



## Prime and Auxiliary Power Systems



# FISCHER PANDA MILITARY GENERATORS

**About this brochure :** Modern military systems require highly efficient and reliable power sources in order to function during intense operations and in harsh conditions. Fischer Panda generators and ECU systems meet this requirement. This brochure outlines the main types of generators, an overview of their main application areas and shows a selection of the models currently in military service.

## 1. POWERING YOUR DEFENCES

The rising demand for mobile and high-quality power solutions.

## 2. FISCHER PANDA GENERATORS

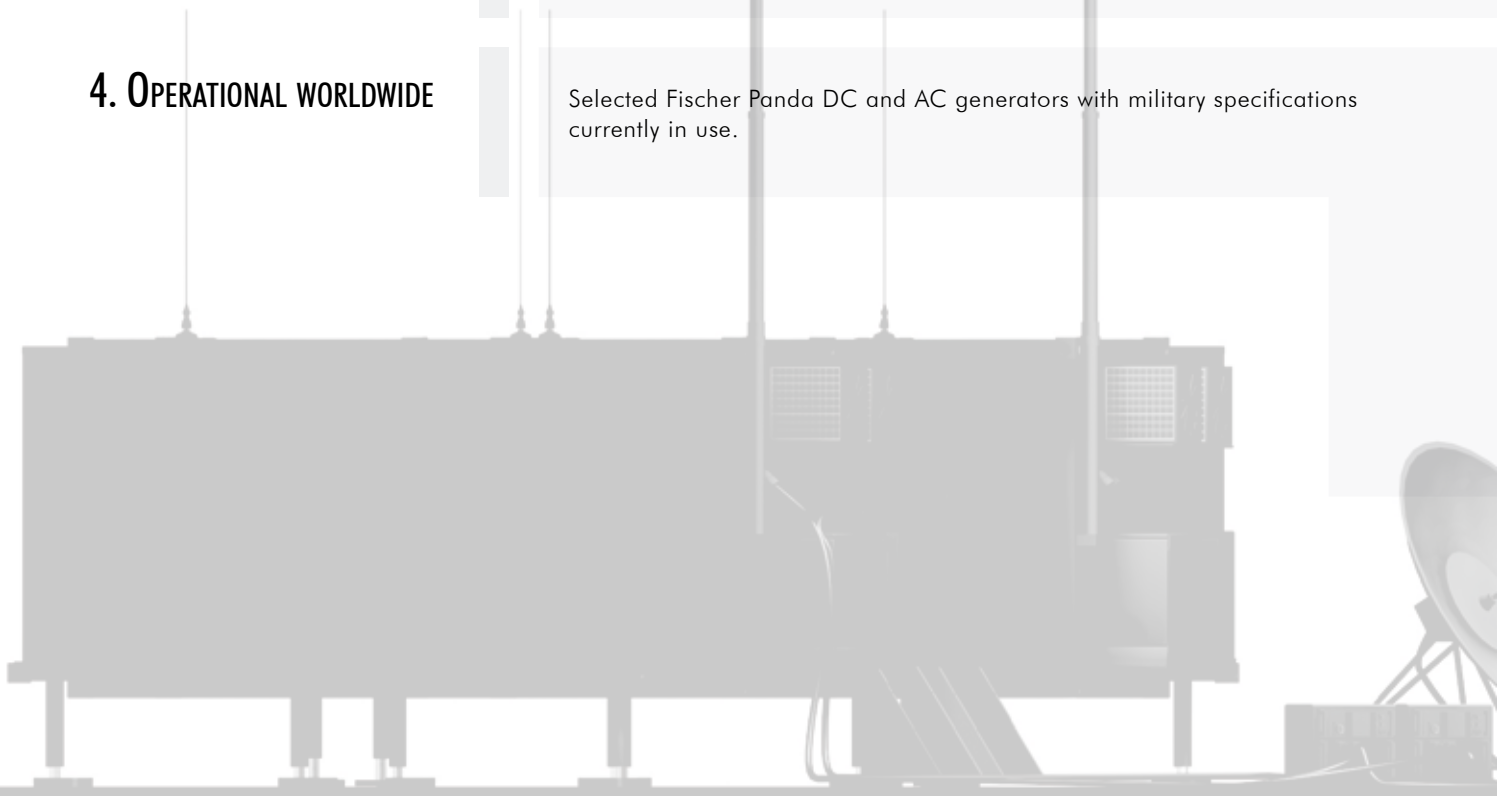
With over 30 years experience in mobile power supply, Fischer Panda Generators are robust, compact and designed for mission critical applications.

## 3. POWER - WHEREVER YOU ARE

Fischer Panda Generators are suited for a wide range of military applications requiring compact, quiet, efficient and quickly- deployable power solutions.

## 4. OPERATIONAL WORLDWIDE

Selected Fischer Panda DC and AC generators with military specifications currently in use.





The Demand for Power	4
The Requirement	5
Meeting the Requirement	5

Company Profile	6
Designed and Built for Extreme Conditions	8
Modular Design for Installation Flexibility	10

Power Systems for Integrated Vehicle Operations	12
Power Systems for Light Forces C3 Applications	14
Integrated AC Power Systems for Medium-sized Vehicle Applications	16
Power for General Purpose Applications	18
Parallel Power - Scalable Power Systems	20

Air-cooled DC Generators	23
Water-cooled DC Generators	23
Water-cooled AC generators 50 / 60 Hz	24
Water-cooled AC generators 400 Hz	26
Combined Generator / Aircons (Combi) and ECU Systems	26
Generators with Variable Speed Constant Frequency Technology	27
Environmental Control Units (ECUs)	27



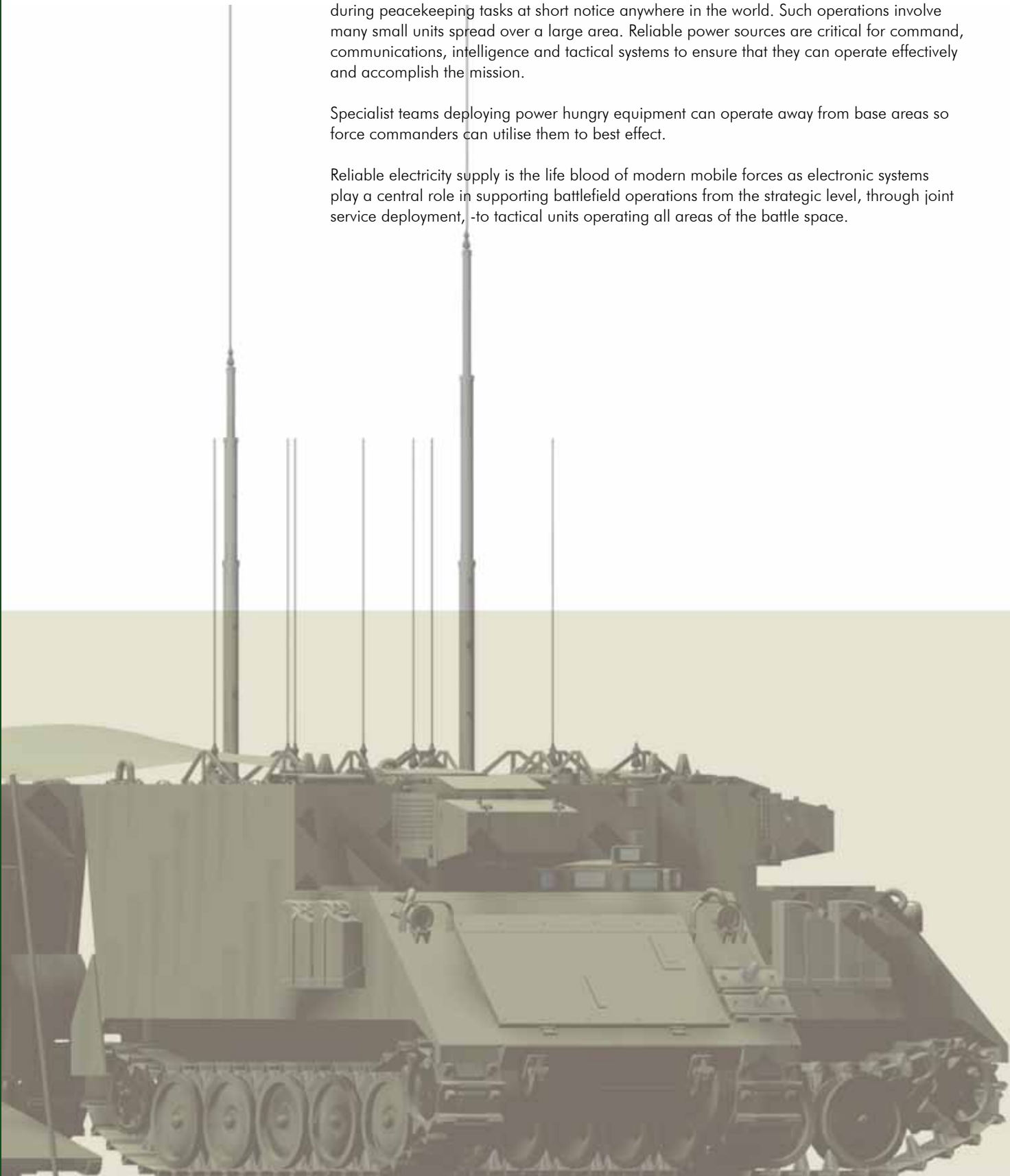
## The Demand for Power

The use of modern electronics, communications and surveillance systems, access to real time tactical information and logistic support have dramatically increased the mobility and responsiveness of today's modern armed forces. Wheeled and tracked vehicles have become the chosen platform for deploying powerful electronic systems. Fischer Panda Generators are suited for mobile units requiring an efficient and robust power supply while operating independently for long periods.

Smaller, more mobile units are required to undertake diverse roles and their mission profiles have been dramatically expanded: executing offensive and defensive combat missions, sustaining prolonged operations, providing disaster relief and supporting aid agencies during peacekeeping tasks at short notice anywhere in the world. Such operations involve many small units spread over a large area. Reliable power sources are critical for command, communications, intelligence and tactical systems to ensure that they can operate effectively and accomplish the mission.

Specialist teams deploying power hungry equipment can operate away from base areas so force commanders can utilise them to best effect.

Reliable electricity supply is the life blood of modern mobile forces as electronic systems play a central role in supporting battlefield operations from the strategic level, through joint service deployment, -to tactical units operating all areas of the battle space.



## The Requirement

Generators must be capable of running 24 hours a day, 7 days a week and be totally reliable. The generator must start at below minus 45 degrees Celsius and work reliably and with high efficiency up to at least 55 degrees Celsius at 3000 meters above sea level. Sandstorms, rain or snow should not have any adverse effect on generator. Acoustic, electronic and thermal signatures must all be low. Easy access for maintenance is vital and a long operational life is demanded with comprehensive first rate support.

## Meeting the Requirement

Fischer Panda Generators are designed and built specifically for mobile applications. The aim is to provide efficient and reliable power under harsh and extreme conditions. The modular nature of the generators means they can be built as fully self-contained units in a number of configurations, or installed around the vehicle depending on the space available and role.

The Fischer Panda AC alternators supply electricity with a very clean sine wave suitable for sensitive electrical equipment. They are also capable of providing sufficient power for starting heavier equipment such as environmental control units (ECUs). Fischer Panda DC generators enhance lighter vehicle systems with powerful charging capabilities enabling indefinite silent running. Using water-cooling and operating within a sound-insulated housing all generators are very quiet, are almost vibration free and have minimal thermal signatures which makes them ideal for front line operations.

Parallel load switching and parallel load sharing are available to enable the generators to function as decentralised power assets to manage peak demands for power during operations by combining the power output or swapping the load to sustain supply. Power - wherever you are.

# Powering your defences



### Company Profile

Fischer Panda, established in 1977, has been producing top class generators for over 20 years. With over 20.000 generators now in service, the company is acknowledged as a leader in the mobile power generator market. Fischer Panda aim for perfection – top class design, top quality components, top grade engineering and perfect performance tailored exactly to the need specified. The alternators are all made in-house and are recognized as some of the most compact, robust and efficient available.

Originally named Icemaster GmbH, the company began by producing mobile refrigeration systems. From this technology base the company began to develop the world's first 100% water-cooled marine generator in co-operation with the BMW marine division. Coupled with a patented voltage control system (VCS) - this led to the Fischer Panda Generator.

With a reputation for being comparably compact, light, silent and reliable - the generators are much in demand within a wide range of marine and vehicle application, in fact wherever high quality mobile power is required. Many Formula One teams and renowned boat builders are long time customers of Fischer Panda.

The first generators for military use were available in the mid 1990s as part of a modular "commercial off the shelf" (COTS) range for shelter and trailer applications. After Fischer Panda perfected tunnel technology in 1999, generators designed specifically for the military appeared in the range. An example is the DC PE150 series, perfect for automatically maintaining battery systems onboard AFVs. A further development was the Combo system, featuring an AC generator and high efficiency ECU for installation in a dedicated shelter tunnel. Stand alone ECU designed for military conditions are also in the range. The technology is continually being improved and developed upon and the latest models feature variable speed constant frequency technology in a compact, quiet and lightweight design.

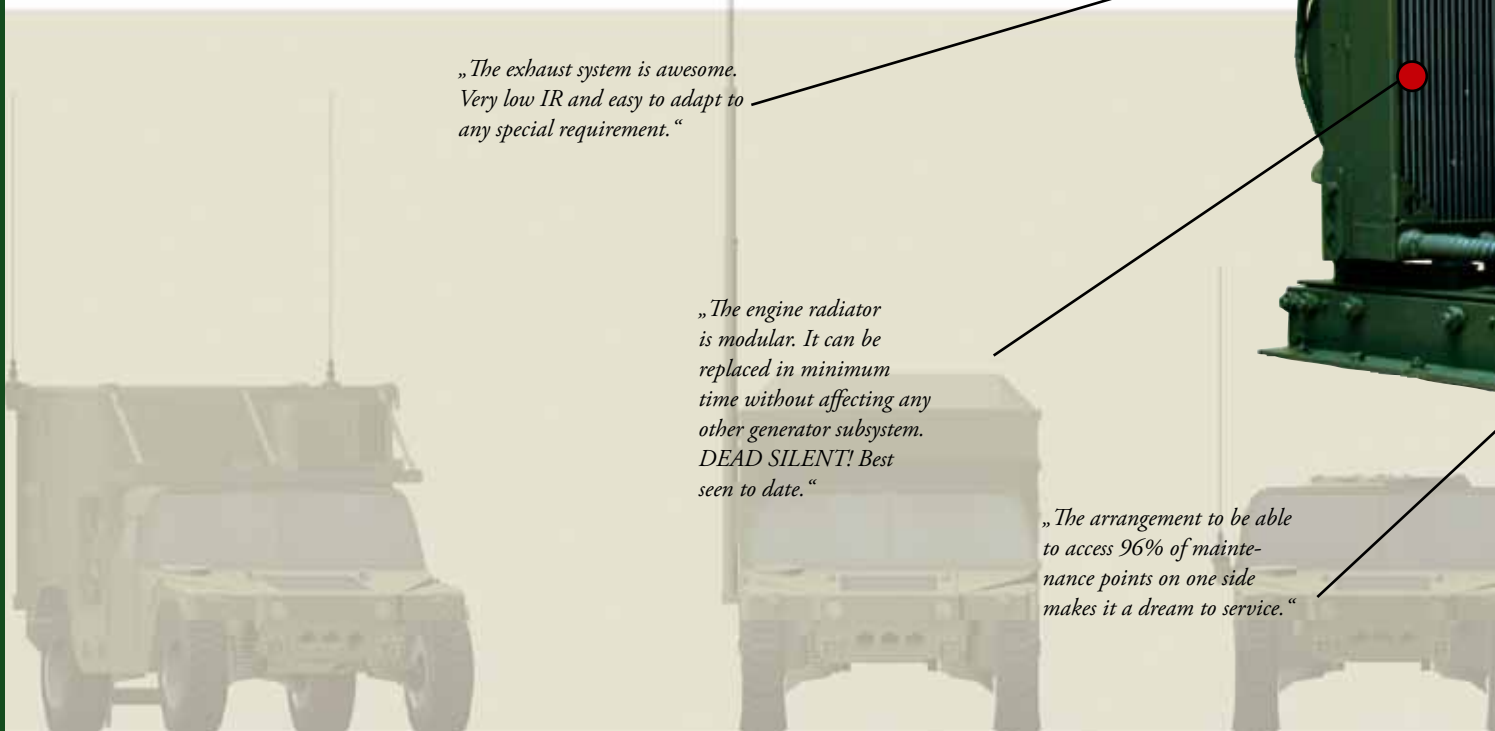
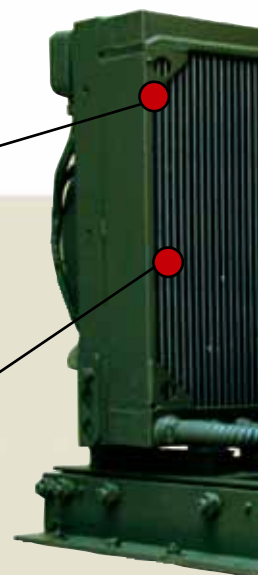
This permanent magnet system has been comprehensively tested to a wide range of MIL Standards in the USA. All larger generators are capable of being connected together to form parallel systems with options for load switching and load sharing.

In 2007 the company was renamed Fischer Panda GmbH to strengthen the corporate link with the well known Panda generator brand. The export sales are at 80% in 2007 and turnover doubled from 2005 to 2007. More than 80 people are employed at the Paderborn company headquarters in Germany and over 400 are active worldwide.

*„The exhaust system is awesome.  
Very low IR and easy to adapt to  
any special requirement.“*

*„The engine radiator  
is modular. It can be  
replaced in minimum  
time without affecting any  
other generator subsystem.  
DEAD SILENT! Best  
seen to date.“*

*„The arrangement to be able  
to access 96% of mainte-  
nance points on one side  
makes it a dream to service.“*





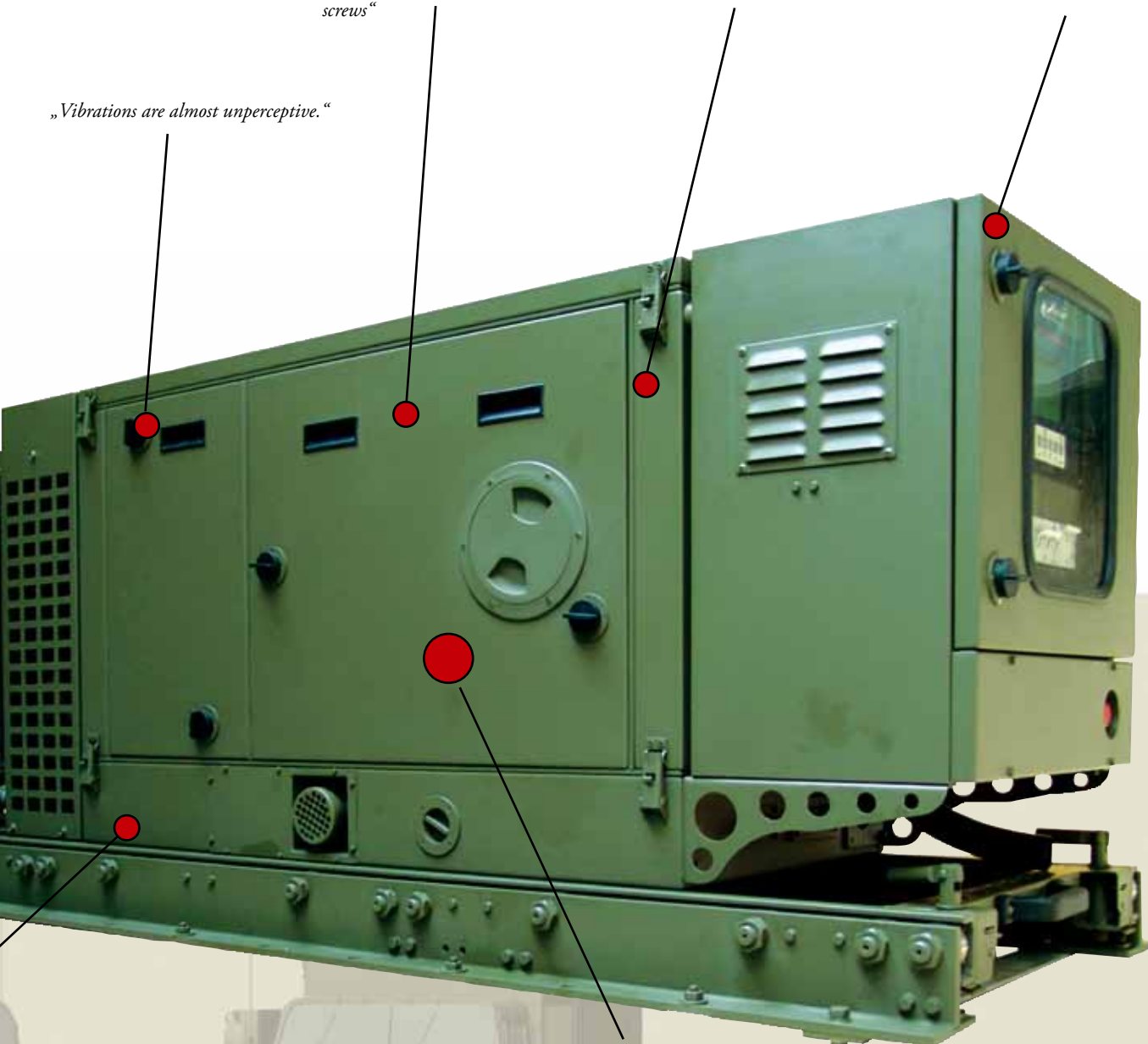
# Fischer Panda Generators

*„Access to any point on the engine takes only 3 minutes without having to take apart 50 bolts and screws“*

*„The unit is completely sealed. A feature that pays off on preventing sand, dust, dirt from reaching vital components“*

*„The generator is compact in size yet powerful. We loaded it almost 200% and still delivered.“*

*„Vibrations are almost unperceptive.“*

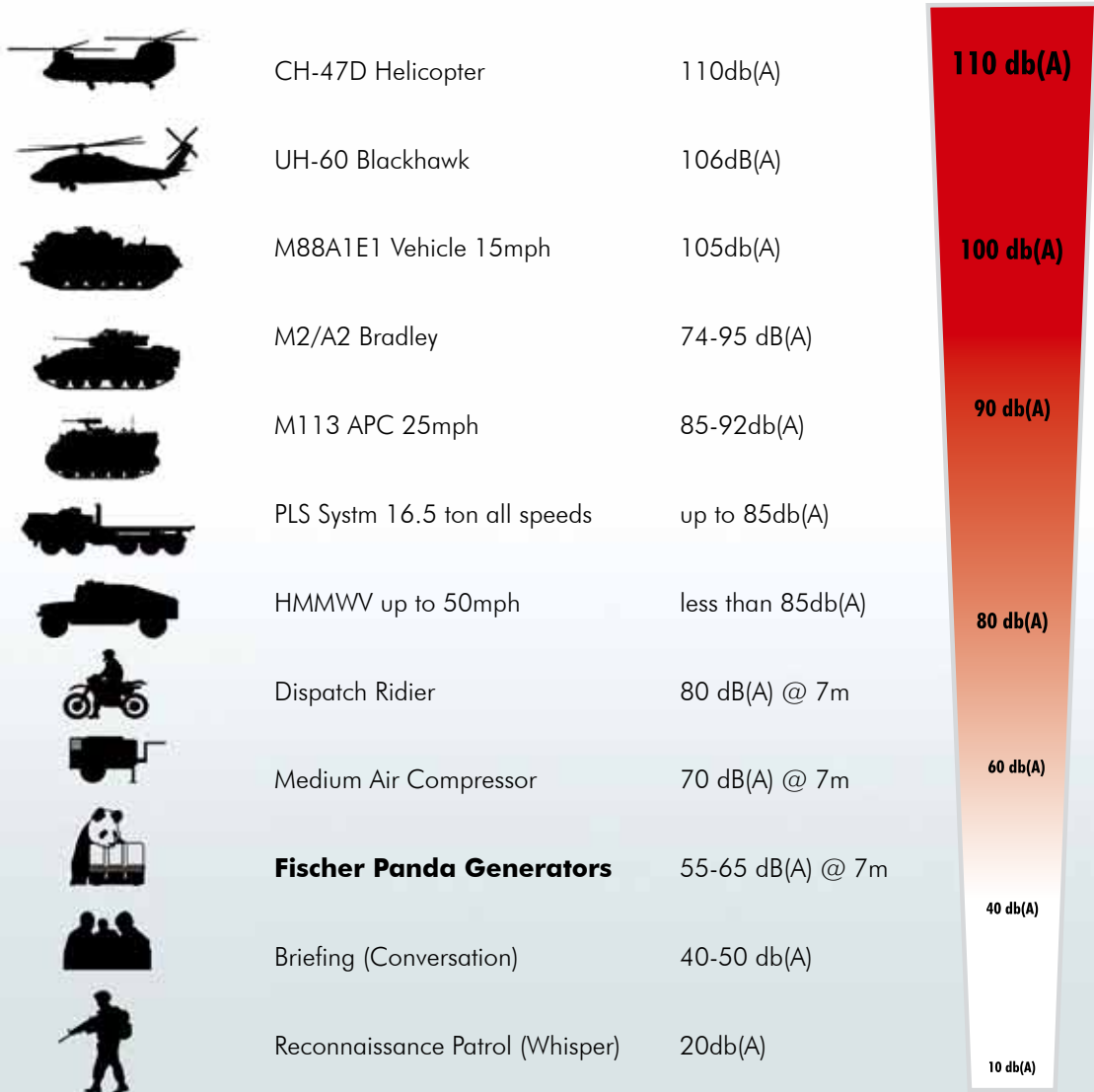


*„After seeing this unit perform, I can say is the best generator design I have seen in 15 years“*

Designed and Built for Extreme Conditions

Fischer Panda has a full military specification for its generators and is experienced with designing and constructing generators to a wide range of MIL-STD requirements especially concerning EMI levels and IR signatures, exhaust emissions and operating sound levels. Custom-built generators can be constructed as practically all the main components are manufactured by Fischer Panda. Generators are subject to an intensive quality and testing regime to ensuring

that specifications are met. The use of water cooling for engine and alternator ensures optimal operating temperatures are maintained. The generators are compact and enclosed within a sound insulated capsule which reduces operating noise and simplifies installation. They are designed with fast and easy maintenance in mind, whatever the conditions or circumstances, which is essential for the military operator.







Operating in sub-zero temperatures

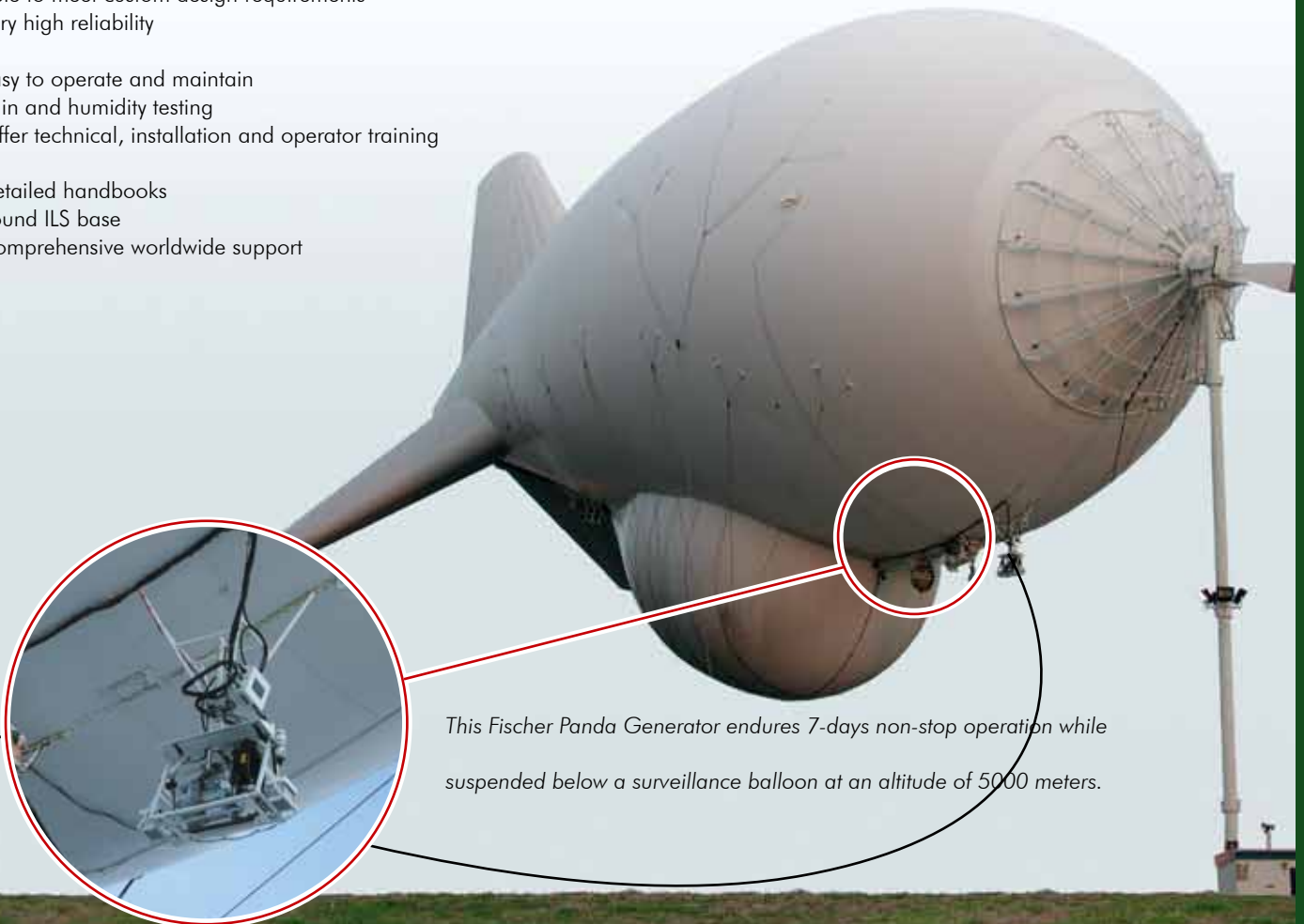


EMC / EMI interference testing

- Operating in sub-zero temperatures
- Vibration free operation
- Intensive quality and testing regime
- Meet EMC/EMI milspecs or defstans
- Meet all emission regulations
- Low thermal Signature
- Liquid cooling for engine and alternator
- Encapsulated system – no contamination
- Compact, rugged design
- Optional configurations for requirements
- Operate with a wide range of fuel types
- -40° to + 60° C constant operation
- 3000 metres standard military operating altitude (AMSL)
- Able to meet custom design requirements
- Very high reliability
- Easy to operate and maintain
- Rain and humidity testing
- Offer technical, installation and operator training
- Detailed handbooks
- Sound ILS base
- Comprehensive worldwide support



Rain and humidity testing



*This Fischer Panda Generator endures 7-days non-stop operation while suspended below a surveillance balloon at an altitude of 5000 meters.*

## Modular Design for Installation Flexibility

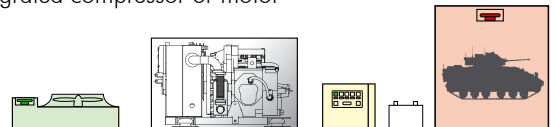
Fischer Panda Generators are compactly constructed and highly suited for applications which have limited installation space available. Generators are available for internal installation within the vehicle and external mounting on the chassis. The modular nature of the Panda generators makes them particularly suited for use on vehicles especially when space is a critical factor. An externally mounted radiator provides effective cooling for generators installed inside the vehicle. Radiators can be mounted above, below or on the side of the vehicle.

### Generators for Internal Installation



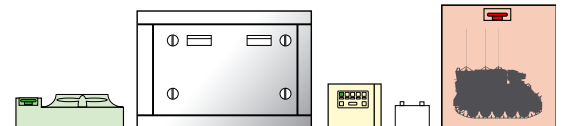
Suitable for internal mounting in very tight spaces such as engine bay, fender or compartment. The generator is generally connected to vehicle fuel system. Requires an external radiator for cooling.

- Connects to vehicle or separate fuel supply
- Ideal for upgrading power supply systems
- Optional integrated compressor or motor



Generators in a rugged sound insulated capsule for installation in internal area or externally on the chassis. Water cooling for engine and generator (plus internal exhaust silencer optional) keep exhaust temperatures low. The generator is generally connected to vehicle fuel system and requires an external radiator for cooling.

- Suitable for internal and external mounting
- Sound insulation capsule
- Ideal for upgrading power supply systems

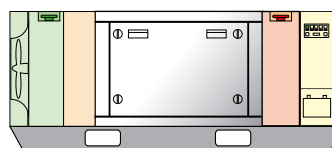


### Fully Self-Contained Generators

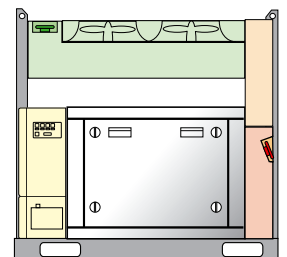


These fully self-contained generators are fitted with an integrated cooling system, fuel tank and electrical control cabinet.

- Suitable for external mounting
- Lifting eyes / forklift transport
- Completely mounted on frame
- Fast, easy access to components for maintenance
- Sound insulation capsule
- No additional exhaust silencer required
- Integrated radiator and cooling system
- Integrated fuel system
- Electrical cabinet and power distribution



All major components are fitted with a vertically mounted radiator.



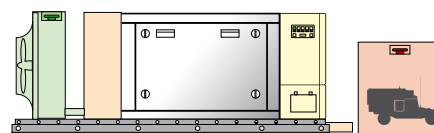
All major components are fitted with a horizontally mounted radiator.

## Supersilent Tunnel Generators

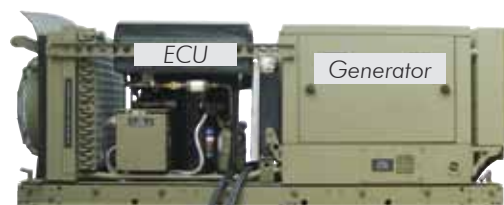


SST "Super Silent Tunnel" Generators for mounting in enclosed area such as Humvee tunnel. Generators can be connected to vehicle fuel tank and start batteries for lowest all-up weight.

- Supersilent Tunnel Generators
- Suitable for shelter tunnels
- Mounted on telescopic slides

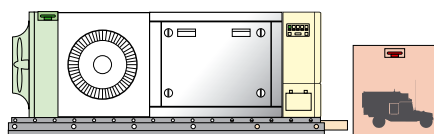


## Combo Generators

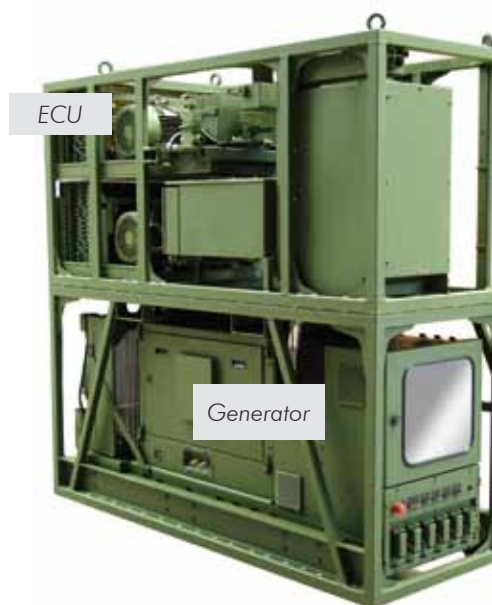


Combining compact generator and integrated ECU into single unit. Major components are fitted together on telescopic frame for mounting in shelter. Fuel is supplied from vehicle tank.

- Suitable for shelter tunnels
- Mounted on telescopic slides
- Integrated ECU



## Complete System Solutions for Container-Based Applications



Highly sophisticated "all-in-one" solutions for container-based applications requiring electrical power, advanced ECU heating and air-conditioning capabilities. The system is designed for command units maintaining a heightened "battle readiness" which are connected to a mains power grid where disruption or total loss is imminent or expected. The complete unit makes efficient use of co-generation coupling the generator cooling system with the ECU system.

### Heat can be supplied from three different sources:

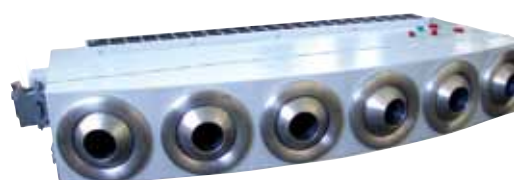
- Heat as "by product" from the generator cooling system
- Diesel heating
- Heat produced by electrical heating

The container's electrical systems are supplied via multiple electrical outlets with isolation transformer protection. An integrated fuel tank allows the system to operate at full load for 12 hours. An automatic refuelling unit can be connected to an external fuel source.

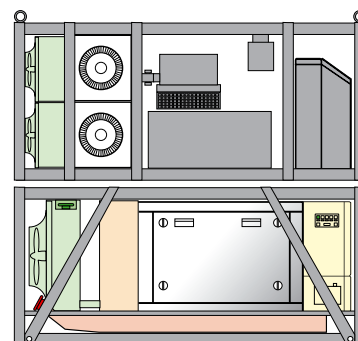
- Economic - up to 30% fuel savings - reduces storage and re-supply logistics
- Reduces the environmental impact
- Lowers the dependence on local energy sources



Computer controlled  
split-system air conditioning



All major assemblies are mounted in two stackable frames which assemble to the container to form a complete unit. The lower frame houses generator, fuel tank and electrical distribution. The upper frame houses ECU (air conditioning and heating) with NBC filters. Electrical and water-cooling hoses make use of quick release connectors to allow the frames to be separated in less than a minute. The modular construction allows individual assemblies to be easily exchanged. A filter system for NBC, which fits into the ECU's main mounting frame is available as an option.





## Power Systems for Integrated Vehicle Operations

Armoured tracked vehicles for command and control role are becoming of increasing importance not only for mobility on rough terrain but also in operations where light armoured wheeled vehicles have proven to be very vulnerable. They form the first major communications link for troops in contact operations.

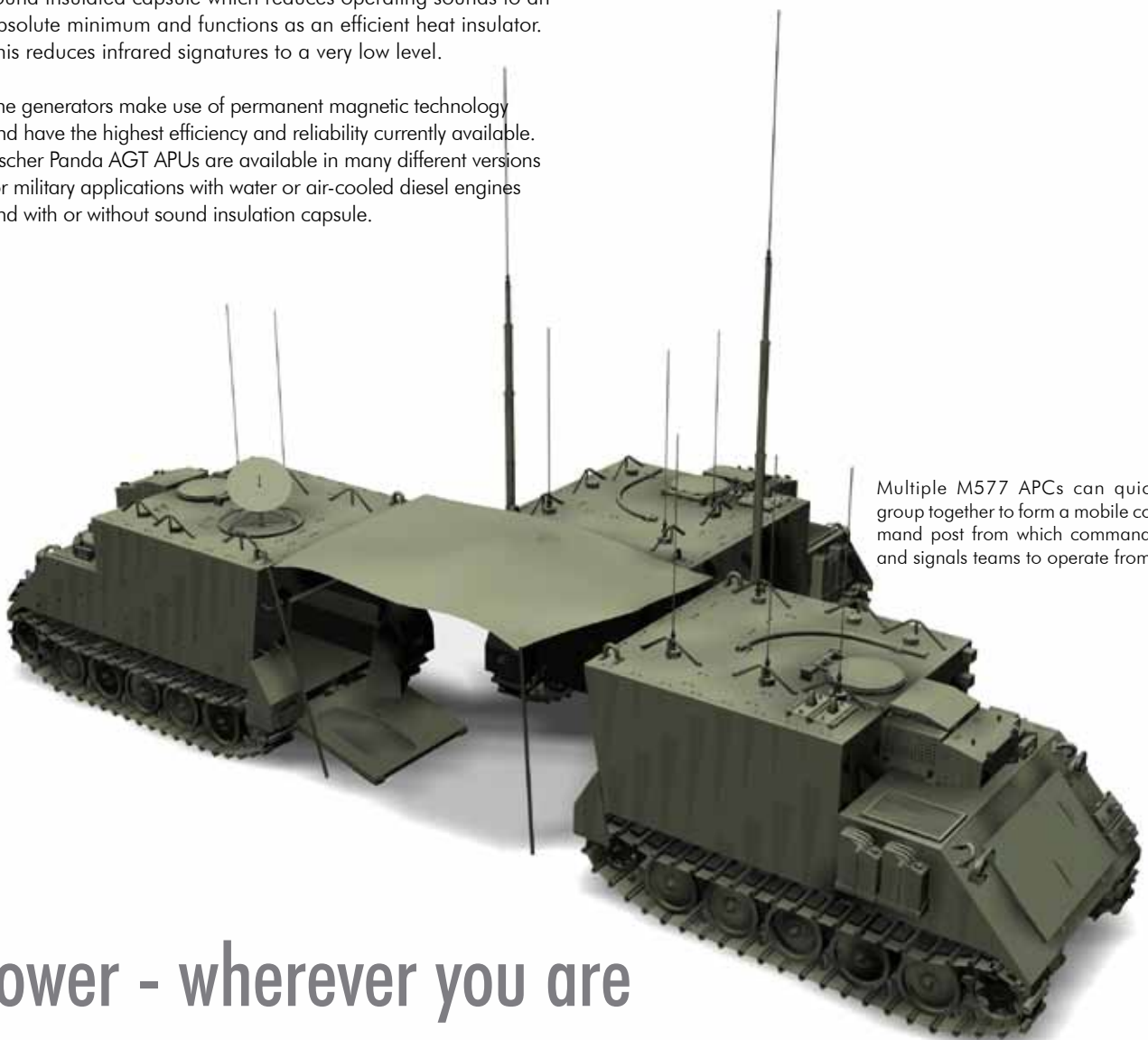
Panda AGT (Advanced Generator Technology) power units (APU) are driven by water-cooled diesel engines and are designed to supply high quality DC direct to the on board power system allowing equipment to be powered independent of the vehicle's engine or any other external energy source. The batteries are charged automatically in a very short time which makes most economical use of fuel while maintaining full combat capability.

If there is absolutely no room for a sound insulation capsule, the generator may be installed in very tight equipment compartment inside the hull. The modular design makes it possible to distribute the generator's major components throughout the vehicle wherever space is available.

Generators for installation outside the vehicle are housed in sound insulated capsule which reduces operating sounds to an absolute minimum and functions as an efficient heat insulator. This reduces infrared signatures to a very low level.

The generators make use of permanent magnetic technology and have the highest efficiency and reliability currently available. Fischer Panda AGT APUs are available in many different versions for military applications with water or air-cooled diesel engines and with or without sound insulation capsule.

The PE-150 N series has been developed specially for upgrading the M577 and M113 Command Post variants with either attached or external radiators. The nominal voltage is 28 V DC and the unit is driven by a high quality water-cooled diesel engine. The speed is variable from 2.000 to 2.400 rpm according to the required power and the sound emission is only 55 dBA at a distance of 7 m which makes the generator completely inaudible beyond 20 metres. The generator charges the vehicle batteries automatically with very high efficiency and consumes approx. 1.5 litres/hour. The electronic voltage controller regulates both the charging rate and voltage accurately according to the battery condition. Maximum charge rate is normally 360 Amps.



Multiple M577 APCs can quickly group together to form a mobile command post from which commanders and signals teams to operate from.

# Power - wherever you are



Image courtesy of The Norwegian Armed Forces



Flagship generator - The PE-150 N series is developed specially for M113 APC and M577 Command Post Variant.



Especially low design with integrated 8.000 BTU compressor for mounting inside T-72 hull



Ready for deployment. State of the art 10kW generator with hydraulic PTO designed specifically for installation within modern AFVs



Generator with integrated silencer for installation in M2/A2 Bradley AFV fender



## Power Systems for Light Forces C3 Applications

The mobility and size of wheeled vehicles enables commanders to deploy rapidly by air, co-ordinate operations and assets while operating in non-armoured formations. C3 networks can be deployed providing line-of-sight radio relays to connect forward units with higher-level networks over wide areas. To operate successfully, such systems rely increasingly on sophisticated and powerful electronics. Reliable power is of prime importance.

Vehicles such as the M1097A2 Shelter Carrier variant of the HMMWV (Humvee) are used in light operations and in roles where tracked vehicles are considered unacceptable - such as supporting humanitarian or disaster relief operations. With sufficient room for equipment and operators - the vehicle has become the standard for deploying mobile C3 systems. The shelter has a dedicated generator "tunnel" which allows a generator of sufficient capacity to be installed in a protected area as primary power source. This is a major advantage as it removes the need for cumbersome trailers, thus improving off-road capabilities and reducing the setup and into action times. Getting rid of trailers also reduces the airlift requirements which saves both money and time in deployment.

Sensitive electronic equipment also requires a controlled environment in which to operate, improve productivity, decrease downtime and increase the equipment's operational life-span. Fischer Panda Super-Silent Tunnel generators are developed to supply power and conditioned air to such shelter-based systems. The lightweight, compact and modular design of these „combination“ generators has proved successful in supplying a diverse range of solutions specifically for HMMWV mounted systems, and which can be extended to most light and medium wheeled systems.

The complete system is mounted on telescopic slides to allow access to the complete generator, electrical, exhaust and cooling system after it has been installed. Connectors on the generator enable the generator to be supplied from the vehicle's fuel tank. The generator can be controlled from inside the shelter via a panel.

Some shelters have retractable roofs which can be lowered so they can be deployed in smaller transport aircraft. This prevents an ECU from being mounted externally. For such units, Fischer Panda "Combo Units" provide the perfect solution. Both generator and a 22.000 BTU ECU are combined into a single unit to supply both electrical power and a controlled operating environment.



Mobile command and communication systems require efficient AC power and ECUs for cooling sensitive electrical equipment while operating under harsh conditions.



Super-Silent Tunnel Versions. A Panda 18 kW generator mounted on slides designed specifically for supplying power to shelter-based applications.



To keep the weight to an absolute minimum, the compact SST generator connects directly to vehicle's main fuel tank.



Panda 10 Combo for 10 kW electrical or 5kW + 4kW cooling (18,000 BTU) ECU into a single light-weight, transportable package that is quiet, efficient and built for harsh environments.



Panda 12 Combo for 12kW electrical power or 12 kW electrical or 7kW + 5kW cooling (24,000 BTU) ECU. Suited for larger power applications using M997 HMMWV ambulance shelter variants.

## Integrated AC Power Systems for Medium-sized Vehicle Applications

The ability to keep mission-critical equipment mobile and protected is essential if specialist power equipment is to be deployed and operated under constantly changing situations. By mounting systems on trucks and flat racks or prefitted in ISO Containers or tactical shelters, highly mobile, durable platforms can be quickly deployed. Such systems place rigid restrictions on space and weight available. The modular construction of Fischer Panda generators and ability to custom build allows them to meet specific design requirements which require minimal setup time and fast out-of-action times.

### Power for Vehicle Mounted Applications

Radar / weapon control centres, air defence systems and satellite communication systems require a dedicated supply of continuous, clean power so that their sensitive electronics can operation without disruption.

Fischer Panda Generators are tested for EMI / EMC compatibility so they can be installed in close proximity to powerful electronic equipment.



### Power for PLS / DROPS Deployable Systems

The Palletized Load System (PLS) / Dismountable Rack Offload and Pickup System (DROPS) has revolutionised the distribution and resupply system. Complete systems including generators with electrical distribution can be quickly transported to support critical front-line missions where they are required.

Fischer Panda Generators are enclosed in a super-silent capsule which ensures the operation sound level is kept to a minimum. The rugged design also protects generators from harsh weather conditions or other environments.





## Power for Tactical Shelter Systems

Tactical shelters are designed to be deployed and setup quickly while operating in a lighter tactical role. They are constructed as soft-skinned, hybrid, or rigid shelters with expanding sides or tent attachments to form larger self-contained operational areas. When deployed as tactical command headquarters they provide commanders with electrical power and a protected environment for equipment to operate in.

Fischer Panda Generators are designed to fit into limited installation areas. Fully self-contained generators are capable of providing continuous energy supply during deployment and handle peak power requirements during intensive operations.



## Power for Container Based Systems

The ISO container is an ideal basis for mounting all components of a larger mobile power system, including generators, fuel and space for spares and maintenance work. By maintaining standard shipping dimensions and transportation platforms, the logistic effort is reduced especially during multi-national missions. The rugged steel frame of the ISO container is ideal for adding additional protection for generators operating in critical tasks.

Fischer Panda Generators can supply the necessary starting power to operate heavier equipment such as ECUs, motors, compressors and pumps. Fischer Panda also has a specifically designed ECU for military needs which ensures a clean, controlled environment for operating in extreme weather and tactical conditions.



## Combined Air-conditioner and Power Systems

Fischer Panda **CAPS** is a highly sophisticated system for container-based applications requiring electrical power, advanced ECU heating and air-conditioning capabilities. By fully utilising performance, management and self testing features, the CAPS can maintain an optimal environment for sensitive electronic equipment and personnel to operate in. Upon loss grid power, the generator is automatically started and the supply switched over. This can also be done manually.

**Active performance** management adjusts the air condition output depending on the altitude. This ensures a full electrical supply to the shelter.

During longer periods of inactivity, the system can start and automatically using advanced **Built-in Test Equipment** to undergo extensive self tests.

Innovative coupling of generator cooling and ECU system using **Thermo-management** can supply heat from three different sources: heat as "by product" from the generator cooling system, integrated diesel heating and heat produced electrically.



## Power for General Purpose Applications

Fischer Panda Generators are generally suited to a wide range of applications operating from towed, shelter-based, container, mobile and semi-static locations that are not connected to the local grid or managed by on-site power utilities. A range of installation and mounting options are available when weight and space restrictions are challenging.

The generators are available in a wide range of voltage and frequencies for supplying continuous power for applications supplying lighting, air conditioning, heating devices, filtering and ventilation devices, air compressors and pumps for air circulation and flow and shelter pressurizing systems, hydraulic pumps, power tools and battery charging.

Fischer Panda Generators can be found worldwide supplying power to mobile petrochemical laboratories, repair and maintenance units, intelligence and data analysis, mobile surgeries, field hospitals, fire fighting vehicles, coastal vessels, health centres, disaster control and emergency relief agencies.

The generators are fitted within a sound insulated capsule, this ensures that operators are not disturbed while working, even less than a metre from the generator and low signatures reduce the possibility of detection.

Extreme weather conditions such as heat and terrain can take a high toll on material. The water-cooled Fischer Panda Generator does not require hot and dusty air to keep cool while operating. This means a long and trouble free life for the equipment.



Complete unit, cooling, fuel, 6 kW generator and electrical systems all mounted on frame. Vertical mounted radiator is rotated 90°, for cooling efficiency in high side trailer.



Complete unit, cooling, fuel, 6 kW generator and electrical systems. Trailer mounted on frame with forklift pockets and lifting eyes.







Folding radiator assembly allows access to generator unit. The ends of the frame base serve as pockets for transporting by fork-lift.



Fully self-contained 8 kW generator with horizontally mounted radiator (tall-version). The unit is mounted on slides which allow 100% extension.



Fully self-contained mounted on frame. The frame base can be transported by fork-lift. The major electrical connections are grouped on the side of the cabinet.



Complete unit, cooling, fuel for 72 hours, 15 kW generator and electrical cabinet mounted on frame. Major electrical functions via remote control unit.



Fully self-contained generator with fuel tank, electrical cabinet. This generator is being used to power a SATCOM unit.



Teamwork: Trailer Mounted 40kW Generator with Fischer Panda's own ECU 6000 providing 75,000 BTU specifically designed for military applications.

## Parallel Power - Scalable Power Systems

Installing two generators in parallel to operate together has two main advantages. Either they can be run together which will provide the system with twice as much power with enough supply for very demanding peak periods or the load can be switched from one generator to the other without having to switch off the entire system.

Two generators allow unexpectedly large loads or longer peak periods of demand to be covered. When the demand drops back to the normal level, only one smaller generator is required to run which is more efficient than running a larger generator with a low load.

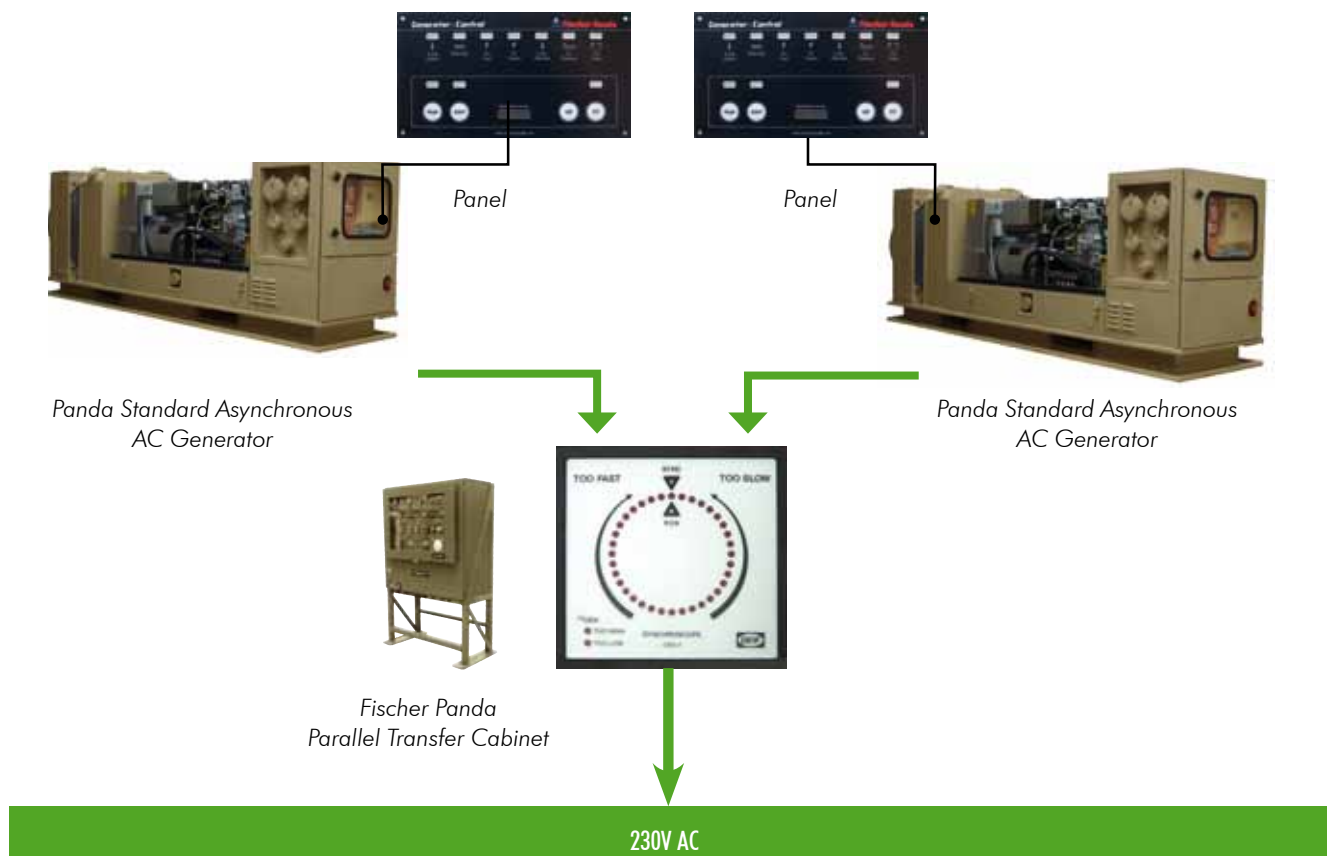
When power is required for very long periods of time, the second generator can be started and brought "online" to take over from the first. The first generator can then be safely switched off for maintenance purposes without having to shutdown the entire power system. If the primary power generator fails, a second generator is always available to supply the power without having to rely on a backup system with reduced capacity. This is suited for applications which may require a full energy supply in reserve.

### Parallel System Benefits

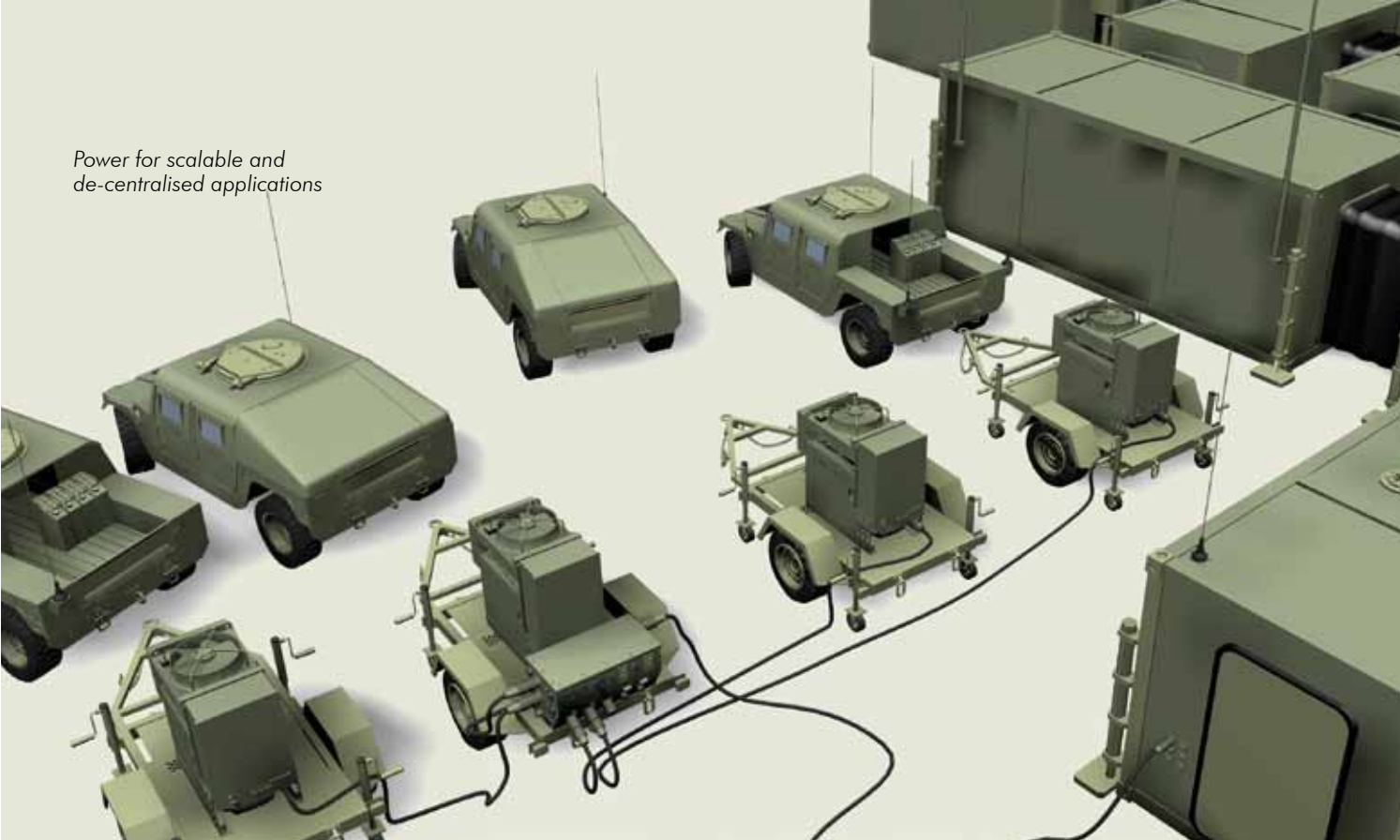
- Switch loads from one generator to the other without shutting down complete system
- Always one generator ready to supply the system in reserve
- One smaller generator can efficiently cover lower power demands
- Peak periods - cover demanding peak periods by running generators together.
- Flexible - when not enough room for a single large generator is available

### Parallel Operation - Load Switching

Two Panda AC generators can be connected together to operate as one unit. This system does not feature full load-sharing capabilities for safety reasons and to keep the system simple to operate. The generators' output is synchronised and either combined or switched from one generator to the other. To increase operational safety both generators are shutdown if a system failure occurs.

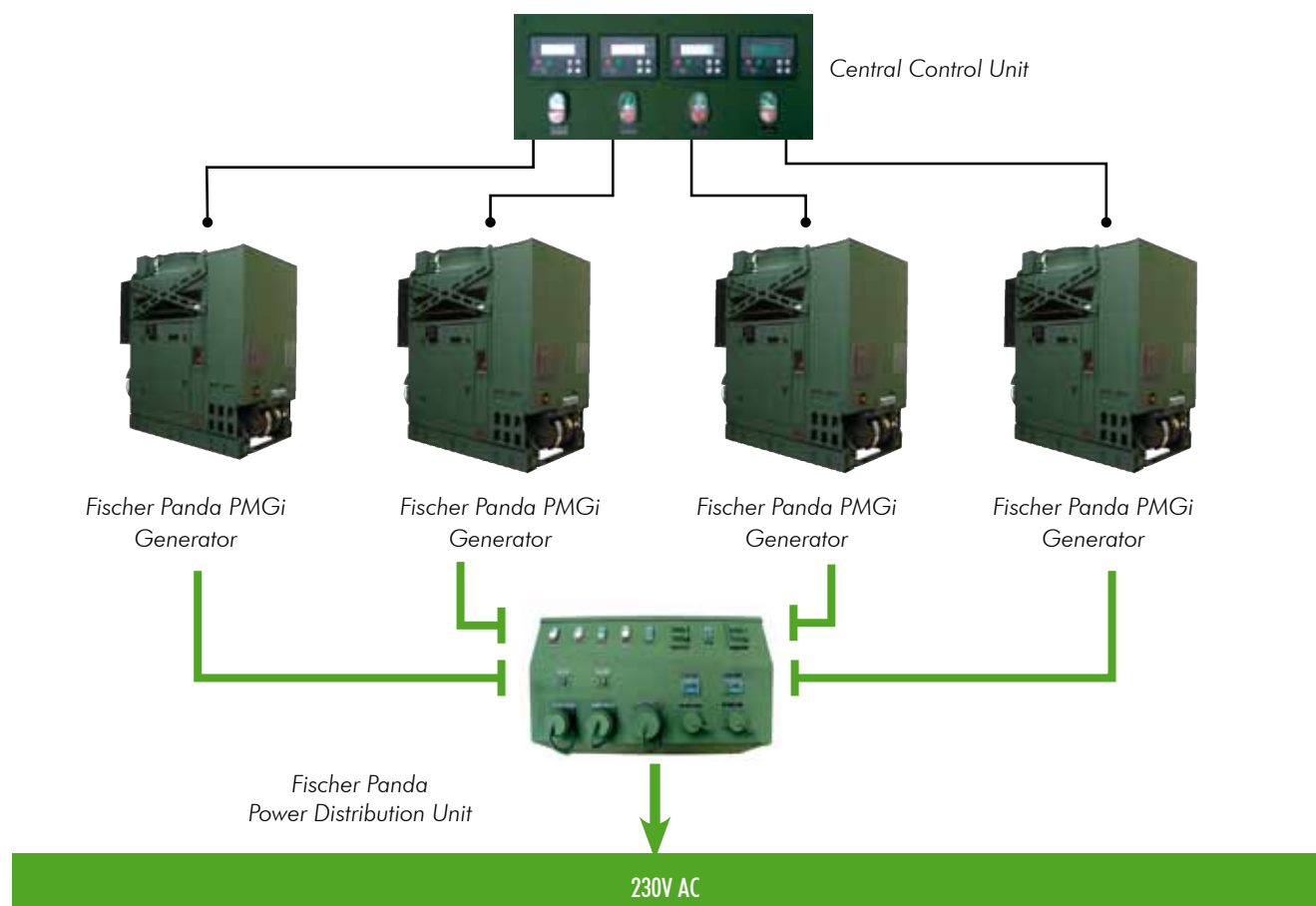


Power for scalable and de-centralised applications



## Parallel Operation - Load Sharing

Fischer Panda PMGi Generators with VSCF - "Variable Speed Constant Frequency" technology allow full load sharing capabilities. Each generator can run at a differing speed while operating in parallel. Multiple generators can be coupled and operate together as one unit.



Fischer Panda Generators are currently in use by major armed forces worldwide:

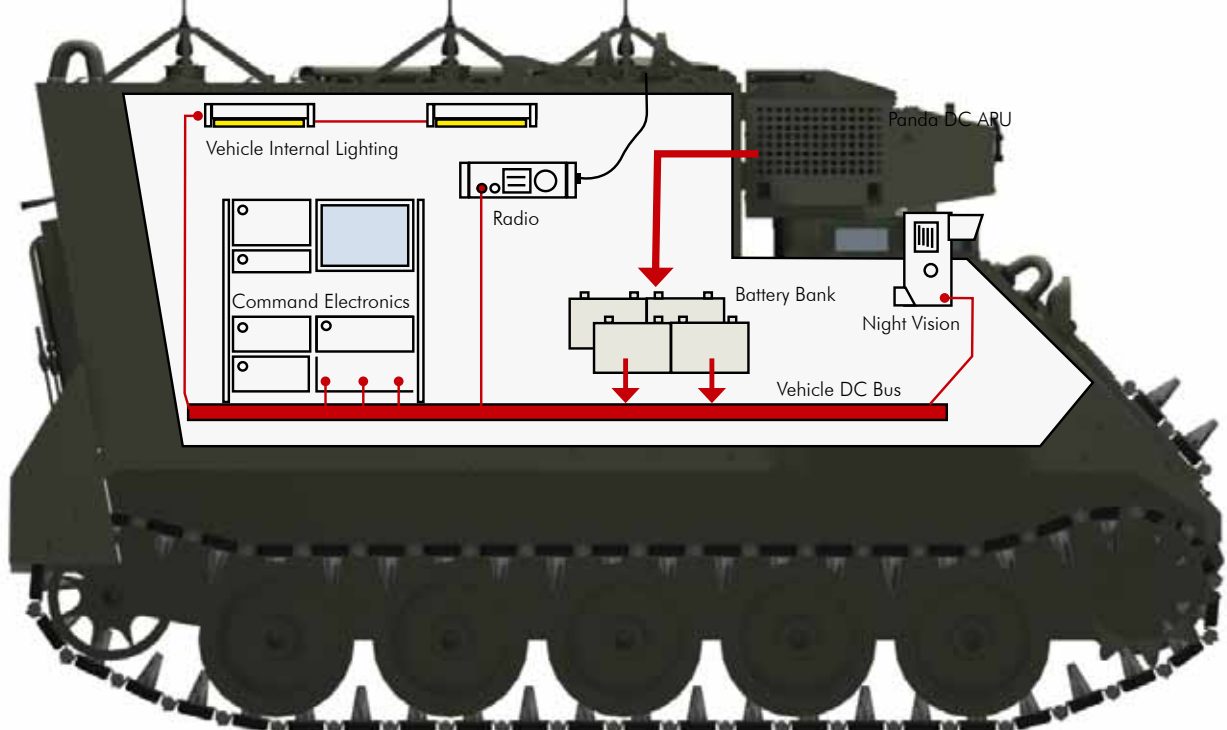
Austria, Canada, Denmark, France, Germany, Italy, Netherlands, Norway, Poland, Singapore, Slovakia, South Africa, Spain, UAE, United Kingdom, United States of America and Turkey

# Operational worldwide

## DC Generators

Fischer Panda DC Generators operate as part of an intelligent DC-AC power system. Most general purpose power systems rarely require the full amount of power that the system is capable of supplying continually. A battery bank of sufficient capacity is used to supply the energy which drastically reduces fuel consumption and running times. The generator is capable of providing fast and efficient battery charging and is only required to run (starts and stops automatically) when the batteries require recharging. Low noise, energy saving are good reasons for making use of this type of power system. An inverter can be added to the system to supply 230 V AC. The DC generators are available in a wide range of standard voltages 12V / 24V / 48V to suit typical mobile power systems. Other voltages are available on request.

*Panda DC Generator extends the operational capabilities of a battery-based systems.*





## Air-cooled DC Generators

28V / 2 kW – 4,5 kW

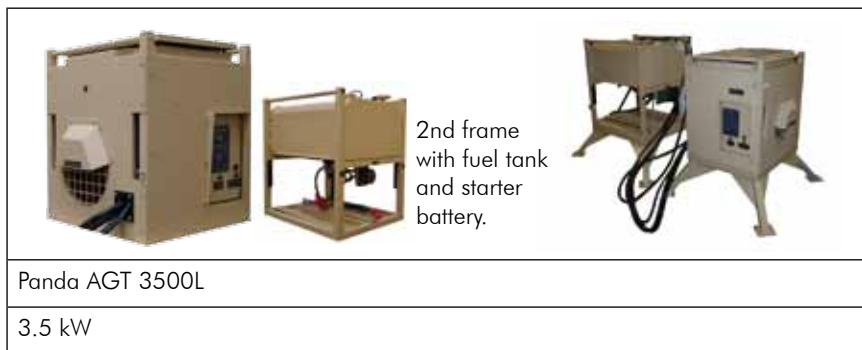
Quieter than most air-cooled units – c.70dbA

Ideal for lighter installations – 80 to 110 Kg

Electric and manual start

Easy to service and maintain

Good EMC/EMI performance



## Water-cooled DC Generators

28V / 4 kW – 10 kW

Quiet and smooth running

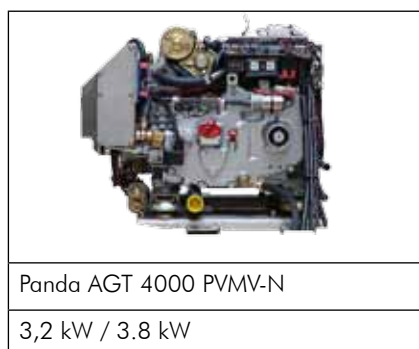
High efficiency

Low signatures

Start and forget – silent operational running

High reliability - long term MTBF > 10,000 hours

Integrated compressor or hydraulic output (optional)





## Water-cooled AC generators 50 / 60 Hz

4 kW - 65 kW  
230V / 50Hz Single Phase  
120 / 240V 60Hz Single Phase

230V / 400V 50Hz Three Phase  
120V / 208V 60Hz Three Phase  
240V / 416V 60Hz Three Phase

Fischer Panda AC generators feature all the reliability and safety of the asynchronous generator, provide fully water-cooled systems for both winding and engine. They produce an extremely clean sine wave for sensitive electronic equipment and are suitable for starting demanding consumers such as compressors. No cooling air is required inside of the capsule.



Panda PU-2060N

6 kW / 7 kVA



Panda 8000 PSC

6 kW



Panda 8000 NE PSCH

6 kW / 7 kVA



Panda 8000 NE PSC

6 kW / 7 kVA



Panda 8000 NE PSC

6 kW / 7 kVA



Panda SST 10 Tunnel

10 kW / 11.7 kVA



Panda 12.000 NE PSC

10.2 kW / 12 kVA



Panda 15/10

10 kW / 12 kVA



Panda 15/10

11 kW



Panda 15 NE PSC

15 kW / 17.6 kVA



Panda PSC 15-10-KU-D

10.2 kW / 12 kVA (15 kW option)



Panda 15 PSC  
12 kW



Panda SST 18  
18 kW / 21 kVA



Panda 18 NE PSC  
15 kW / 17.6 kVA



Panda 24 NE PSC  
20 kW / 24 kVA



Panda 24 PSC  
20.5 kW



Panda 30 NE PVMV-N  
25.5 kW



Panda 30 NE PVMV-N  
23 kW / 27 kVA



Panda 40 Lom PSC  
37 kW / 37 kVA



Panda 47 Lom PSC  
37 kW / 37 kVA



Panda 65/2 PSC  
60 kW / 70 kVA

## Water-cooled AC generators 400 Hz

120V / 208V / 400 Hz

240V / 416V / 400 Hz

120V / 208V / 400 Hz



Panda AGT 6000 NE PSC

6 kW / 7 kVA



Panda AGT 10000 PVM-NE

8 kW / 9.4 kVA



Panda AGT 12000 PSC

12 kW / 14 kVA



Panda AGT 10000 PVMV-N

10 kW / 11.7 kVA

## Combined Generator / Aircons (Combi) and ECU Systems

10 kW electric + 22.000 BTU Aircon

28 V DC + Aircon

Power, heating and cooling for HUMVEE mounted shelter systems

Complete Generator / ECU Systems for Container based Systems



Panda AGT 5000 PVM / 24(28)VDC

5 kW electrical / 6 kW Cooling



Panda 10 SST Combo

10 kW elec. / 5kW + 4kW cooling



Panda 12 PSC EU Combo

12 kW elec. / 7kW + 5kW cooling



Panda 30 CAPS Combined Systems

up to 25 kW elec. / 2 x 8kW cooling



Panda 60 CAPS Combined Systems

up to 50 kW elec. / 4 x 8kW cooling

## Generators with Variable Speed Constant Frequency Technology

The next generation of Fischer Panda Generators for AC power supply. Ideal for varying AC loads and peak power demands. The 25kW Permanent Magnet Generator (PMG) is super-silent and very efficient. Variable Speed / Constant Frequency (VSCF) technology ensures optimum fuel efficiency - the engine speed is adjusted according to the load. Several PMGi generators can be linked together to synchronize total power output and provide multiple levels of power according to demand.



Engine	4 Cylinder Kubota Diesel Tier IV
Output	3x230 / 400 Volts / 50 Hz with 45 Amps per phase or 3x120 / 208 Volts / 60 Hz with 86 Amps
Preheat system	24 Volt glow plugs + automatic cold start
Dimensions	1159x632x1173
Weight	705 kg
Instrumentation	Fully automatic digital panel with optional remote panel
Fuel	All diesel and AVTOR types fuels, external tank required
Power rating	25kW @ PF 0,8
Derating	3.5% per 200m above 1200 m
Fuel consumption	max 8 liters / hour
Operating Temp	minus 32 deg to 50 deg C
Store Temp	minus 40 deg to 60 deg C

## Environmental Control Units (ECUs)

Specifically designed for military use. The ECU 6000 with 75.000 BTU capacity ensuring the optimal operating temperature for mission critical equipment. Compressor operates with no inrush current which saves up to 42% of energy due to variable scroll under light load conditions



Cooling capacity	75,000 BTU (6 Ton)
heating capacity	12 KW (40,960 BTU / HR)
Voltage	3 x 208 Volts / 60 Hz or 3x400 Volts / 50Hz
Consumption	max. 15,5 kW
Refrigerant	R134A
Temperatures range	minus 8°C to 52°C
operation	minus 32°C to 52°C
storage	minus 40°C to 60°C
Dimensions	1150 x 678 x 1215 mm
Weight (wet)	368 kg
NBC	NBC Ready



Communications



Mobile Workshops / Chassis Mounted Units



Command and Control Systems



Tracked Command Posts



AFV's



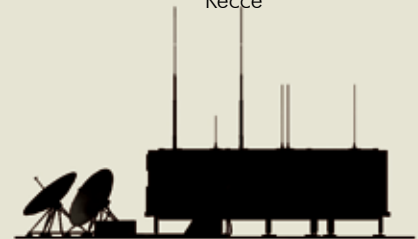
Recce



Trailer Mounted APUs



DROPS / PLS Based Applications



Tactical Shelters / Command Headquarters



Fischer Panda GmbH  
Otto-Hahn-Str. 40  
D-33104 Paderborn  
Germany

Tel. : +49 (0)5254 9202-0  
Fax : +49 (0)5254 9202-550  
Email : [defence@fischerpanda.de](mailto:defence@fischerpanda.de)  
Web : <http://www.fischerpanda-defence.de>

#### Disclaimer:

The information contained here is to the best of our knowledge accurate at the date of publication. Please note that the data in this publication reflects the technical state at time of print. Dimensions apply for the sound insulation capsule only and do not include latches, fittings etc. Additional room will need to be calculated for installation to include hoses, cables and capsule mountings. Additional components or alternators may also affect capsule dimensions. Due to our policy of continual product development, we reserve the right to alter technical specifications without notice. All performance data relates to air and water temperatures of 20°C. Performance reduction (approx. 1% per 100 m height and approx 2% per 5°C air temperature and approx. 1% per 1°C water temperature above 20°C)

Stand: 20120525

Art.: 71.02.01. H

MilPower\_2010v01.indd  
Stand: 15.00.2010