



CLIMATE CONTROL SYSTEMS / DEFENSE

# READY FOR EVERY MISSION

Heating & Air Conditioning Solutions


# EBERSPÄCHER GROUP

 **28** countries\*

 **10,600** employees

 **80** locations

 **6.0** billion euros in total revenue

 headquarters  
Esslingen, Germany



## CLIMATE CONTROL SYSTEMS



-  Enhanced application expertise for heating and cooling
-  Extensive product portfolio for heating and cooling
-  Accessories for a wide variety of applications
-  A/C and heating specialists combined to make one powerful team

# EXPERTS IN COOLING AND HEATING.

## FOR MILITARY SHELTERS AND VEHICLES.

Active duty services members are stationed all over the world. Regardless of the location or climate, thermal management technology by Eberspächer provides ideal temperatures so that they can do their work. We outfit military shelters and vehicles with customized air conditioning, tailored to comply with any requirements and regulations to ensure operational readiness under any condition. Find your optimal solution for cooling, heating and ventilation – all from Eberspächer and all from a single source.

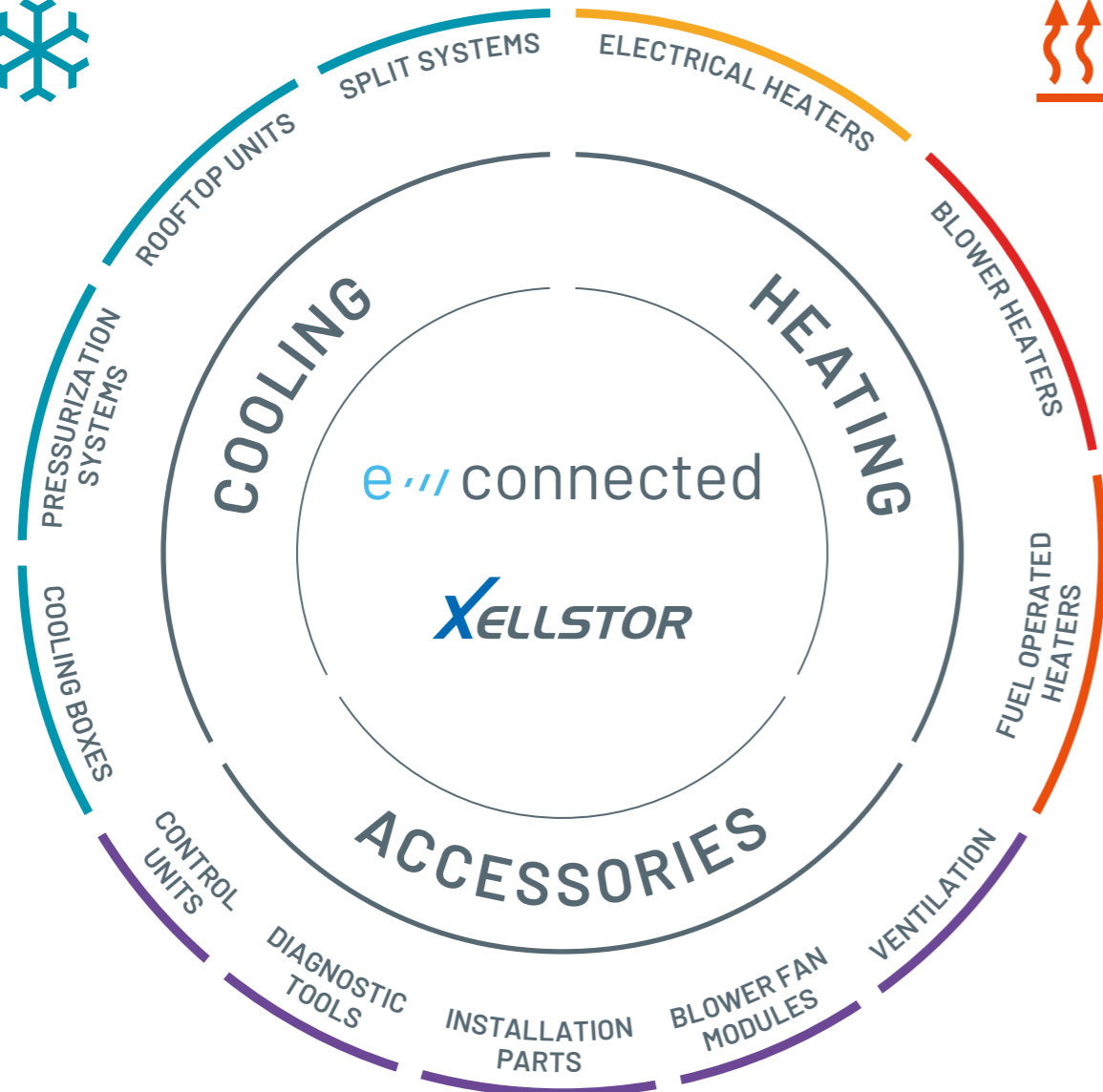
[Defense]



\* All numbers as of 2021

# OUR PRODUCT PORTFOLIO

COOLING



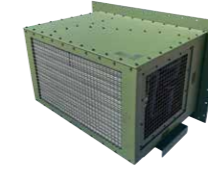
ACCESSORIES & CONTROLS



# PRODUCTS FOR MILITARY VEHICLES AND SHELTERS



CONTROL UNIT



HVAC SYSTEM



SHELTER DIESEL HEATER



GRILL



MOBILE FUEL OPERATED HEATER



FUEL OPERATED WATER HEATER



FUEL OPERATED AIR HEATER



SHELTER FUEL TANK

# FUEL OPERATED HEATING SOLUTIONS

## FUEL OPERATED WATER HEATERS

- Preheating of the engine and the vehicle's interior
- Suitable for the most demanding military requirements, meeting rigorous shock, vibration, EMC, and environmental conditions
- Long service life of 5,000 hrs (Hydronic S3) and 6,000 hrs (Hydronic M)
- Protected from dust in harmful quantities, strong water jets under increasing pressure and high-pressure water / steam jet cleaning
- Integration of heater in the vehicle's control panel and in the vehicle's own diagnostics possible
- Operation temperature range: -40 °C to 80 °C (Hydronic S3, Hydronic M2), -40 °C to 85 °C (Hydronic L2)

### HYDRONIC S3



Version [Diesel, 24 V]	S3 D5L	S3 D6L
Variants	Civilian	Military and Civilian
Heating performance kW	1.3 – 5.0	1.3 – 5.6
Fuel consumption l/h	0.15 – 0.59	0.15 – 0.65
Weight kg	2.0	
Main dimensions* l x w x h mm	215 x 91 x 180	
Interfaces	CAN/S+	

\* With straight connection fittings

### HYDRONIC M2



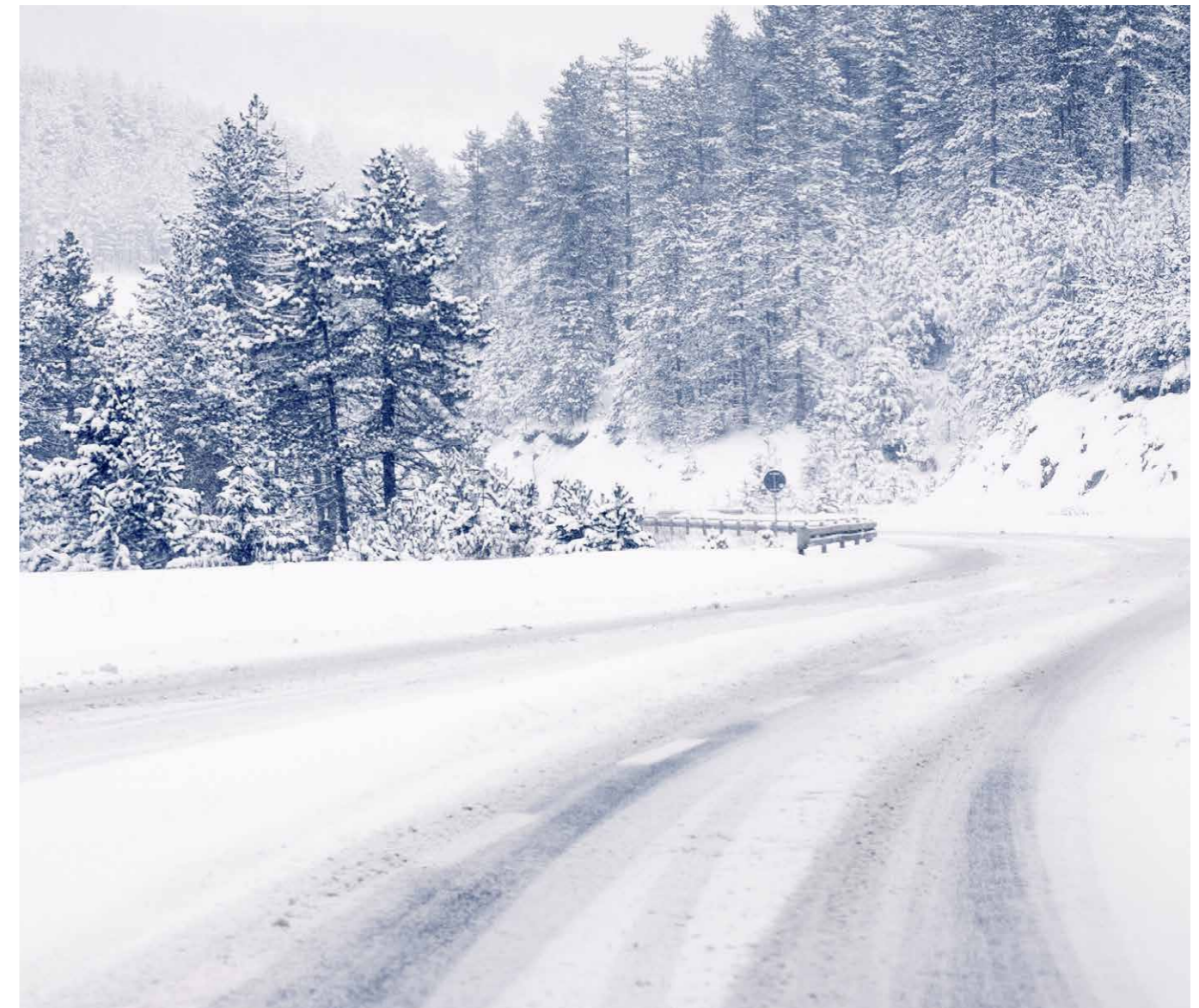
Version [Diesel, 24 V]	M8 Biodiesel*	M10	M12
Variants	Civilian	Military and Civilian	Military and Civilian
Heating performance kW	1.5 – 8.0	1.5 – 9.5	1.2 – 12.0
Fuel consumption l/h	0.18 – 0.9	0.18 – 1.2	0.15 – 1.5
Weight kg	6.2		
Main dimensions l x w x h mm	331 x 138 x 221		
Interfaces	LIN		

\* 100% biodiesel compatible in accordance with FAME DIN EN 14214

### HYDRONIC L2



Version [Diesel, 24 V]	L16	L24	L30	L35
Variants	Civilian			Military and Civilian
Heating performance kW	16.0	24.0	30.0	35.0
Fuel consumption l/h	2.0	2.9	3.65	4.2
Weight kg	18			
Main dimensions l x w x h mm	600 x 230 x 222			
Interfaces	S+			



## FUEL OPERATED AIR HEATERS

- Rapid interior heating thanks to fast direct heat output
- Highly efficient electricity consumption enables continuous operation
- Can be installed independently from existing heating or A/C systems
- Long service life of 5,000 hrs
- Operating temperature range: -40 °C to 70 °C
- Available as civilian variants

### AIRTRONIC S3 / M3



Version [Diesel, 24 V]	S3 D2L	M3 D4L
Heating performance kW	0.85 – 2.2	1.05 – 4.0
Fuel consumption l/h	0.1 – 0.27	0.12 – 0.49
Weight kg	2.5	approx. 4.5
Main dimensions l x w x h mm	310 x 115 x 122	376 x 140 x 150
Interfaces	CAN/S+	

### AIRTRONIC L3 / XL3



Version [Diesel, 24 V]	L3 D6L	XL3 D8L
Heating performance kW	1.5 – 6.0	2.0 – 7.6
Fuel consumption l/h	0.16 – 0.74	0.23 – 0.96
Weight kg	approx. 7.0	8.5
Main dimensions l x w x h mm	438 x 160 x 170	
Interfaces	CAN/S+	

### POLARN – MOBILE HEATER



- High heating performance, fast operational readiness
- Mobile and versatile at all times
- Low electricity and fuel consumption
- Maintenance-free

Version [Diesel, 24 V]	Polarn 4000	Polarn 8000
Heating performance kW	0.9 – 4.0	0.35 – 8.0
Fuel consumption l/h	0.11 – 0.51	0.4 – 1.05
Weight kg	approx. 11.0	approx. 26.0
Control stages	2	4



# AIR CONDITIONING SOLUTIONS

## DESIGN SERVICES FOR CUSTOM SOLUTIONS

Eberspächer offers custom HVAC solutions that can be tailored to suit every detail of our customers' requirements. We have over 25 years of experience designing, developing, and testing custom HVAC solutions for military applications across the globe. We work closely with our customers to ensure that their requirements are met in a timely and cost-effective manner. Our exceptional aftersales service provides up to 30 years of support and service technicians are available to service our products worldwide.

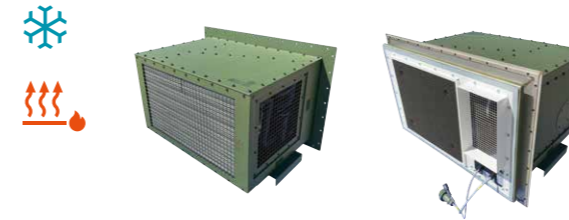
- Full product lifecycle development: from rough idea to fully validated product, supported globally using our extensive Group network
- Assistance in every stage: requirement generation, highly managed and gated programs that make the customer the focus
- Comprehensive tools: broad range of in-house design tools for development and simulation
- Extensive testing: in-house dual cell test chamber -33 °C to 71 °C; strong external test house links for EMC, shock and vibration, environmental suitability, and more

## HVAC SYSTEMS

- Controlled remotely, high capacity, external HVAC
- Designed to condition any enclosed space
- Hermetically sealed refrigeration circuit
- Capable of withstanding 12 g vertical shock
- Capable of operating in the harshest environments
- For use on military shelters
- Easily adapted to suit a large range of specifications according to customer requirements
- Remote control box allows HVAC to be controlled from within the conditioned space or from outside



### E5 / E7 / E9



Version		E5	E7	E9
Cooling performance	kW	up to 4.9	up to 8.3	up to 9
Heating performance	kW	up to 2.3	up to 4.1	up to 6
Power supply		230 V/50 Hz/1~	400 V/50 Hz/3~	400 V/50 Hz/3~ 208 V/60 Hz/3~ available
Operating temperature range	°C	-32 to 49	-32 to 55	-46 to 49
Storage temperature range	°C	-33 to 71	-33 to 71	-46 to 71
Airflow	m³/h	up to 750	up to 1820	up to 1900
Fresh air capacity		Passive air inlet	up to 200 m³/h	Passive air inlet
EMC performance		Land Class B (Def-Stan 59-41)	MIL-STD 461F (Army-Ground)	Land Class A (Def-Stand 59-41)

### E5 KEY FEATURES:

- Suitable for marine environments
- Slide in slide out mounting arrangements
- Hermetically sealed refrigeration circuit
- Airsock interface option

### E7 KEY FEATURES:

- Suitable for marine environments
- Direct integration with shelter HMI via CAN network
- Speed-controlled fresh air fan, can be controlled by CO<sub>2</sub> level
- Hermetically sealed refrigeration circuit
- Heat pump option for efficient, high-capacity heating

### E9 KEY FEATURES:

- Long service life of more than 30,000 hrs
- NEMP and LEMP protection
- High degree of shock and vibration resistance
- Controlled via a remote control box or the HVAC itself

MACR / MVCR



Version	MACR	MVCR
Cooling performance kW	up to 22	up to 22
Heating performance kW	up to 9	up to 9
Power supply	400 V/50 Hz/3~ (HVAC)	400 V/50 Hz/3~ (HVAC) 230 V/50 Hz/1~ (AHUs)
Operating temperature range °C	-40 to 55	-40 to 55
Storage temperature range °C	-40 to 71	-40 to 71
Airflow m³/h	up to 4,700	up to 4,000
Fresh air capacity	up to 200	Fresh air inlet as part of one AHU
EMC performance	Land Class B (Def-Stan 59-41)(HVAC)	Land Class B (Def-Stan 59-41)(HVAC) Land Class A (Def-Stand 59-41)(AHUs)

MACR KEY FEATURES:

- Ducting-based system that allows for rapid connection and deployment
- Ventilation via speed-controlled fresh air fan

MVCR KEY FEATURES:

- Glycol-based system that operates with supplied air handling units
- Dry-break fittings allow the glycol system to be disconnected easily

VK9



- Powerful vertical unit that can be installed in a dashboard to heat and cool the driving space
- Also available as VAC version (cooling only)
- Also available as FAI version with 6 outlet louvers and an integrated control panel
- For a better fit, 2 standard pressure regulator versions are available, rear or lateral outlet

Version	VK9 HVAC E
Cooling performance kW	8
Heating performance kW	10
Airflow m³/h	670
Operating temperature range °C	-20 to 40
Storage temperature range °C	-30 to 70
Electrical consumption W	300
Compatible refrigerant	R134a/R1234yf
Blower voltage V	12 or 24

# ACCESSORIES AND CONTROLS

AIR OUTLETS / GRILLS



- Extensive range of outlets with different designs, functions, and installation options
- Developed in house, customized for the application
- Durable elements, made of high-quality plastics
- Simple and easy to install

CONTROL UNIT FOR FUEL OPERATED HEATERS – EASYSTART PRO



- Intuitive timer setup
- Easy to use even while wearing gloves
- Operation of two heaters with only one control unit possible
- Integrated temperature sensor makes installation simple and lowers costs
- Fast servicing thanks to rapid troubleshooting

DIAGNOSTIC TOOL FOR FUEL OPERATED HEATERS – EASYSCAN



- Failure analysis of devices and components
- Comprehensive evaluation of current operating status
- Error code display including additional system parameters
- Easy optimization of control units such as EasyStart Pro including firmware updates

SHELTER FUEL TANK



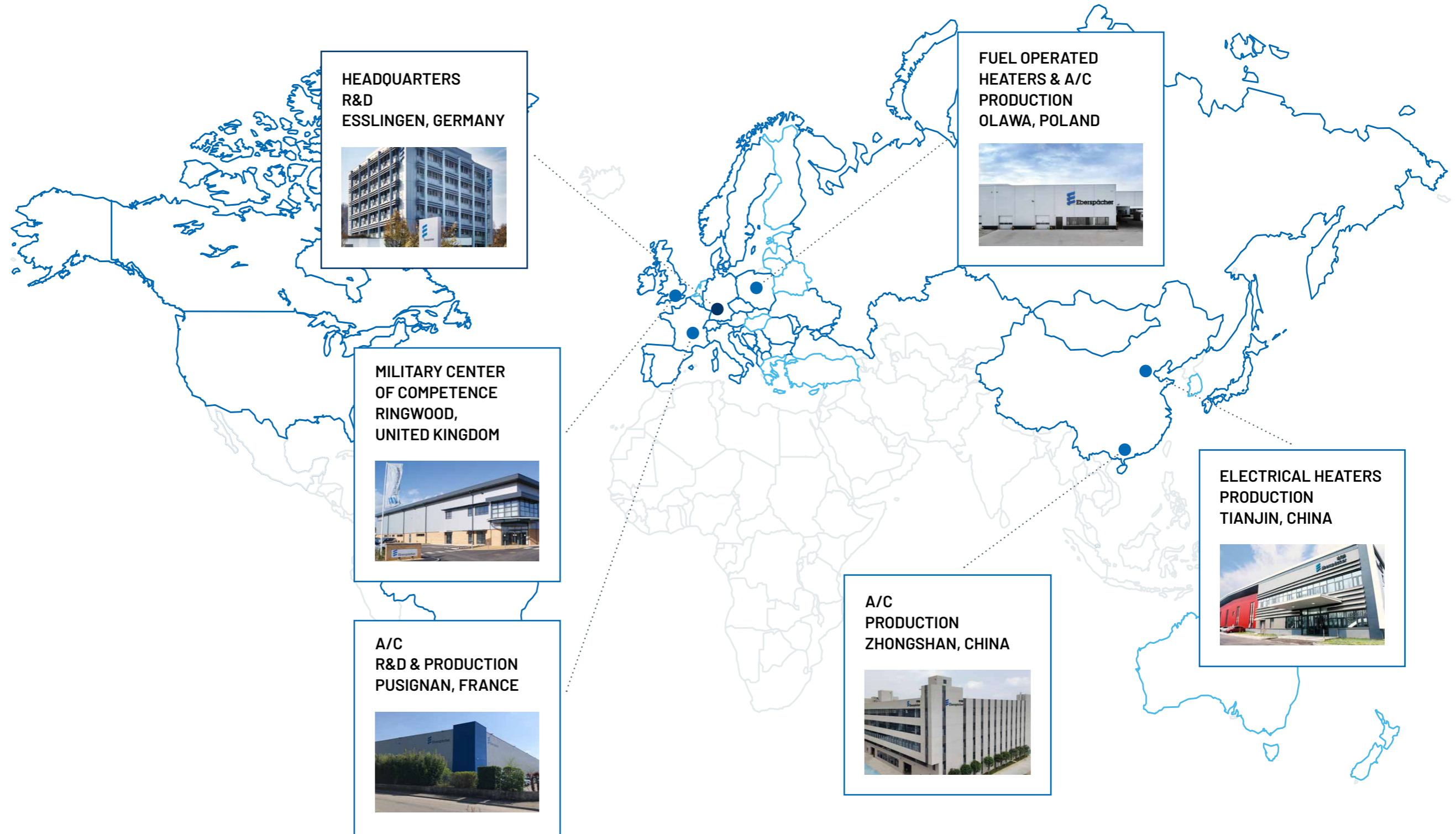
- Shock and vibration-resistant design, suitable for demanding military transport
- Military-grade painted, stainless-steel enclosure
- Suitable for use in DEF-STAND 00-35 C2 climate (-40 °C)
- Electronics fuel level sensor communications with Diesel heater

SHELTER DIESEL HEATER



- Rugged stainless steel enclosure allows for simple attachment to the shelter and provides plug & play operation for heaters


# GLOBAL FOOTPRINT




**HEADQUARTERS  
R&D  
ESSLINGEN, GERMANY**




**FUEL OPERATED  
HEATERS & A/C  
PRODUCTION  
OLAWA, POLAND**



**MILITARY CENTER  
OF COMPETENCE  
RINGWOOD,  
UNITED KINGDOM**



**ELECTRICAL HEATERS  
PRODUCTION  
TIANJIN, CHINA**



**A/C  
R&D & PRODUCTION  
PUSIGNAN, FRANCE**



**A/C  
PRODUCTION  
ZHONGSHAN, CHINA**



BRANCHES  
ESSLINGEN, GERMANY

SUBSIDIARY

GENERAL AGENTS



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