APPLICATION EXAMPLES



Secop BD compressors mean: extraordinary performance at minimum power consumption, superbly silent running, reliable operation even when tilted up to 30 degrees, problem-free operation at 12/24/48 volts and more than 40 years' of experience in mobile refrigeration.

Transport stable, speed/capacity stable, multifunctional electronic, silent, high COP and compact design.























BD COMPRESSORS BRING COMFORT AT WORK AND LEISURE

The direct current compressors BD35F/50F/80F for 12/24 V DC power supply can be used in mobile refrigerators and freezers with refrigerant R134a.

The BD250GH.2 and the BD350GH compressors in 12/24 or 48 V DC versions are R134a HBP compressors used for mobile spot cooling systems or telecommunication cooling.

BD35/50K (R600a) and BD80/100CN (R290) are compressors that use HFC-free refrigerants.

All compressors are equipped with an electronic unit with built-in protection against shortages, operation outside temperature limits, and destructive battery discharge.

The advanced micro-controller technology enables new functions such as an electronic thermostat, fan speed, ECO function, alarm log, event log, and software main switch.

Second to none-even cooling "without power supply"

Thanks to an extensive voltage rate the BD compressors are ideal for operation by solar power.

The exceptionally low-starting current eliminates the need for batteries if an ice bank is used for energy storage. When storing the converted sun energy in ice packs, the cabinet can be kept at desired temperatures both night and day.

This feature offers numerous uses in areas without power supply such as for the storage and transportation of vaccines, drugs, ice cream stands in holiday resorts, food preservation under off road conditions, and refrigerators in boats to name only a few.

BD1.4F-AUT0.3 (BD Micro)

The BD1.4F-AUT0.3 is the latest generation of BD Micro compressors specially designed for high-end car minibars.

It features an optimized noise level and is also approved for refrigerant R1234yf.

BD1.4F-VSD.3 (BD Micro Variable Speed Drive)

The BD1.4F-VSD.3 (new BD Micro generation with optimized noise level and approved for refrigerant R1234yf) is 60% smaller than previous models and weighs in at only 2.3 kilograms.

Perfect for 10–30 liter in car, van, boat cabinets, or portable boxes that need to fit into tight spaces without compromising storage space.

This powerhouse of a compressor makes it easier than ever to provide leading-class mobile refrigerators.

Enabling the variable speed function increases the system's COP. Low energy consumption is good for car, boat, or van batteries as well as the environment. The optimized, low-noise motor ensures outstanding performance for offering that extra degree of luxury on the go.

The electronic thermostat (NTC sensor support) provides an accurate temperature while the failure detection allows fast fault diagnosis. The computer interface makes it easier for customization.

BD35F-HD.2, BD250GH.2-HD, BD1.4F-VSD-HD (Heavy Duty)

BD35F-HD.2, BD250GH.2-HD (48V) and BD1.4F-VSD-HD and are new versions which can handle extreme vibrations.

BD35F-B, BD35K-B (Bus-optimized)

The BD35F-B and the BD35K-B are special versions optimized for rough vehicle motions, especially in buses.

BD50K (Isobutane, R600a)

The new BD50K offers 25% additional cooling capacity compared to the BD35K compressor.



Applications	BD1.4F-AUTO.3	BD1.4F-VSD.2	BD1.4F-VSD-HD	BD35F	BD35F-B	BD35F-HD.2				
Truck refrigerators	-	\checkmark	\checkmark	\checkmark	-	\checkmark				
Boat refrigerators	-	~	-	~	-	-				
Bus refrigerators	-	~	-	~	~	-				
Portable boxes	-	~	-	~	-	-				
Car minbars (high end)	~	~	-	~	-	-				
Car minibars (SUV, MPV)	-	~	-	~	-	-				
Spot cooling (e.g. trucks)	-	-	-	-	-	-				
Van boxes	-	-	-	-	-	-				
Battery cooling	-	-	-	-	-	-				
Solar cabinets	-	-	-	~	-	-				

Compressors									
BD35K /-B	BD50K	BD50F	BD80F	BD80CN	BD100CN	BD250GH.2	BD350GH	BD220CL	
\checkmark	\checkmark	\checkmark	-	\checkmark	-	-	-	-	
\checkmark	~	~	~	~	~	-	-	-	
\checkmark	\checkmark	-	-	~	-	-	-	-	
\checkmark	\checkmark	\checkmark	\checkmark	-	-	-	-	-	
\checkmark	-	-	-	-	-	-	-	-	
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-	-	\checkmark							
-	-	-	-	-	-	\checkmark	\checkmark	-	
\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	-	-	-	

COMFORT COOLING IN TRUCKS



In the USA, Australia, Asia, South America, and Europe many of the heavy trucks are equipped with sleeping compartments. The cab gives the driver the opportunity to respond to spontaneous transport tasks and to plan his own work day.

To ensure a good night sleep it is important to keep the temperature and humidity in the cabin at a comfortable level also during night time when the engine is shut off and the air conditioning system is not running. Many states and countries have abandoned idle cooling, meaning the diesel engine is not allowed to run when the truck is parked.

To keep a comfortable temperature during the hot summer nights, a small DC-driven comfort cooler system could be the solution. It cools down the cabin and at the same time lowers the humidity to a comfortable level. BD250GH.2 and BD350GH compressors are tailored to workplaces where driving is required.

They are universal for 12 V and 24 V DC power supplies. In addition, they are unsurpassed when it comes to tolerating changeable climatic conditions and vibrations under harsh road conditions all over the world.

BD compressors cover a capacity range from 180 W to 850 W at Te +15 °C and are specially designed for high back pressure applications.

The compressors are controlled by an electronic unit that also offers protection against overload and hazardous battery discharge. The unit also features an internal voltage recorder as well as calibration to the applied voltage (compressor monitoring) plus many other smart features in order to save energy and maximize performance.

Fea	tures	Ber	hefits
\rightarrow	Silent operation	\rightarrow	The driver can sleep without being disturbed by a noisy compressor.
\rightarrow	High efficiency. Low current consumption	\rightarrow	Energy-saving. Less battery power needed to cool overnight.
\rightarrow	Variable speed/capacity	\rightarrow	Energy savings. Adapts speed to cooling needs.
\rightarrow	Direct 12 V/24 V DC power supply	\rightarrow	Same compressor can be used globally. One product covers the world.
\rightarrow	Modbus communication connection	\rightarrow	Customers can make their own control box including control of the BD compressor.
\rightarrow	Electronic thermostat	\rightarrow	Cost savings. No extra thermostat needed. Fewer components and failure modes.
\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Lower service costs.
\rightarrow	Fan speed control 40–100 %. Start/stop delays	\rightarrow	Less noise during night. Fewer components, fewer costs, less wiring, fewer installation costs.
\rightarrow	Advanced battery protection function	\rightarrow	Safety. The battery will never be drained. Truck can be started safely every time.
\rightarrow	No APU necessary	\rightarrow	Runs directly on battery. No additional cost for an auxiliary power unit. Lower costs and failure modes.
\rightarrow	Transport stable	\rightarrow	Designed to resist vibrations, shocks, and bumping roads. Design lifetime 10 years. Lower service costs.









COOLING IN MARITIME APPLIANCES



The BD compressor series is specially designed for refrigeration in boat applications. A sturdy design enables it to resist vibrations, hard impacts, and heavy seas.

BD compressors cover a capacity range from 20 to 180 Watt. They are ideal for low and medium back pressure applications and refrigerator sizes up to 180 liters and freezers up to 90 liters.

The compressor's capacity can be adjusted manually. A special version of the electronic unit will adapt the capacity of the compressor automatically (AEO) to the actual load on the refrigeration system. The algorithm will adjust the speed of the compressor to achieve a running time of approximately 30 minutes. This is the most energy efficient way to operate the compressor.

The BD1.4F-VSD.3 and BD35F/BD50F (with electronic unit 101N0242) offer an ECO function which adapts the speed of the compressor so that it runs at an optimal level.

Furthermore, these functions protect the compressor from short cycling in low load situations and also reduce the number of starts and thus saving battery life. An optional LED (diode) will flash and the following faults will be indicated by a blinking light:

low battery voltage, fan overload, minimum speed exceeded, thermal cut-out, motor start error.

The new BD1.4F-VSD.3 has additional features such as fan speed control, built in electronic thermostat, communication interface which makes programming the controller easy without requiring resistors or extra wiring.

The electronic unit provides protection against electromagnetic interference (EMI) which will allow communication and navigation equipment to work unproblematically without any disturbance.

Fea	atures	Ber	
\rightarrow	Silent operation	\rightarrow	No compressor noise at night when sleeping next to the refrigerator in the boat.
\rightarrow	High efficiency. Low current consumption	\rightarrow	Energy-saving. Operates on a smaller battery.
\rightarrow	Variable speed/capacity	\rightarrow	Energy savings. Adapts speed to cooling needs.
\rightarrow	Direct 12 V/24 V DC power supply	\rightarrow	Same compressor can be used globally. One product covers the world.
\rightarrow	Modbus communication connection	\rightarrow	Customized settings and fast programming on the production line are possible.
\rightarrow	Electronic thermostat	\rightarrow	Cost savings. No extra thermostat needed. Fewer components and failure modes.
\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Lower service costs.
\rightarrow	Fan speed control 40 – 100 %. Start/stop delays	\rightarrow	Less noise during night. Fewer components, fewer costs, less wiring, fewer installation costs.
\rightarrow	Advanced battery protection function	\rightarrow	Safety. The battery will never be drained to a dangerously low level.
\rightarrow	AC/DC module available as option	\rightarrow	When staying in a port the refrigerator can be powered by shore power (100–240 V AC, $50/60$ Hz).
\rightarrow	Transport stable	\rightarrow	Designed to resist conditions on the sea such as vibrations, shocks, and inclement weather. Design lifetime 10 year. Lower service costs.











COOLING IN RECREATIONAL VEHICLES (RV)



Everybody wants to bring modern comfort with them when going on vacation or a weekend tour.

BD compressors make it possible to go on vacation in recreational vehicles all over the world and to bring along a refrigerator and a freezer – even in "off grid" places without power supply. The compressors are universal for 12 and 24 V DC power supply and can be used in recreational vehicles like luxury coaches, diesel motor homes, mini motor homes, travel trailers, and fifth wheels, truck campers, etc. They are unsurpassed when it comes to tolerating changeable climatic conditions and vibrations under harsh road conditions.

The BD1.4F-VSD.3, BD35F, BD50F and BD80F compressors cover a capacity range from 20 to 180 W. They are ideal for low and medium back pressure applications and refrigerator sizes up to 180 liters and freezers up to 90 liters. A special version of the electronic unit adapts the capacity of the compressor automatically (AEO) to the actual load on the refrigeration system. The algorithm adjusts the speed of the compressor to achieve a running time of approximately 30 minutes. This is the most energy efficient way to operate the compressor. The BD1.4F-VSD.3 and BD35F/BD50F (with electronic unit 101N0242) offer an ECO function which adapts the speed of the compressor so that it runs at an optimal level. It has additional features such as fan speed control, built in electronic thermostat, communication interface which makes programming the controller easy, without resistors and extra wiring.

The compressors are controlled by an electronic unit that also offers protection against overload and hazardous battery discharge. The unit also features an internal voltage recorder as well as calibration to the applied voltage (compressor monitoring).

\rightarrow	Silent operation	\rightarrow	No compressor noise during night when sleeping next to the refrigerator in the RV.
\rightarrow	High efficiency. Low current consumption	\rightarrow	Energy-saving. Operates on a smaller battery. Three times less energy consumption compared to absorption and fast pull down.
\rightarrow	Variable speed/capacity	\rightarrow	Energy savings. Adapts speed to cooling requirement.
\rightarrow	Direct 12 V/24 V DC power supply	\rightarrow	Same compressor can be used globally. One product covers the world.
\rightarrow	Modbus communication connection	\rightarrow	Customized settings and fast programming on the production line are possible
\rightarrow	Electronic thermostat	\rightarrow	Cost savings. No extra thermostat needed. Fewer components and failure modes.
\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Reduced service costs.
\rightarrow	Fan speed control 40 – 100 %. Start/stop delays	\rightarrow	Less noise during night. Fewer components, fewer costs, less wiring, fewer installation costs.
\rightarrow	Advanced battery protection function	\rightarrow	Safety. The battery will never be drained to a dangerously low level.
\rightarrow	Transport stable	\rightarrow	Designed to resist vibrations, shocks, mountain terrain, and bumping roads. Design lifetime 10 year. Reduced service costs.
\rightarrow	AC/DC module available as option	\rightarrow	During a stay at a campsite the refrigerator can be powered by mains power (100–240 V AC, $50/60$ Hz).











REFRIGERATORS IN TRUCKS



Most truck drivers are on the road for many days at a time. To keep their food and beverages cold they need refrigerators that can be built into the cab.

The BD compressors are tailored for the driving workplaces. BD35F-HD.2 and BD1.4F-VSD-HD are special versions designed to meet even harder road conditions where the refrigerator is mounted on the chassis of the truck. They are universal for 12 V and 24 V DC power supply.

Besides this they are unsurpassed in their ability to tolerate changeable climatic conditions and vibrations under harsh road conditions all over the world.

BD35F and BD50F compressors can be used for both refrigerators and freezers.

The compressors cover a capacity range from 20 to 180 W. They are ideal for low, medium and high back pressure applications and refrigerator sizes up to 80 liters incl. freezer compartment.

The compressors are controlled by an electronic unit that also offers protection against overload and hazardous battery discharge.

The unit also features an internal voltage recorder as well as calibration to the applied voltage (compressor monitoring).

The new BD1.4F-VSD.3 and the BD35F-HD.2 have additional features such as fan speed control, builtin electronic thermostat, communication interface which makes programming the controller easy without requiring resistors or extra wiring.

ге	atures	Bei	Terris
\rightarrow	Silent operation	\rightarrow	The driver can sleep without being disturbed by a noisy compressor.
\rightarrow	High efficiency. Low current consumption	\rightarrow	Energy saving. Less batteries needed to cool overnight.
\rightarrow	Variable speed/capacity	\rightarrow	Energy-savings. Adapts speed to cooling requirement.
\rightarrow	Direct 12 V/24 V DC power supply	\rightarrow	Same compressor can be used globally. One product covers the world.
\rightarrow	Modbus communication connection	\rightarrow	Customers can make their own control box including control of the BD compressor.
\rightarrow	Electronic thermostat	\rightarrow	Cost savings. No extra thermostat needed. Fewer components and failure modes.
\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Lower service costs.
\rightarrow	Fan speed control 40–100 %. Start/stop delays	\rightarrow	Reduces noise. Fewer components, fewer costs, less wiring, fewer installation costs.
\rightarrow	Advanced battery protection function	\rightarrow	Safety. The battery will never be drained. Trucks can be started safelyevery time.
\rightarrow	Meets EMI standards	\rightarrow	The electronic unit meets automotive standards and in most cases no additional EMI filters are needed.









COOLING IN MEDI BOXES



Manufacturers and users of transport equipment for medicines, vaccines, blood plasma, and organs know how critically important it is to store these products at the right temperature during transport. Vaccines and stored blood for example may only be given, if the temperature gradient during transport can be completely proven. Similar high requirements apply to protein medicines, dialysis preparations, and organs.

The BD35F and BD50F compressors have been specially designed for temperature controlled transportation. They ensure that the temperature can be kept at a constant temperature within the range of -18 °C to +8 °C and are therefore unsurpassed to be used in medi boxes for transporting medicines from main pharmacies to drugstores and organs from donor to recipient as well as storing medicines and vaccines in ambulances, for example.

BD compressors are universal for 12 V and 24 V DC power supply and can be used in medi boxes up to 150 liters.

The compressors cover a capacity range from 20 to 180 W. They are ideal for low and medium back pressure applications.

An electronic unit including protection against overload and hazardous battery discharge controls the compressors.

The unit also features an internal voltage recorder as well as calibration to the applied voltage (compressor monitoring).

The new BD1.4F-VSD.3 has additional features such as fan speed control, built in electronic thermostat, communication interface which makes programming the controller easy without requiring resistors or extra wiring.

Features		Ber	Benefits				
	\rightarrow	Reliable compressor. More than 40 years in the market.	\rightarrow	High level of security. No damage to vaccines, etc. due to too high temperatures.			
	\rightarrow	High efficiency. Low current consumption	\rightarrow	Energy-saving. Less battery consumption needed to cool overnight.			
	\rightarrow	Variable speed/capacity	\rightarrow	Energy savings. Adapt speed to cooling requirement.			
	\rightarrow	Direct 12 V/24 V DC power supply	\rightarrow	Same compressor can be used globally. One product covers the world.			
	\rightarrow	Modbus communication connection	\rightarrow	Customers can make their own control box including control of the BD compress Temperatures can be logged via communication interface.			
	\rightarrow	Electronic thermostat	\rightarrow	Very accurate temperature control. Cost savings. No extra thermostat needed. Fewer components and failure modes.			
	\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Reduced service costs.			
	\rightarrow	Fan speed control 40 – 100 %. Start/stop delays	\rightarrow	Fewer components, fewer costs, less wiring, fewer installation costs.			
	\rightarrow	Advanced battery protection function	\rightarrow	Safety. The battery will never be drained. Vans can be started safely every time.			
	\rightarrow	Lightweight compressor	\rightarrow	Easy to carry a smaller medical box to small towns, even with a small battery mounted in the box.			







SOLAR ASSISTED COOLING



With its BD35F and BD35K solar compressors, Secop offers a refrigeration solution for places with poor or no power supply. Thanks to the exceptionally low starting current, batteries are not required if an ice bank is used for energy storage.

BD35F and BD35K solar compressors offer numerous functions for manufacturers within the rapidly growing area of mobile and stationary refrigeration. For example, storage and transportation of drugs, storage of food under difficult conditions without power supply, ice cream stands in holiday resorts, remote bottle coolers, refrigerators in boats, just to name a few.

At times when there is no sun, the ice packs keep the cabinet at the set temperatures.

Its wide voltage range (10–45 V DC) makes the BD very suitable for powering photovoltaic systems.

The new BD50K with its High Speed controller needs an addional capacitor or battery but offers higher cooling capacity.

An example on the latter was displayed at a UN summit in Johannesburg, South Africa. On this occasion, we supplied the compressor for a solar cabinet, complying with the tough demands of WHO (storage for 3 days without power supply).

The concept is well accepted by WHO and UNICEF today.

Fea	tures	Ber	nefits
\rightarrow	Reliable compressor. More than 40 years in the market.	\rightarrow	High level of security. No damage to vaccines, etc. due to too high temperatures.
\rightarrow	High efficiency. Low current consumption	\rightarrow	Energy-saving. Less batteries needed to cool overnight.
\rightarrow	Variable speed/capacity	\rightarrow	Energy savings. Adapts speed to cooling requirement.
\rightarrow	Direct 12 V/24 V DC power supply	\rightarrow	Same compressor can be used globally. One product covers the world.
\rightarrow	Modbus communication connection	\rightarrow	Customers can make their own control box including control of the BD compress Temperatures can be logged via communication interface.
\rightarrow	Electronic thermostat	\rightarrow	Very accurate temperature control. Cost savings. No extra thermostat needed. Fewer components and failure modes.
\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Lower service costs.
\rightarrow	Fan speed control 40 – 100 %. Start/stop delays	\rightarrow	Fewer components, fewer costs, less wiring, fewer installation costs.
\rightarrow	Advanced battery protection function	\rightarrow	Safety. The battery will never be drained. Vehicles can be started safely every time
\rightarrow	Very low weight of compressor	\rightarrow	Easy to carry a smaller medical box to small towns, even with a small battery mounted in the box.







COOLING IN PORTABLE COOLING BOXES



Today, more and more people want to spend their vacation in places that are off the beaten track where there is no electricity power, yet they still want to be able to cool their food and beverages. This has created a demand for a market for portable cooling boxes.

The BD35F compressor is the ideal choice for this application. It is battery-powered, compact, light, and easy to carry around. It also functions as an independent compressor to refrigerate a cooler in the car during family outings. What's more, it's also nice for a salesperson to always have chilled food and beverages at hand.

The BD35F is universal for 12 and 24 V DC power supply. The compressors cover a capacity range from 20 to 130 W. They are ideal for low and medium back pressure applications. Cooling boxes from 18-150 liters. The electronic unit is mounted on the compressor – this means no additional mounting costs.

The compressors operate with electronic as well as standard mechanical thermostats. They can be powered directly from an AC/DC unit. A switch in the power supply cables can be mounted to eliminate standby power consumption.

The BD compressors have an internal voltage recorder and calibration to the applied voltage as well as adjustable battery protection settings. The capacity can be varied by regulating motor speed. An electronic unit including protection against overload and hazardous battery discharge controls the compressors. The new BD1.4F-VSD.3 has additional features such as fan speed control, built-in electronic thermostat, communication interface which makes programming the controller easy, without requiring resistors or extra wiring.

reatures	Benefits					
\rightarrow Low weight	ightarrow The smallest BD compressor weighs only 2.3 kg, making it easy to carry.					
ightarrow Small and compact	\rightarrow 60 % less volume on BD1.4F-VSD.3 compared to BD35F. Increase net volume of the box.					
ightarrow Silent operation	\rightarrow The owner can sleep close to the box without being disturbed by a noisy compressor.					
→ High efficiency. Low current consumption	ightarrow Energy-saving. Less battery capacity needed to keep the goods cooled.					
ightarrow Variable speed/capacity	ightarrow Energy savings. Adapts speed to cooling requirement.					
ightarrow Direct 12 V/24 V DC power supply	ightarrow Same compressor can be used globally. One product covers the world.					
ightarrow AC/DC module available as option	\rightarrow $$ If grid power is available, the box can be powered by mains power (100–240 V AC, 50/60 Hz).					
ightarrow Electronic thermostat	ightarrow Cost savings. No extra thermostat needed. Fewer components and failure modes.					
ightarrow Alarm & event logs	$ \begin{tabular}{lllllllllllllllllllllllllllllllllll$					
→ Fan speed control 40 – 100 %. Start/stop delays	→ Reducing noise. Fewer components, fewer costs, less wiring, fewer installation costs.					
ightarrow Advanced battery protection function	ightarrow Safety. The battery will never be drained. Cars can be started safely every time.					







CONTROL YOUR COLD CHAIN BD VAN BOXES

The most economical and efficient solution for small-scale transport is a mobile refrigeration unit that fits easily into cars and vans, and is powered by the car's own battery.

The advantages of such a solution are clear:

The vehicle does not need to be altered. Cabinets can also be moved from vehicle to vehicle and even run on 220 V AC with the help of an AC/DC converter when the engine is turned off. In addition, the systems are more energy efficient and can be custom built to a wide range of sizes — depending on storage requirements.

Finally, an expensive, impractical, specially adapted refrigerated van is no longer the only option on the market. In recent years, mobile cooling solutions have become increasingly competitive, and the latest solutions are far more economical, practical, and efficient. This is the most flexible and cost effective solution for meeting the HACCP guidelines.

- → Vans can be bought in standard model version and no extra bodywork on van is required
- \rightarrow Refrigeration when the engine is not running
- → Both battery and AC utility can be used via a converter
- → The box is mobile and can be handled separately.
 Can be used as extra refrigerator and can be loaded directly in the cooling or freezer room
- \rightarrow Lower energy consumption (lower CO₂ emission per kilometer)
- → The can can be used for other purposes when not being used to carry refrigerated food
- $\rightarrow~$ Van can be resold much easier
- \rightarrow No hygiene issues with the car itself
- \rightarrow "Streamlined" car lower wind resistance, lower energy consumption, lower CO $_2$ emission
- \rightarrow Operation and service much easier

reatares		benento				
Runs directly on the car batteries	\rightarrow	Keeps the goods active cooled also when the van is stopped for loading and unloading.				
High efficiency. Low current consumption	\rightarrow	Energy-saving. Makes it possible to cool also when the van's motor is stopped.				
Variable speed/capacity	\rightarrow	Energy savings. Adapt speed to cooling requirement.				
Direct 12 V/24 V DC power supply	\rightarrow	Same compressor can be used globally. One product covers the world.				
Modbus communication connection	\rightarrow	Customers can make their own control box including control of the BD compressor.				
Electronic thermostat	\rightarrow	Cost savings. No extra thermostat needed. Fewer components and failure modes.				
Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Reduced service costs.				
Fan speed control 40–100 %. Start/stop delays	\rightarrow	Fewer components, fewer costs, less wiring, fewer installation costs.				
Advanced battery protection function	\rightarrow	Safety. The battery will never be drained. Vans can be started safely every time.				
	Runs directly on the car batteries High efficiency. Low current consumption Variable speed/capacity Direct 12 V/24 V DC power supply Modbus communication connection Electronic thermostat Alarm & event logs Fan speed control 40 – 100 %. Start/stop delays Advanced battery protection function	Runs directly on the car batteries \rightarrow High efficiency. Low current consumption \rightarrow Variable speed/capacity \rightarrow Direct 12 V/24 V DC power supply \rightarrow Modbus communication connection \rightarrow Electronic thermostat \rightarrow Alarm & event logs \rightarrow Fan speed control 40 – 100 %. Start/stop delays \rightarrow Advanced battery protection function \rightarrow				







TELECOM COOLING INCREASE BATTERY LIFETIME



When power fails, battery cooling systems must draw on their batteries' power. Since the compressor is the main power consumer, a lot can be gained with a solution that is extremely efficient without being overly power hungry.

By using a battery powered direct current (DC) compressor, it is possible to build a cooling system that can run on batteries, solar cells, and wind turbines without needing to convert to alternating current (AC).

The BD250GH.2 and BD350GH compressors are unique as they are constructed with integrated fan control and electronic thermostat. In this way, it is possible to simplify the design of the overall system and still ensure maximum performance. With battery drain being a big issue, it is important to use an energy efficient compressor with the highest COP possible.

Compared to other solutions that rely on AC and 230 V AC conversion, the BD250GH.2 and BD350GH compressors save up to 250 W per hour.

In areas that rely on battery power for up to 16 hours a day, you can be certain that Secop BD compressors will ensure that batteries will last as long as possible.

The optimal temperature for batteries is 25 °C. Anything above this will shorten their life expectancy and provide their owners with an inconvenient replacement cost.

Features B		Ber	Benefits				
	\rightarrow	Higher COP with DC compressors	\rightarrow	Better efficiency.			
	\rightarrow	Direct power supply to the compressor (32–62 V DC)	\rightarrow	Fast installation and fewer failure modes.			
	\rightarrow	100 % cooling, also at grid power failure	\rightarrow	Maintaining lifetime of batteries save up to 20.000 USD over 8 years.			
	\rightarrow	Up to 90 % less failure modes on BD compressors compared to AC solutions.	\rightarrow	Reduced service costs and much better "up-time" of the BTS station.			
	\rightarrow	Modbus communication connection	\rightarrow	Customers can make their own control box including control of the BD compressor. Remote monitoring possible.			
	\rightarrow	Electronic thermostat	\rightarrow	Cost savings. No extra thermostat needed. Fewer components and failure modes.			
	\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Reduced service costs.			
	\rightarrow	Fan speed control 40 – 100 %. Start / stop delays	\rightarrow	Fewer components, fewer costs, less wiring, fewer installation costs.			







MOBILE REFRIGERATION IN CARS



The demand for mobile refrigeration in cars has increased due to the increasing amount of time that people spend in them. With its compact design, low noise level, and robustness against vibrations, the BD compressor is the perfect solution for cool boxes in cars offering the driver and passengers the comfort not to stop every time they want food or something to drink. And when not on the road, the storage box keeps items cold for up to five hours after the car engine has been turned off. There are number of areas to place a cool box in a car. The center console area is possibly the most obvious location, but the cool box can also be put under the passenger seat or even within the front passenger seat — where access is via a lift-up seat cushion.

Lose excess weight and use the extra space for what really matters. The new BD1.4F-AUT0.3 and the BD1.4F-VSD.3 from Secop are 60 % smaller than previous models and weigh in at only 2.3 kilos. Perfect for 10–15 liter in-car cabinets that need to fit into tight spaces without compromising storage space.

Specially designed for maximum efficiency and reliability, this tiny powerhouse of a compressor makes it easier than ever to provide leading class mobile fridges to the discerning automobile manufacturers.

The optimized, low-noise motor ensures outstanding performance when you want to provide that extra degree of luxury on the move.

Cool beverages on demand make driving so much more of an experience. Fridges using the BD1.4F-AUT0.3 or the BD1.4F-VSD.3 take up less space and allow small fridges to fit easily with maximum storage space for snacks and beverages. Low energy consumption is good for car batteries and the environment.

10		DCI	
\rightarrow	Low weight	\rightarrow	Only 2.3 kg for the smallest BD compressor. Overall weight reduction in the car.
\rightarrow	Small and compact	\rightarrow	60 % less volume on BD1.4F-AUT0.3/-VSD.3 compared to BD35F. Increase net volume of the box.
\rightarrow	Silent operation	\rightarrow	The owner can sleep close to the box without being disturbed by a noisy compressor.
\rightarrow	High efficiency. Low current consumption	\rightarrow	Energy-saving. Less battery capacity needed to keep the goods cooled.
\rightarrow	Variable speed/capacity	\rightarrow	Energy savings. Adapts speed to cooling requirement.
\rightarrow	Direct power supply	\rightarrow	Same compressor can be used globally. One product covers the world.
\rightarrow	Transport stable	\rightarrow	Long lifetime. Minimum of spare parts.
\rightarrow	Electronic thermostat	\rightarrow	Cost savings. No extra thermostat needed. Fewer components and failure modes.
\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Reduced service costs.
\rightarrow	Fan speed control 40 – 100 %. Start/stop delays	\rightarrow	Reducing noise. Fewer components, fewer costs, less wiring, fewer installation costs.
\rightarrow	Advanced battery protection function	\rightarrow	Safety. The battery will never be drained. Cars can be started safely every time
\rightarrow	Meets EMI standards	\rightarrow	The electronic unit meets automotive standards.







MOBILE REFRIGERATION IN BUSES



Many coaches offer passengers to buy cold beverages during a long tour. BD compressors are universal for 12 V and 24 V DC power supply and can be used in all kind of busses. They are unsurpassed in tolerating changeable climatic conditions and vibrations under harsh road conditions. The BD1.4F-VSD.3, BD35F, BD35F-B and BD35K-B compressors cover a capacity range from 20 to 180 W. They are ideal for low and medium back pressure applications.

A special version of the electronic unit adapts the capacity of the compressor automatically (AEO) to the actual load on the refrigeration system. The algorithm adjusts the speed of the compressor to achieve a running time of approximately 30 minutes. This is the most energy efficient way to operate the compressor. The BD1.4F-VSD.3 and BD35F/BD35F-B/BD35K-B (with electronic unit 101N0242) offer an ECO function which adapt the speed of the compressor to an optimum level.

It has additional features such as fan speed control, built-in electronic thermostat, communication interface which makes programming the controller easy, without requiring resistors or extra wiring.

Ideal for refrigerator sizes up to 30–50 liters with freezer compartment. The compressors are controlled by an electronic unit including protection against overload and hazardous battery discharge.

The unit also features an internal voltage recorder as well as calibration to the applied voltage (compressor monitoring).

reatures		Dei	Denents	
\rightarrow	Low weight	\rightarrow	Only 2.3 kg for the smallest BD compressor makes it easy to carry.	
\rightarrow	Small and compact	\rightarrow	60 % less volume on BD1.4F-VSD.3 compared to BD35F. Increase net volume of the box.	
\rightarrow	Silent operation	\rightarrow	The owner can sleep close to the box without being disturbed by a noisy compressor.	
\rightarrow	High efficiency. Low current consumption	\rightarrow	Energy-saving. Less battery capacity needed to keep the goods cooled.	
\rightarrow	Variable speed/capacity	\rightarrow	Energy savings. Adapts speed to cooling requirement.	
\rightarrow	Direct 12 V / 24 V DC power supply	\rightarrow	Same compressor can be used globally. One product covers the world.	
\rightarrow	Special designed BD for buses.	\rightarrow	BD35F-B and BD35K-B reduce any noise from the compressor to an absolute minimum even on very bumpy roads.	
\rightarrow	Electronic thermostat	\rightarrow	Cost savings. No extra thermostat needed. Fewer components and failure modes.	
\rightarrow	Alarm & event logs	\rightarrow	Makes identifying errors fast and is easy to service. Reduced service costs.	
\rightarrow	Fan speed control 40 – 100 %. Start/stop delays	\rightarrow	Reducing noise. Fewer components, fewer costs, less wiring, fewer installation costs.	
\rightarrow	Advanced battery protection function	\rightarrow	Safety. The battery will never be drained. Busses can be started safely every time.	
\rightarrow	Meets EMI standards	\rightarrow	The electronic unit meets automotive standards and in most cases no additional EMI filters are required.	







AIR FREIGHT COOLING



Transporting pharmaceutical products by air around the world under safe and temperature-controlled conditions can mean the difference between life and death. Especially in the globalized world that we live in, reliable cooling of airfreight is vital for the patients who depend on effective medication. Having a dependable cold chain during the whole transportation is key to keeping the number of wasted pharmaceuticals due to a broken cold chain as low as possible.

On many occasions, temperature fluctuations around 2 °C can make the difference regarding the viability of vaccines. To maintain these strict temperature conditions, Secop offers a multitude of DC-powered compressors to equip specialized containers. While the usual transportation methods rely on gel packs, dry ice, or operating compressors during transportation to cool goods, the installed BD series compressor operates prior to transport to freeze the container's eutectic plates. Thereby the current containers are able to get FAA approval while exceeding the World Health Organization's "Cold Chain Storage and Distribution" guidelines.

The BD series compressors use approximately 6 kilowatts of energy to freeze the cooling plates prior to the transportation which reduces the cost down to \$ 0.50. The eutectic cooling plates can keep the goods cool for days while the containers can be moved without any additional necessary equipment.

Our BD series compressors are able to withstand harsh changes in climate conditions and are unsurpassed in tolerating vibrations.

Our compressor models BD350GH and BD250GH.2 have been used for many years specifically for cooling airfreight. The installed electronic control unit is proven to be very robust while maintaining accurate temperatures and meeting the EMC requirements for aviation.

eatures	Benefits
→ Runs directly on batteries.	ightarrow Active cooling through the whole cold chain.
> High efficiency. Low current consumption.	ightarrow Energy-saving. Batteries will last longer.
Variable speed/capacity	ightarrow Energy savings. Adapts speed to cooling requirement.
No need for insulated packaging.	ightarrow Eliminates the need for a refrigerated truck. Saves time and costs.
Modbus communication	ightarrow Customers can communicate with the compressor for monitoring and contro
 Internally powered during transport. 	\rightarrow Always active cooling.
 Precise temperature control. 	ightarrow No scrap or damaged pharmaceutical products.
→ No need for dry ice.	→ Eliminates HAZMAT costs.
 Advanced battery protection function 	ightarrow Safety. The battery will never be drained.
	 Features → Runs directly on batteries. → High efficiency. Low current consumption. → Variable speed/capacity → No need for insulated packaging. → Modbus communication > Internally powered during transport. > Precise temperature control. > No need for dry ice. > Advanced battery protection function





