

FRIGOBLOCK

# HK SERIES

FOR CITY-TRAILERS  
AND BATTERY APPLICATIONS



ELECTRIC TRANSPORT COOLING  
SUSTAINABLE THINKING



FULL ELECTRIC REFRIGERATION FOR SMALLEST TO LARGEST VEHICLES.  
40+ YEARS FRIGOBLOCK EXPERTISE IN FULL ELECTRIC DRIVES.  
EXTENSIVE, HIGHLY TRAINED SERVICE & DEALER NETWORK.

## Contents

HK SERIES: A MODEL FOR EVERY APPLICATION 4  
HK SERIES: MEETING NEEDS WITH SUSTAINABLE INNOVATION 5  
SUSTAINABLE INNOVATION: SIMPLE. POWERFUL. EFFICIENT. 6  
SMART CONTROL: TO REDUCE ENERGY CONSUMPTION 8  
FLEXIBLE CHOICE: TO MEET YOUR PRECISE NEEDS 9  
TECHNICAL INFORMATION 10  
DISCOVER THE COMPLETE ELECTRIC RANGE 12

# TOMORROW'S TECHNOLOGY TODAY

Operators of refrigerated fleets have always faced significant challenges. From the earliest days of ice, they strove to deliver temperature sensitive cargo in prime condition. Today, added to this basic requirement are:

- economy of operation,
- ability to meet rapidly changing needs,
- environmental sustainability.

Even in our highly competitive and environmentally conscious world, the full electric HK Series dependably exceeds all these demands due to its unique technology.

### TOTAL COST OF OWNERSHIP

Switching to the HK series delivers a quick return on investment, thanks to substantial gains in fuel economy and uptime.

### ASSET UTILIZATION

The HK Series leverages its innovative design features to give all area access, increased load capacity, high reliability and exceptional load protection. Put simply, you gain increased utilization of your assets.

### NEW DESIGN ALLOWS EASIER INSTALLATION AND ACCESS FOR MAINTENANCE

No need to be concerned about future environmental regulations; the HK Series leads the market in the reduction of CO<sub>2</sub> and noise emissions.

### FLEXIBILITY

Discover the HK Series and you discover the power of choice including compartment configuration and vehicle type.

EXPLORE THE HK SERIES TO DISCOVER THE IDEAL MODEL  
FOR YOUR SPECIFIC NEEDS.



## HK SERIES

### A MODEL FOR EVERY APPLICATION

Extremely rapid pulldown and recovery makes the HK Series ideal for multi-drop operations. Zero-intrusion evaporators give you full use of your available load space. Massive capacity of up to 18.500 W at 0 °C ensures total protection of the most sensitive loads.



HKi



HKe

#### BUILT ON EXPERIENCE

With over 10.000 full electric units in service, no other manufacturer has more experience, a wider product portfolio or a more extensive service network. Our highly trained and certified technicians will provide preventative maintenance, parts supply and emergency support. In fact, everything you need to keep your fleet in peak condition and your operation running to full capacity.

#### HOW IT WORKS

A high-performance alternator is directly driven by the vehicle engine. The alternator supplies electricity with minimal energy transfer losses. In the case of a HV e-truck, the electricity is supplied by the battery pack. The power generated passes to the full electric unit via an inverter. The inverter modulates the voltage and frequency so that the electric motors for compressor and fans can operate with optimum control and efficiency.

## HK SERIES

### MEETING NEEDS WITH SUSTAINABLE INNOVATION

#### WHAT IT DELIVERS

Our innovative alternator drive is compact, light-weight, low noise, low emission and highly reliable with very few moving parts. In addition, you benefit from extremely low operating costs thanks to a market-leading operating efficiency of 96 %.

#### REDUCTION IN TOTAL COST OF OWNERSHIP

The savings gained when you switch to the HK Series will outweigh the initial premium, giving you an ROI in less than 4 years. An exceptionally efficient design and smart control contributes fuel savings of up to 60 % while fewer moving parts result in more reliability and less downtime.

#### ASSET UTILIZATION

Thanks to its whisper quiet operation, the HK Series enables you to access noise sensitive areas. Industry leading cooling capacity provides the pulldown and recovery performance you need for the toughest multi-drop operations. Our low intrusion evaporators increase the available load space. Eliminating the need for an internal combustion engine creates a low weight unit with impressively high reliability.

#### FUTURE READINESS

The HK Series is simply the most sustainable system on the market, exceeding all current environmental regulation by a comfortable margin. The secret is in the concept: having no engine to provide emissions, reducing CO<sub>2</sub> by 60 % and meeting all LEZ requirements are welcome achievements.

On top of these, you will be investing in a unit which adapts to all leading vehicle designs and has future vehicle compatibility, whether the power source is LNG, CNG or electric. With over 45 years of experience Frigoblock in full electric units and over 150 BEVs equipped with Frigoblock units, you can be confident that a fleet equipped with the HK series will send out a powerful customer message clearly demonstrating your commitment to sustainable operation.

#### FLEXIBILITY

Whatever your current and future needs, the HK Series has the flexibility to satisfy them. Choose single or multi-temp, pick the evaporators you want from our wide range and be confident that whatever your performance needs, we have a unit with the appropriate cooling capacity. Importantly, our adaptable solutions have been approved by the major vehicle OEMs and we enjoy strong links with those companies for cooperation during their product development.

# SUSTAINABLE INNOVATION

## RELIABLE. POWERFUL. EFFICIENT.

### OUR PROVEN INVERTER TECHNOLOGY

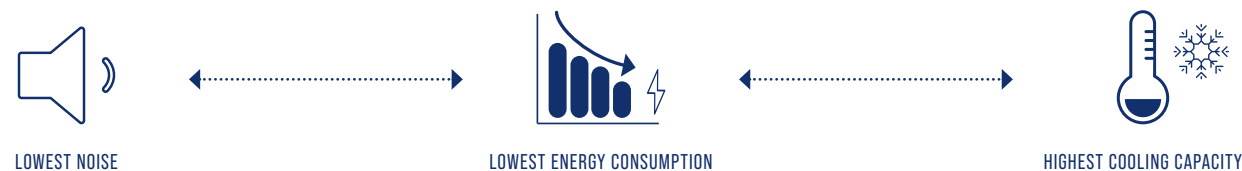
Advanced design means you can enjoy a choice of operating profiles, while also benefiting from reduced energy consumption and increased service life. Inverter technology allows cooling capacity and temperature control to be optimized regardless of vehicle engine speed, while also making rapid unit start-up a useful bonus.

### HOW IT COMPARES

Our electric refrigeration solution offers the best for you and for the planet. Inverter technology sets the standard with unbeatable efficiency, ultra-lightweight design, and industry-leading cooling and heating capabilities, creating a unique full-electric platform solution.

### FLEXIBILITY AND CHOICE

Choose the operating profile that best suits your cargo, your customer and your location: Lowest noise, lowest energy consumption or highest cooling capacity.



### BENEFITS

Innovative use of our inverter system means reduced energy requirements, improved load quality and longer component life.



#### AW ALTERNATOR

Transforms mechanical power from the vehicle engine to electricity, to power the HK refrigeration unit.

#### INVERTER

INTEGRATED IN THE UNIT

Delivers constant voltage and frequency to the unit regardless of vehicle engine speed. Guarantees rapid start-up of the unit with low mechanical stress. Provides optimum load temperature control with minimum power consumption.

### INNOVATION

The new HK looks similar from the outside, but its true magic lies on the inside. The new HK units offer up to 20 % faster pull-down compared to the previous generation. By seamlessly integrating full power electronics into the unit, intelligent control for remarkable efficiency has been unlocked. Features like the whisper mode, internal telemetry and the ability to operate in high ambient regions are answering the changing needs of the customer and regulations.

### AXLEPOWER TECHNOLOGY

A lot of energy is lost when your vehicles are on the road. That energy can be used to keep your load at optimum temperature. Thermo King's AxlePower technology redresses the balance: turning lost energy into a power source for trailer refrigeration. Developed in partnership with BPW, the system benefits from decades of experience in refrigerated transport.

AxlePower integrates seamlessly into your existing fleet and delivers low-noise, high-powered performance in fully electric powered units.

The system's electric operation results in lower fuel consumption and less maintenance costs. On top of this, the system also heightens your fleet's flexibility, unlocking late-night and last-mile deliveries in zero-emission city districts. All of this makes AxlePower not only a flexible power source for your fleet but also affordable and sustainable. Combined with smart power management capabilities, your drivers can take on any journey with complete confidence.

### BENEFITS

Designed to recuperate energy from a trailer's braking and movement, AxlePower enables you to reduce energy consumption. During routine operation, power is captured and stored in the AxlePower Energ-e Pack for use whenever it is needed. A process that removes the unit's CO<sub>2</sub> emissions, while also reducing the fuel needed to power the transport refrigeration unit.



#### ENERG-E PACK

The high-voltage battery holds at least 2-8 hours of autonomous operation and has rapid battery charge. Choose between two varieties, a Standard (19 kWh) and an Extended (38 kWh) Autonomy Pack, to create the best fit for your fleet.

#### AXLE GENERATOR

The ePower Axle from BPW delivers energy to charge the battery



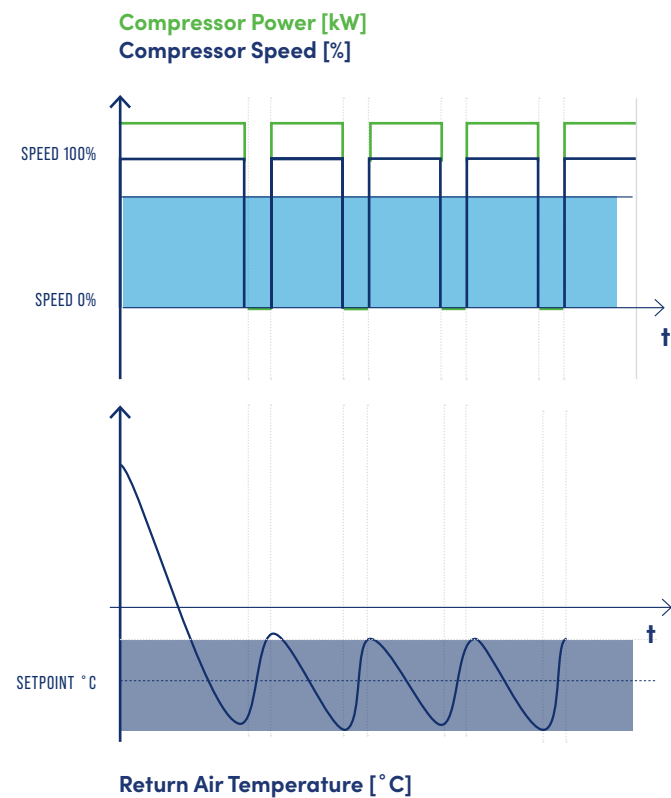
# SMART CONTROL

## TO REDUCE ENERGY CONSUMPTION

Achieve up to 80 % improved efficiency with the variable-motor-speed control available on i-units. This feature allows our customers to further reduce their energy consumption compared to previous generation and other units in the market.

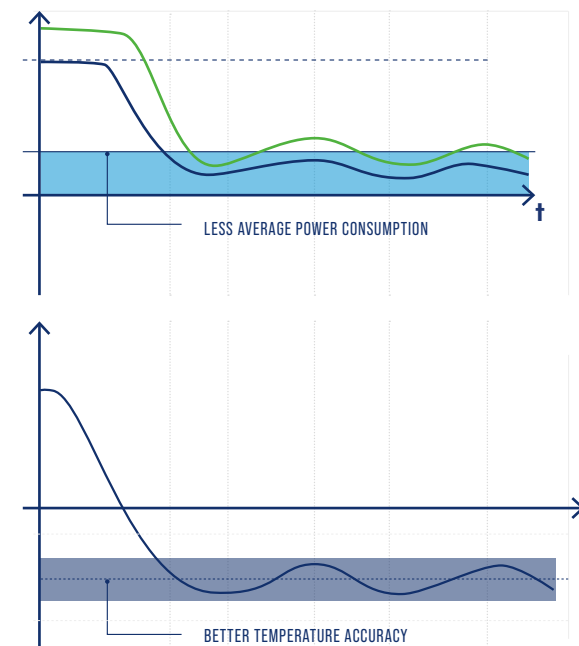
### Classic/R-units

On-Off motor control



### i-UNITS

Full-variable motor speed control



# FLEXIBLE CHOICE

## TO MEET YOUR PRECISE NEEDS

### FLEXIBLE CHOICE

The Frigoblock HK unit can be combined with up to two ultra slim remote evaporators of four different sizes. You can choose between multiple compartments or use remote evaporators to increase the power in a shared compartment.

### SINGLE DISCHARGE



RE 42-1  
Compatible with HKe only

### DUAL DISCHARGE



RE 11-2



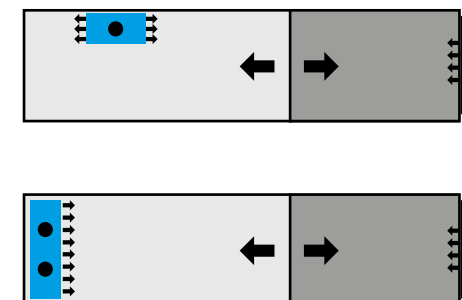
RE 22-2



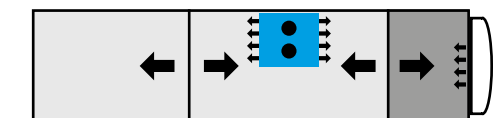
RE 44-2  
Compatible with HKe only

### MULTIPLE CONFIGURATION OPTIONS

Possible 2 zones configurations HKi/e



Possible 3 zones configurations HKe



Compatible with HKe only



# TECHNICAL INFORMATION

PERFORMANCE		HKe	HKi
REFRIGERATION SYSTEM NET COOLING CAPACITY AT 30 °C AMBIENT			
Capacity @ electric mode 0 °C	W	17.200	18.500
Capacity @ electric mode -20 °C	W	9.500	10.000
HEATING BOX TEMPERATURE +2°			
Capacity @ electric mode (Independent from outside air temperature)	W	8.600	8.600
Capacity on hot gas (Outside air temperature: -20 °C)	W	20.000	20.000
AIR - INDEPENDENT FROM UNIT ENGINE SPEED			
Maximum ambient temperature	°C	50	55
Airflow volume @ 0 Pa static pressure	m³/h	5.300	6.400
Air throw	m	9	10
TECHNICAL DATA			
GENERIC			
Refrigerant		R410A	R410A
Controller		RUF FB2	iSMART RUF FB2
Dimensions (H x W x D)	mm	2.000 x 1.380 x 425	2.000 x 1.380 x 425
Weight	kg	375	400
Sound Pressure (7.5 m) @ Whisper mode	dB(A)	65	64
Sound Pressure (7.5 m) @ Whisper mode pro (coming soon)	dB(A)	N.A.	< 62
COMPRESSORS			
Cylinders		4	4
Displacement	m³/h	48.2	57.9
HEAT EXCHANGER			
Evaporator surface area	m²	56	57
Condenser surface area	m²	63	72
INVERTER			
Compressor motor		Fast/Slow mode	Stepless control
Fans		Fixed speed	Stepless control

ALTERNATORS		AW 22.5	AW 30
Capacity	kVA	22.5	30.0
Voltage	V	400	400
Current	A	32	43
Dimensions (H x W x D)	mm	187 x 187 x 336	187 x 187 x 411
Weight	kg	49	60

REMOTE EVAPORATORS		RE 42-1	RE 11-2	RE 22-2	RE 44-2
Airflow volume (ATP Conditions)	m³/h	4.000	1.950	3.800	6.800
Air throw, without ducting	m/s	6-7	6-7	6-7	6-7
Fans		2	1	2	4
Discharge		Single	Dual	Dual	Dual
Dimensions (H* x W x D)	mm	140 x 2.160 x 680	160 x 720 x 1.120	160 x 1.160 x 1.120	140 x 2.160 x 1.020
Weight	kg	52	46	74	92

\* Can be recessed 40mm into the roof  
Subject to technical changes without prior notice.





# DISCOVER THE COMPLETE ELECTRIC RANGE

DISCOVER OUR FULL PRODUCT RANGE,  
ALL TECHNICAL SPECIFICATIONS AND OUR  
EXTENSIVE '24/7/365' SERVICE NETWORK  
**AT [WWW.FRIGOBLOCK.COM](http://WWW.FRIGOBLOCK.COM)**



FRIGOBLOCK GmbH is a brand of Thermo King®. Thermo King – by Trane Technologies (NYSE: TT), a global climate innovator – is a worldwide leader in sustainable transport temperature control solutions. Thermo King has been providing transport temperature control solutions for a variety of applications, including trailers, truck bodies, buses, air, shipboard containers and railway cars since 1938.