

QAS+ 120 S5

Mobile Generator



Standard Scope of Supply

The Atlas Copco **QAS+ 120 S5** generator is a prime power, sound attenuated, mobile generator. It is powered by a FPT Stage V liquid-cooled, four-cylinder diesel engine. The units consist of an alternator, diesel engine, cooling system, electrical distribution and control systems - all enclosed within a sound attenuated enclosure fabricated from powder coated steel. Special attention has been given to the overall product quality, user friendliness, ease of serviceability, and economical operation to ensure best in class total cost of ownership.

The QAS range is feature-packed and comes with the ruggedness and reliability you demand from a generator. However, some features set the QAS apart – they help operators to meet their sustainability targets while enabling significant business advantages.

These generators feature an innovative design that meets the strictest environmental regulations and helps end-users to optimize their operational performance. Thanks to their high resilience in fast and easy connection, these models are unrivaled when it comes to flexibility. The QAS range is “Plug-and-Play” (multiple sockets, power locks, terminal board), Fleetlink Telemetry, and a simple paralleling capability. Your need for power can be ever changing.

QAS+ generators help customers to improve their fleet performance and achieve a faster Return on Investment (ROI). These models are the most efficient within the QAS range, offering cuts in CO2 emissions and fuel consumption. QAS+ generators deliver a significant reduction in operating noise levels and are quieter than comparable generators.

Standard Features

Benefits

- | | |
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| <ul style="list-style-type: none">• Smart Variable Speed Drive (VSD) motordriven cooling fan combined with remote radiator and dedicated engine-alternator room• Compact, sound attenuated, corrosion resistant, with single point lifting and 110% fluid containment• Heavy Duty alternator with AREP excitation, 3-phase Digital AVR D350 and additional grade protection• Easy service with long run filters and 600-hour service intervals• FPT N45 Stage V engine, DOC + SCRof + CUC exhaust after treatment• Earth Leakage Relay• Emergency Stop• Dual Frequency• Remote signal Start / Stop• External Fuel Tank Connections• High Capacity Fuel tank | <ul style="list-style-type: none">• Improve efficiency, lower fuel consumption and noise level• Extremely durable and environmentally sensitive, designed to be used for everything from the oil field to special event power• Start-up power for the most demanding sites with 300% over load starting capabilities• Heavy duty oil, air and fuel filters extend the maintenance interval to 600 hours for reduced total cost of ownership• Proven engine platform with high reliability and durability• Indirect contact protection for user safety• External, recessed emergency stop for increased safety• Improve genset versatility with possibility of 60Hz application• Allows connection as a critical back-up unit via a 2-wire dry contact connection in the distribution panel• Ability to provide extended running hours with external fuel tank• Enhanced autonomy for long power runs |
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Technical Data¹

Preliminary data

Generator	Units	QAS+ 120 S5
Rated frequency	Hz	50 60
Rated voltage	V	400 480
Prime power (PRP) ¹	kVA / kW	115.8/92.6 129.9/103.9
Rated standby power (ESP) ¹	kVA / kW	125.8/100.6 142.6/114.1
Power factor cos ϕ		0,8
Rated current (PRP)	A	167 156
Single step load capability (G3) acc. ISO-8528/5 ¹	%	50 55
Operating temperature (min/max) (with cold weather equipment)	°C	-15 (-25) / 50
Alternator Model		LEROI SOMER LSA 44.3 M6
Rated output (ESP 27°C 40°C)	kVA	138 165
Degree of protection / insulation class		IP 23/H
Excitation type / AVR model		AREP / D350
Sound power level (LwA)	dB(A)	87
Sound pressure level (LpA) at 7m	dB(A)	56

Engine	Units	QAS+ 120 S5
Model ⁵		FPT N45ETVP02
Emission compliance		Stage V
Speed	rpm	1500 1800
Rated net power (with fan)	kW _m	102 111
Aspiration		Turbocharged and air-to-air aftercooled
Speed control		Electronic
Number of cylinders		4L
Coolant		Parcool
Swept volume	l	4.5
Exhaust gas after treatment system ⁶		DOC + SCRoF + CUC
Combustion system		Direct Injection
Capacity of oil sump : - Initial fill ³	l	10.6
Capacity of cooling system	l	22
Maximum permissible load factor during 24h period	%	70
Electrical system (DC)	V	12
Battery Capacity (Cold Cranking Amps)		950

Fuel System	Units	QAS+ 120 S5
Fuel Consumption @ 0% load	l/h	2.3
Fuel Consumption @ 50% load	l/h	11.7
Fuel Consumption @ 75% load	l/h	17.1
Fuel Consumption @ 100% load	l/h	23.0
Fuel Type		Diesel
Fuel Tank Capacity	l	553
Fuel Autonomy @ 75% load ⁷	h	32.3
Fuel Autonomy @ 100% load ⁷	h	24.0
DEF Tank Capacity	l	43

¹ All ratings are at a reference condition of 0m altitude and 25°C

² Please see receptacle voltage configuration in Power Distribution section on page #5

³ Engine oil to meet CJ-4 (low ash oil)

⁴ Please see "Derate Table" for altitude and temperature calculations on page #4

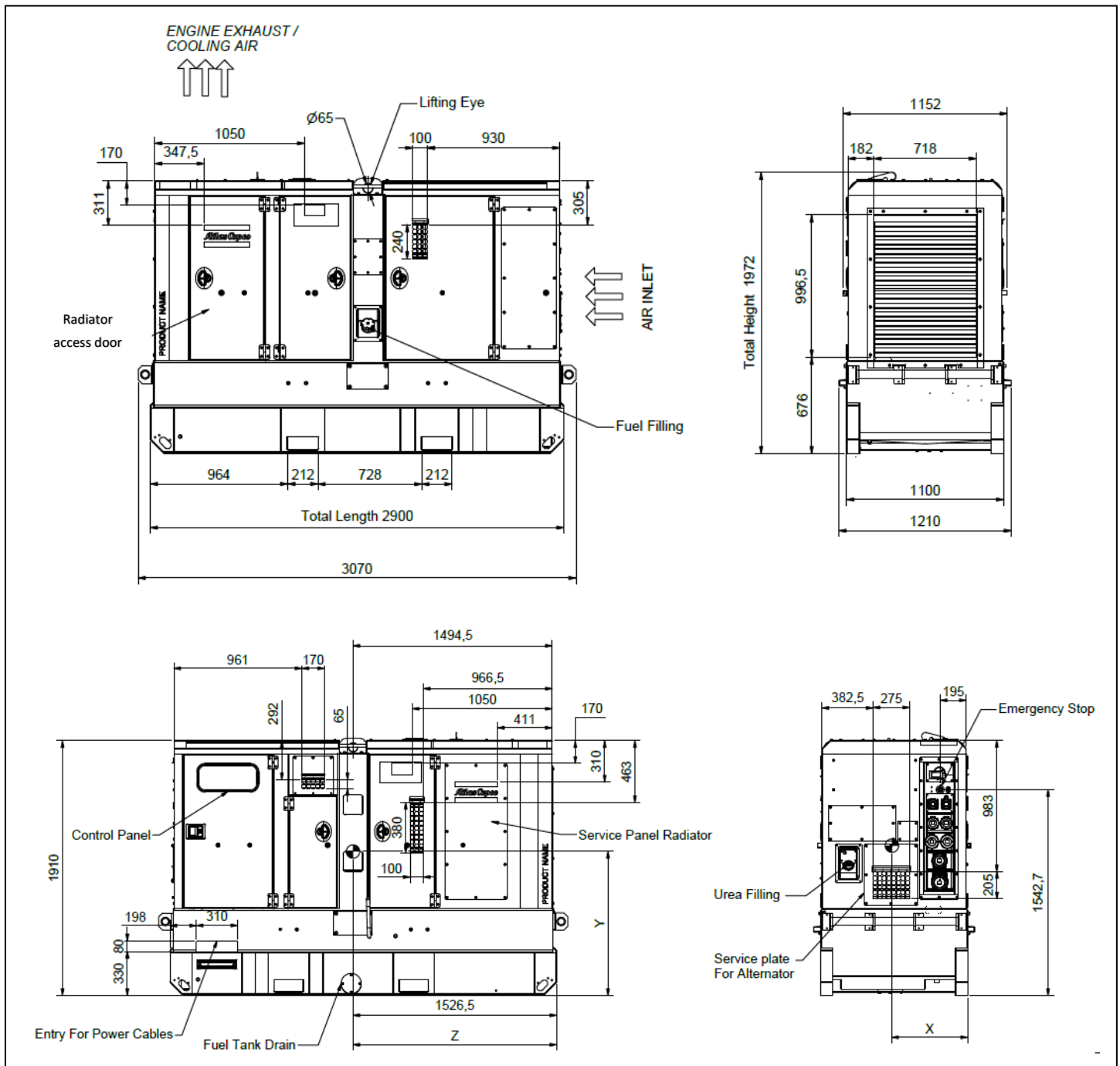
⁵ Engine and emissions require the use of Ultra Low Sulfur Diesel in accordance to ASTM-D975 Grade No.1-D S15 & No.2-D S15

⁶ DOC = Diesel Oxidation Catalyst | SCRoF = Selective Catalytic Reduction on Filter | CUC = Clean Up Catalyst

⁷ Diesel density used 0.86 kg/l

Dimensions

Drawing



Weight - Wet (ready to operate)

Net / Wet mass

Units

kg

QAS+ 120 S5

2615 / 2680

Dimensions

Standard fuel tank (L x W x H)

m

2.9 x 1.1 x 1.91

Main Data

Alternator

The Leroy Somer LSA alternators are designed for heavy duty continuous applications, with marine winding protection and Leroy Somer's AREP excitation system.

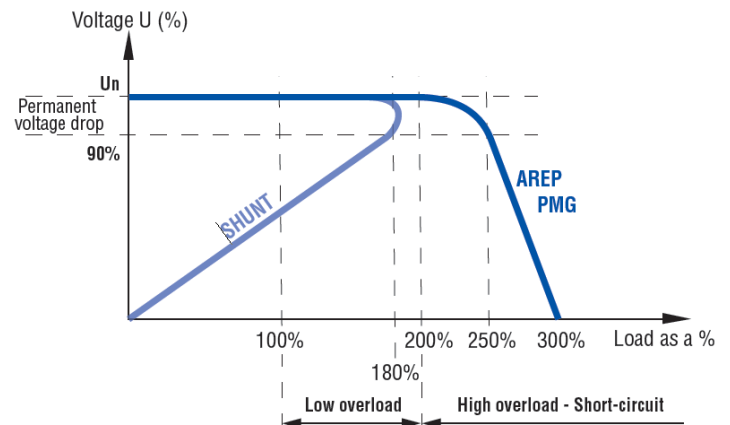
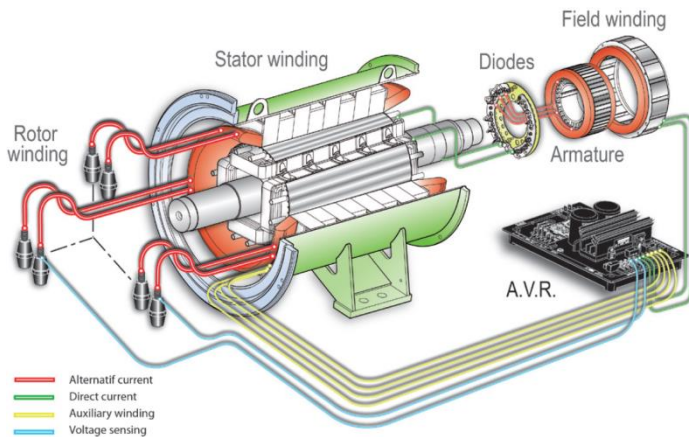
- AREP Excitation for superior motor starting capabilities
- Rental grade system 2 (relative humidity >95%) protection
- 4 pole brushless design with single bearing, Class H insulation and IP23 rating
- Voltage regulation +/- 0.5%
- Full Load acceptance of prime power rating

The AREP system uses 2 independent auxiliary windings located in the main stator to send supply voltage to the AVR:

- The voltage delivered by the first auxiliary winding H1 is proportional to the alternator output voltage (shunt characteristic).
- The voltage delivered by the second auxiliary winding H3 is proportional to the current drawn by the alternator and is a function of the applied load (compound characteristic – booster effect).
- The resulting phase-to-phase voltage supplies power to the AVR.

This power supply to the AVR power circuit is independent of the voltage sensing measured on the alternator output terminals. Therefore, the excitation current delivered by the AVR to the alternator exciter is independent of any voltage distortions (harmonics) due to the load.

The AREP system gives the alternator a high overload capacity (load impact or starting electric motors) and a short-circuit capability (300% - 10 s) in order to provide discriminating protection: the alternator with AREP excitation is shorter than the one with PMG excitation. It is particularly suitable for demanding applications.



Performance @ Altitude and High Ambient Conditions

When using at altitude and high ambient conditions the engine and alternator will de-rate as per chart below.

rating factor %	temperature (°C)										
	0	5	10	15	20	25	30	35	40	45	50
0	100	100	100	100	100	100	100	100	100	97	95
500	100	100	100	100	100	100	100	100	100	97	95
1000	100	100	100	100	100	100	100	100	100	97	95
1500	97	97	97	97	97	97	97	97	97	97	95
2000	94	94	94	94	94	94	94	94	94	94	94
2500	91	91	91	91	91	91	91	91	91	91	91
3000	88	88	88	88	88	88	88	88	88	88	88
3500	82	82	82	82	82	82	82	82	82	82	82
4000	76	76	76	76	76	76	76	76	76	76	76

Power Distribution

The cubicle incorporates all power distribution, controls, sensing and protection devices.

- ✓ Current transformer x 3 (1 each leg)
- ✓ Single main breaker w/shunt trip
- ✓ Individual breakers for each socket
- ✓ Sockets panel located on outside of unit for easy access
- ✓ Terminal board for hard wiring
- ✓ PowerLocks external quick connect
- ✓ External emergency stop switch (recessed)
- ✓ Neutral bonded to Ground with a removable bonding link accessible in the control cubicle

Circuit breaker and Earth leakage relay	Units	QAS+ 120 S5
Circuit-breaker 3ph: Number of poles		4
Circuit-breaker 3ph: Thermal release (It)	A	200
Circuit-breaker 3ph: Magnetic release (Im)	A	600 +/-20%
Fault current protection, Insulation resistance	kΩ	1-160
Fault current protection, residual current release, Idn	A	0,03-30

Sockets and Power locks panel



Five Slots of sockets available (only 4 if the genset has a synchronizing/paralleling controller)

In each slots several sockets can be selected from the below list.

- ✓ CEE 5P 125A 400V
- ✓ CEE 5P 63A 400V -
- ✓ CEE 5P 32A 400V
- ✓ CEE 5P 16A 400V
- ✓ Single phase 3P 16A CEE 230V
- ✓ Single phase 3P 32A CEE 230V
- ✓ Single phase 3P 16A PIN 230V
- ✓ Single phase 3P 16A RIM 230V

It is also available an individual earth leakage protection per socket or type A or type B.

Sockets can also be combined with 1 or 2 rows of 400Amps Power locks.

Controller - Standard

The QAS+ 120 S5 comes equipped with a Qc1212 control module. This is a diagnostic ECU controller with large 3" display that is intuitive and easy to operate with all functions conveniently at your fingertips. The controller also manages the engine ECU operating system, and several safety warnings and shut downs on various parameters (listed below).

The controller is powered by a main On/Off switch located next to display.

Qc1212 Controller Functionality:

Home Page (displayed while running, scrolling every 3seconds)

- ✓ Generator voltage (ph-ph)

Status Page

- ✓ Generator voltage (ph-N)
- ✓ Generator voltage (ph-ph)
- ✓ Generator frequency
- ✓ Generator kw
- ✓ Generator power factor
- ✓ Generator amperage

Generator Page

- ✓ Generator current (A)
- ✓ Generator earth current
- ✓ Generator load (kW)
- ✓ Generator load (kVA)
- ✓ Generator power factor
- ✓ Generator load (kVAr)
- ✓ Generator load (kWh, kVAh, kVArh)
- ✓ Generator phase sequence
- ✓ Dual mutual status

Event Page

- ✓ Displays the last 15 events

Remote Start/Stop

- ✓ Automatic start/stop via 2 wire dry contact connection

Operational Buttons

- ✓ Start button
- ✓ Stop button
- ✓ Automatic mode (external remote start)
- ✓ Up/Down arrows

Info Page

- ✓ Model number
- ✓ USB identification number
- ✓ Configured engine type
- ✓ Module's date and time
- ✓ Scheduler setting

Engine Page

- ✓ Engine speed
- ✓ Oil pressure
- ✓ Coolant temperature
- ✓ Engine battery volts
- ✓ Run Time
- ✓ Oil Temperature
- ✓ Fuel Temperature
- ✓ Turbo Pressure
- ✓ Fuel Pressure
- ✓ Fuel Consumption
- ✓ Fuel Used
- ✓ Fuel Level
- ✓ Auxiliary Sensors
- ✓ Engine Maintenance Due
- ✓ Engine ECU Link

Engine DTC Page

- ✓ This page contains any active Diagnostic Trouble Codes that the engine ECU is currently generating. These alarms are conditions detected by the engine ECU and displayed on the DSE controller.



Controller - Optional

As an option, The QAS+ 120 S5 comes with the Qc4004 controller with a capacitive touch screen. This is a fully diagnostic ECU controller with large 7" diagonal (800 x 480 pixel) touch screen display that is intuitive and easy to operate with all functions conveniently at your fingertips. The controller also manages the engine ECU operating system, and a number of safety warnings and shut downs on various parameters.

Additionally, our Power Management System (PMS) enables the optimization of fuel consumption and expands the generator lifetime. PMS manages the quantity of generators running in parallel with load demand, starting and stopping units in line with increases or decreases in load. This ensures the demand on each generator remains at a level which optimizes fuel consumption. This also eliminates the need for generators to run with low load levels, which can cause engine damage and shorten the life expectancy of the equipment.

Qc4004 Controller Benefits:

Modular Plant Capacity

- ✓ The Qc4004 controller allows up to 32 generators to be coupled in parallel to fit the power requirement of any application.

Remote communication capability

- ✓ The Qc4004 supports serial communication protocols including Modbus (RS-485, USB, and TCP/IP) and Profibus allowing you to supervise and control your genset/plant remotely.

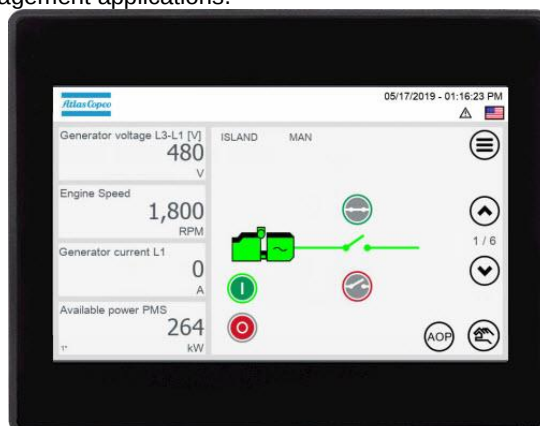
User friendly rental interface

- ✓ Rental companies will benefit from the standardized user interfaces. The controller has been designed with ease of operation in mind, and rental companies can easily set and lock parameters to ensure full protection of their equipment.

Available Modes:

- ✓ **Island mode** - Power plant with synchronizing generators or a stand-alone generator. Also applicable in critical power plants.
- ✓ **Automatic Mains Failure** - Critical power/emergency standby plants, black start generator.
- ✓ **Fixed power** - Power plant with fixed kW set point (including building load).
- ✓ **Peak shaving** - Power plant where generator supplies peak load demand paralleled to the mains.
- ✓ **Load takeover** - Plant mode where the load is moved from mains to generator, for example peak demand periods or periods with risk of power outages.
- ✓ **Mains power export** - Power plant with fixed kW set point (excluding building load).
- ✓ **Remote maintenance** - Used when the generator must supply the load while a distribution transformer is disconnected for service. (as an additional option)

* All modes are configurable, and it is possible to change the plant mode on the fly both in single and in power management applications.



Engine

FPT

FPT Stage V, turbo charged, intercooled, four-cylinder, liquid-cooled diesel engine provides ample power to operate the generator continuously at full-load.

The engine has Diesel Oxidation Catalyst, Selective Catalytic Reduction on filter with an Ad-Blue tank and Clean Up Catalyst to meet with European Stage V emission directive. All functionality of the engine is monitored automatically on the controller.

The engine has the capability to start the generator at -15°C with standard scope of supply. Cold weather option is available for machine starting for down to -25°C.

The engine operates on a 12V negative ground electrical system with a charging alternator and lockable battery cut-off switch.

The cooling system is suitably designed for continuous operation in ambient conditions up to 40°C with canopy door closed.

Fuel System

The fuel tank provides safe diesel storage while eliminating tank corrosion contaminants from being introduced to your fuel system. With integrated fuel water separator and filter, the system is designed to help maintain clean and trouble-free diesel supply to the engine for reliable trouble-free operation.

- ✓ Pad-lockable diesel fill cap
- ✓ Fuel / Water separator
- ✓ Fuel pre-filter
- ✓ Fuel level sensor
- ✓ Low fuel shut down feature
- ✓ External fuel connections w/3-way valve and quick couplings

Scheduled maintenance

Standard equipped with filters sized and designed to allow 600-hour service intervals under normal operating conditions. Extended time between services reduces down time and total cost of ownership of the unit over its lifetime.

600 Hour Service Interval:

- ✓ Oil filter
- ✓ Fuel filter
- ✓ Fuel / water separator

1200 Hour Service Interval:

- ✓ Air filter
- ✓ Oil filter
- ✓ Fuel filter
- ✓ Fuel / water separator

NOTE: Site specific operating conditions such as; poor fuel quality and low load profile may require more frequent service intervals.

Enclosure & Frame

The generator enclosure is designed for extreme applications to provide superior performance and reliability.

The enclosure is fabricated from galvanized steel which is powder coated for corrosion resistance. The enclosure and frame are fully sealed providing a true 110% containment of the maximum fluid tank.

- ✓ Galvanized steel powder coated enclosure
- ✓ Heavy duty base frame
- ✓ 110% fluid containment
- ✓ Superior level of rain ingress protection and design features
- ✓ Pad-lockable doors and fuel cap
- ✓ Engine fluid plumbed to exterior of frame for ease of service
- ✓ Central lifting point
- ✓ Sound dampening material and design to allow quiet operation

Noise level and noise map

QAS+ 120 S5 generator delivers a significant reduction in operating noise levels and is quieter than comparable generators.

Sound power level (LwA)	dB(A)	87
Sound pressure level (LpA) at 7m	dB(A)	56

Options available

Benefits

- | | |
|---|--|
| <ul style="list-style-type: none"> • Coolant heater • Cold weather • External Fuel Tank Connections • Automatic fuel refueling system • Automatic urea refueling system • Battery Charger | <ul style="list-style-type: none"> • Maintain engine temperature at optimal level in order to improve load acceptance. • Allows to use and start the genset in lower temperature condition • Ability to provide extended running hours with external fuel tank • Ability to provide extended running hours maintaining the day tank at optimal level with external fuel tank • Ability to provide extended running hours maintaining the day tank at optimal level with external urea tank • Ensures the batteries are always ready for starting |
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Manufacturing & Environmental Standards

The **QAS+ 120 S5** is manufactured following stringent ISO 9001 regulations, and by a fully implemented Environmental Management System fulfilling ISO 14001 requirements.

Attention has been given to ensure minimum negative impact to the environment.

The **QAS+ 120 S5** meets current European Stage V directive.

Supplied Documentation

The unit is delivered with documentation regarding:

- Hard copies of the Engine Manual, alternator manual, wiring diagram in English, Atlas Copco Operators Safety and Instruction Manual
- CE certificate and Test certificate