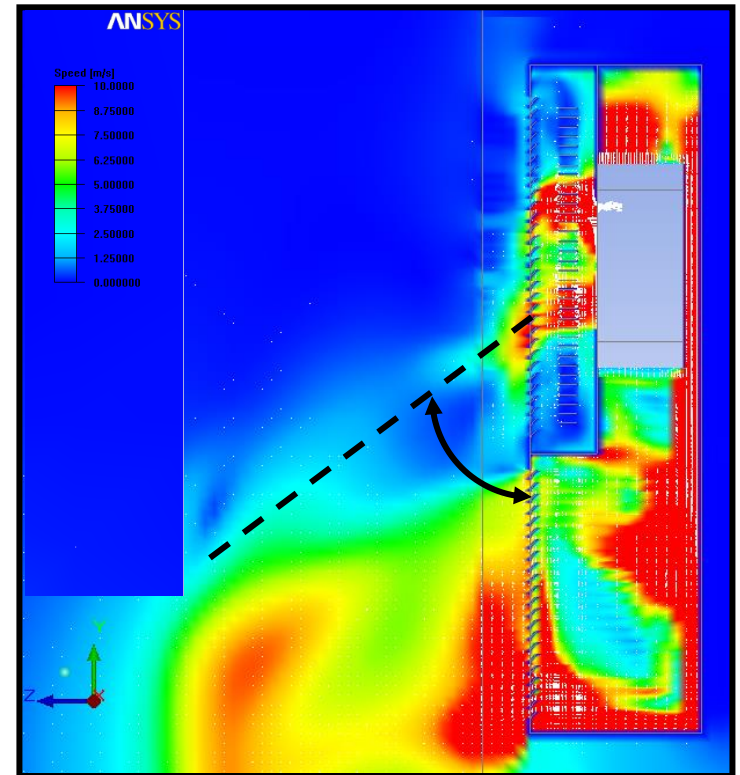
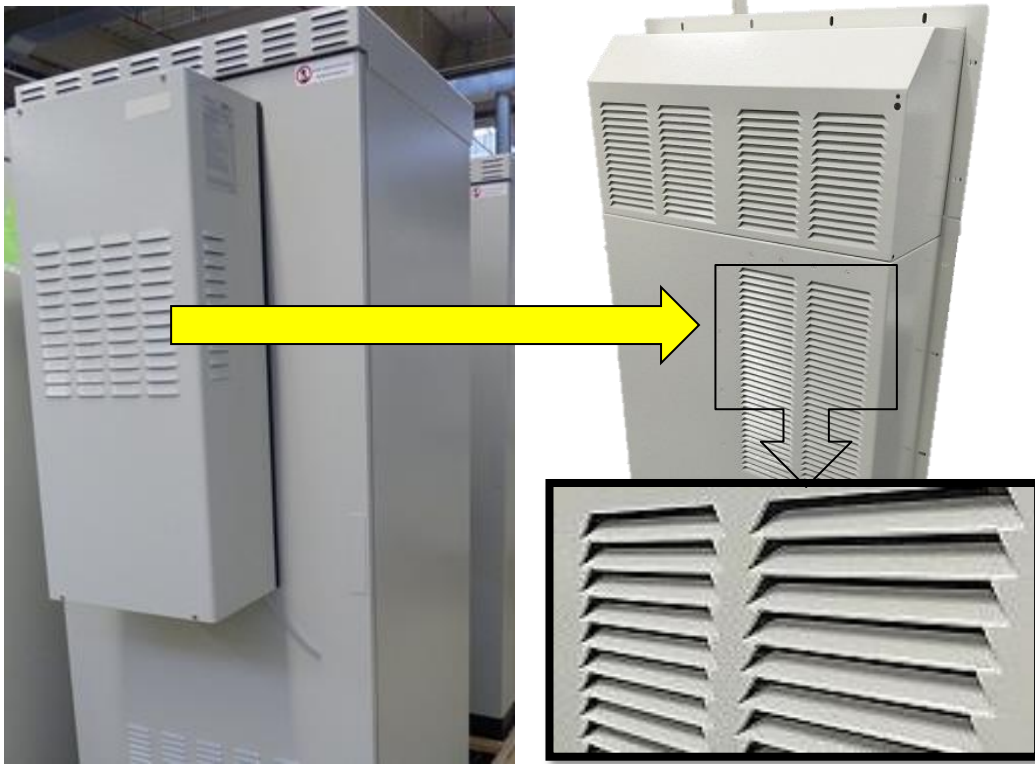
COP 值高达 4.3
(根据测试报告值)

仅COP 2.1产品50%功率消耗



HEC1000PB

防止风沙及雨水泼入以及无热流场回流设计.





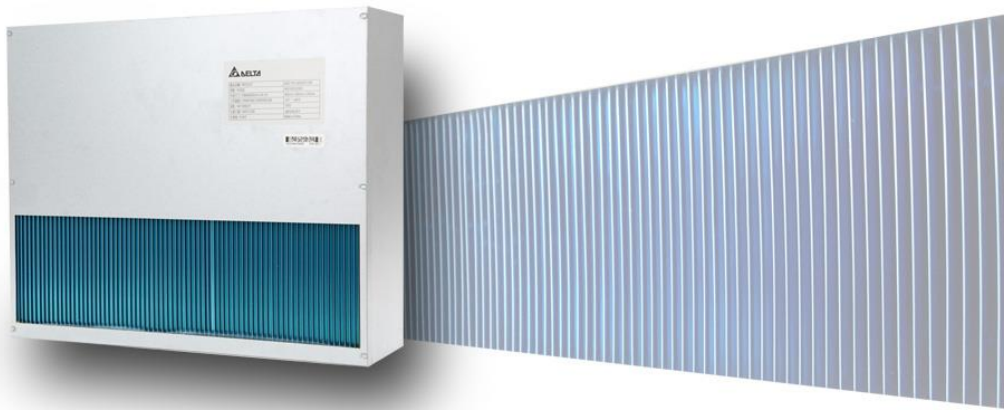
系统冗余设计





Product List: 800W/1000W/1200W/1300W/1500W/1700W

THANK YOU



To learn more about Delta, please visit www.deltaww.com

