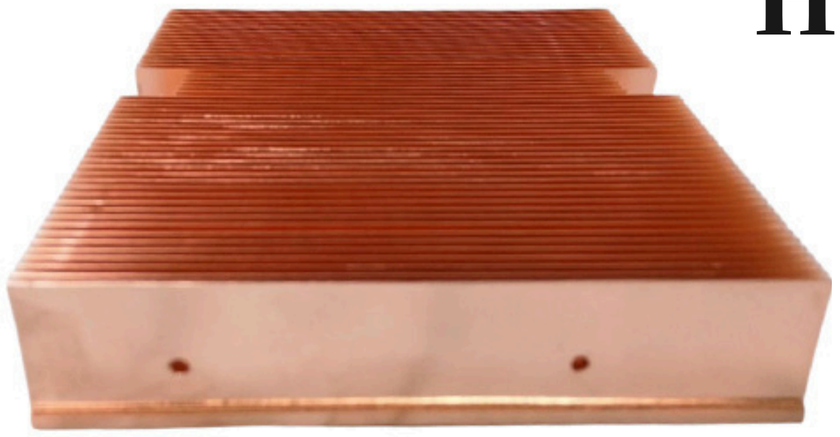
Walmate®

SKIVED FIN HEATSINK



High-Density Fins
Monolithic Structure
Flexible Customization

ONE-STOP SOLUTION PARTNER FOR
THERMAL MANAGEMENT AND ENERGY STORAGE PRODUCTS

WALMATE

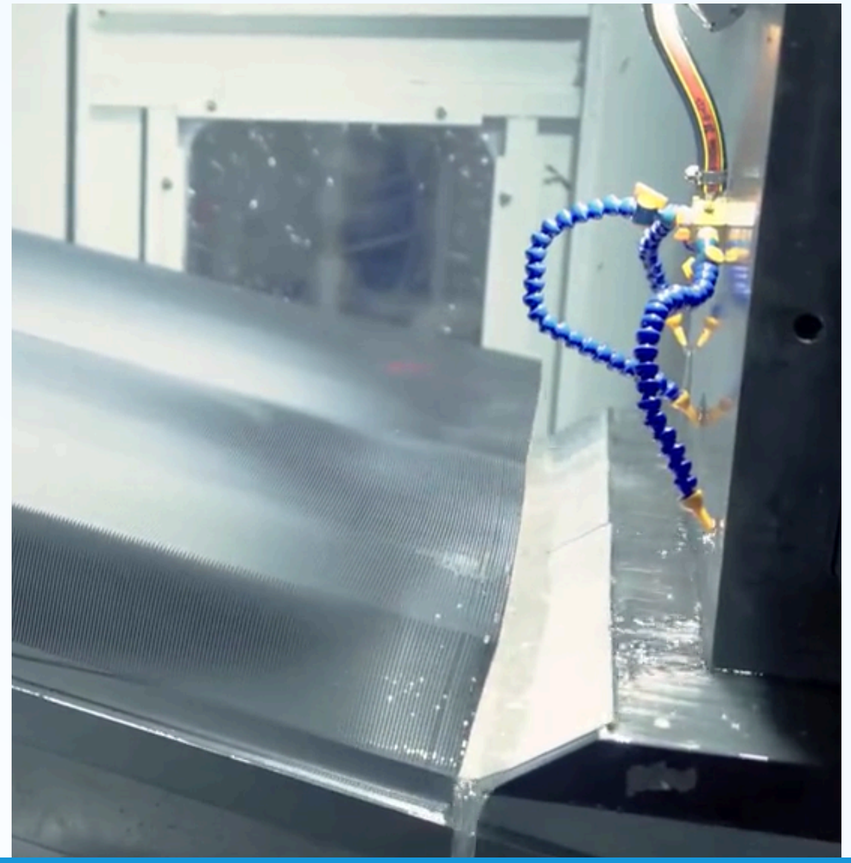
is One-stop solution partner for thermal management and energy storage products.

Our main service areas include AI data centers, power electronics, industrial automation control, electric vehicles and energy storage industries.

Walmate provides one-stop customized services for battery trays, ESS battery enclosures, liquid cooling plates and heatsinks.

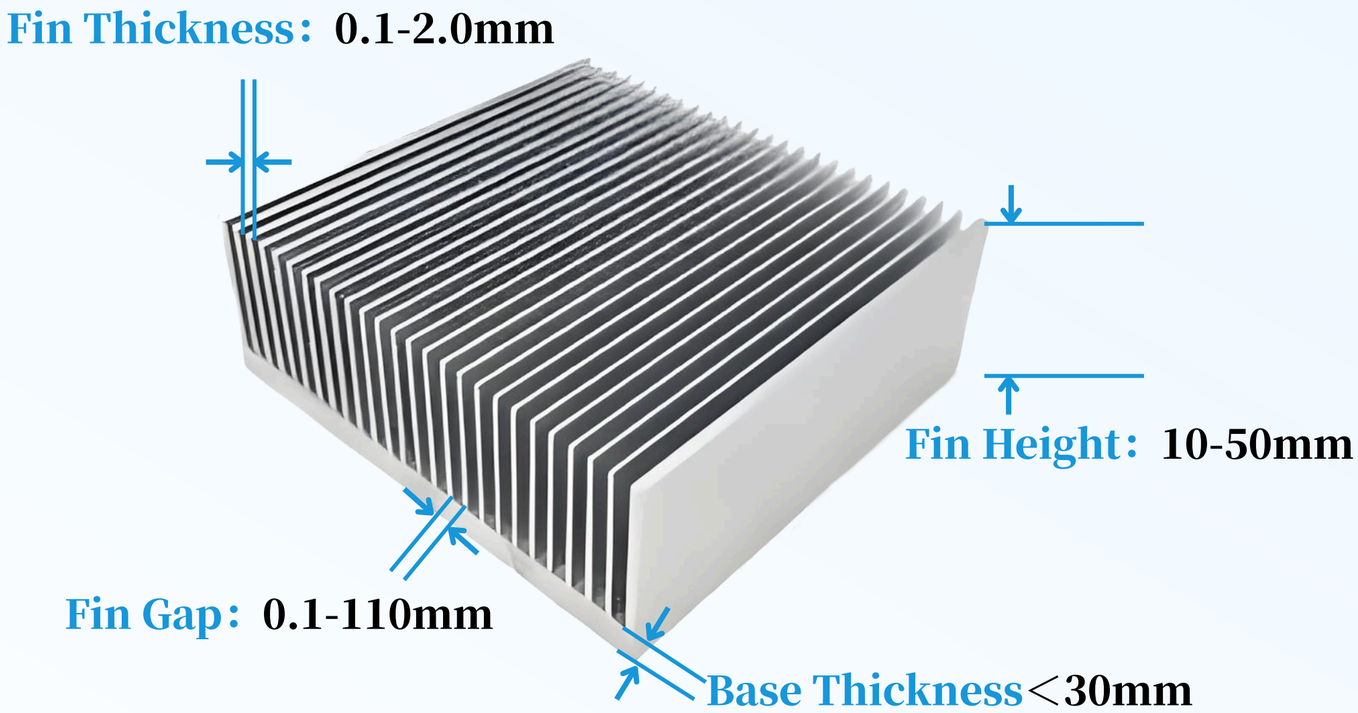
Walmate®

SKIVED HAETSINKS
CUSTOMIZED SOLUTIONS



- **Processing Technology：** Skived fin
- **Additional Process：** CNC machining
- **Material：** AL1060、AL 6061、AL6063、Cu1100、Cu1020（Choose the material based on your cooling needs）
- **Size/Color：** Subject to customer drawings
- **Surface treatment：** Sandblasting, brushing, painting, anodizing, electroplating
- **Quality Control：** Full inspection
- **OEM：** Accept

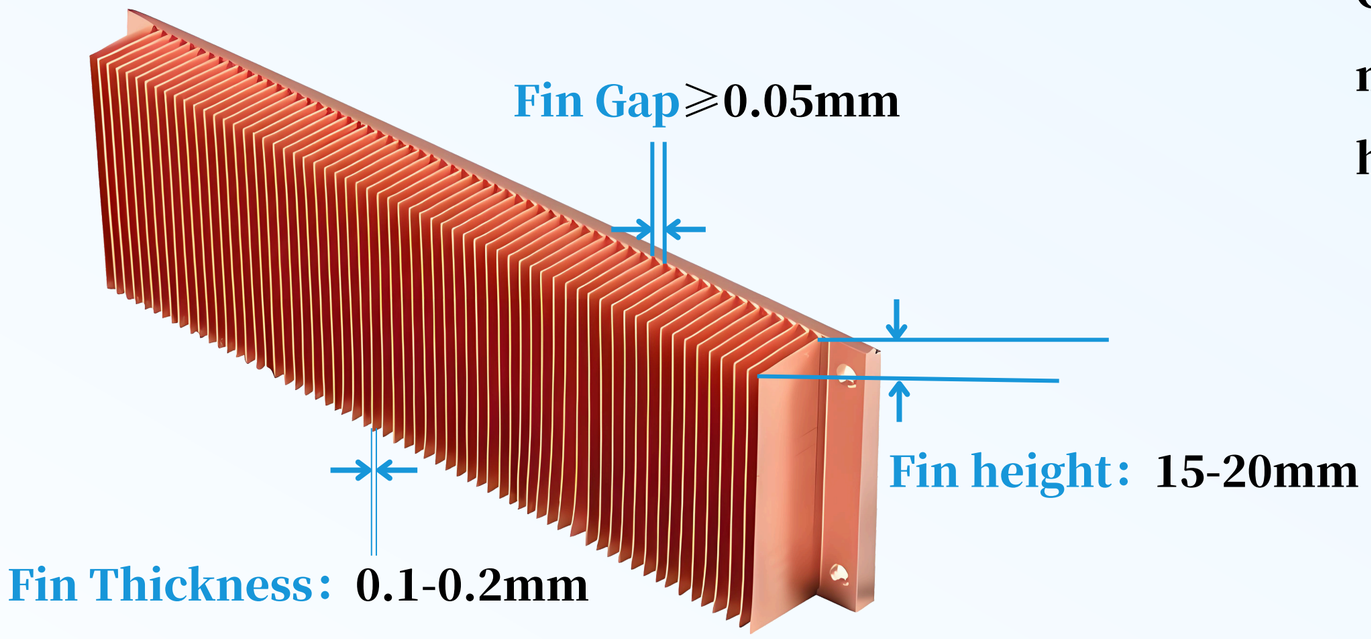
ALUMINUM SKIVED FIN HEATSINK CUSTOMIZATION



AL1060, AL6061, and AL6063 are suitable for scenarios with high requirements for heat dissipation and structural strength.

- Material：AL1060、AL 6061、AL6063
- Surface treatment：Sandblasting, brushing, painting, anodizing, electroplating
- Size/Color：Subject to customer drawings
- OEM：Accept

COPPER SKIVED FIN HEATSINK CUSTOMIZATION

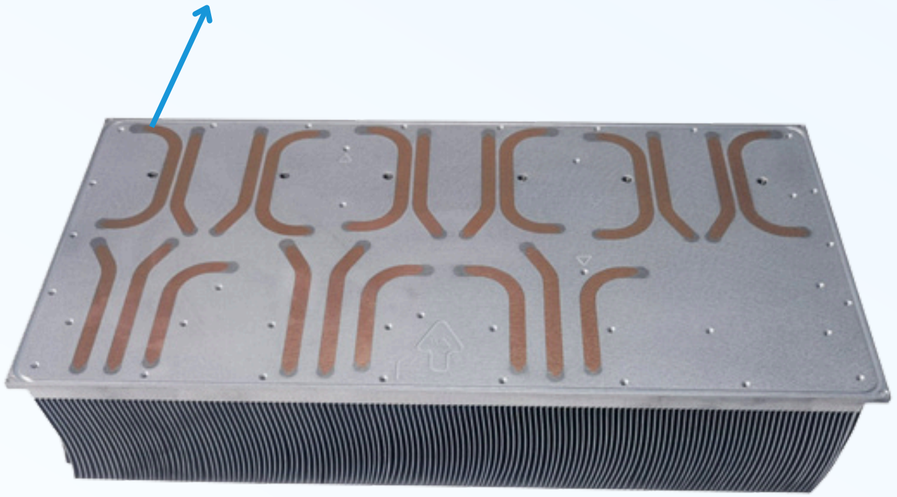


Copper has excellent ductility, and the fins can be made very thin. Suitable for scenarios with high heat dissipation requirements such as servers

- Material：CU1100、CU1020
- Surface treatment：Sandblasting, brushing, painting, anodizing, electroplating
- Size/Color：Subject to customer drawings
- OEM：Accept

HEAT PIPE SKIVED FIN HEATSINK CUSTOMIZATION

Heat Pipe： Flexible location change
Customizable shape



The combination of skived fin heatsink and heat pipe can improve the heat dissipation efficiency.

- **Material：** AL1060、AL 6061、AL6063、CU1100、CU1020
- **Surface treatment：** Sandblasting, brushing, painting, anodizing, electroplating
- **Size/Color：** Subject to customer drawings
- **OEM：** Accept

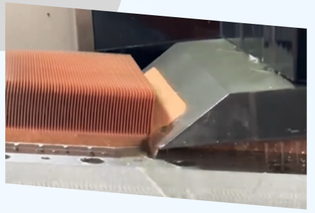
SKIVED HAETSINKS PROCESSES

Cutting profiles

Select appropriate heat dissipation materials and cut

Skiving Process

The profile is sent to the CNC Gear Relief Grinding Machine to produce heat dissipation fins



Fin Flattening Processing

Flatten the fins on a staking machine to ensure fin straightness

Secondary CNC machining

Milling off excess fin material at the edges 、drilling mounting holes and so on

Cleaning

Removal of metal debris and cutting fluid residues to enable subsequent surface treatment

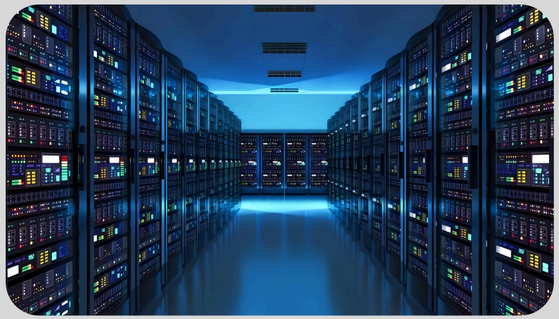
Surface treatment

According to the needs, you can choose anodizing, painting, brushing and other methods

SKIVED HAETSINKS APPLICATIONS

High Power Electronic Equipment

Server/Data Center

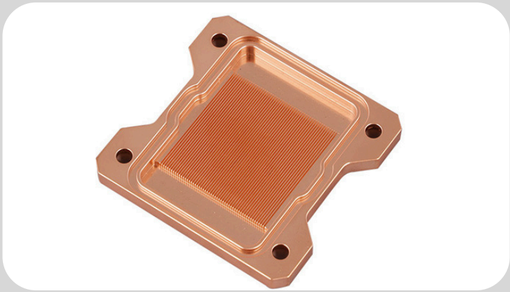


Thermal Challenges:

- CPU/GPU power>700W, traditional heat dissipation has serious heat accumulation
- High-density server cluster has limited heat dissipation space

High Power Electronic Equipment

Server/Data Center



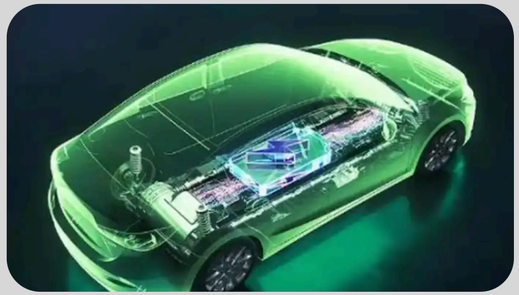
Solutions:

- **Microchannel skiving cold head**: fin thickness 0.15–0.3mm, fin spacing 0.25mm, heat dissipation area increased by 5 times, no interface thermal resistance
- **Liquid cooling integration**: skived fin heatsink baseplate embedded in closed water cooling loop, supports 1000W+ heat load

SKIVED HAETSINKS APPLICATIONS

New Energy&Electric Transportation

Electric Vehicle Electronic Control

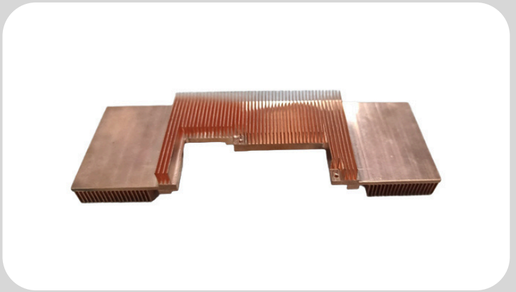


Thermal Challenges:

- IGBT/SiC modules need to withstand temperatures > 200°C, and traditional aluminum heat sinks have excessive junction temperatures (> 150°C), causing failures
- Lightweighting is urgently needed

New Energy&Electric Transportation

Electric Vehicle Electronic Control



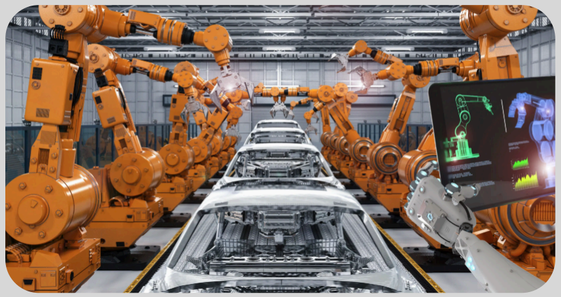
Solutions:

- **Double-sided skived fin + heat pipe enhancement:** fin height ⩾ 80mm, with embedded heat pipe to diffuse heat
- **Copper-aluminum composite skived fin:** copper substrate + aluminum teeth, thermal conductivity ⩾ 200W/mK, junction temperature ↓18℃, weight ↓60%

SKIVED HAETSINKS APPLICATIONS

High-End Industry

Industrial Inverter&Laser

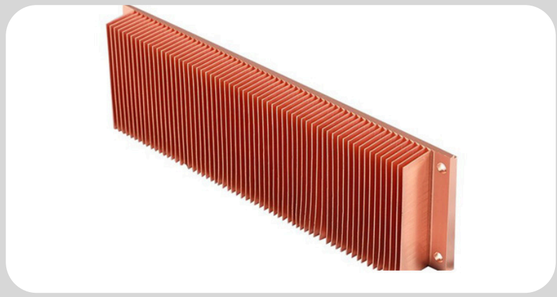


Thermal Challenges:

- Lasers/inverters need to withstand 300°C high temperatures and salt spray corrosion
- Airborne electronics need to reduce weight by 20% and resist vibration

High-End Industry

Industrial Inverter&Laser



Solutions:

- Fully sealed skived fin air duct: IP55 protection + root thickened fin design, passed IEC 61373 vibration

SKIVED HAETSINKS APPLICATIONS

Power Electronics

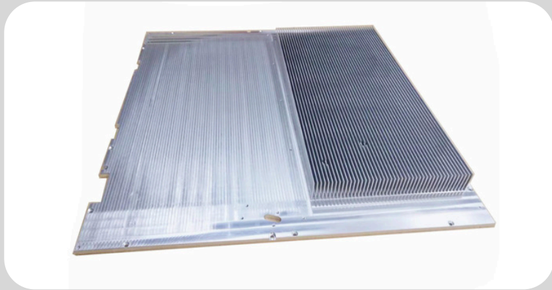
Wind Power/Photovoltaic Inverter

Thermal Challenges:

- Photovoltaic inverters/wind power converters need to support 3m ultra-long substrates (traditional profiles have high thermal resistance when spliced)
- 10MW-class converters have insufficient heat dissipation area (temperature rise ΔT ＞50℃), and fail due to corrosion in salt spray environments

Power Electronics

Wind Power/Photovoltaic Inverter



Solutions:

- **Segmented fin splicing technology:** supports 3000mm substrate (tooth height 120mm)
- **High fin ratio design + forced air cooling:** fin spacing 0.5mm, with centrifugal fan

CERTIFICATIONS OF WALMATE

- IATF 16949:2016
- ISO 9001:2015
- ISO 45001:2018
- ISO 14001:2015

Certificate of Registration

This certificate has been awarded to

Walmate (Dongguan) Thermal Technology Co.,Ltd.

Room 101, No. 1, Liujia Xinxing North Road, Hengli Town, Dongguan City, Guangdong Province, China

in recognition of the organization's Quality Management System which complies with

IATF 16949:2016

The scope of activities covered by this certificate is defined below

Please refer to the Appendix

Certificate Number: 133170/A/0001/UK/En			
Date of Issue of Certification Cycle	Issue Number	Certificate Expiry Date	Certification Cycle
29 March 2024	1	28 March 2027	1
Revision Date	Revision Number	Original Certificate Issue Date	Scheme Number
29 March 2024	0	29 March 2024	01085127

For detailed explanation for the data fields above, refer to http://www.urs-holdings.com/logos-and-regulations

Issued by: Mukesh Singhal - On behalf of the Schemes Manager

QUALITY MANAGEMENT SYSTEM
CERTIFICATION CERTIFICATE

Walmate (Dongguan) Thermal System Limited
The Quality Management System Conforms to the Standard
GB/T19001-2016/ISO9001:2015

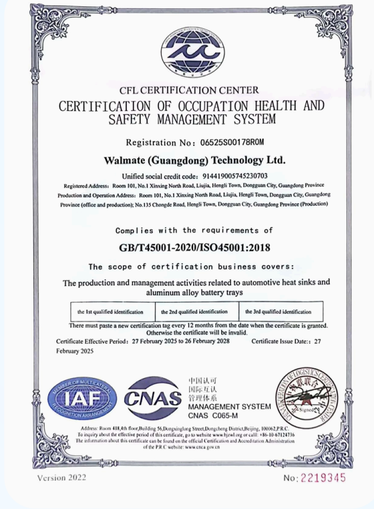
Registered Address: Room 101, No.1, Xinxing North Road, Liujia, Hengli Town, Dongguan City, Guangdong Province
Business Location: Room 101, No.1, Xinxing North Road, Liujia, Hengli Town, Dongguan City, Guangdong Province
Production Address: Room 101, No.1, Xinxing North Road, Liujia, Hengli Town, Dongguan City, Guangdong Province

Certified Scope: Production of automotive heat sinks and aluminum alloy battery trays

Unified Social Credit Code: 91441900574523070 3
Registration No.: 04324Q30295R0M
First Issuing Date: 31 Jan. 2024
Issuing Date: 31 Jan. 2024
Altering Date: 26 Feb. 2024
Expiration Date: 30 Jan. 2027

Issued By: Meng Yong ge

IAF CNAS 中国认可 国际互认 管理体系 MANAGEMENT SYSTEM CNAS C043-M



CFL CERTIFICATION CENTER

CERTIFICATION OF OCCUPATION HEALTH AND SAFETY MANAGEMENT SYSTEM

Registration No: 06525S00178ROM

Walmate (Guangdong) Technology Ltd.

Unified social credit code: 91441900574523070 3

Registered Address: Room 101, No.1 Xinxing North Road, Liujia, Hengli Town, Dongguan City, Guangdong Province
Production and Operation Address: Room 101, No.1 Xinxing North Road, Liujia, Hengli Town, Dongguan City, Guangdong Province (office and production); No.115 Chengde Road, Hengli Town, Dongguan City, Guangdong Province (Production)

Complies with the requirements of

GB/T45001-2020/ISO45001:2018

The scope of certification business covers:

The production and management activities related to automotive heat sinks and aluminum alloy battery trays

the 1st qualified identification	the 2nd qualified identification	the 3rd qualified identification

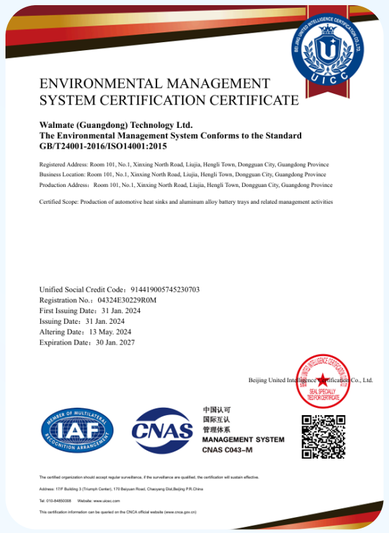
There must paste a new certification tag every 12 months from the date when the certificate is granted. Otherwise the certificate will be invalid.

Certificate Effective Period: 27 February 2025 to 26 February 2028 Certificate Issue Date: 27 February 2025

IAF CNAS 中国认可 国际互认 管理体系 MANAGEMENT SYSTEM CNAS C065-M

Address: Room 418,4th floor,Building 36,Dongqinglong Street,Dongcheng District,Beijing, 100062,P.R.C
For inquiry about the effective period of this certificate, go to website www.fyrad.org or call: +86-10-67524716
The information about this certificate can be found on the official Certification and Accreditation Administration of the P.R.C website: www.cnca.gov.cn

Version 2022 No: 2219345



ENVIRONMENTAL MANAGEMENT
SYSTEM CERTIFICATION CERTIFICATE

Walmate (Guangdong) Technology Ltd.
The Environmental Management System Conforms to the Standard
GB/T24001-2016/ISO14001:2015

Registered Address: Room 101, No.1, Xinxing North Road, Liujia, Hengli Town, Dongguan City, Guangdong Province
Business Location: Room 101, No.1, Xinxing North Road, Liujia, Hengli Town, Dongguan City, Guangdong Province
Production Address: Room 101, No.1, Xinxing North Road, Liujia, Hengli Town, Dongguan City, Guangdong Province

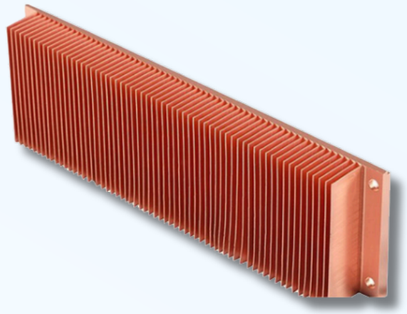
Certified Scope: Production of automotive heat sinks and aluminum alloy battery trays and related management activities

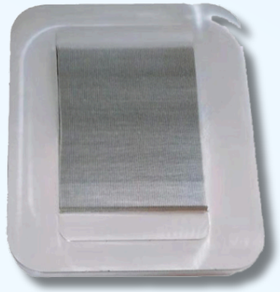
Unified Social Credit Code: 91441900574523070 3
Registration No.: 04324E30229R0M
First Issuing Date: 31 Jan. 2024
Issuing Date: 31 Jan. 2024
Altering Date: 13 May. 2024
Expiration Date: 30 Jan. 2027

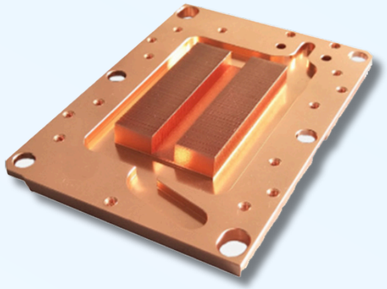
Beijing United Information Certification Co., Ltd.

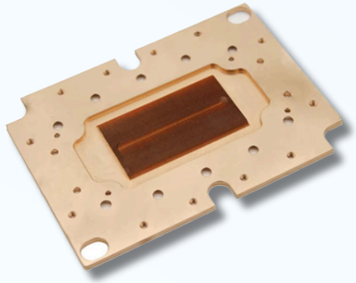
IAF CNAS 中国认可 国际互认 管理体系 MANAGEMENT SYSTEM CNAS C043-M

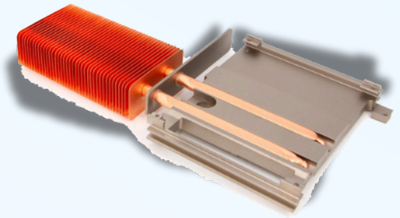
Walmate®











- R&D: 135 Chongde Road, Hengli, Dongguan, Guangdong
- Southern China base: 1 XinxingNorth Road, Hengli, Dongguan, Guangdong
- Eastern China base: 1308 Yannan Road, Bengbu, Anhui

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