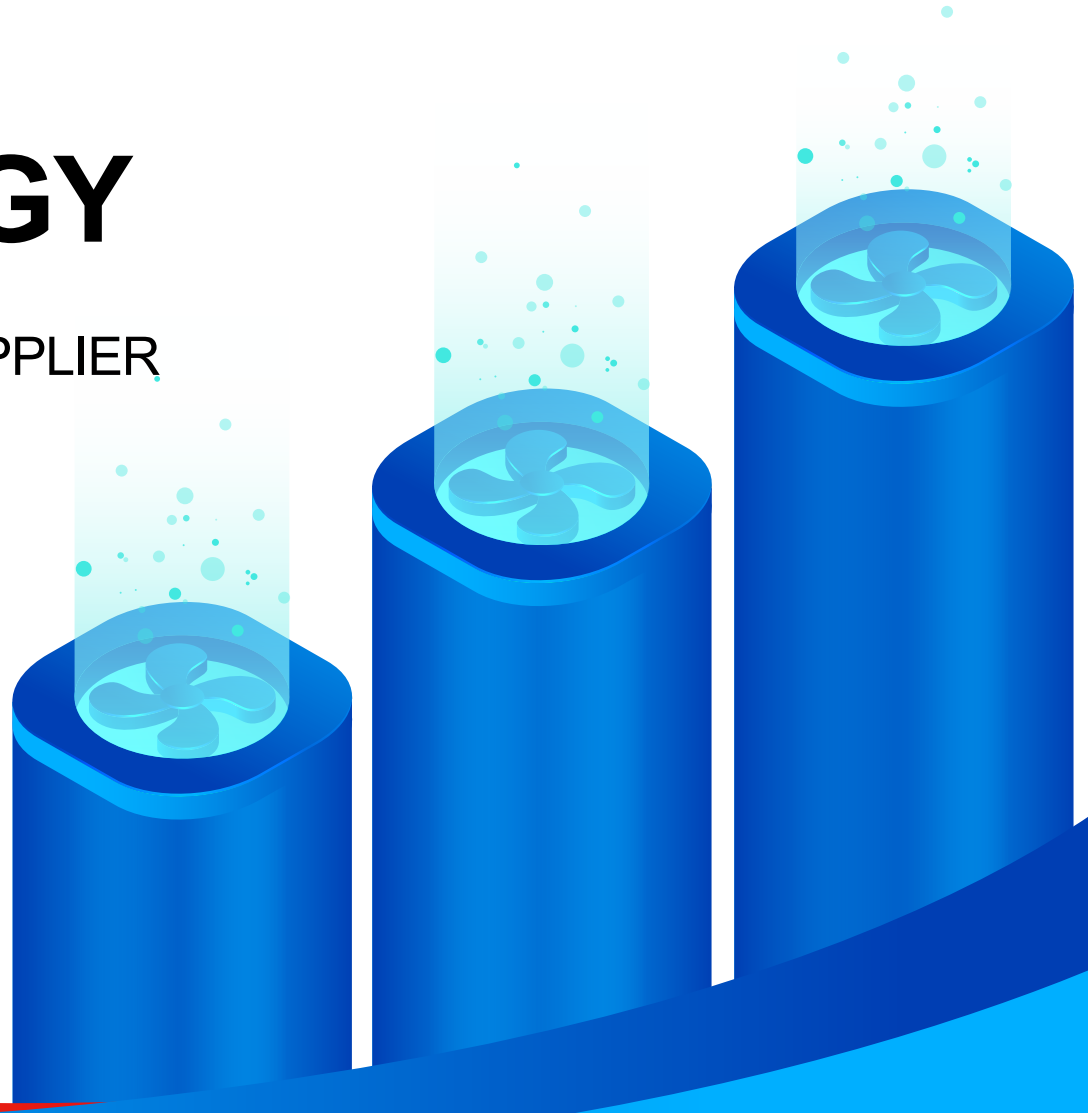
TONGYU TECHNOLOGY

GLOBAL THERMAL SOLUTIONS PROVIDER & SUPPLIER



CONTENTS

01 Company Profile

About Tongyu

- **Founded in 2005 and headquartered in Guangdong, China.**
- **Focus on Thermal Solution with 20 years.**
- **Products covering a large number of industries such as :**

  Electronic power,

  5G communication,

  LED lighting,

  Smart home,

  Computer servers,

  New energy vehicles,

  Rail transit,

  Energy storage,

  Aerospace,
- **Have 3 production bases and 3 service centers.**

3 R & D centers

Taibei Tongyu industrial Ltd (Taiwan)

Naxin Electronics Technology Co.,Ltd(Hongkong)

Tongyu Thermal Technology Co., Ltd (China)

3 Production bases

Tongyu Electrinics co. Ltd(Headquarter)

Xinyang Tongyu Electronics Co., Ltd(China)

Vietnam Bac Ninh Naxin Electronics Co. LTD

(Vietnam)

2005
Dongguan Tongyu founded

2009
Enter the Foxconn system.

2011
Xinyang Tongyu founded

2014
Taipei Tongyu founded

2016
Gain the Sugon AVL

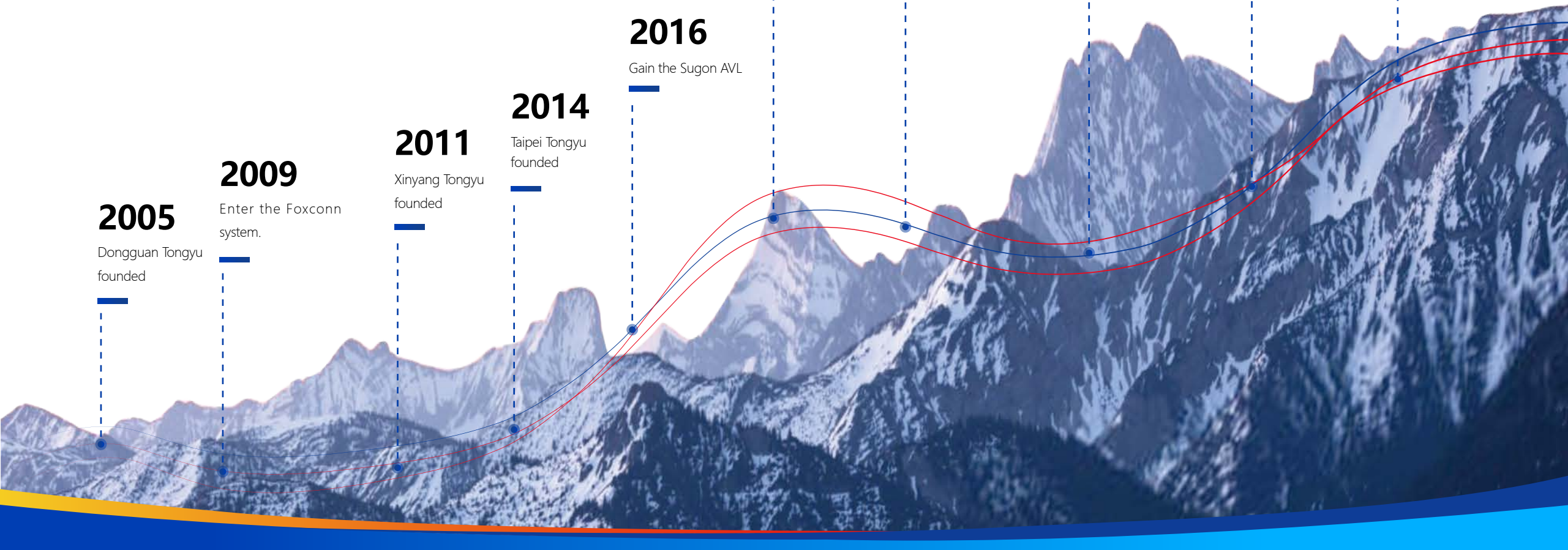
2017
Tongyu thermal technology founded

2018
Gain the BYD AVL

2019
Vietnam Bac Ninh Naxin Electronics Co., LTD founded.Gain the Inspur&LG AVL

2020
Gain the Tesla AVL
Tongyu New energy division founded

2023
Into the doubling programme enterprise



Certificates & Honors

IECQ QC 080000:2012

ISO 9001:2015

ISO 45001:2018

ISO 27001:2013

ISO 14001:2015

IATF 16949

UL

TUV

CE

Fan Certificate

50 Patents+

Excellent Supplier Trophies

02 Factory Overview

Headquarter Factory

Factory Building

Office Area

Heat Pipe Workshop

CNC Workshop

Die Casting Workshop

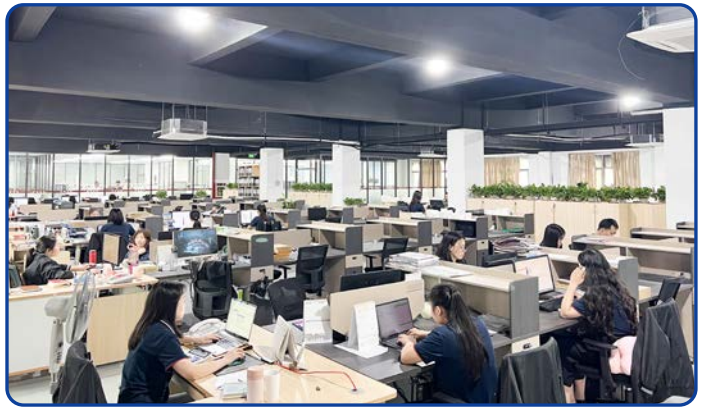
Assembly Workshop

Stamping Workshop

Welding WorkShop

Liquid- Cooling Factory

Factory Building



Office Area

CNC Workshop

Friction Welding Workshop

Liquid-Cooling Test Workshop

Tunnal Brazing Workshop

Workshop

Hydraulic Workshop

Vacuum Degassing Workshop

Automatic Bending Machine

Machine Name	Quantities
Powder Filler	4
Sintering Furnace	5
Vacuum Degasser	6
Water Dispenser	2
Pipe Bender	10
Power Screener	4
Automatic Bending Machine	10
Total	41

Office Building

Machine Name	Quantities
CNC	38
Anode	1
Sewerage Line	1
Special Machine	20
Assembly Lines	8
Punch	10
Total	78

Factory

CNC Workshop

Packaging Workshop

Factory Outside View

CNC Workshop

Slittering Workshop

Assembly Workshop

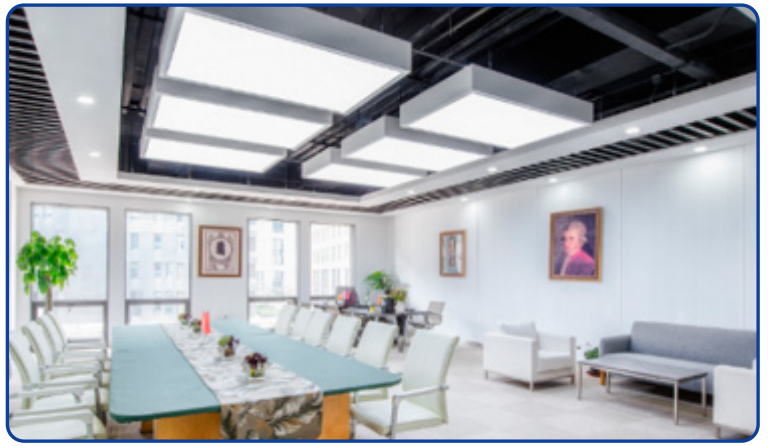
Laboratory

Polishing Workshop

Dongguan Songshan Lake

Taiwan Tong Yu Industrial Co.

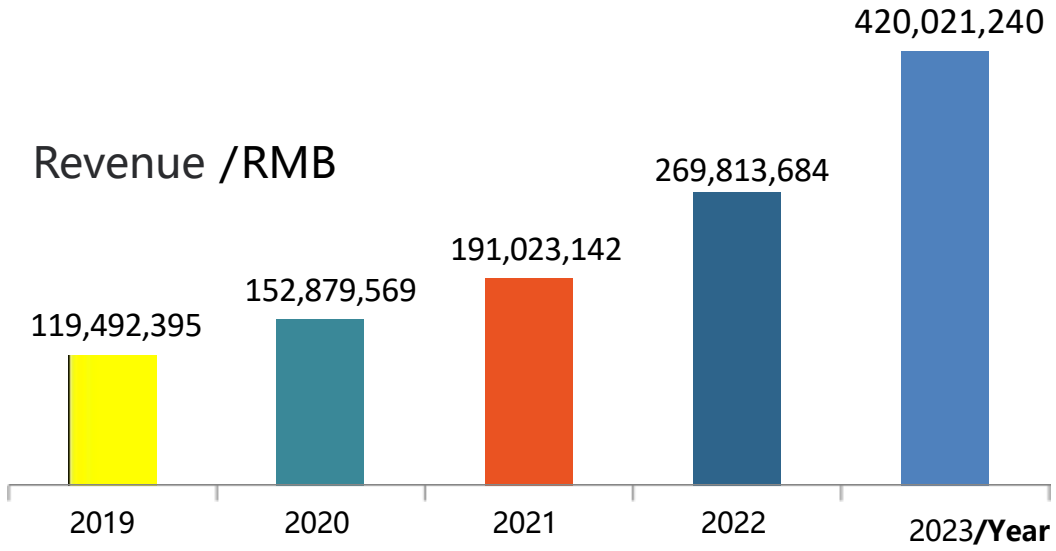
Dongguan Songshan Lake



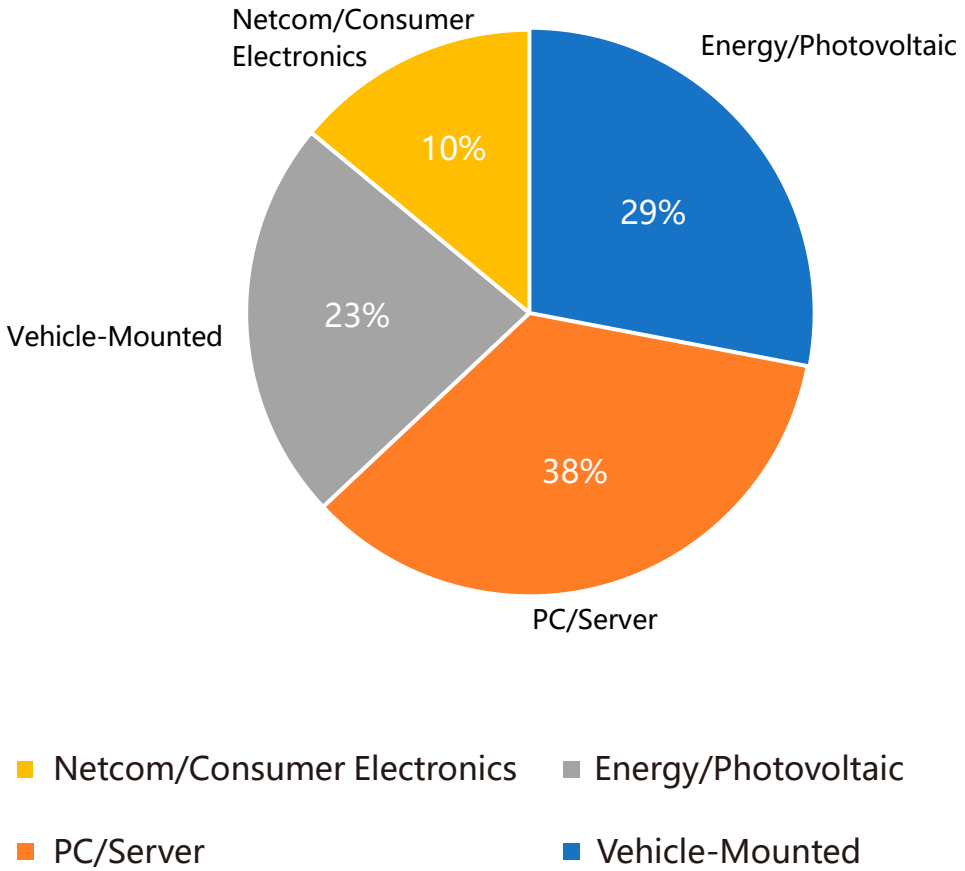
Taipei Office

Production Capacity and Product Sales Proportion

Comparison of sales in the last 5 years



Category	Shipments/month	Monthly production	Moving rate
Extrusion	1500K	2000K	75%
Module Soldering	350K	500K	70%
Water-cooled	6K	15K	40%

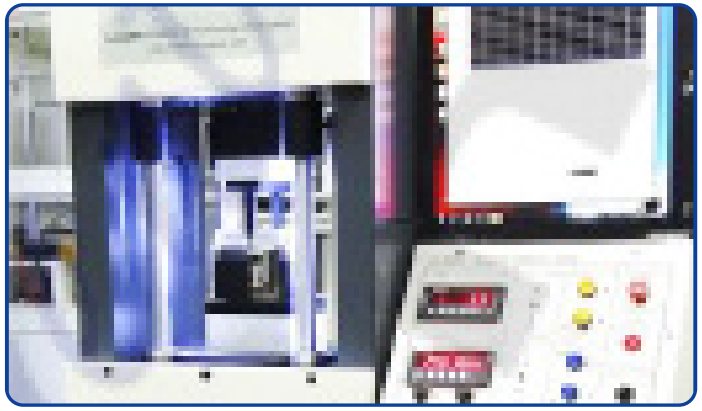


03 Quality System

Coordinate Measuring Machine

X Ray Imaging

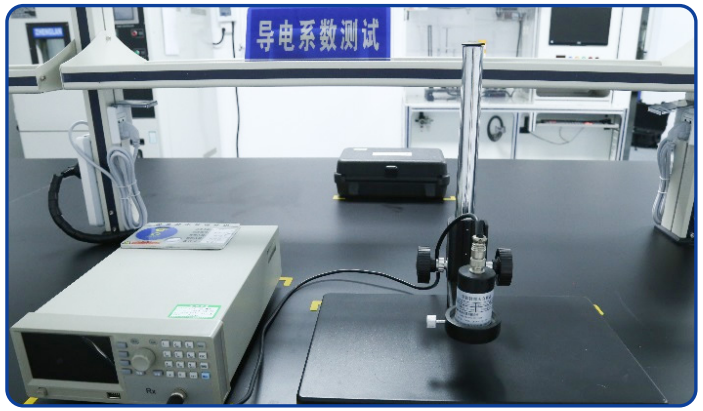
C-Scan Imaging



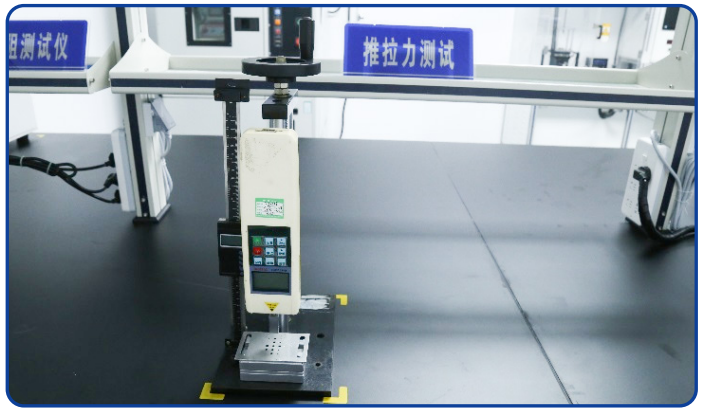
Rigidity Tester

Compound Salt Spray Testing Machine

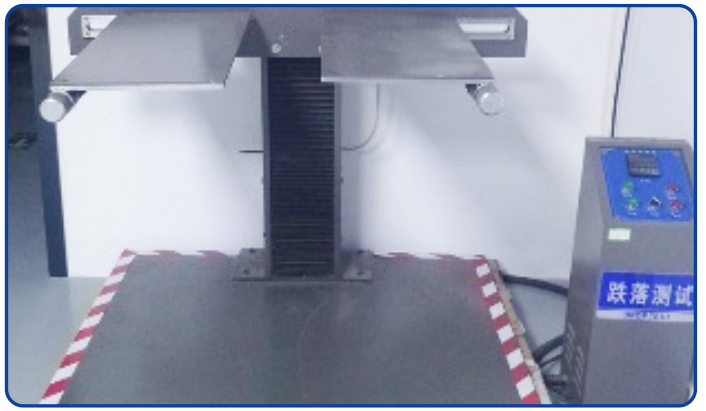
Thermal Shock Chamber



Conductivity Tester



Push-Pull Tester



Drop Tester

Thermal Resistance Tester 1

Thermal Resistance Tester

Wind Tunnel Test

Laboratory Area I

Laboratory Area II

Dongguan Tong Yu Electronic Co., Ltd

Overview of monitoring and measuring equipment

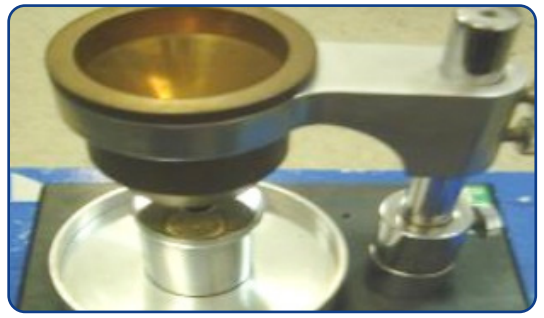
NO	Name	User Department	Statuses	NO	Name	User Department	Statuses
1	2.5 Dimension	Laboratory	OK	28	Push-Pull Gauge	Laboratory	OK
2	XRF Tester	Laboratory	OK	29	Thermohygrometer	Laboratory	OK
3	Thermal Resistance Tester	Laboratory	OK	30	Temperature Collector	Laboratory	OK
4	Fully Automatic Rupture Strength Test	Laboratory	OK	31	Power Supply	Laboratory	OK
5	Salt Spray Tester	Laboratory	OK	32	Power Supply	Laboratory	OK
6	Drop Test Machine	Laboratory	OK	33	Digital Pasteurization	Laboratory	OK
7	Constant Temperature and Humidity Tester	Laboratory	OK	34	Rubber Hardness Measurement	Laboratory	OK
8	Power Supply	Laboratory	OK	35	Programmable Thermostat	Laboratory	OK
9	Quantitatively Fast	Laboratory	OK	36	Pencil Scratch Synthesis	Laboratory	OK
10	Film Thickness Tester	Laboratory	OK	37	Pressure Roller Tensile Strength	Laboratory	OK
11	Weights	Laboratory	OK	38	Sharp Edge Measurement	Laboratory	OK
12	Electronic Weighing Scale	Laboratory	OK	39	Rubber Hardness Measurement	Laboratory	OK
13	Glossy Ring Gauge	Laboratory	OK	40	Push-Pull Gauge	Laboratory	OK
14	Thermal Conductivity Tester	Laboratory	OK	41	Thermal Conductivity Tester	Laboratory	OK
15	Illumination Tester	Laboratory	OK	42	Digital DC	Laboratory	OK
16	Conductivity Tester	Laboratory	OK	43	Quantitatively Fast	Laboratory	OK
17	Roughness Tester	Laboratory	OK	44	Endoscopic Testing	Laboratory	OK
18	Hundred Gauge Tester	Laboratory	OK	45	Drop Shot (Athletics Event)	Laboratory	OK
19	3rd Dimension	Laboratory	OK	46	Initial Adhesion Test	Laboratory	OK
20	Thermohygrometer	Laboratory	OK	47	Thermohygrometer	Laboratory	OK
21	Withstand Voltage Tester	Laboratory	OK	48	X-Ray imaging	Laboratory	OK
22	Multi-Circuit Temperature Tester	Laboratory	OK	49	Ultrasonic C-scan	Laboratory	OK
23	Sealing Inspection System	Laboratory	OK	50	Sealing Inspection System	Laboratory	OK
24	Mini-Digital Torque Wrench	Laboratory	OK	51	Gas Chromatography	Laboratory	OK
25	Fan Speed Tester	Laboratory	OK	52	Vickers Hardness Tester	Laboratory	OK
26	Automatic Radiator Performance Measurement	Laboratory	OK	53	Spectrophotometer	Laboratory	OK
27	Electronic Digital Display Spring Tensile Test	Laboratory	OK				

On-line Test Equipment

Power Screening Machine

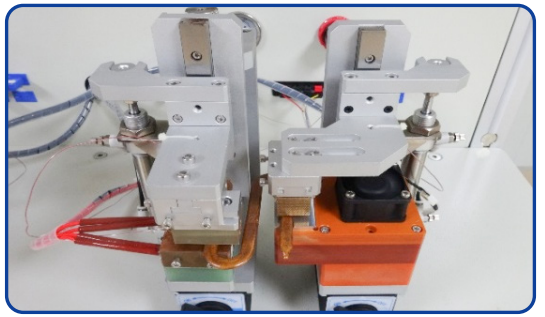
Backplane Full Checker

Bursting Test Mmachine



Hall Flow Meter

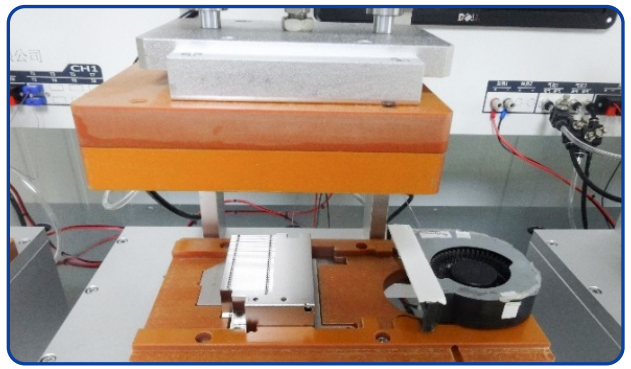
Helium Leak Detector



Heat Pipe Thermal Resistance Testing

Heat Pipe Aging Tester

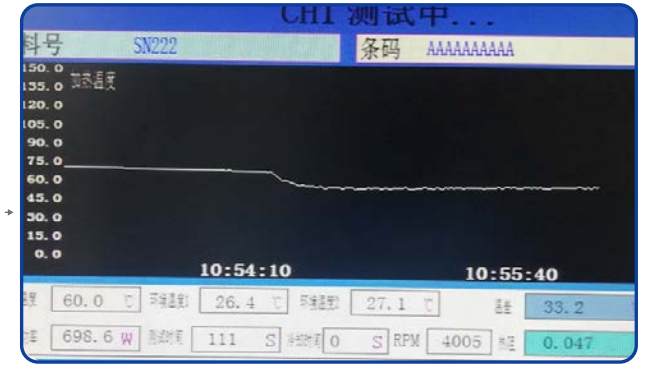
On-line Test Equipment



Module Thermal Resistance Test

Module Thermal Resistance Tester

Heat Pipe Thermal Resistance Tester



Automatic Thread Tester

Automatic Thread Tester

CCD Infrared Detector

Precision Air Tightness Tester

Air Tightness High Pressure Tester

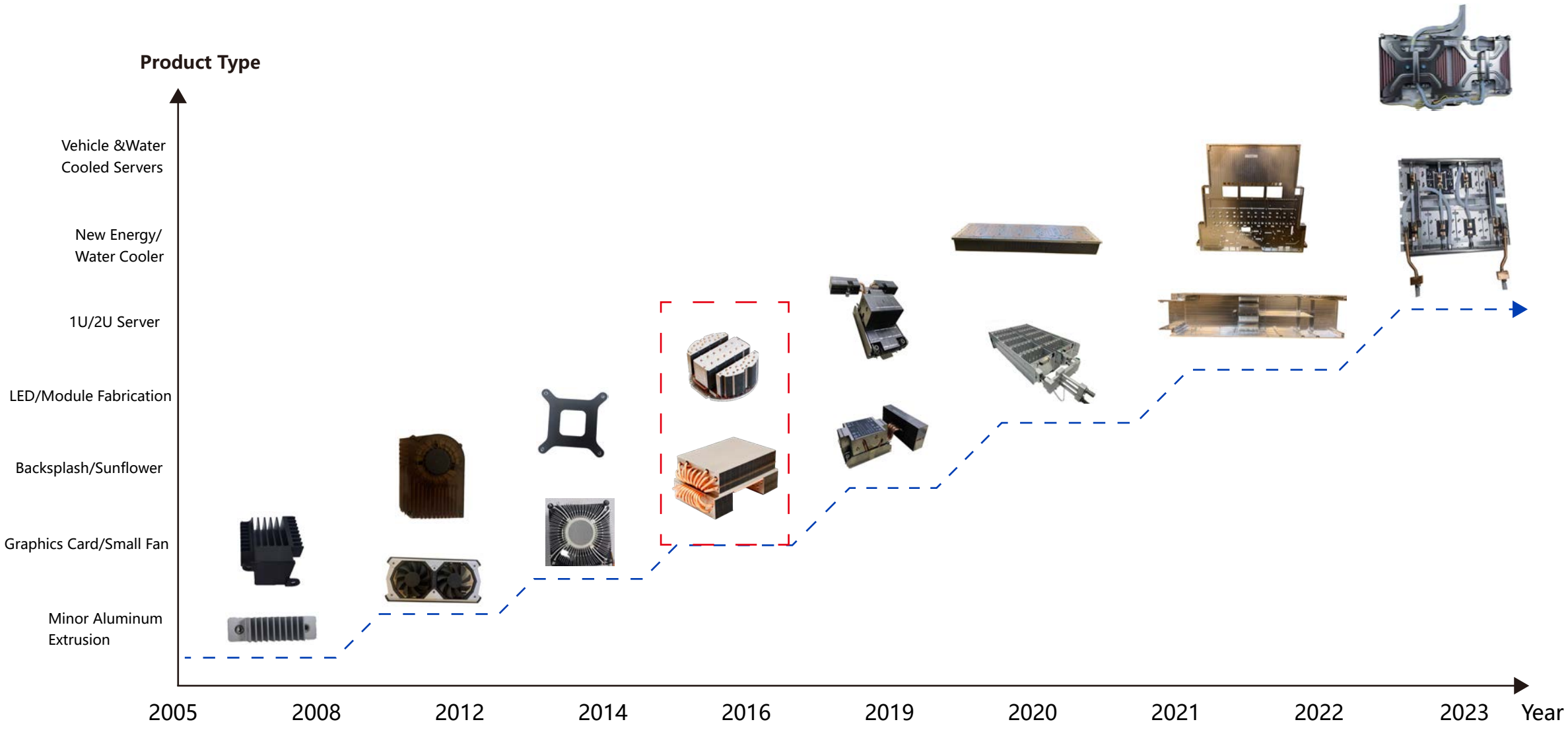
Resistance Tester

Helium Mass Spectrometer Leak Detector

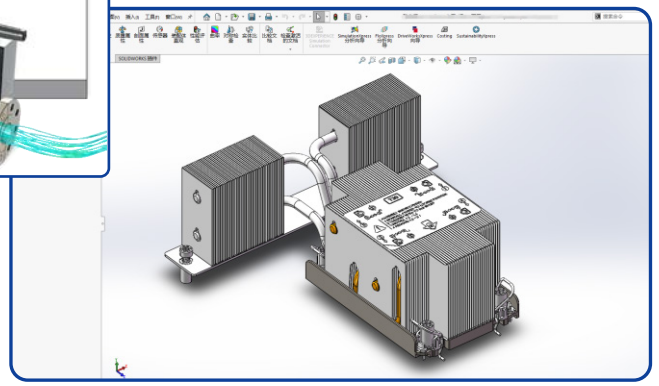
Liquid Channel Drying Equipment & Liquid Channel Cleaning Equipment

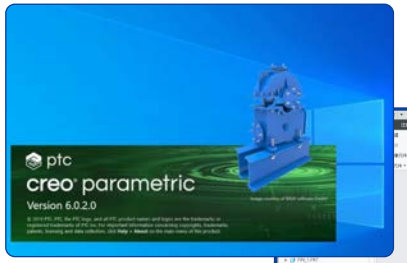
04 Design Case

Product Upgrade

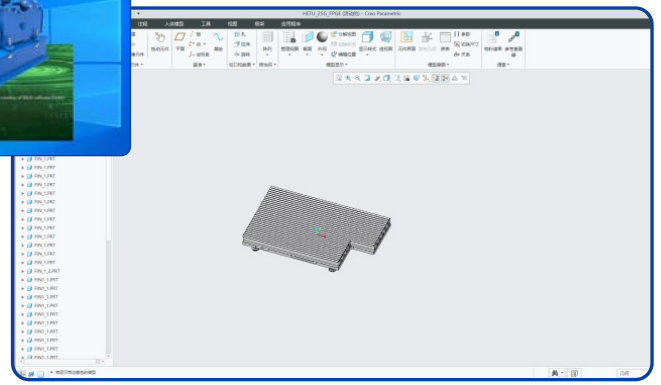


Solideworks 2021

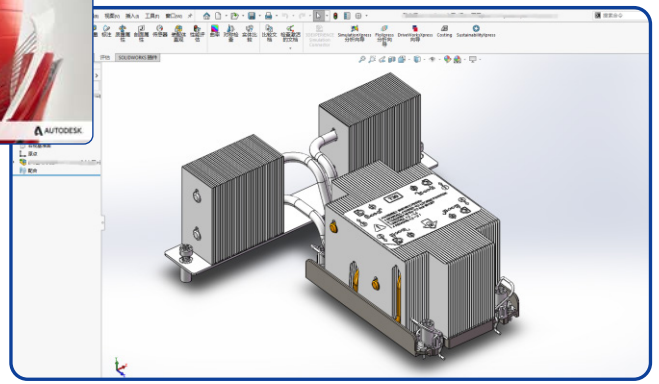


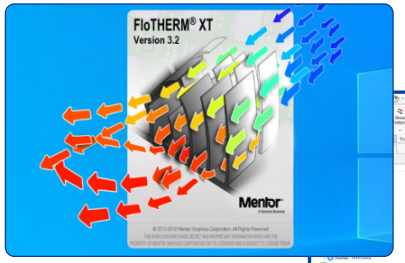


Creo Parametric 6.0

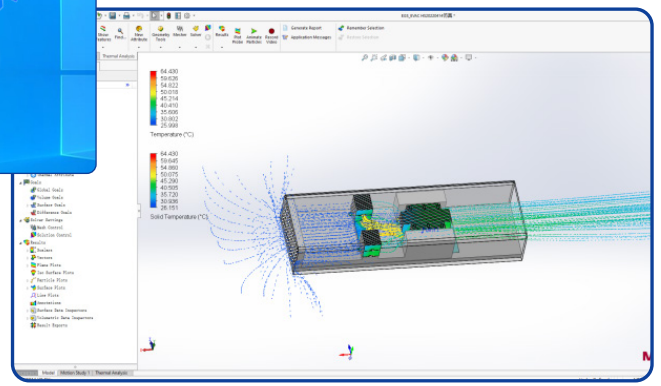


Auto CAD2019





Flotherm xt3.2



Product Applications

Energy Storage

Interner

Electric Appliance

Medical Care

Tongyu's
Heat Sink

Vehicle

Aviation/Aerospace

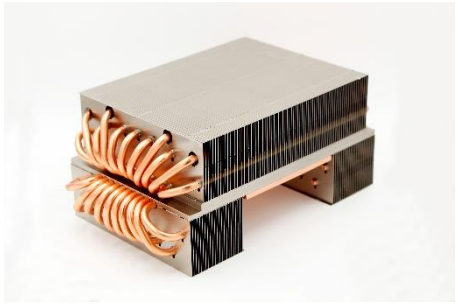
Electronics

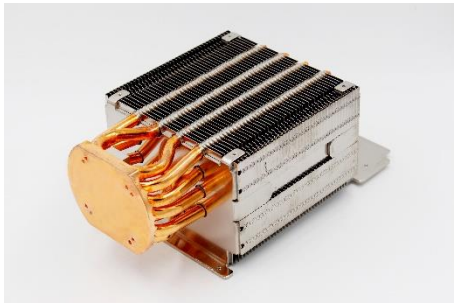
Communication

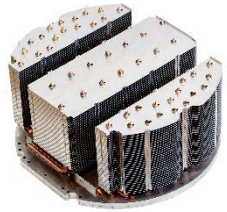
LED - Lights

Stage Light

Photography Light





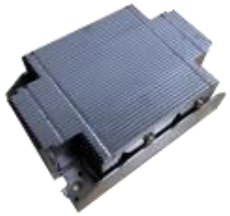


CPU/GPU

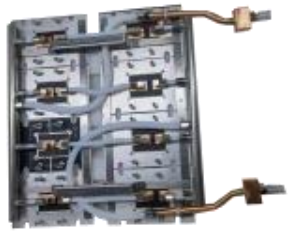
Memory

SWITCH/PCH

VR Chip

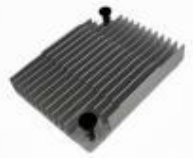








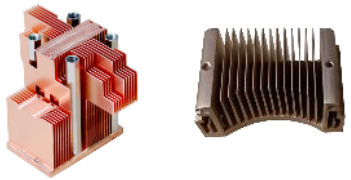



Domain Controller

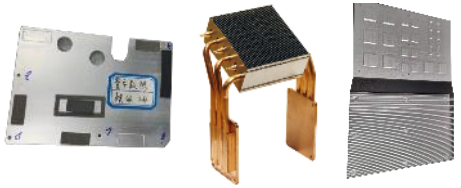
Central Controller

Battery & Tray

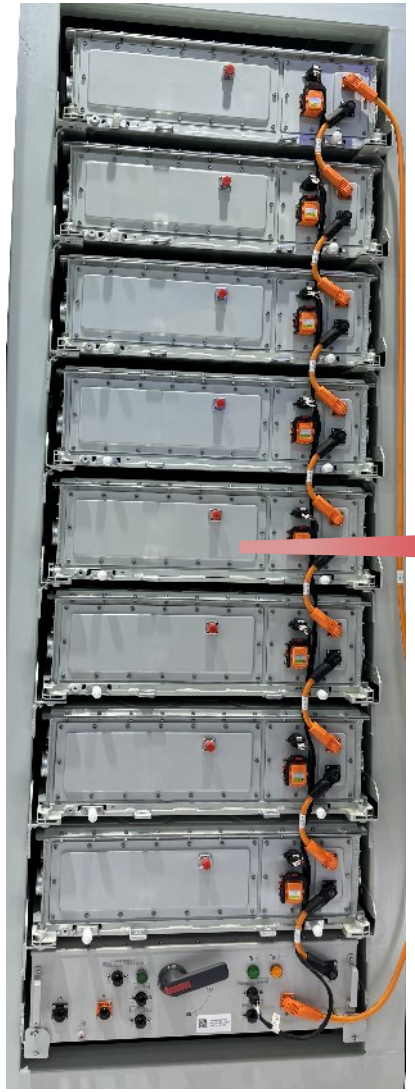
Vehicle Lights

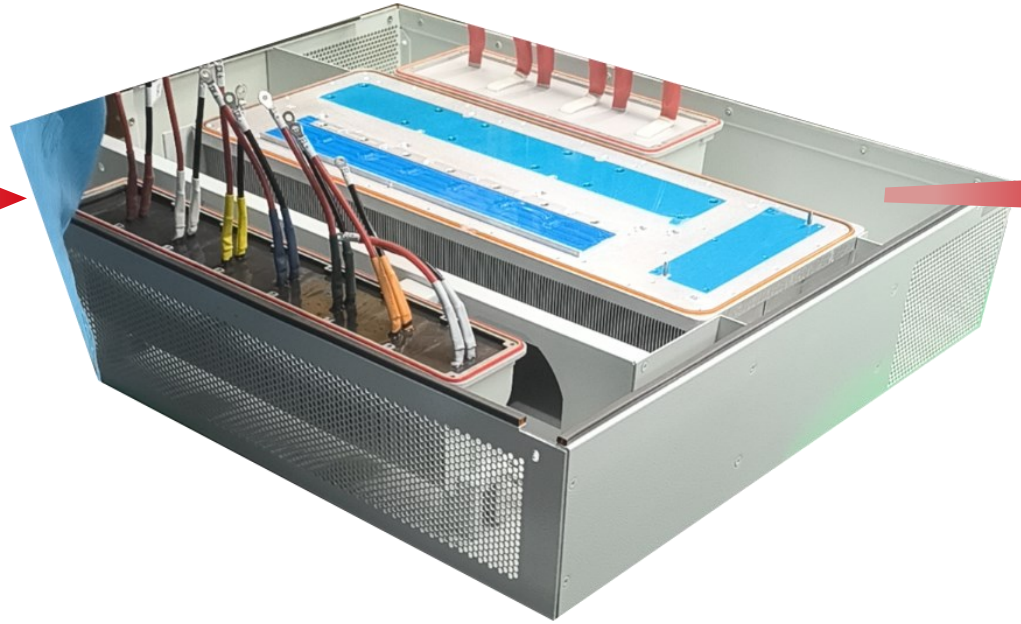


Structural Parts & Accessories



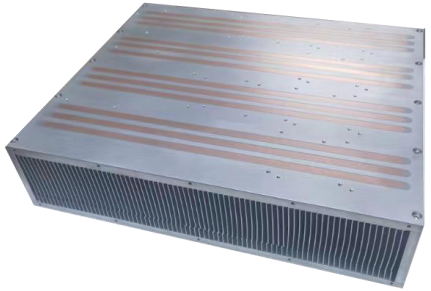
Charging Post

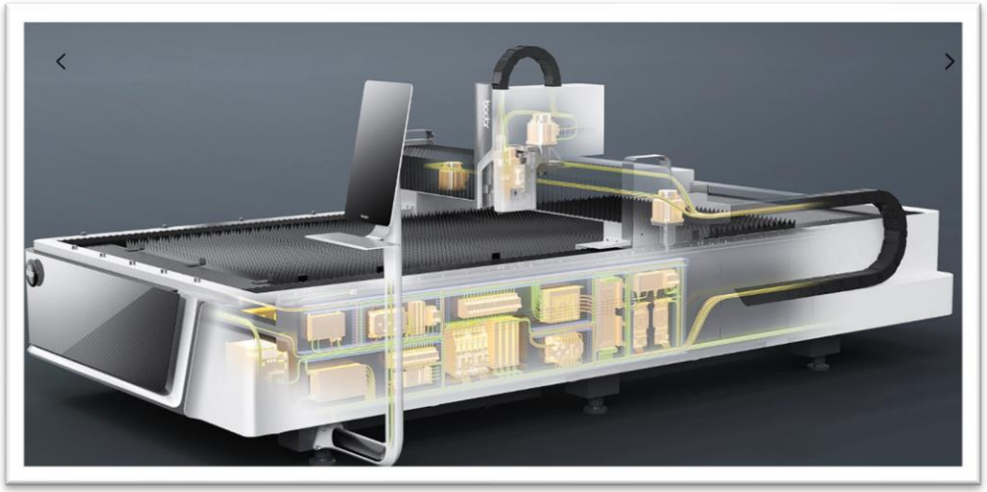




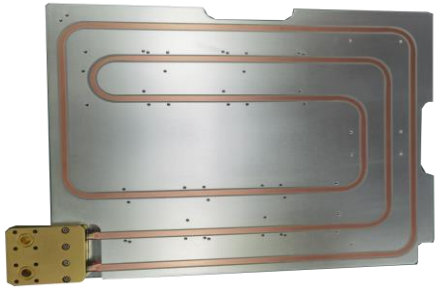
Inverter Heat Sink
(Aluminum Extruded &
Skived Fin)

Air-cooled



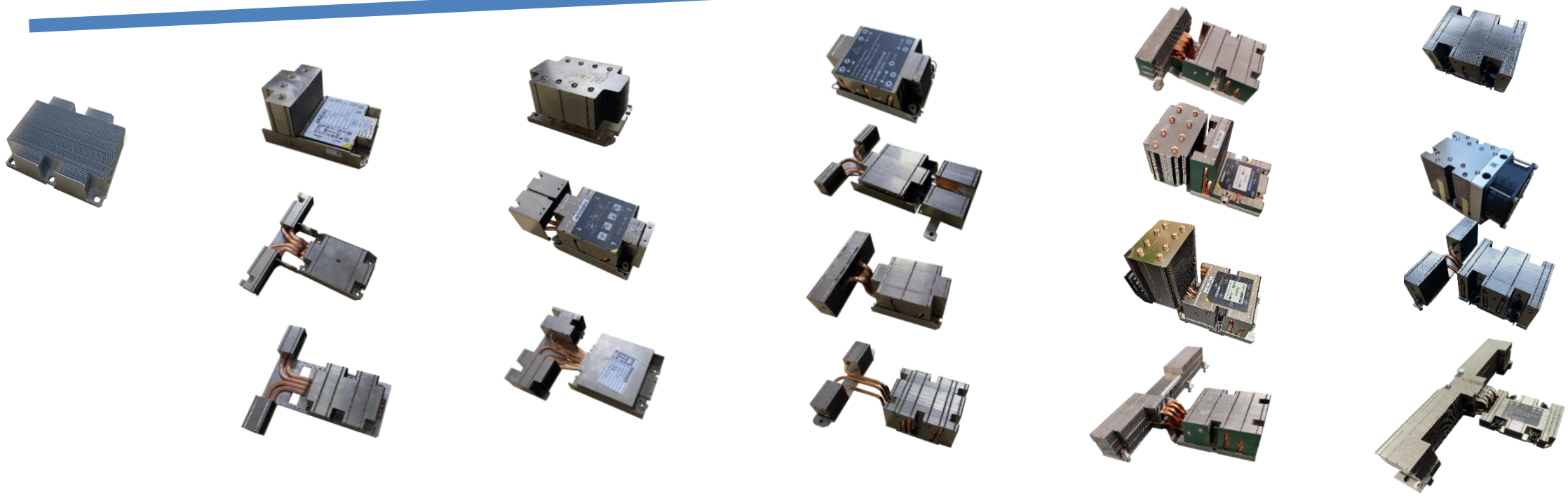


Liquid-cooled



Air Cooled Heat Sinks Product Lineup

200W 270W 300W 350W 500W >500W



Product Features:
Based on aluminum extrusion and 1U soldering module

Product Features:
Based on L-shaped, 1U EVAC soldering module

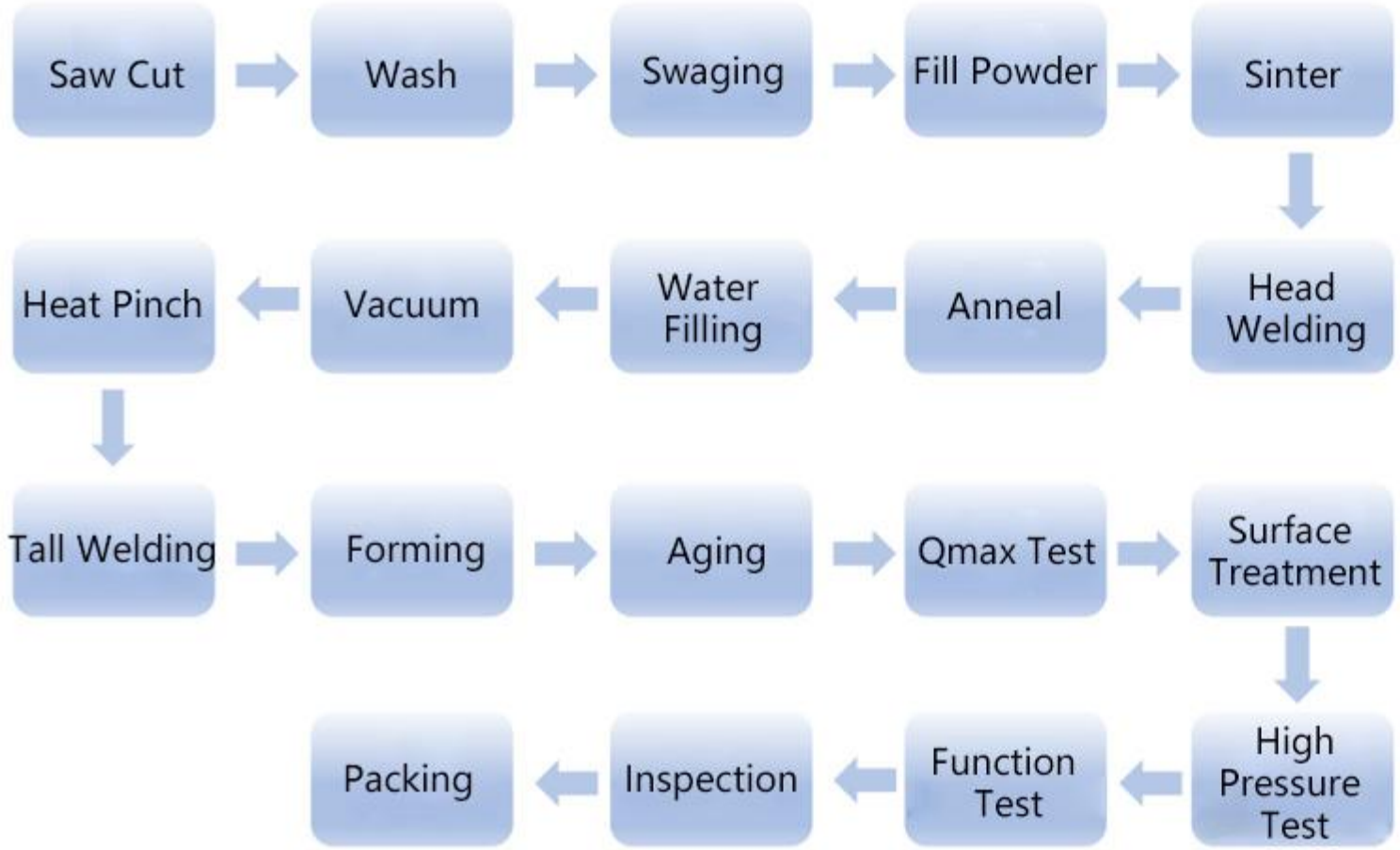
Product Features:
Featuring 1.5U EVAC, 2U, 2U EVAC soldering modules

Product Features:
Based on 2U, 1.5U EVAC, 2U EVAC soldering module

Product Features:
Mainly roller tube 2U EVAC, 3U EVAC

Product Features:
Roller tube 2U EVAC, 3D VC, AP platform soldering modules mainly

Heat Pipe Processes / Procedures



开模的参考数据—平模散热器

Tooling reference date---

Flat heat sink

宽度 Width	高度 Height	齿距 Distance	齿厚 Fin thickness	平面度Flatness	底板厚度Base thickness	模具寿命Tooling life
10-20	12-16	1.4-1.6	齿尖(Tip) 0.5齿根(Root) 0.7	0.05-0.08	2	约(about)2000m
20-35	15-25	1.7-2.0	齿尖(Tip) 0.5齿根(Root) 0.8	0.08-0.1	2	约(about)2000m
35-50	20-30	1.8-2.3	齿尖(Tip) 0.6齿根(Root) 0.9	0.1-0.12	2.3	约(about)2000m
45-60	25-35	2.0-2.6	齿尖(Tip) 0.7齿根(Root) 1.1	0.1-0.15	2.2-2.8	约(about)3~4T
60-80	25-40	2.0-3.0	齿尖(Tip) 0.8齿根(Root) 1.2	0.12-0.18	2.4-3.0	约(about)3~4T
80-100	25-45	2.4-3.2	齿尖(Tip) 0.8齿根(Root) 1.3	0.15-0.2	2.6-3.2	约(about)4~5T
100-125	25-50	2.6-3.4	齿尖(Tip) 0.9齿根(Root) 1.4	0.18-0.25	2.7-3.5	约(about)4~5T
125-150	25-60	2.7-3.6	齿尖(Tip) 1.0齿根(Root) 1.5	0.2-0.3	3.0-4.0	约(about)5~6T
150-165	25-35	2.8-4.0	齿尖(Tip) 1.2齿根(Root) 1.6	0.3-0.4	4.0-6.0	约(about)6~7T

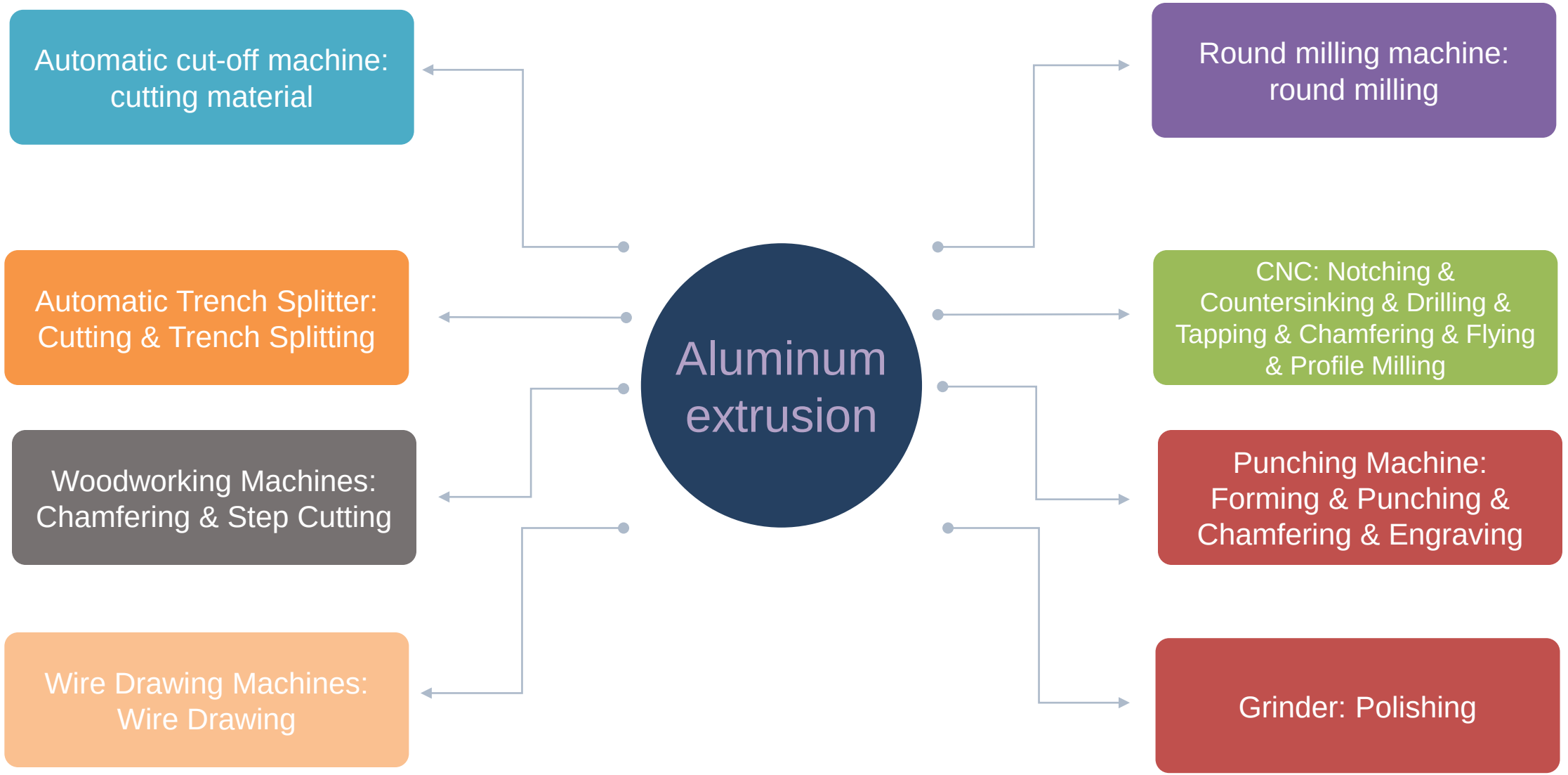
开模的参考数据—圆弧散热器

Tooling reference date---

round heat sink

外径 Outer diameter	实心大小 Size	齿距 Distance	齿厚 Fin thickness	挤压速度(米/分) Extrusion speed(M/min)	棒温 Aluminum temperature	模温 Tooling temperature	模具寿命 Tooling life
50	18-20	1.6-1.8	齿尖(Tip) 0.5齿根(Root) 0.7	3	470-500	450-480	约(about)3~4T
60	22-25	1.7-2.0	齿尖(Tip) 0.6齿根(Root) 0.8	2.7	470-500	450-480	约(about)3~4T
70	25-30	1.8-2.2	齿尖(Tip) 0.6齿根(Root) 0.9	2.5	470-500	450-480	约(about)4~5T
80	28-35	1.9-2.4	齿尖(Tip) 0.7齿根(Root) 1.0	2.2	480-510	450-480	约(about)5~6T
90	35-42	2.0-2.8	齿尖(Tip) 0.8齿根(Root) 1.1	2	480-510	450-480	约(about)6~7T
95	35-44	2.2-2.9	齿尖(Tip) 0.9齿根(Root) 1.2	1.8	480-510	450-480	约(about)6~7T
100	35-48	2.4-3.1	齿尖(Tip) 1.0齿根(Root) 1.3	1.7	480-510	450-480	约(about)6~7T
110	35-52	2.6-3.3	齿尖(Tip) 1.1齿根(Root) 1.4	1.6	480-510	450-480	约(about)6~7T
120	35-54	3.0-3.5	齿尖(Tip) 1.2齿根(Root) 1.5	1.5	480-510	450-480	约(about)6~7T

Aluminum extrusion process



	¢4	¢5	¢6	¢8
80-100 [MM]	28	40	50	60
101-120 [MM]	35	50	65	73
121-150 [MM]	40	57	72	90
151-180 [MM]	37	52	65	80
181-220 [MM]	32	46	57	70
221-270 [MM]	28	40	50	60
271-320 [MM]	22	32	42	50
321-380 [MM]	15	22	30	35

折弯 bends	1	2	3	4	5	6	above6
Loss rate	-5%	-10%	-15%	-20%	-25%	-30%	-30%

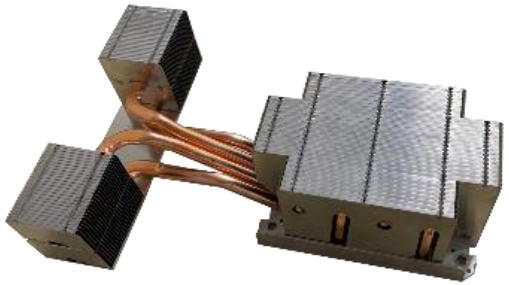
打扁 Thickness	2.0-2.2	2.3-2.7	2.8-3.2	3.3-3.7	3.8-4.2	4.3-4.7	above4.8
Loss rate	-40%	-30%	-20%	-15%	-10%	-5%	0%

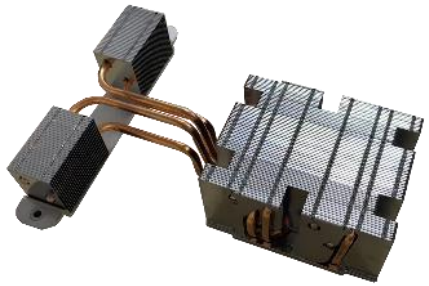
Welding Processes/Procedures

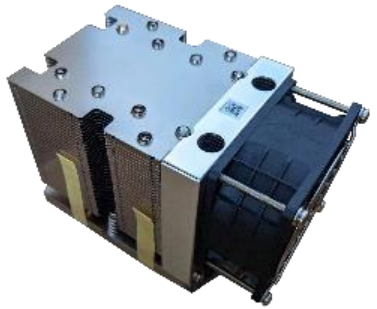
Reflow soldering: The part of the heat sink fins and heat pipes that are in contact with each other are soldered together with solder paste.

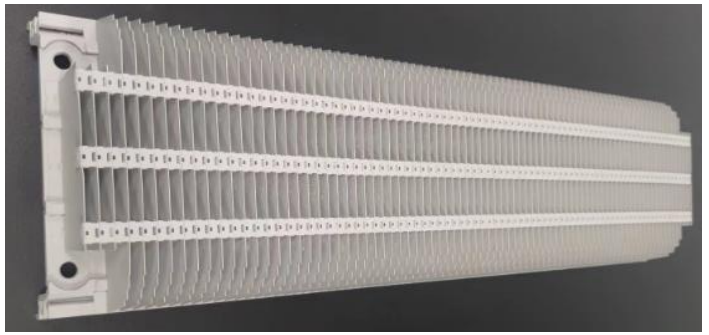
Currently used solder: solder paste (high, medium and low temperature paste) / aluminum paste

Low temperature solder paste melting point： 138 ℃
Medium temperature solder paste melting point： 160 ~ 170 ℃
High temperature solder paste melting point: 210 ℃
Melting point of aluminum paste: 138 ℃









LED - Stage Lighting

Program Information:

Thermal power consumption: 100W

Ambient temperature: 40℃

Require lamp board temperature below 85℃

natural air cooling

Thermal resistance: <0.45℃/w

Simulation Results:

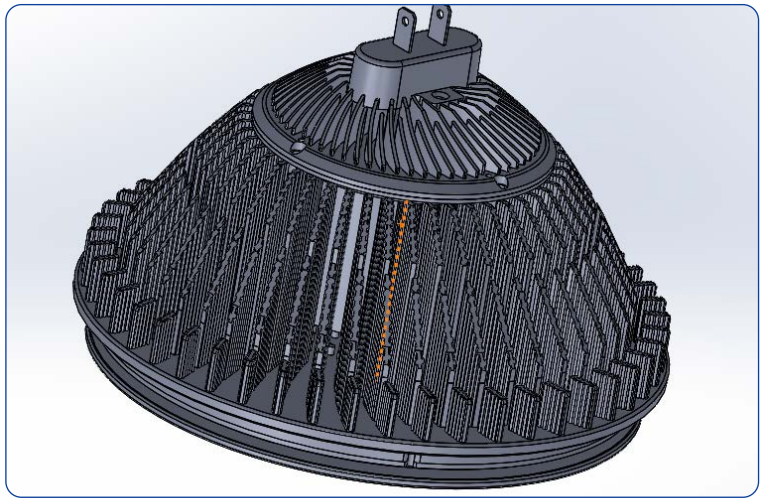
Simulation results show:

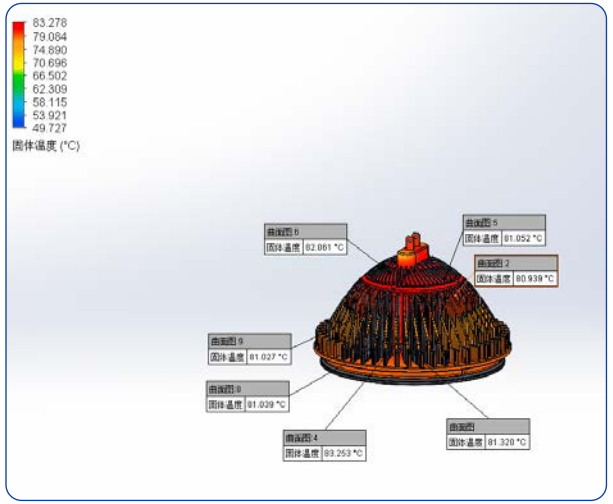
In a constant temperature 40℃ environment

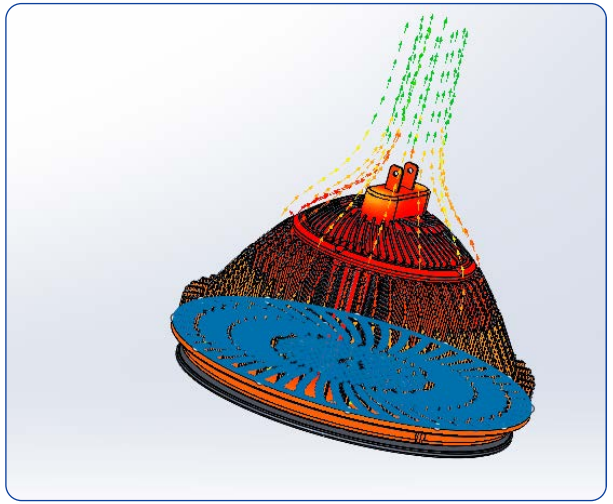
The maximum temperature of the lamp board is 83.277℃

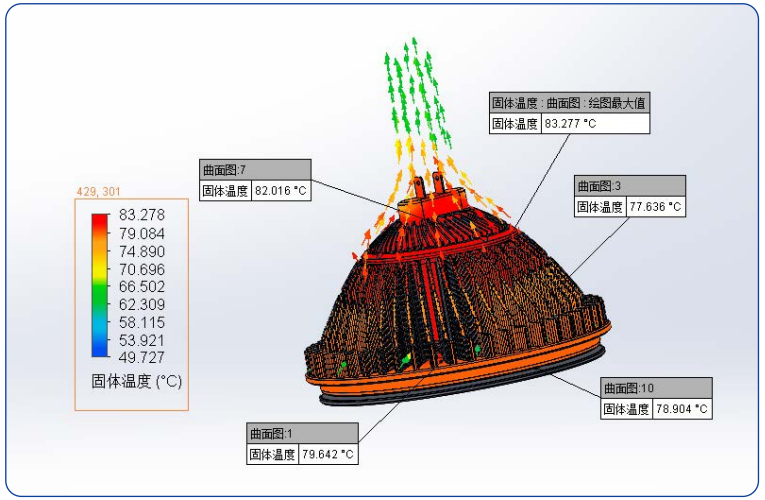
Temperature rise 43.27℃

Thermal resistance value 0.432℃/W









LED - Handheld Fill light Bar

Program Information:

Thermal power consumption: 50W

Ambient temperature: 25℃

Require lamp board temperature below 75℃

Air volume: 16cfm

Wind pressure: 1.3mmH2O

Thermal resistance: <1℃/w

Simulation Results:

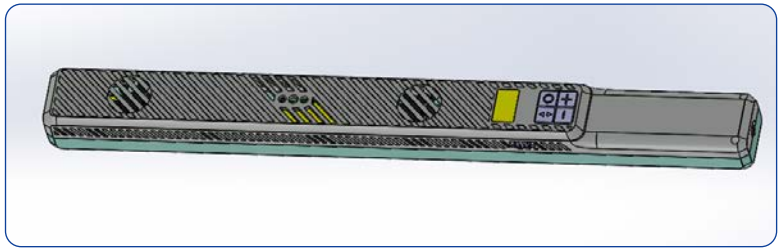
Simulation results show:

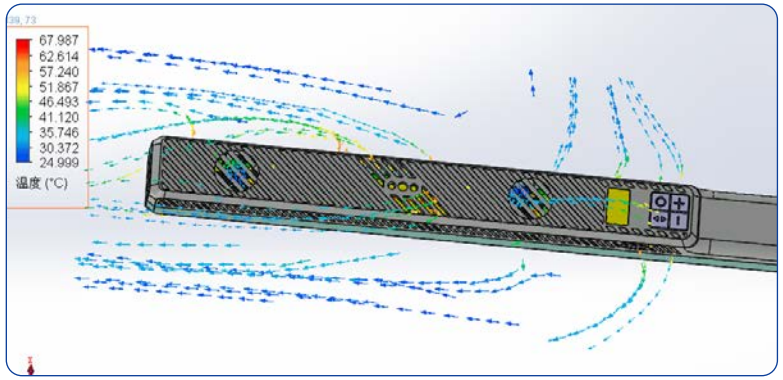
In a constant temperature 25℃ environment

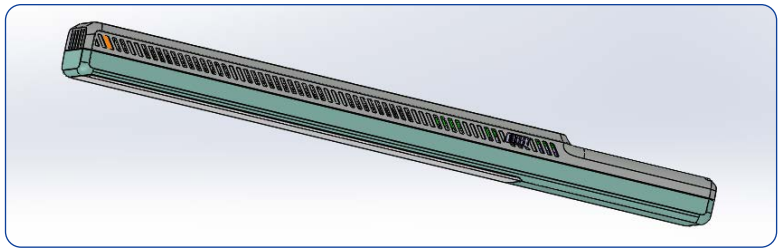
The maximum temperature of the lamp board is 73.384℃

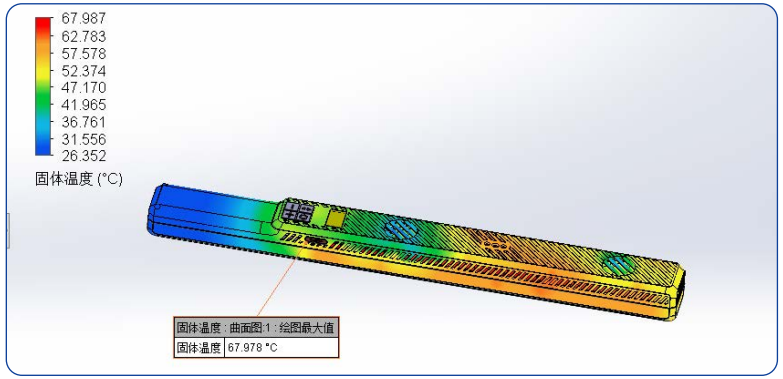
Temperature rise 42.374℃

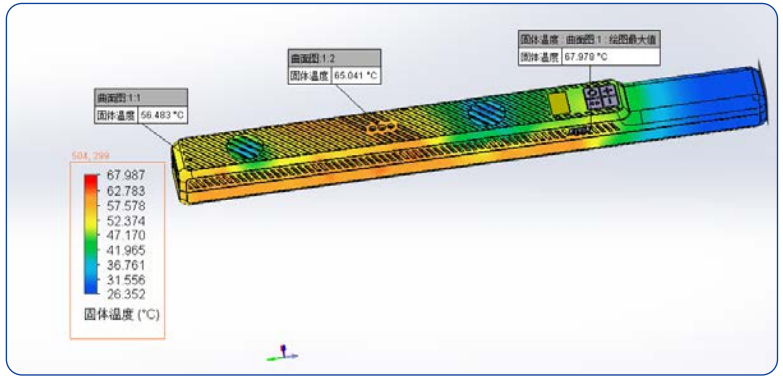
Thermal resistance value 0.859℃/W











LED - Photography Light

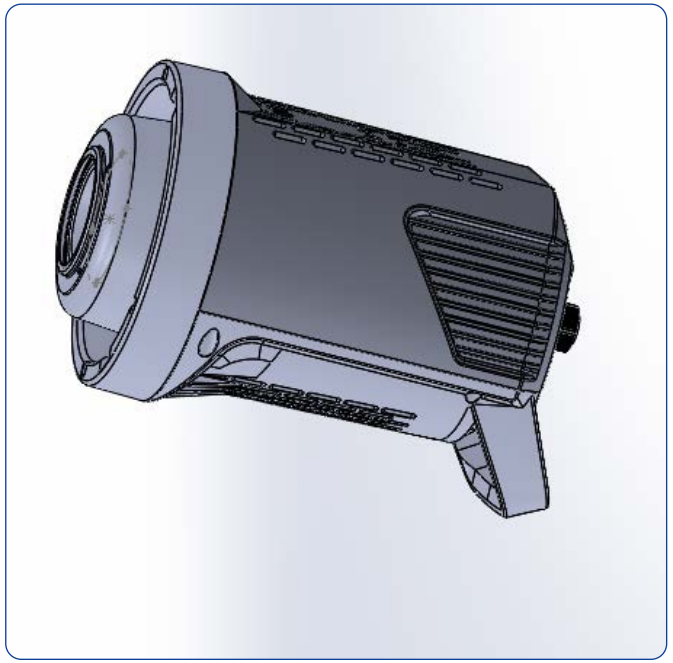
Customer Requirements:

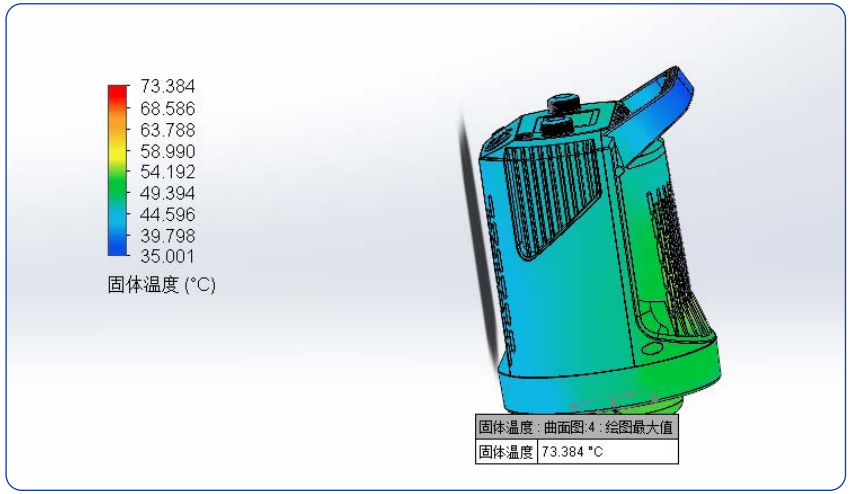
Diameter: 59.5mm

Material: Substrate 1 Series Aluminum Substrate

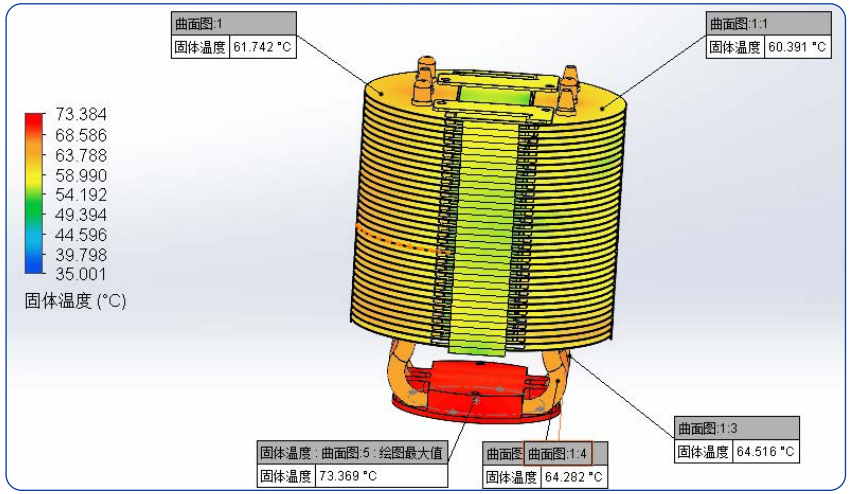
Thermal power consumption: 220W

Ambient temperature: 35°C





The hottest point of the whole equipment is the center point of the lamp board, the highest temperature 73.384℃.



Customer Requirements:

The simulation results show that

Under the environment of Huan temperature: 35℃

The maximum temperature of the lamp board is: 73.384℃

Temperature rise: 38.374℃

Thermal resistance value: 0.174℃/W

LED - Photography Light

Program Information:

Thermal power consumption: 600W

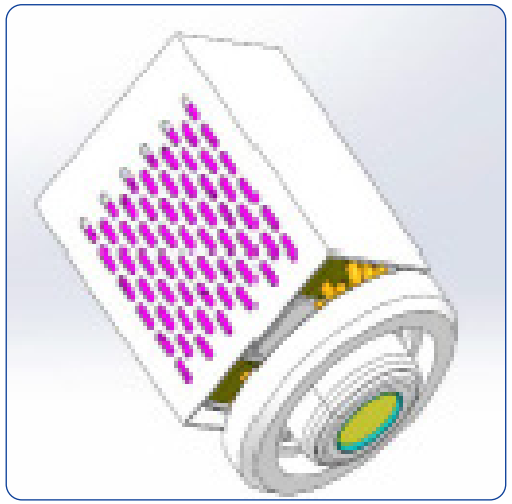
Ambient temperature: 35℃

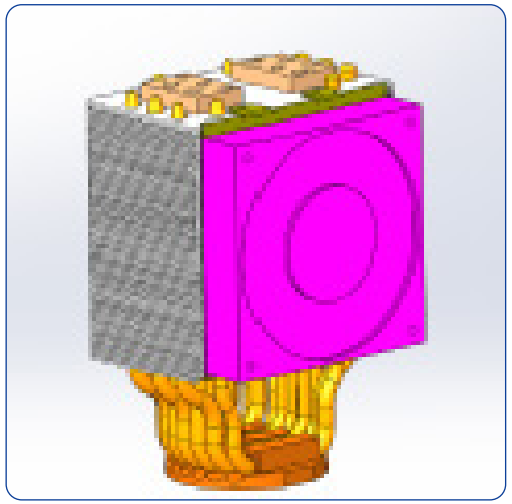
Required lamp board temperature below 75℃

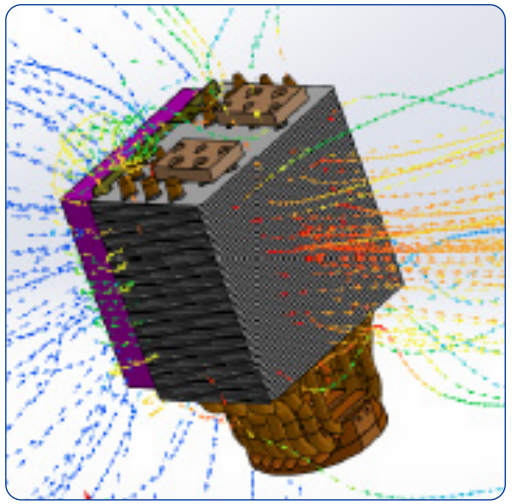
Air volume: 72cfm

Wind pressure: 28.5pa

Thermal resistance: <0.07℃/w







Simulation Results:

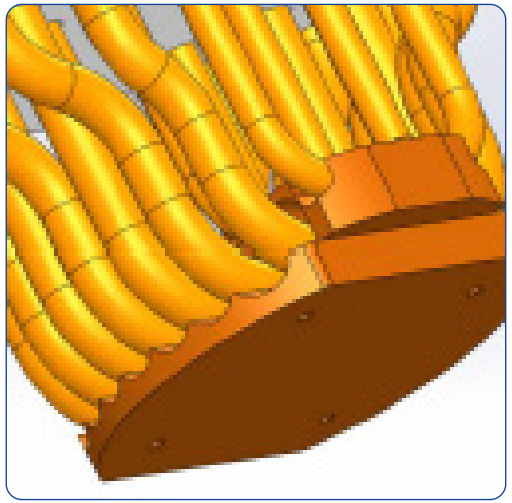
Simulation results show:

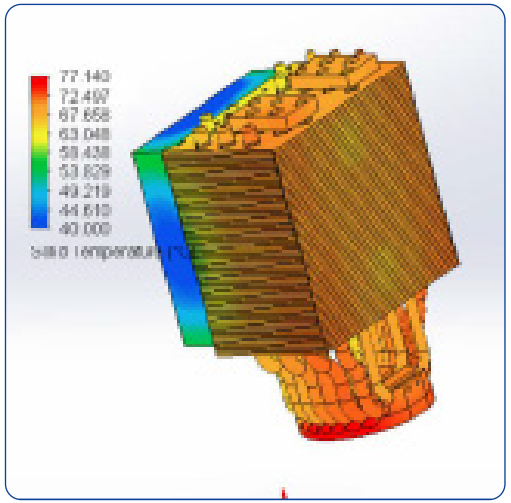
In a constant temperature 35℃ environment

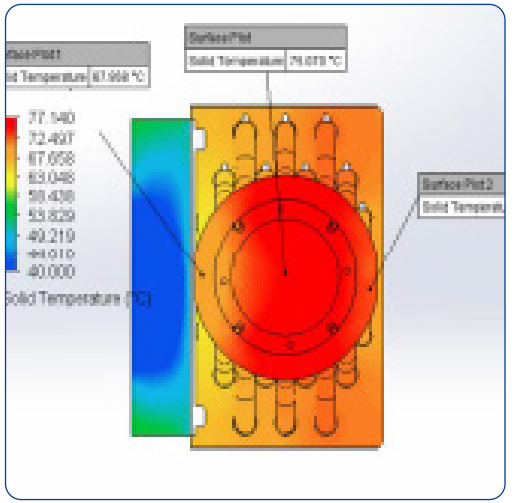
The maximum temperature of the lamp board is 77.14℃

Temperature rise 42.14℃

Thermal resistance value 0.08℃/W







Netcom / Consume - 4U Switch

Customer Requirements:

Power: 530W

flow: 150cfm

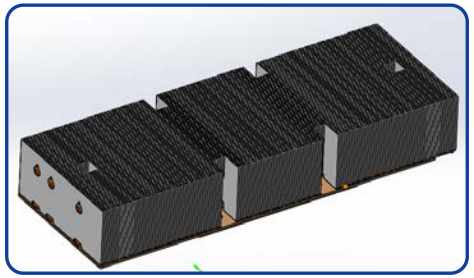
R<0.3℃/W

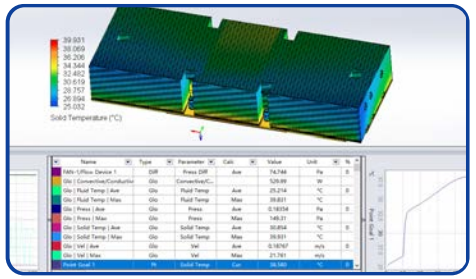
Design Option 1:

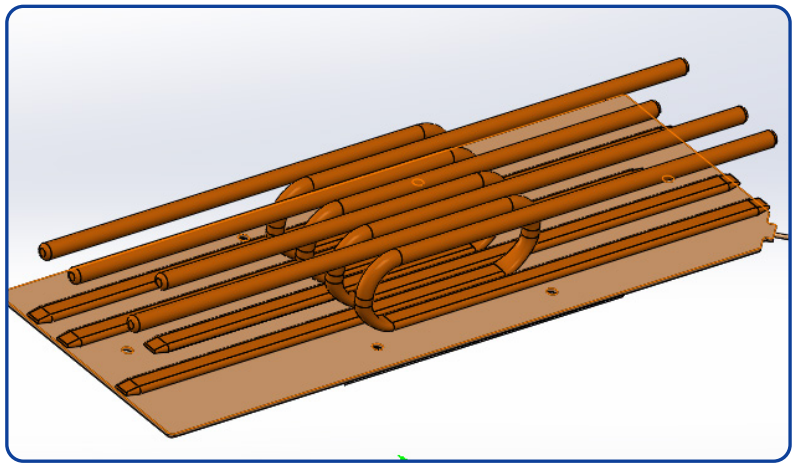
VC+8pcs φ8 heat pipes

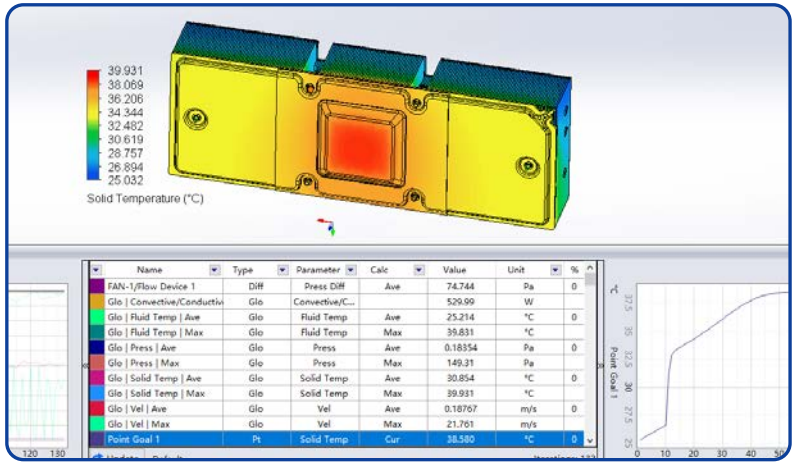
Simulation Results:

Simulation of the center temperature of the upper surface of the heating block is 38.58 degrees thermal resistance of 0.0256 ℃ / W, to meet customer requirements







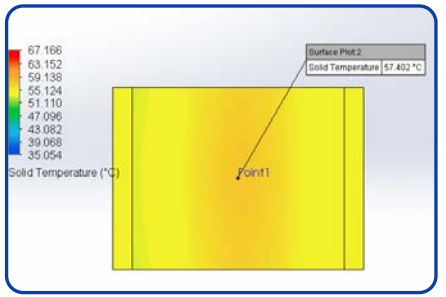


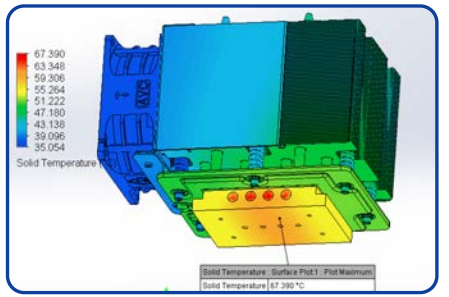
Program Information:

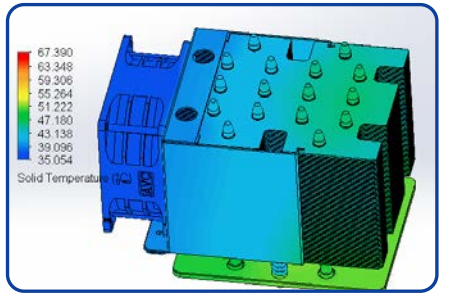
Heat sink with 8038 fan and simulation of the heat block simulation results, Ambient temperature:35 ℃, power:500w

Heat Sink Description and Simulation Results					
Radiator Optimized Structural Parameters mm			Monitoring Point	Fan Work Point Units Consistent With The PQ Curve)	
HS Height	Fin Pitch	Fin Thickness	Tc(℃)	Airflow cfm	Wind Pressure Inh20
105.9	1.2	0.3	57.40	111.4	0.993

3. Test condition			Heatsink Vendor	TUNG YU ELECTRONIC CO.,LTD.			
			Clip Force (lbf)				
			CPU	500W			
			Motherboard	***			
			Test envirnment	open system			
			Ambient Temp (℃)	T4			
			Ambient Humidity (RH)	50%			
			flow(cfm)				
			Heatsink grease	\			
Test Result							
Item	flow (cfm)	ΔP (mm-Aq)	T2(℃)	T4(℃)	DT2 (℃)	Power(w)	Rca(℃/W)
1			46.7	23.5	23.2	500.000	0.0464
2			47.4	22.2	25.2	500.000	0.0504
3			45.6	22.8	22.8	500.000	0.0456
4			46.3	23.4	22.9	500.000	0.0458
5			45.4	22.8	22.6	500.000	0.0452
6			47.1	22.8	24.3	500.000	0.0486
7			47.4	23.1	24.2	500.000	0.0484
8			47.2	22.4	24.8	500.000	0.0496
9			46.9	22.6	24.3	500.000	0.0486
10			45.2	22.8	22.4	500.000	0.0448





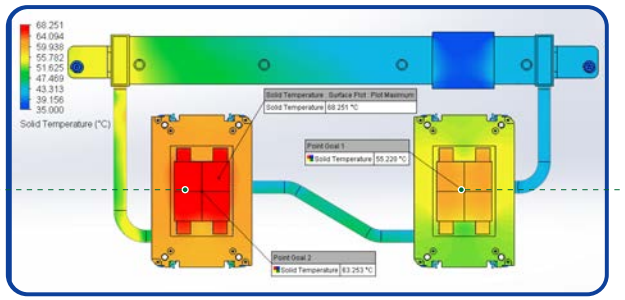


PC / Server - Integrated Liquid-Cooling Project

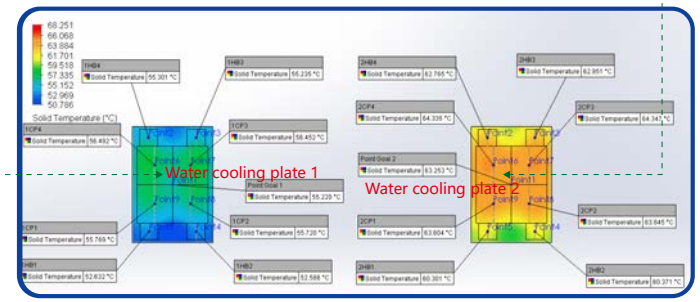
Flow: 0.693L/min

Ambient temperature: 35℃

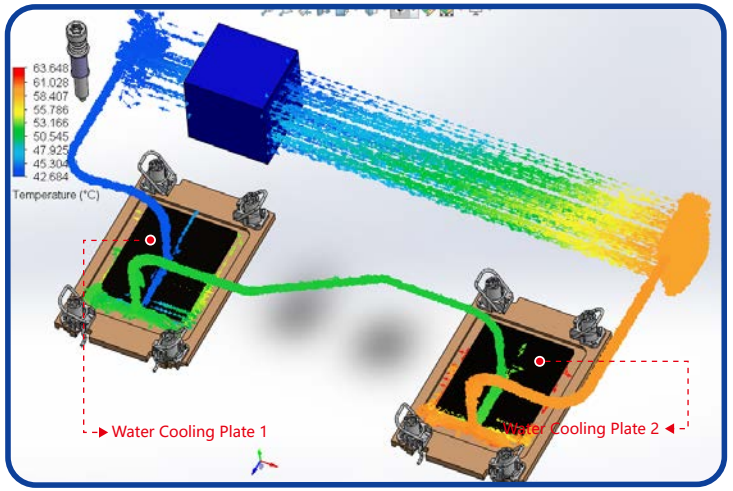
Power: 350w

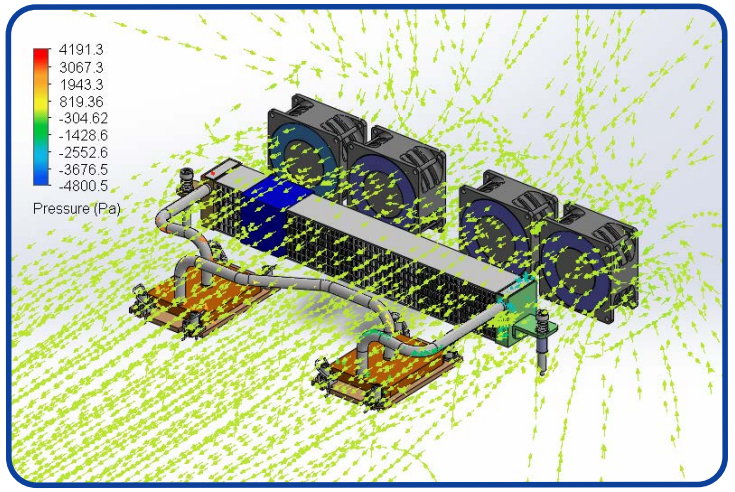


Temperature cloud of the water cooling board and the corresponding chip, the highest temperature of the chip is 68.2 degrees.



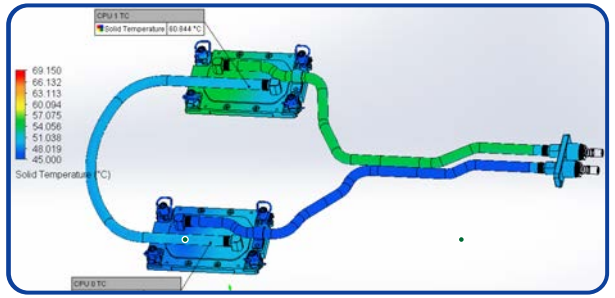
Temperature cloud of the water cooling board and the corresponding chip, Tc CPU1 is 55.22 degrees



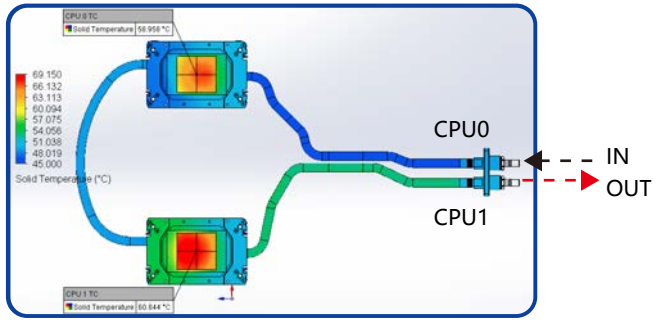


IN OUT R	Diff	Fluid Temp...	Ave	-7.8501	°C	✓
IN OUT L	Diff	Fluid Temp...	Ave	-8.2362	°C	✓
IN OUT LP	Diff	Fluid Temp...	Ave	-15.904	°C	✓
IN OUT R	Diff	Press Diff	Ave	1698.2	Pa	✓
IN OUT LP	Diff	Press Diff	Ave	5012.4	Pa	✓
IN OUT L	Diff	Press Diff	Ave	1698.3	Pa	✓
PUMP IN OUT	Diff	Press Diff	Ave	-8719.6	Pa	✓
FAN-HGD1-JY-1/Flow Devic	Diff	Press Diff	Ave	-172.57	Pa	✓
FAN-HGD1-JY-1/Flow Devic	Diff	Press Diff	Ave	-140.45	Pa	✓
FAN-HGD1-JY-1/Flow Devic	Diff	Press Diff	Ave	-62.142	Pa	✓

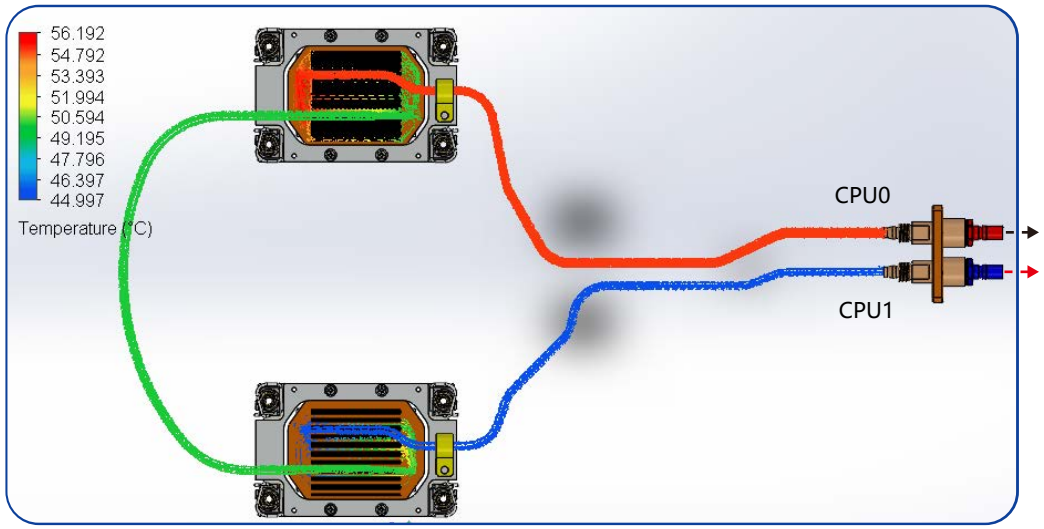
Flow1L/min



Temperature cloud of the water cooling board and the corresponding chip, the highest temperature of the chip is 69.15 degrees.



The temperature cloud of the water cooling board and the corresponding chip is 58.95 degrees for Tc CPU0 and 60.84 degrees for Tc CPU1.



Simulation Results:

Total water temperature difference: 10.05℃

Temperature difference between water cooling Plate 0 and water inlet/outlet: 5.068℃

Temperature difference between water cooling Plate 1 and inlet/outlet water: 5.052℃

Total pressure drop: 9.52KPa (excluding pressure loss of quick coupling)

Pressure drop of water cooling plate 0 inlet and Outlet water: 2.47KPa

Pressure drop of water cooling plate 1 inlet and Outlet water: 5.78KPa

Name	Type	Para...	Calc	Value	Unit	%
IN OUT	Diff	Fluid Te...	Ave	10.057	°C	✓
CPU 0 IN OUT	Diff	Fluid Te...	Ave	5.0686	°C	✓
CPU 1 IN OUT	Diff	Fluid Te...	Ave	-5.0529	°C	✓
CPU 1 IN OUT	Diff	Press Diff	Ave	5780.9	Pa	✓
IN OUT	Diff	Press Diff	Ave	-9520.0	Pa	✓
CPU 0 IN OUT	Diff	Press Diff	Ave	-2470.9	Pa	✓

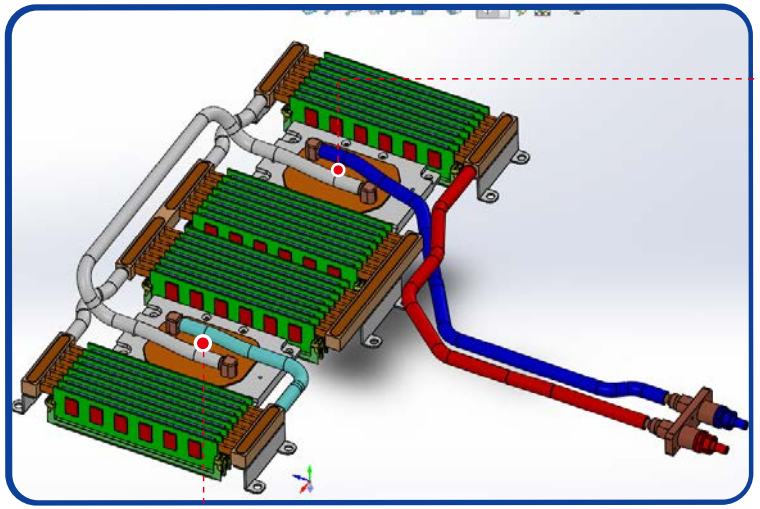
PC / Server - Whitely Platform Cooling Project

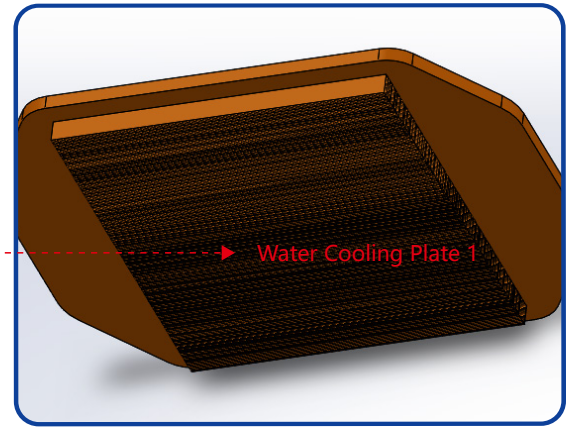
Project Information:

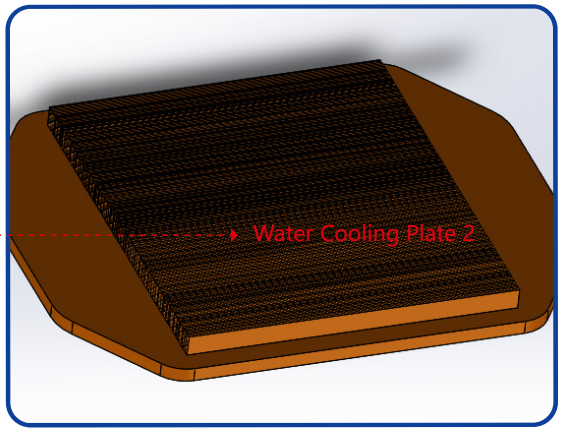
Power：280W
Ambient temperature：35 degrees
individual memory stick power：8W
liquid pure water, into the liquid water temperature：50 degrees
Tc less than 60：degrees. tcpu1-tcpu0 <3 degrees.

Product Information:

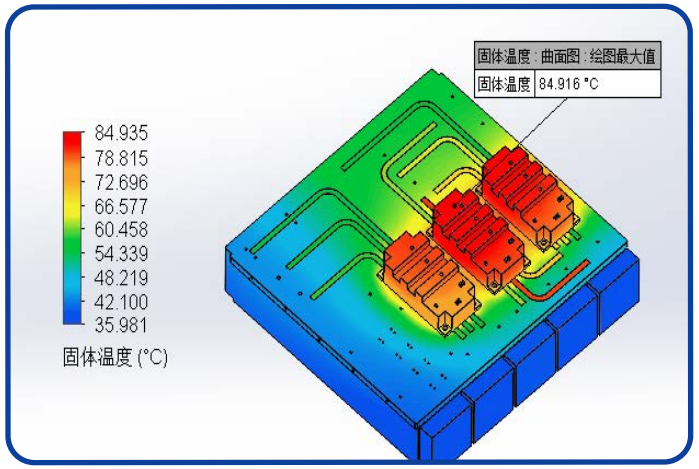
Water-cooled plate heat exchanger fin: material pure copper
Thickness of water-cooled plate heat exchanger fin 0.15mm
Gap 0.15mm
Height 3mm
Tooth length 47.56mm
Total number of chips 178
(Simulation model ignores chip thermal resistance Rjc)

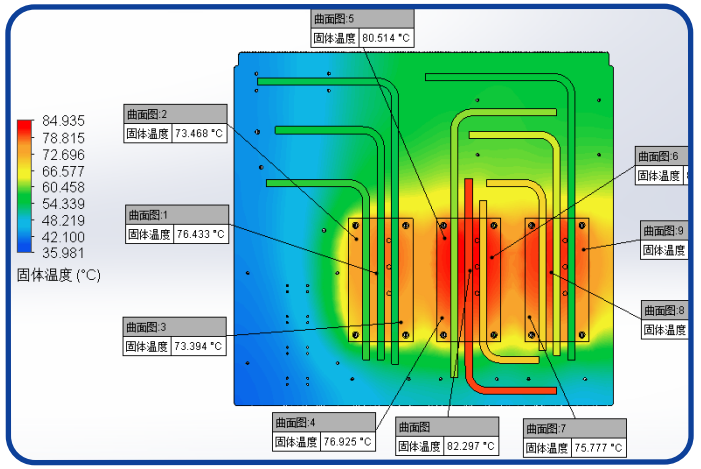


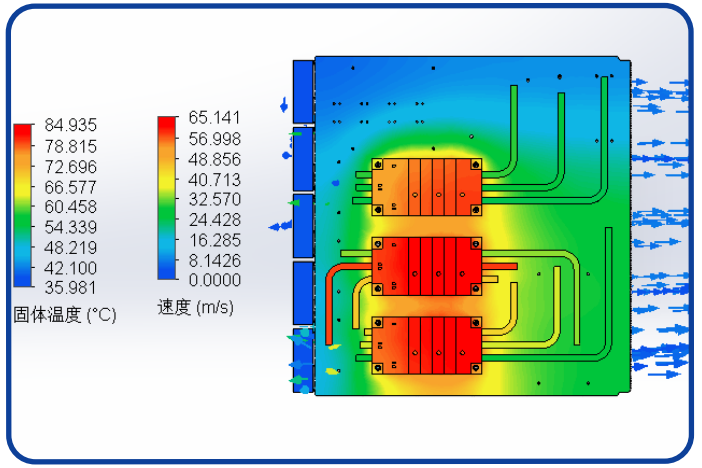


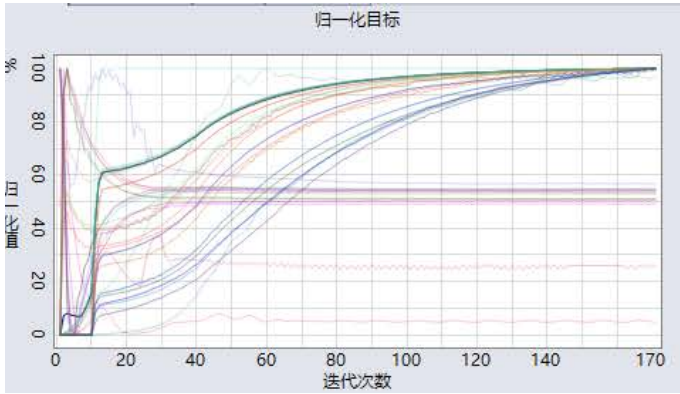


IGBT and the corresponding chip temperature cloud diagram, the maximum temperature of the chip is 83.916 degrees, can meet the requirements of less than 90 degrees



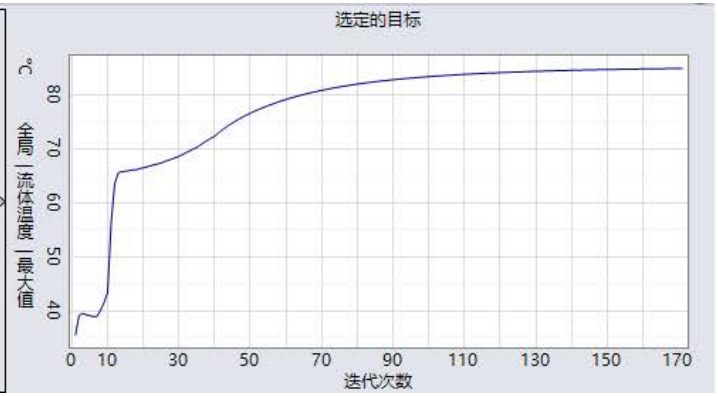






名称	类型	参数	计算	值	单位	%
全局 | 对流/传导传热速率	全局	对流/传导...		2100.0	W	
全局 | 固体温度 | 平均值	全局	固体温度	平均值	55.396	°C	47
全局 | 固体温度 | 最大值	全局	固体温度	最大值	84.935	°C	
全局 | 流体温度 | 平均值	全局	流体温度	平均值	35.891	°C	19
全局 | 流体温度 | 最大值	全局	流体温度	最大值	84.934	°C	
全局 | 速度 | 平均值	全局	速度	平均值	0.73269	m/s	✓
全局 | 速度 | 最大值	全局	速度	最大值	87.410	m/s	
全局 | 压力 | 平均值	全局	压力	平均值	-22.176	Pa	✓
全局 | 压力 | 最大值	全局	压力	最大值	2939.3	Pa	
___-___5-1	体积	固体温度	平均值	80.301	°C	✓

更新 Default 迭代次数: 171



Project Information:

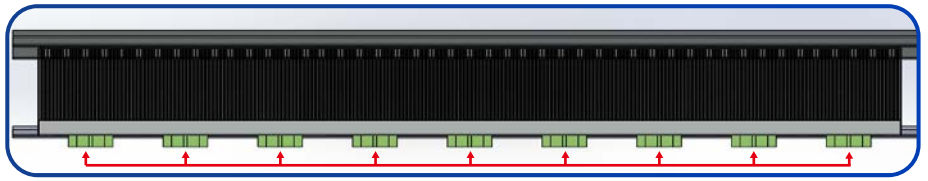
Fin change to 0.8*1.6mm total 499 pcs

Place Φ 8 heatpipe ,total 45 pcs

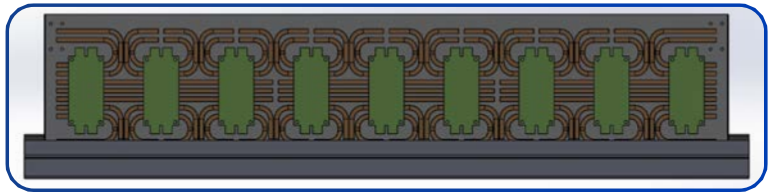
power of 9 pcs IGBT are 636w each

Ambient temperature： 45 degrees,

IGBT TC < 30 degrees

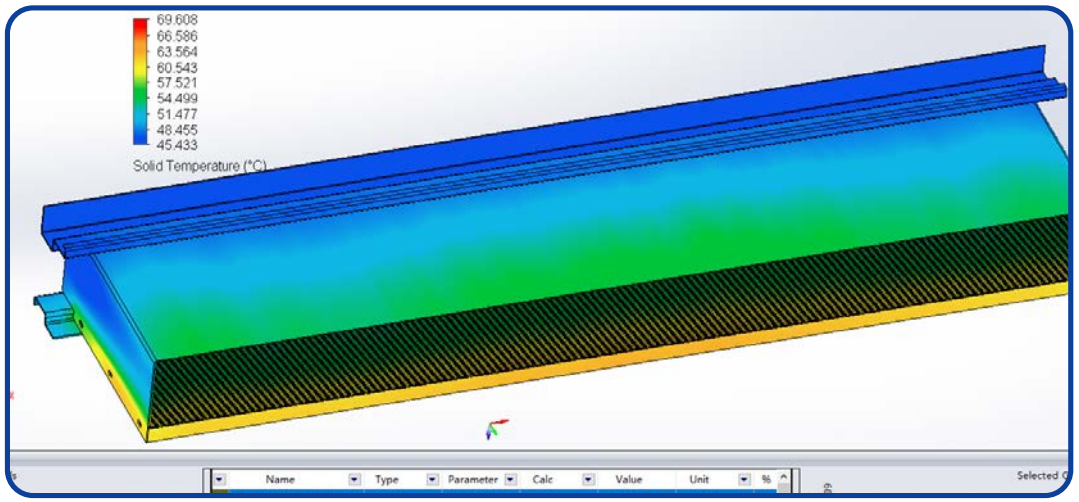


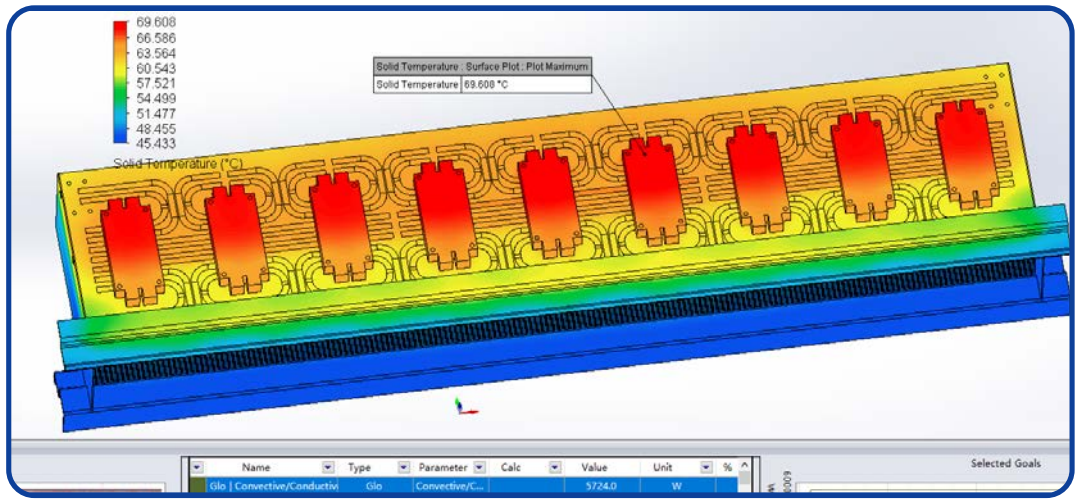
All IGBT heat source surfaces are located on this surface



Because of the spade tooth design, the radiator material is set to AL1060, not AL6061, and the rest of the material is the same as the model.

Add 0.1mm thickness thermal paste between IGBT and heat sink, thermal conductivity 5.2W/mk





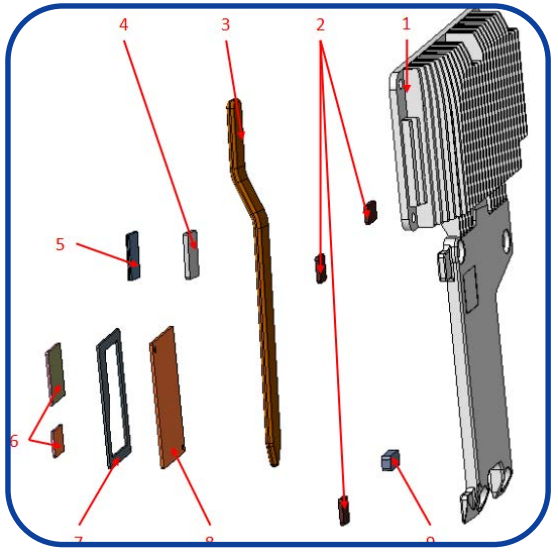
Temperature cloud of water cooling plate and chip, Highest temperature of the chip is about 69.6 degrees， TC is 24.6 degrees can meet the requirements of TC less than 30 degrees.

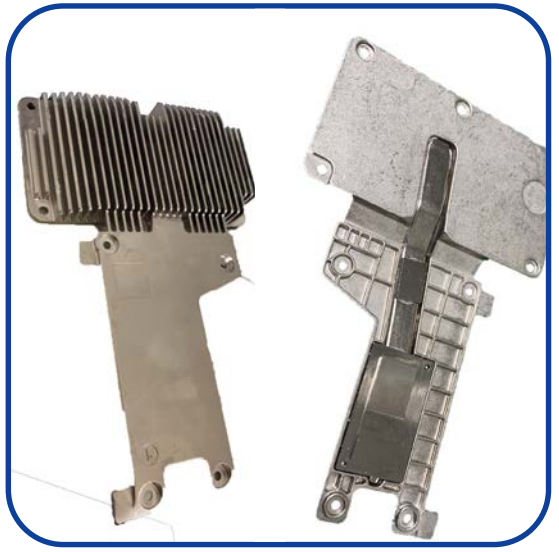
Vehical - Central Controller Heatsink

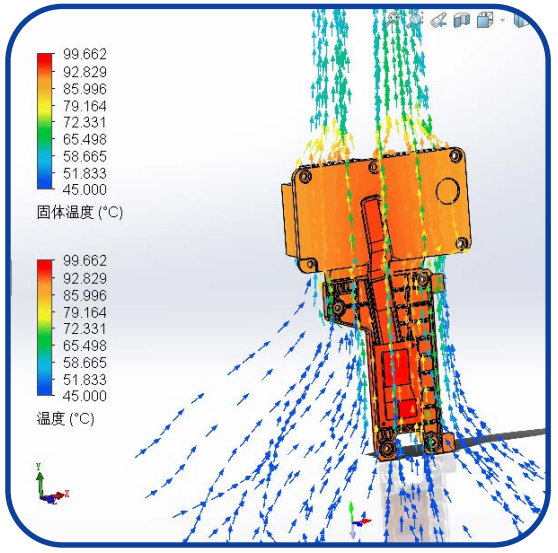
Design Points (Design Solution for 1 Heat Pipe):

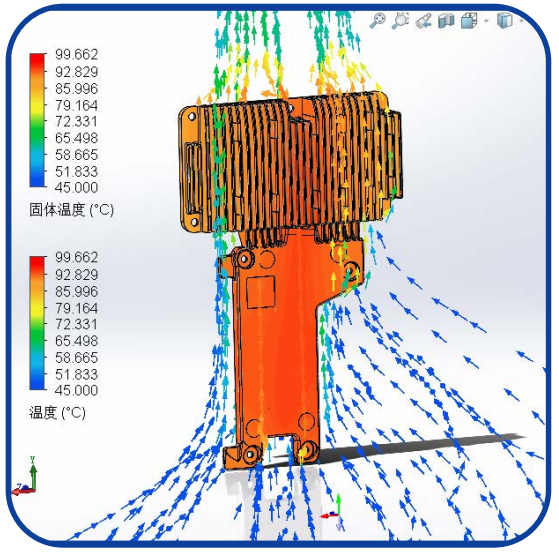
Die-cast aluminum base plate (ENAC44300) + intermediate copper base plate (C1100) + heat pipe (Φ6)

The center control radiator has high requirements for functionality and stability, the radiator has four types of a total of six conductive foam and the materials used need to be able to salt spray resistance is high.









Vehical - Battery Pack Thermal Design

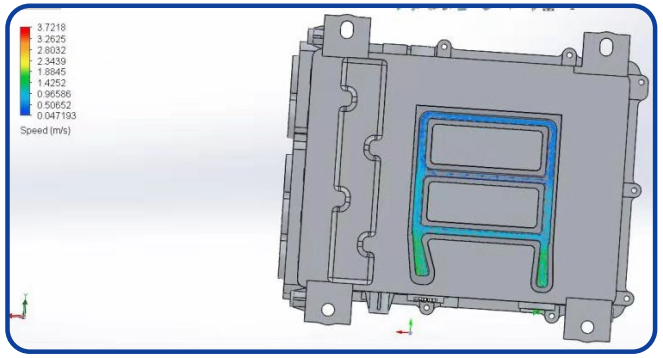
Customer Requirements:

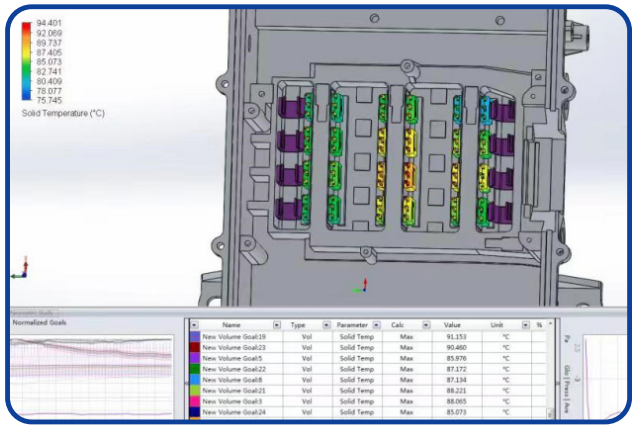
Ambient temperature：60 ℃

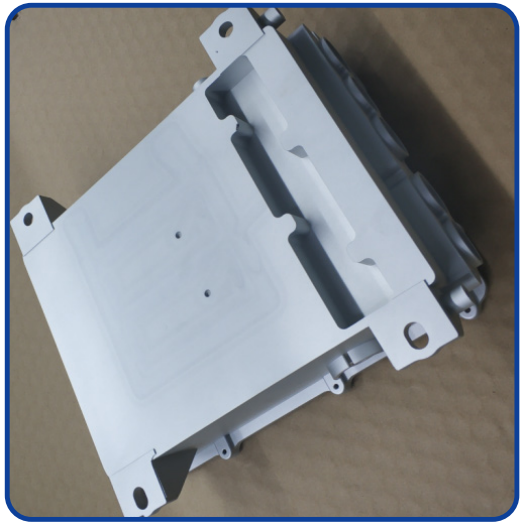
Power：360W need to reduce to：90 ℃

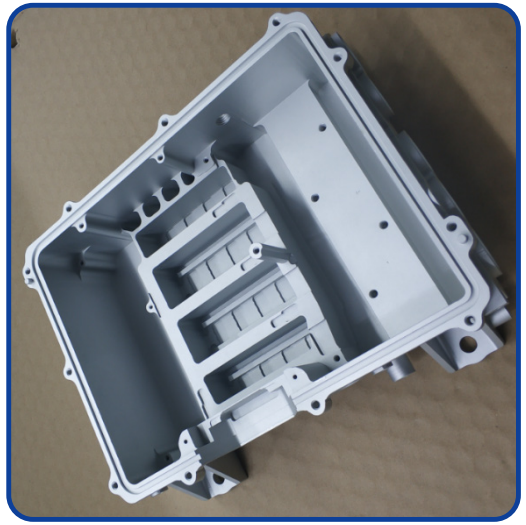
Design Program:

Die casting +CNC+ friction stir welding channel









05 Our Partner

Netcom / Consumer Electronics / LED

浩洋股份 GOLDENSEA

Terbly Professional Lighting

AYRTON Light in action

Aputure 爱图仕

JINBEI

ACME

DLW DREAM LIGHT Workshop

FURUKAWA ELECTRIC GROUP 古河電工

FOXCONN 鴻海科技集團

ASUS

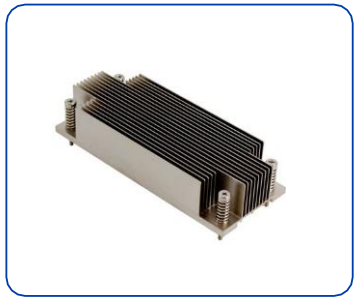
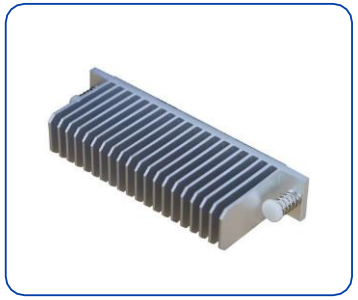
HUAWEI

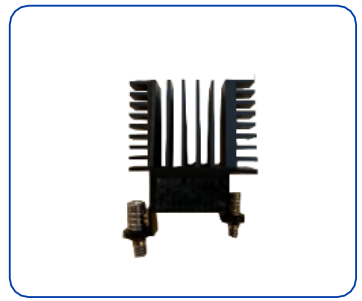
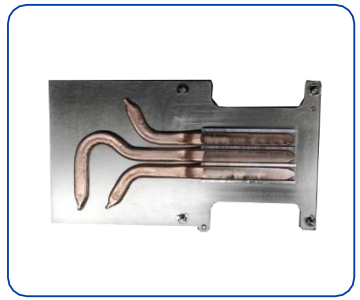
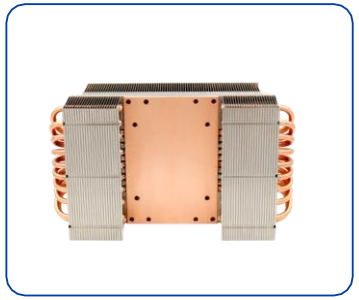
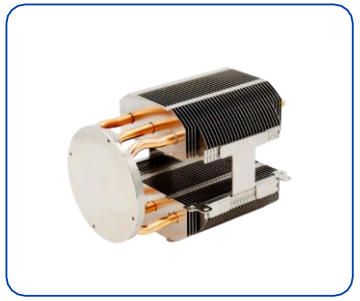
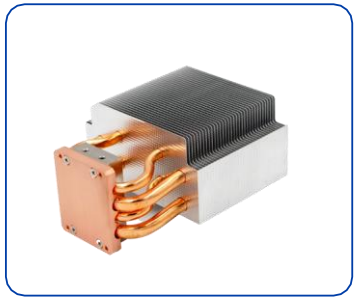
USI

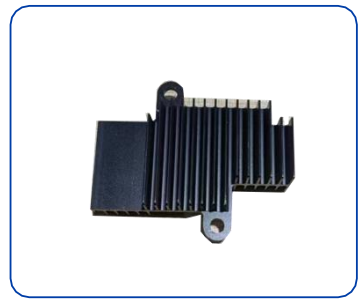
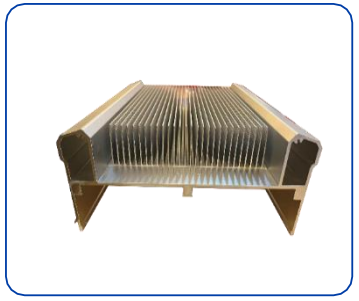
LG

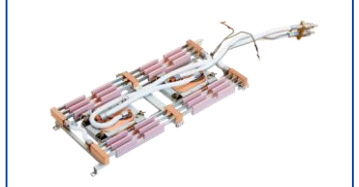
GREE 格力

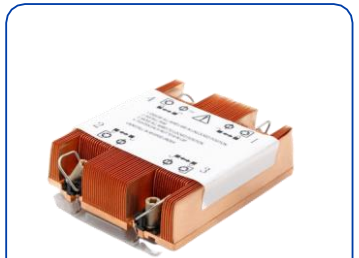
Midea 美的





Energy / Photovoltaic

HUAWEI

i-brights 中国航发·阳天电子

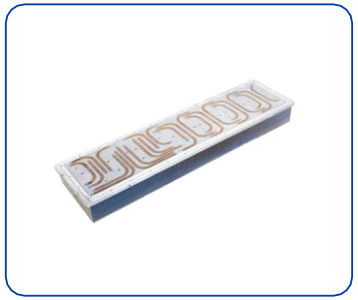
大族激光 HAN'S LASER

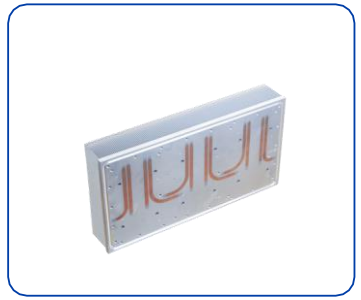
bodor 邦德激光

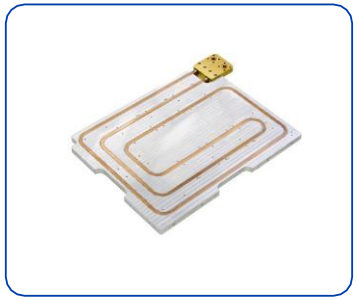
锦浪科技 GINLONG

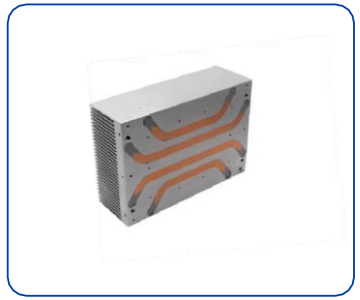
SUNGROW 阳光电源

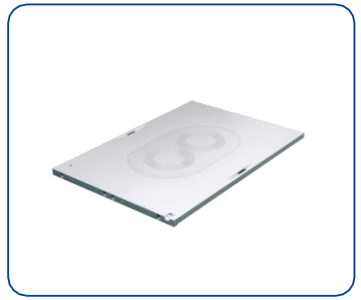
KSTAR 科士达

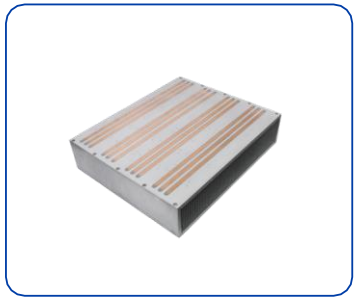


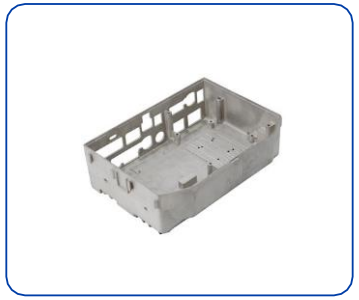


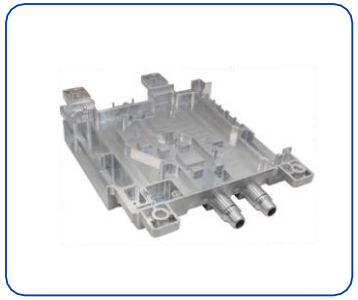


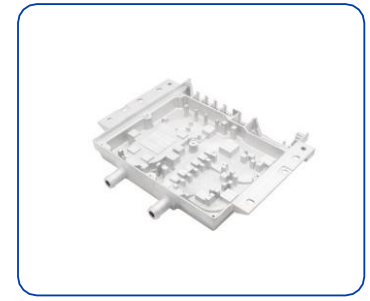
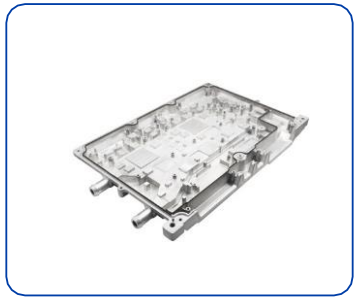


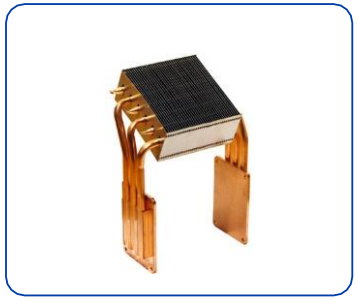









同裕科技
TONGYU TECHNOLOGY

THANKS!

Tel：+86-769-26626558

Web: www.tongyucooler.com

Email: info@tongyu-group.com

Add: No. 5, Chuangye Road, Dongkeng Village, Dongkeng Town,
Dongguan City, Guangdong Province, 523800, China.

GLOBAL THERMAL SOLUTIONS PROVIDER AND SUPPLIER