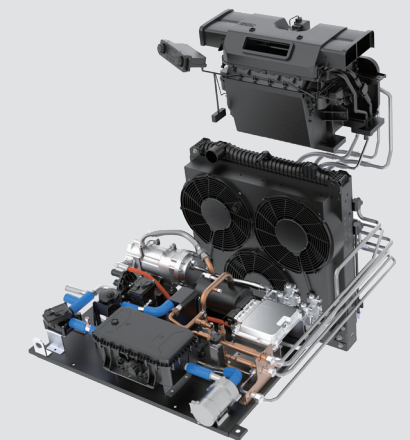
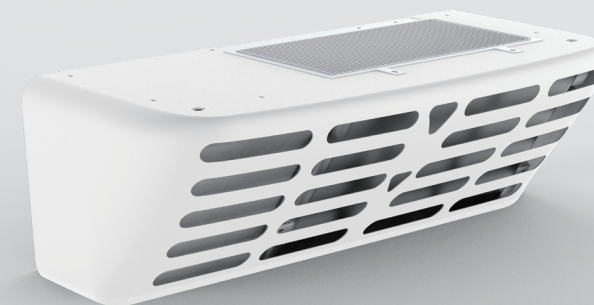
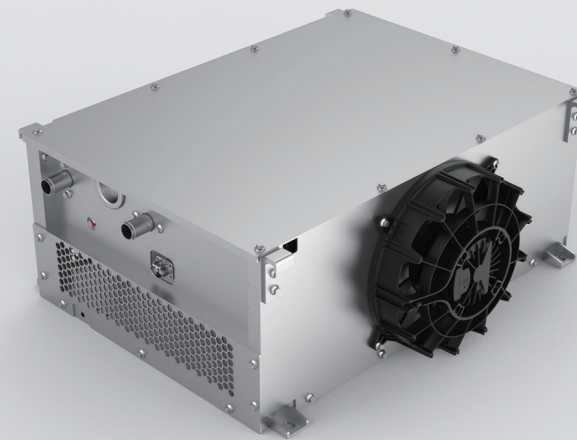




 Molead New Energ

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## INTRODUCTION OF THERMAL MANAGEMENT PRODUCTS FOR COMMERCIAL VEHICLES

Company Profile



HIWE is one of the core company of Molead Group, which has been researched and developed BTMS since 2015 and produced more than 10,000 units per year. Our company has independently mastered core technologies such as full DC frequency conversion technology, high-efficiency heat exchanger technology, high-voltage DC safety protection technology, EMC electromagnetic compatibility technology, air conditioning and thermal management integration technology, it has applied for multiple invention and utility model patents.

Our Main Customers







- Yutong Bus Ltd.,
  - Dongfeng Commercial Vehicle Ltd.,
  - Sany Group Ltd.,
  - Turkey Imecar,
  - India Propel, etc.
- Yutong Commercial Vehicle Ltd.,
  - Dongfeng Motor Ltd.,
  - Turkey TEMSA,
  - Colombia Superpolo S.A.S,

Our Vision

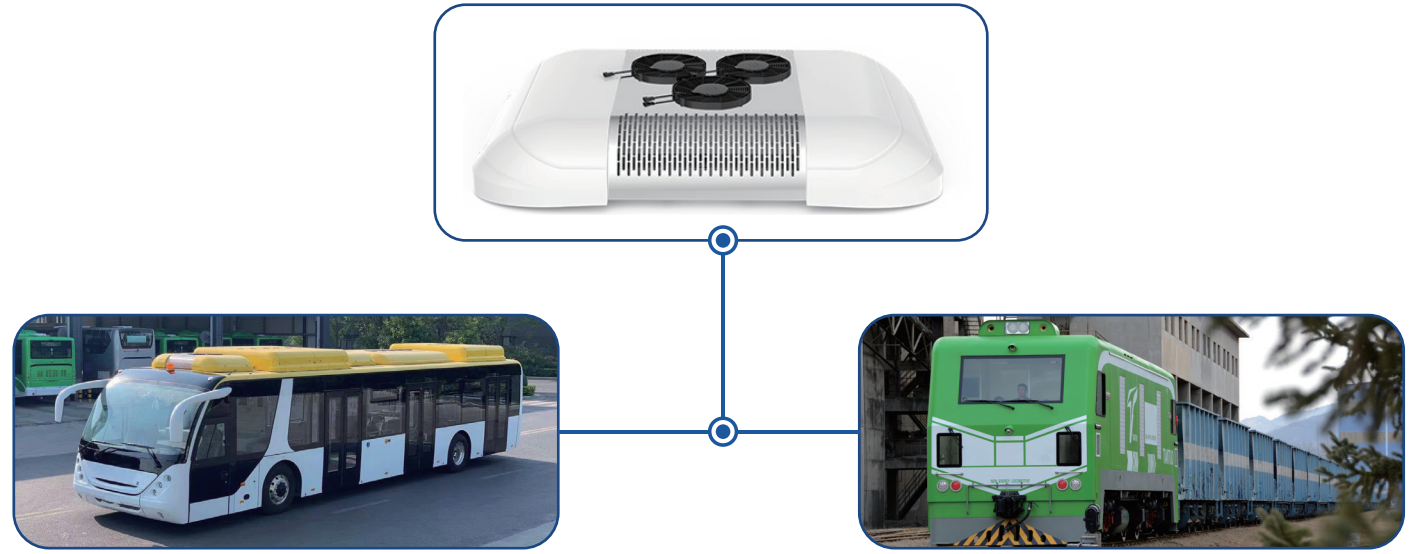
Strive to become an innovative and leading global commercial vehicle thermal management system and service provider to achieve deep empowerment of Non-Passenger commercial vehicles and engineering machinery electrification.

Top mounted battery thermal management - EDDR series

Product Features

-  The unit is designed on the roof, which can meet the thermal management requirements of 6-18m bus and electric locomotives batteries;
-  Lightweight aluminum alloy is used in the bottom shell. RTM material is used in the outer cover. The double waistline design is integrally formed;
-  Optional PTC liquid heater allows for selection of standby, with cooling, heating and self-cycling working modes;
-  The adoption of CAN bus communication enables it to have the function of fault self-diagnosis and real-time uploading of operating status and fault information;
-  EMC can meet Level III requirements;
-  Strong environmental adaptability: It can meet the operating requirements of harsh conditions such as high and low temperatures, high corrosion, and high altitude.

Product Application Cases



## Bottom/skirt mounted battery thermal management unit - EFDR series

### Product Features

01

It is mainly used for power exchange/charging of logistics transportation vehicles such as heavy-duty trucks and pure electric sanitation;

02

The unit adopts an aluminum alloy frame structure, which can meet the needs of weight reduction and efficiency improvement;

03

Optional PTC liquid heater allows for selection of standby, with cooling, heating, and self-cycling working modes;

04

The adoption of CAN bus communication enables it to have the function of fault self-diagnosis and real-time uploading of operating status and fault information;

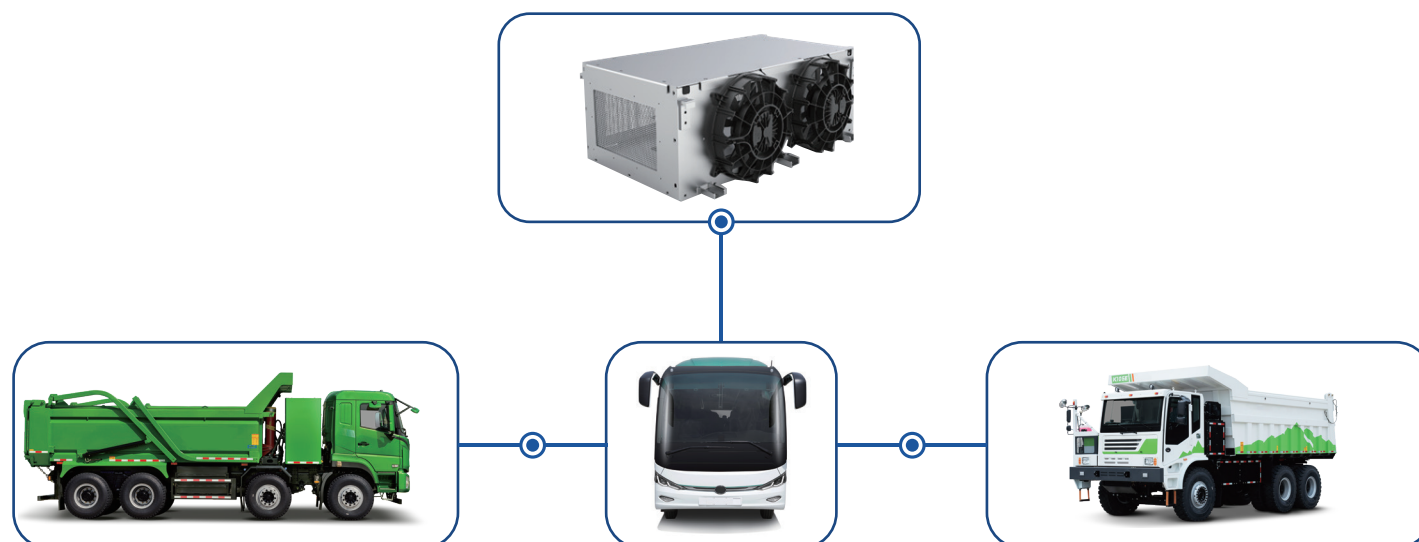
05

EMC can meet Level III requirements;

06

Optional configuration: tube-fin condenser, DC-DC, expansion tank.

### Product Application Cases



## Top mounted battery thermal management - EDDR series

It is customized and developed for pure electric/hybrid buses, which can achieve a perfect fit with the roof curvature. Moreover, it can meet the thermal management needs of batteries in the 6-18 bus and electric locomotives.



3/5KW



8KW



13KW

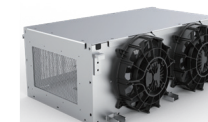
Model	EDDR-01	EDDR-02	EDDR-03	EDDR-04
Customized cooling capacity	3kW	5kW	8kW	13kW
Unit energy efficiency	2.2			
Unit operating temperature range	-20°C~+60°C			
Low voltage demand power	300W	300W	450W	700W
High voltage power supply	DC600V (400-750)			
Low voltage power supply	DC24V (18-32)			
Water pump (built-in)	For selection			
Overall protection level	IPX7			
Refrigerant	R1234yf/R134a			
Refrigerating medium type	50%VW Ethylene glycol aqueous solution			
Overall dimensions	L1300*W1920*H256mm			
Joint	Flange/pier head (Φ25)/Customizable			
Connector	Aviation plug-in/AMP			
Low voltage power distribution	DC-DC included in the unit/ Vehicle supply			
Heating function	Reserve 5kW/10kW/14kW/24kW for selection			

## Bottom/skirt mounted battery thermal management unit - EFDR series

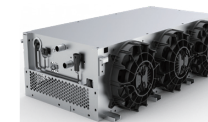
The unit can flexibly be arranged on the frame or chassis, which is consistent with the height of mainstream batteries. It can be applied to power exchange/charging heavy-duty trucks, pure electric sanitation, construction machinery etc



3KW



5/8KW



10KW

Model	EFDR-01	EFDR-02	EFDR-03	EFDR-04
Customized cooling capacity	3kW	5kW	8kW	10kW
Unit energy efficiency	2.2			
Unit operating temperature range	-20°C~+60°C			
Low voltage demand power	450W	800W	800W	1000W
High voltage power supply	DC600V (400-750)			
Low voltage power supply	DC24V (18-32)			
Water pump (built-in)	100W	180W	240W	240W
Overall protection level	IPX7			
Refrigerant	R1234yf/R134a			
Refrigerating medium type	50%VW Ethylene glycol aqueous solution			
Overall dimensions	L685*W600*H280mm		L818*W600*H280mm	L1005*W557*H280mm
Joint	Flange/pier head (Φ25)/Customizable			
Connector	Aviation plug-in/AMP			
Low voltage power distribution	DC-DC included in the unit/ Vehicle supply			
Heating function	Reserve 5kW/10kW/14kW/24kW for selection			



On-vehicle Refrigeration Unit

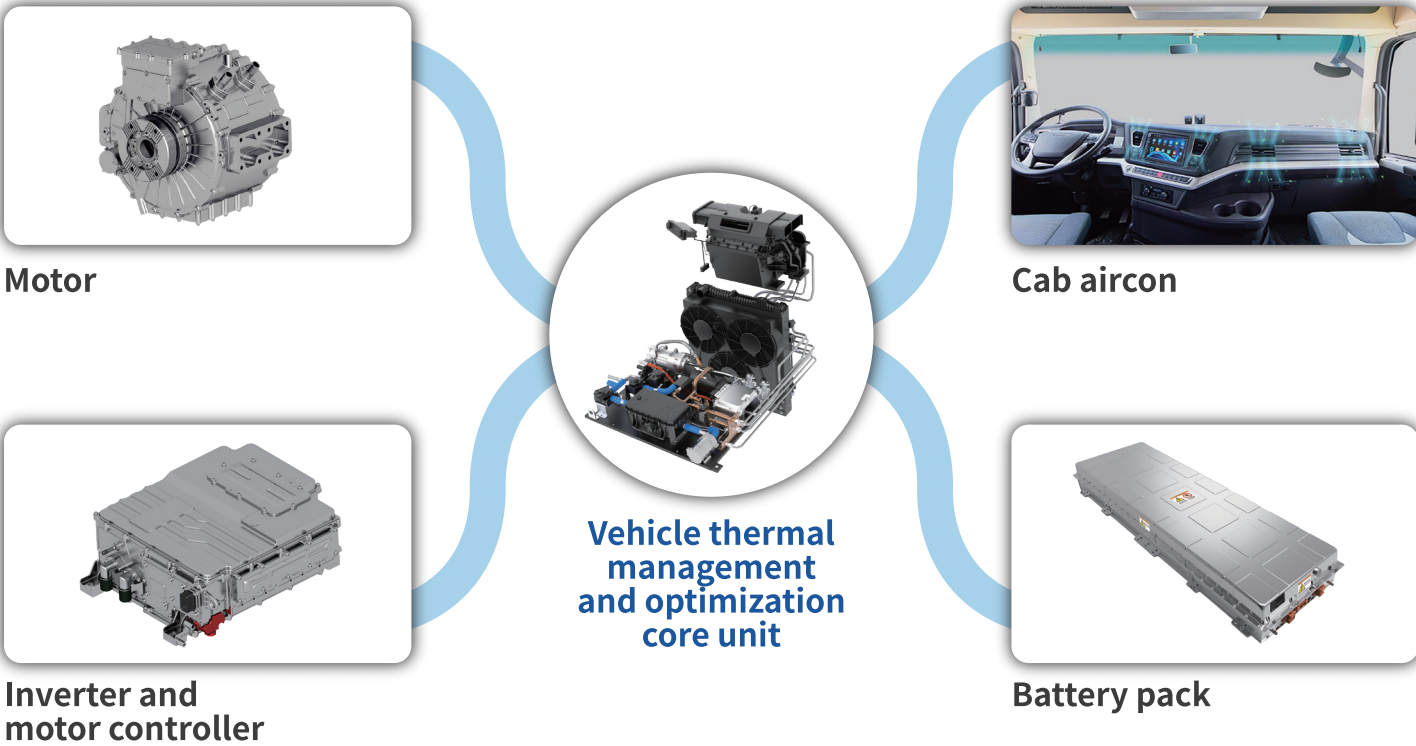
- ✔ **Adjustable operating mode:** The operating mode can be adjusted to shut-down or standby according to the door opening and closing signal.
- ✔ **Real-time monitoring of low pressure and temperature:** It can monitor the low pressure and temperature in real time, with accurate control and high reliability.
- ✔ **Rapid refrigerating:** With large redundancy design of condenser and evaporator, faster refrigeration is achieved.
- ✔ **Variable-frequency energy saving technology:** Electronic expansion valve and variable frequency compressor are adopted, making the unit more power-saving in thermal insulation.
- ✔ **Memory function:** Parameters are automatically saved in real time, and will be loaded automatically at each startup. Operation can be restored by power-on after shutdown under special circumstances.



Model		HW-400E	HW-450E	HW-550E	HW-600E	HW-400	HW-450	HW-500
Applicable Power Supply		200VDC-750VDC				/		
Operating Temperature		-25°C~30°C						
Applicable Box Volume (m³)		8-12	16-22	18-28	28-35	8-12	16-22	18-28
Refrigerating capacity W (A.T.P)	0°C	4250	4730	5173	6400	4150	4550	5073
	-20°C	2250	2500	2700	2835	2050	2500	2680
Compressor	Exhaust Volume	34cc		40cc	42cc	27cc	31cc	35cc
Condenser	Type	Micro-channel Heat Exchanger						
	Quantity of Fans	2PS			3PS	2PS		
	Voltage	12VDC/24VDC		24VDC	12VDC/24VDC	12VDC/24VDC		24VDC
Evaporator	Type	Fin-and-tube Heat Exchanger						
	Quantity of Fans	2PS			3PS	2PS		
	Air Volume (m³/h)	1200		1600	2000	1200		1600
	Voltage	12VDC/24VDC		24VDC	12VDC/24VDC	12VDC/24VDC		24VDC
Refrigerant		R404A						
Filling Amount (kg)		1.2	1.5	1.8	2.2	1.3	1.6	2.0
Back-up Power	Optional	220VAC/380VAC				/		
Heating	Optional	1000W		1500W	2500W	/		
Installation Type		Integrated		Divided		Integrated		Divided
Weight (kg)		80	85	92	105	70	80	85

Integrated Thermal Management System & Heat Pump Technology

Based on the heat supply and demand of battery electric (hydrogen fuel) heavy trucks and available energy gradient, the integrated thermal management system is developed, which can realize 16 combined working modes. Featuring integrated intelligent control of vehicle thermal management and cascade and efficient utilization of energy, it reduces the vehicle purchase and energy consumption costs, and prolongs the overall service life of the battery.



16 Working Modes

- 01 Cab cooling

02 Cab heating (e-drive heat recovery)

03 Defrosting

04 Defogging (cold + hot)

05 Traction battery cooling (compressor cooling)

06 Traction battery cooling (radiator cooling)

07 Battery heating (PTC)

08 Battery heating (motor heat recovery)
- 09 Motor cooling

10 Cab cooling and traction battery cooling

11 Cab cooling + e-drive cooling

12 Cab cooling + traction battery cooling + e-drive cooling

13 Cab heating (PTC + e-drive heat recovery)

14 Cab heating + traction battery cooling

15 Cab heating + traction battery cooling + e-drive cooling

16 Traction battery cooling + e-drive cooling