

KAORI HEAT TREATMENT CO., LTD.



Investor Conference

Allen Wu

December 18th, 2020

Outline

A 、 Company Profile

B 、 Future Prospects

C 、 Q & A

A 、 Company Profile

State—Of—The—Art Heat Treatment Brazing Process

Since 1970



Company Profile

- Founded : 11 October, 1970
- Capital : US\$ 30 million (NT\$893,840,800)
- Employees : 540 (December, 2020)
- Main Products & % : Plate Heat Exchanger (50%) 、Fuel cell Key Parts (49.2%) 、Metal Ware (0.8%)
- Address : No.5-2 Jilin N. Rd., Zhongli District, Taoyuan City, Taiwan
- Base: Taiwan (Zhongli & Kaohsiung), China (Ningbo)



■ Headquarter



■ Kaohsiung



■ Zhongli



■ Ningbo

Facility Sites in Zhongli Industrial Park

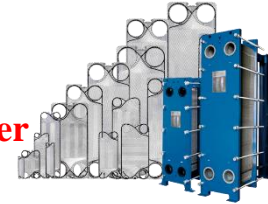


Milestone: Innovations and Transformations

1970
Established
Heat Treatment



1994
Heat Exchanger



Fuel Cell
2008
Power Generation



2016
Immersion
Liquid Cooling


2019
Energy Integration

Core Technologies and Product Integrations



B、Future Prospects

Product | System Solution



Heat Exchanger



**Immersion
Liquid Cooling**



**Fuel Cell
Power
Generation**



**Metal Processing
Welding/Brazing**

Product | System Solution



Heat Exchanger



**Immersion
Liquid Cooling**



**Fuel Cell
Power
Generation**

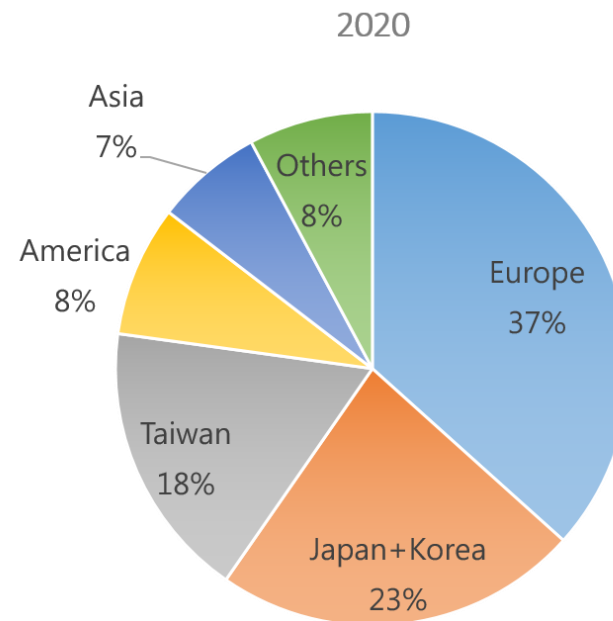
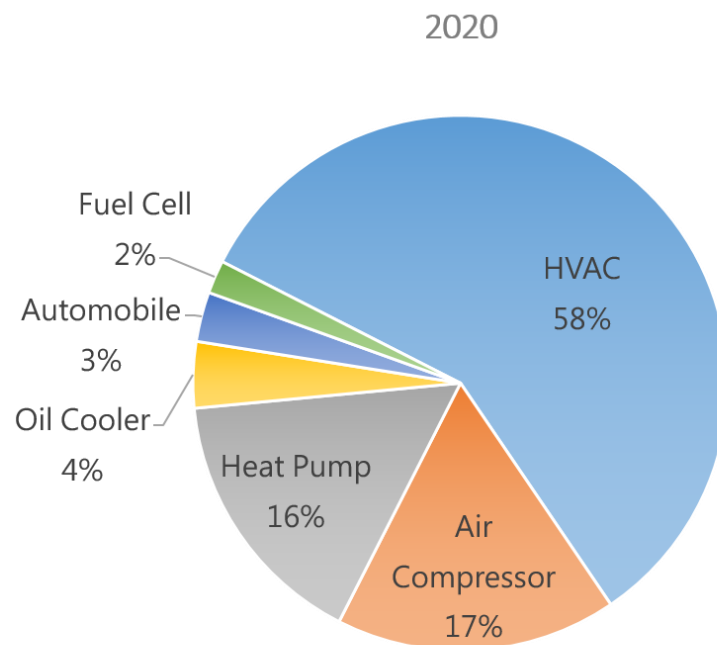


**Metal Processing
Welding/Brazing**

Brazed Plate Heat Exchanger

➤ Operational Overview :

- (1) 2020 The global market size 702 Million,
KAORI market share 4.3%.
- (2) Export 75%, Major market; Europe, Japan & Korea



Brazed Plate Heat Exchanger

➤ **Constantly develop new products to gain competitive advantage for industries;**

1) Asymmetric plate design

(smaller charge of refrigerant)

Heat Pump Water Heating and Chiller industry

Launch B series new products

2) Unique Patent Design

Air Dryer industry

a. expand large capacity;

New A300 model

b. energy saving design ;

Launch Y Series new products



Brazed Plate Heat Exchanger

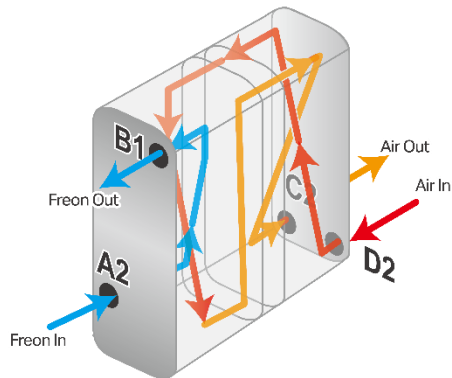
- **Expanding export market**
increase market share :
 - 1) Develop new tier 1 customers (America and Japan)
 - 2) Develop new sales partners (India and Europe)
 - 3) increase Market share over 5% in 2 years
- **Integrate supply chain partners to enhance production efficiency and expand capacity**
 - 1) Manufacturing automation and intelligent production management
 - 2) Flexible adjustment of Production base:
Taoyuan / Kaohsiung / Mainland China
 - 3) Two-digit growth target



BPHE | Product Roadmap

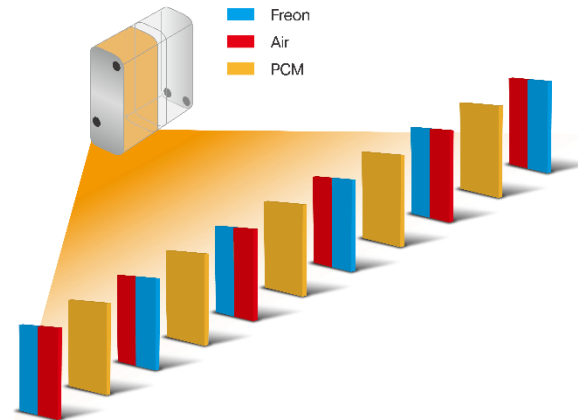
Application	Feature	2020	2021				2022			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3 In 1 Air Dryer	Large Air Flow			A300						
	Energy Saving				Y050				Y140/ Y210	
Asymmetric	Low Pressure Drop		B050		B110				B040/ B200	

53m³/min per unit
The Largest Flow Rate Ever



A300

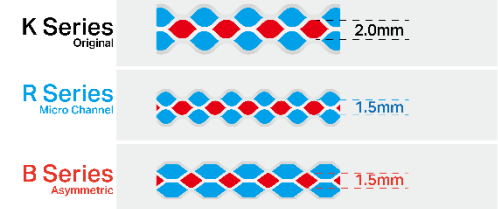
Up to 26% Efficiency Improvement
Amazing Latent Heat Storage



Y Series

Asymmetric Plate Design

Up to
50% Water Pressure Drop Reduced
33% Refrigerant Charge Reduced
11% Water Flow Rate Increased



B Series

Product | System Solution



Heat Exchanger



Immersion
Liquid Cooling



Fuel Cell
Power
Generation

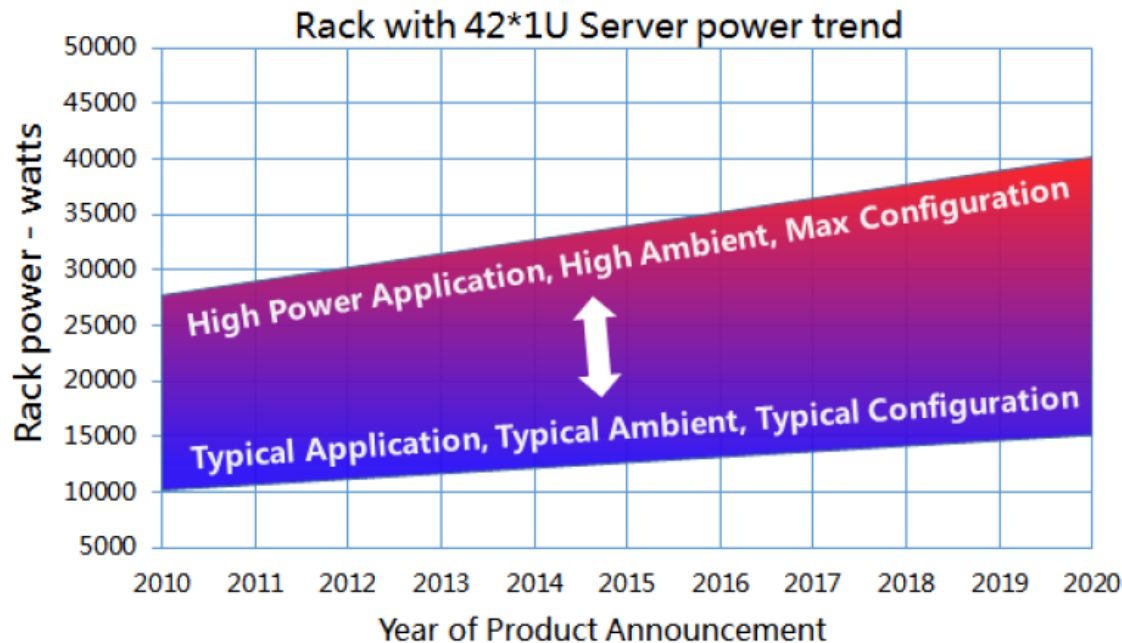


Metal Processing
Welding/Brazing

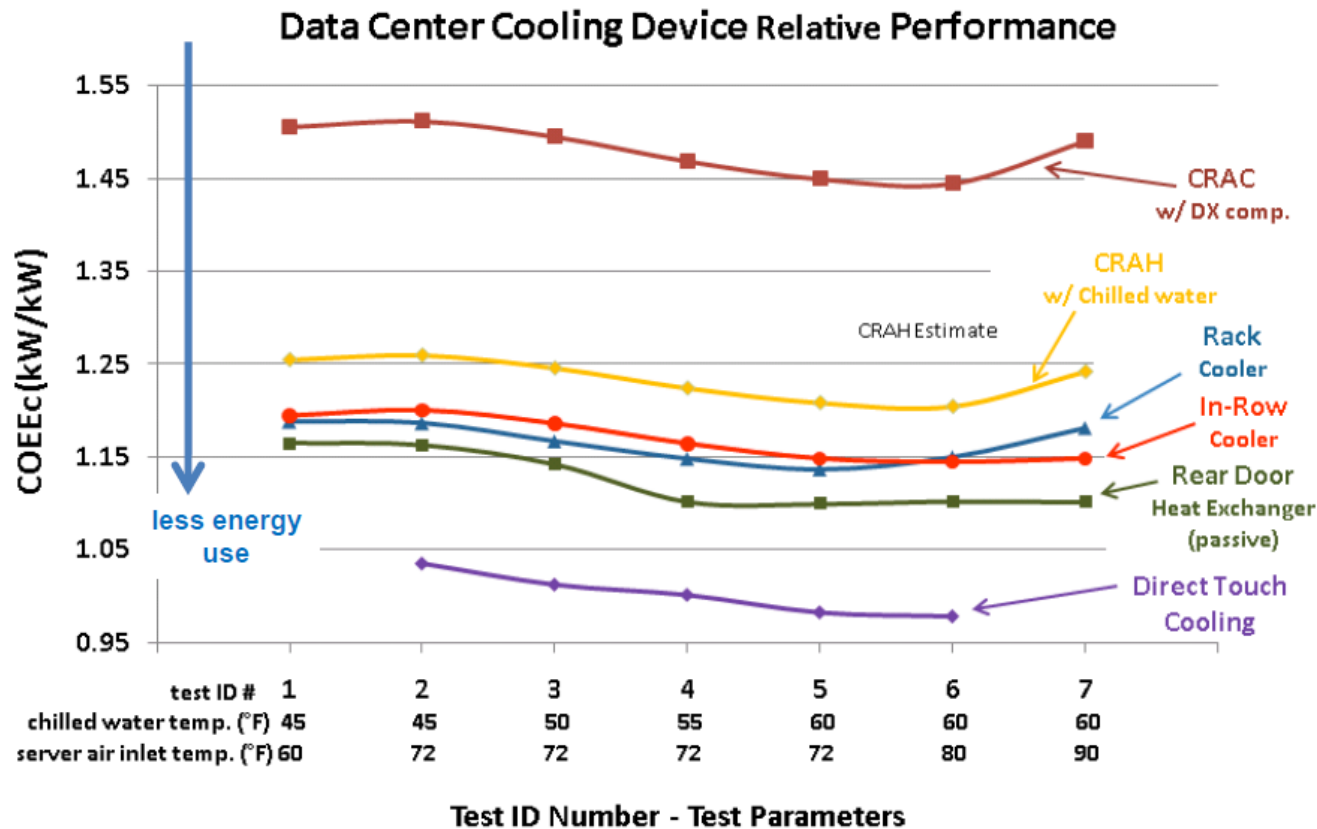


Liquid Cooling System Market Background

The rise of industry has created high computing and high heat density computers.



Data Center Cooling Device Relative Performance



Energy Policy Associated With Liquid Cooling Equipment

$$\text{Power Usage Efficiency (PUE)} = 1 + \frac{\text{Non-IT Equipment Power Consumption}}{\text{IT equipment power consumption}}$$

Non-IT equipment power consumption: Air conditioning, power supply, lighting, other

Country	Average PUE	Demand PUE	Direct Cooling PUE	In-direct Cooling PUE	Regulation Authority
Taiwan	2.0	≤ 1.6	≤ 1.3	≤ 1.5	National Development Association
China	2.2	≤ 1.4			Central government
Others	1.9	$= 1.0$			Non

Product Roadmap

➤ Immersion Cooling System

Cooling capacity: 30-150kW

Fan-less / Dust-less / vibration Isolated

Energy efficiency(PUE) ≤ 1.1

➤ In-Rack Cooling System

Cooling capacity: 6-60k

Energy efficiency(PUE) ≤ 1.3

With various cabinets

➤ Ideal for High Density and Mobile Data Centers

High Computing Data Center (Block chain/AI/Geological exploration)

Small and medium-sized data center
(container/combined)



Product | System Solution



Heat Exchanger



**Immersion
Liquid Cooling**



**Fuel Cell
Power
Generation**



**Metal Processing
Welding/Brazing**

Hydrogen Power Fuel Cell | Zero Emissions

Bloomenergy®

Fuel cell industry leader



Leading O&G in South Korea

Key Korea Partnership Stats

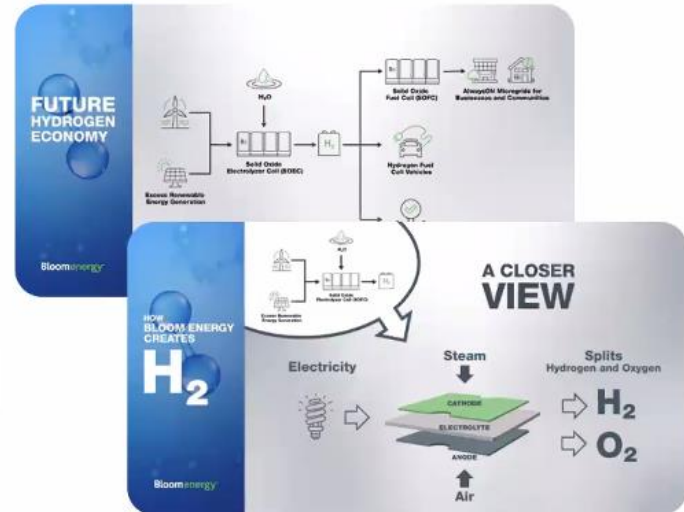
400MW

Forecasted Fuel Cells
Sold per Year¹

6.2MM

Hydrogen Cars Serviced
by 2040

- Expanded commercialization partnership with SK to distribute hydrogen-powered fuel cells and electrolyzers in South Korea
- Bloom will aid SK in helping to meet government hydrogen targets



"Achieving zero emissions in many sectors will depend upon making massive amounts of renewable hydrogen. Because Bloom is the market leader in solid oxide technology, I am very encouraged by this announcement."

Jack Brouwer, professor at NCFRC at UC Irvine.

Hydrogen Power Fuel Cell | Marine Application

BLOOM ENERGY + SAMSUNG PARTNER FOR MARINE TRANSPORT

Partnership Between Industry Leaders...

Bloomenergy®

Fuel cell industry leader



SAMSUNG HEAVY INDUSTRIES

Drillships, LNG carriers, and FPSO industry leader

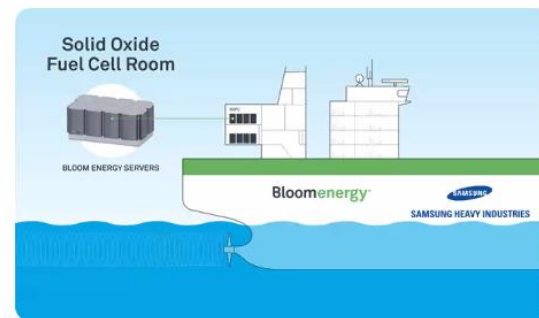


Timeline to Commercialization



Proprietary and Confidential

...Results in Massive Marine Market Opportunity



300MW+

"As regulations to reduce GHG emissions take effect step-by-step, the introduction of fuel cells to vessels is inevitable. This approval, and being the first shipbuilder to secure this marine fuel cell technology, illustrates that Samsung Heavy is highly likely to lead the market."

Kyunghee Kim, Vice President of SHI Outfitting Engineering Team

Hydrogen Generator | Product Roadmap

(Methanol Reforming/ PSA Purification)

Process at safe low pressure to replace hydrogen tank , payback as low as 6 month at equipment investment



4.5 M³/hour

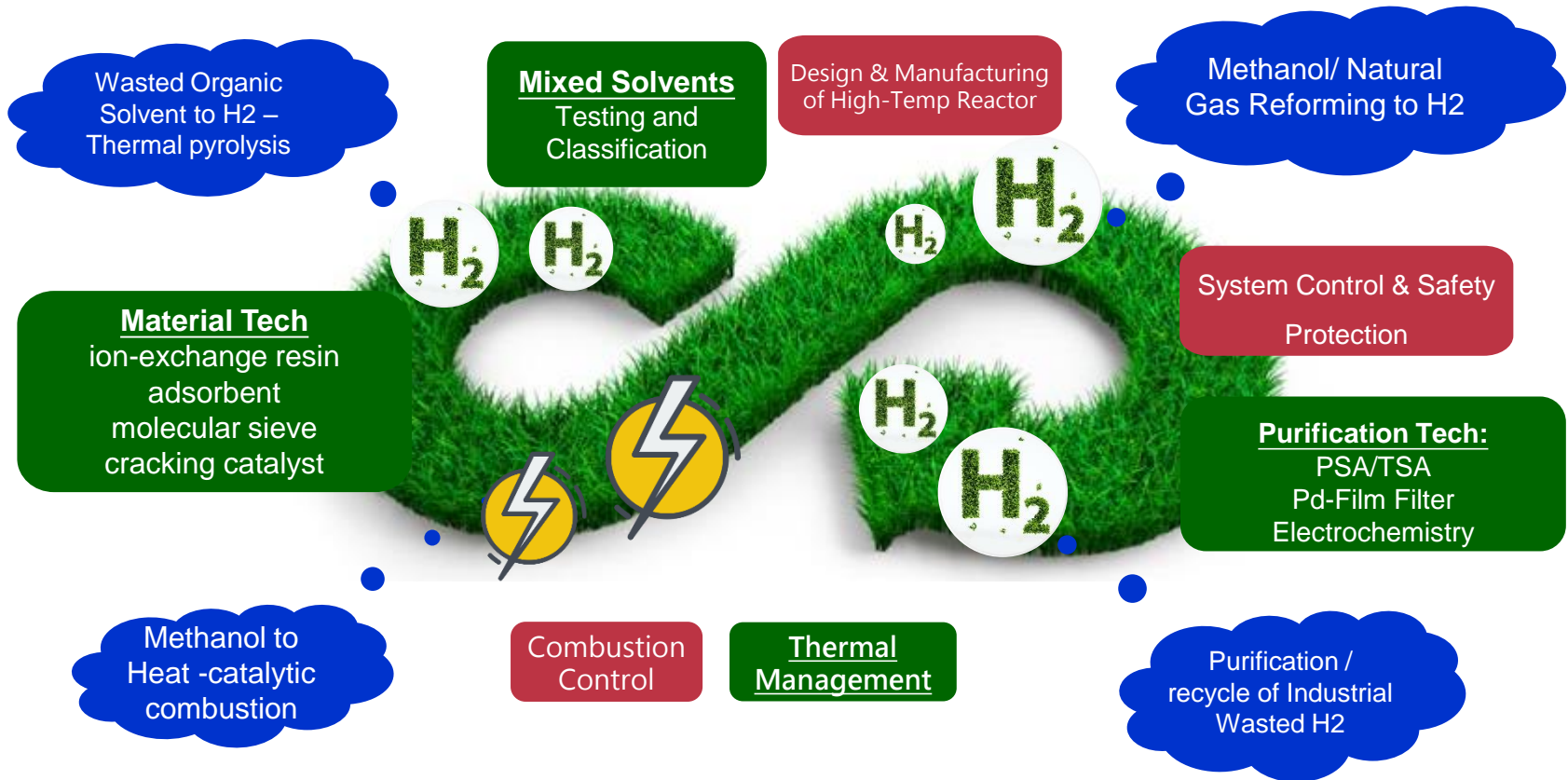


30 M³/hour



Hydrogen Generator | Product Roadmap

Purification / Heat Generation - Circular Economy



Product | System Solution



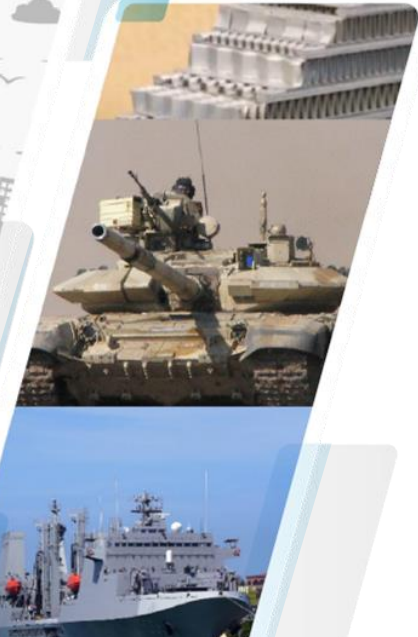
Heat Exchanger



**Immersion
Liquid Cooling**



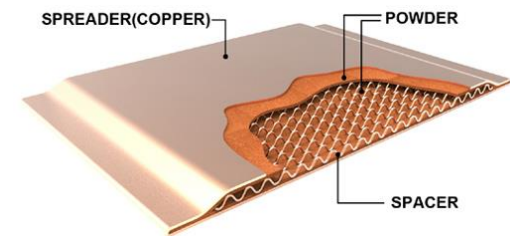
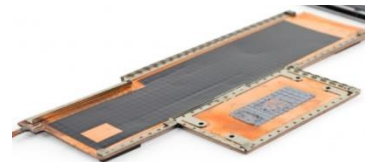
**Fuel Cell
Power
Generation**



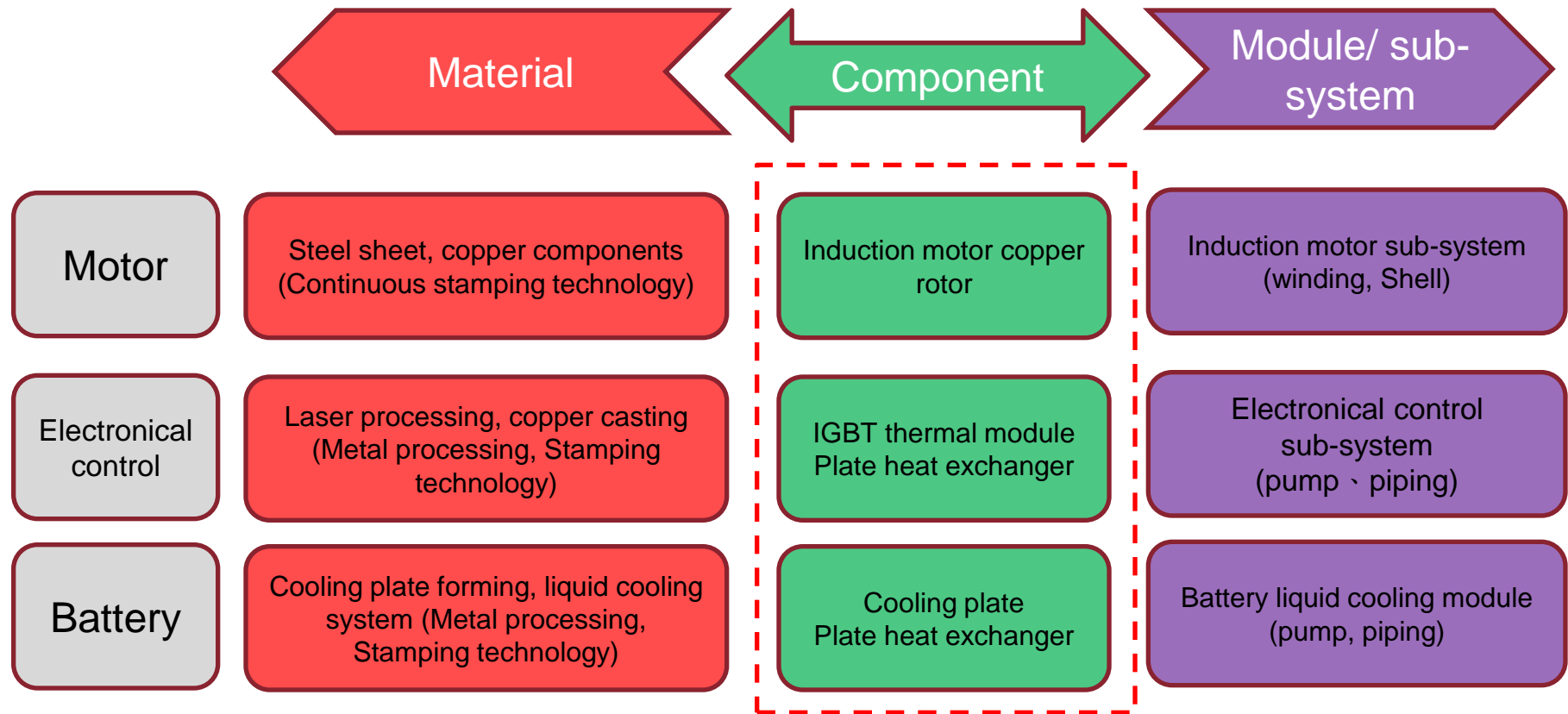
**Metal Processing
Welding/Brazing**

Metal Products Technical Processing Services

- Based on metal brazing and heat transfer technology to provide the best cooling solution for electric vehicles and 5G mobile communication ◦
- Technology advantages
 - Strength: up to 20 kg/mm²
 - Sealing: up to 10⁻⁵ Torr
 - Different materials brazing: (Cu/SUS/Ti/Inconel/Ceramic)
 - Production capacity :3KK/month



Metal Products Technical | Product Roadmap



Vision

**The Leading Company of
Clean Energy
Energy Management
Circular Economy**

C、Q & A

KAORI HEAT TREATMENT CO., LTD.



THE END

Thank You!