This document gives a complete list of technical data with some detailed explanations of the main systems, subsystems and performance of our generators, in order to support local sales documentation, tenders or even technical doubts.

While every effort has been made to ensure that the information in this manual is correct Atlas Copco does not assume responsibility for possible errors. Atlas Copco reserves the right to make changes without prior notice.

Standard Model Scope

Applying insights gained from industrial customers, rental companies, public utilities and other end users QAS generators are designed to withstand the most demanding on-site conditions and environments.

Considering their impressive performance at full capacity, the QAS line of generators includes excellent features for noise reduction and environmental protection.

QAS generators are purpose built for quick, easy and safe transport and on-site handling. Built to last, a QAS generator will provide years of dependable service for your electrical power generation needs.
All members of the widely appreciated QAS family are intelligent multi-task units managing to power a wide range of electrical equipment in different applications.

Their superior component configuration offers a wide range of control modules, electrical settings and mechanical options, in order to guarantee superior quality at efficient operating costs.

Conceived for 100% prime power operation in the most severe outdoor conditions, ready to work in sensitive areas, QAS generators are designed and configured for safe operation with minimal downtime under any circumstance.

Features	Benefits
• Carefully selected components, accurately developed and tested configuration	• Accurate and stable power regardless of the conditions
• Superior standard configuration and extensive option list	• Ability to power a wide range of applications
• 500 hours service interval and superior accessibility to all service points	• Service efficiency: increased up-time
• Compact and safe concept and sturdy design	• Increased transport efficiency
• Designed and built to last	• Superior resale value / longer life time

Manufacturing and Environmental Standards

The QAS range 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 range complies with the latest noise emission directives.

Declaration of Conformity

Our QAS EC falls under the provisions of the article 12.2 of the EC Directive 2005/42/EC on the approximation of the laws of the Member States relating to machinery, is in conformity with, the relevant Essential Health and Safety Requirements of this directive:
MACHINERY SAFETY (2006/42/EC): EN ISO 12100-1, EN ISO 12100-2, UNE EN 12601
ELECTROMAGNETIC COMPATIBILITY (2004/108/EC): EN 61000-6-5, EN 61000-6-4
LOW VOLTAGE EQUIPMENT (2006/95/EC): EN 60034, EN60204-1, EN 60439
OUTDOOR NOISE EMISSION (2000/14/EC): ISO 3744
IS0 8528: QAS generators are design to comply with ISO 8528 regulation

1. Performance Data

Generator		QAS 14 Kd	
Rated speed	rpm	1500	1800
Rated power factor (lagging)		0.8	0.8
Rated Prime Power, PRP	kVA	13.7	16.3
	kW	10.96	13.0
Limited Time Power, ESP (Stand-by)	kVA	15.07	17.9
	kW	12.056	14.3
Continuous Operation Power, COP (Continuous)	kVA	13.7	16.3
	kW	10.96	13.0
Rated voltage (3ph. line to line)	V	400	480
Rated voltage (1ph. line to neutral)	V	230	277
Rated current 3ph. (PRP)	A	19.8	19.6
Rated current 3ph. (ESP)	A	21.8	21.6
Maximum sound power level (LWA) complies with 2000/14/EC	dB(A)	86	90
Maximum sound pressure level (LPA) at 7 m	dB(A)	58	62
Coupling engine/alternator		Direct	
Capacity fuel tank (total)	l	115	
Fuel tank specifications		Plastic	
Fuel Autonomy at full load (Considering full capacity)	h	32.8	26.54
Single step load acceptance (within G2, acc. ISO 8528-5:1993)	%	100	100
Frequency drop (lower than % isochronous)	%	≤0.05	
Maxim oil consumption 100% load	l/h	0.02	0.02

Derating Table (%)

	0ºC	5 ºC	10 ºC	15 ºC	20 ºC	25 ºC	30 ºC	35 ºC	40 ºC	45 ºC	50 ºC
0 m	100	100	100	100	100	100	95	95	95	90	90
500 m	100	100	95	95	95	90	90	90	85	85	85
1000 m	95	90	90	90	85	85	85	80	80	80	75
1500 m	85	85	85	80	80	80	80	75	75	75	70
2000 m	80	80	80	75	75	70	70	70	70	65	65
2500 m	75	70	70	70	70	65	65	65	65	NA	NA
3000 m	70	65	65	65	65	60	60	60	60	NA	NA
3500 m	65	60	60	60	60	55	55	NA	NA	NA	NA
4000 m	60	60	55	55	55	55	55	NA	NA	NA	NA

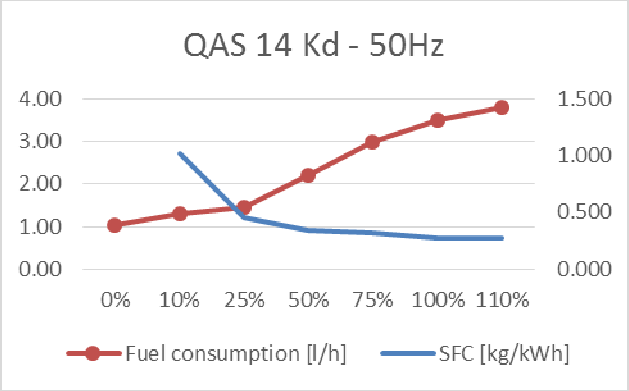
Limitations		QAS 14 Kd
Maximum ambient temperature	ºC	50
Altitude capability	m	4000
Relative air humidity maximum	%	85
Minimum running temperature	ºC	-15
Minimum running temperature, with coldstart equipment and opened breather*	ºC	-25

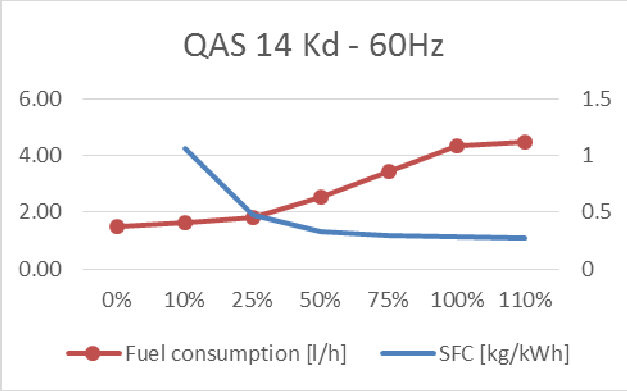
*** on high humidity regions freezing may occur on the *breather pipes***

Application Data		QAS 14 Kd
Mode of operation		PRP
Max. Inclination		+/- 20º
Operation		single
Start-up and control mode		manual / auto
Climatic exposure		open air

		QAS 14 Kd	
	rpm	1500	1800
Fuel Consumption at*:			
0% Load	l/h	1.04	1.50
10% Load	l/h	1.30	1.61
25% Load	l/h	1.46	1.81
50% Load	l/h	2.21	2.53
75% Load	l/h	3.00	3.42
100% Load	l/h	3.50	4.33
110% Load	l/h	3.80	4.49
Specific Fuel Consumption at:			
0% Load	kg/kWh	NA	NA
10% Load	kg/kWh	1.018	1.065
25% Load	kg/kWh	0.458	0.479
50% Load	kg/kWh	0.347	0.333
75% Load	kg/kWh	0.314	0.301
100% Load	kg/kWh	0.275	0.286
110% Load	kg/kWh	0.271	0.269

Diesel fuel type No. 2 diesel or a fuel corresponding to ASTM D2. Density: 0,86 kg/l



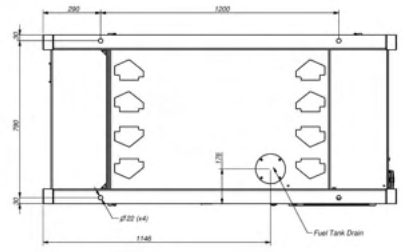


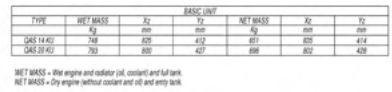
(Reference conditions at 25ºC Air Inlet Temperature, 60% Relative Humidity, 1bar Absolute inlet pressure, for different conditions or limitations contact Atlas Copco technical support).

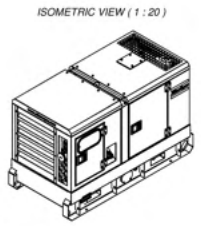
2. Box

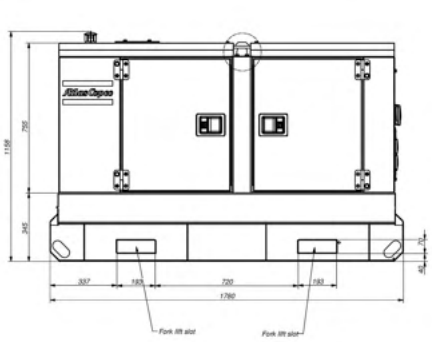
		QAS 14 Kd	
	rpm	1500	1800
Dimensions (L x W x H)	m	1,78 x 0,87 x 1,16	
Weight			
Net mass	Kg	651	
Wet mass	Kg	748	
Capacity of spillage free frame	l	140.25	
Dimensions Long autonomy Fuel tank		-	
Weight			
Net mass	Kg	-	
Wet mass	Kg	-	
Foam silencer			
Thickness	mm	30	
Temperature	ºC	Min -30 Max 120	

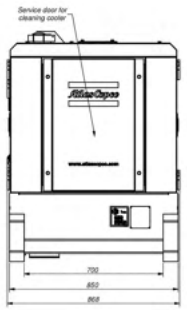
Our canopies are made from galvanized steel and painted with powder coating paint. To improve the protection in the most exposed parts as frame and lifting beam, it is also primed with a special paint before coating.

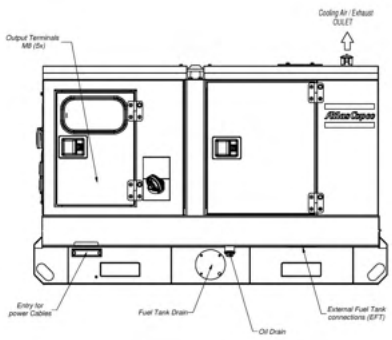


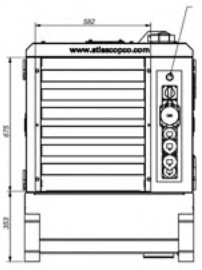


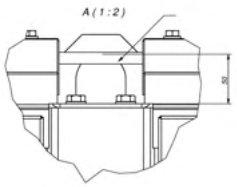


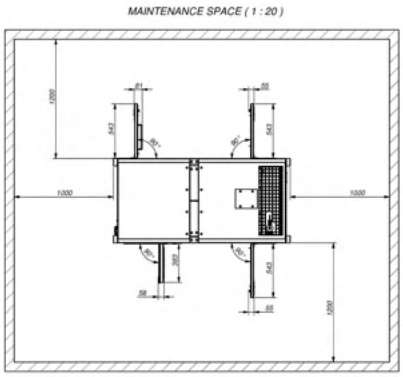


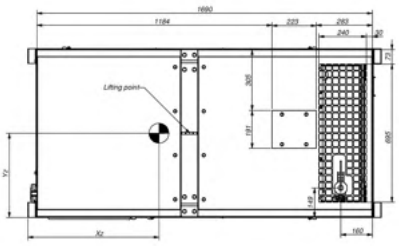












3. Engine

		QAS 14 Kd	
	rpm	1500	1800
General			
Manufacturer		Kubota	
Model		D1703M-BG	
Standard		ISO 3046 / ISO 8528-2	
Number of cylinders	u.	3	
Configuration		4 cycle vertical	
Aspiration		Natural	
Speed governor		Electronic	
Bore	mm	87	
Stroke	mm	92.4	
Electrical system (DC)	V	12	
Compression ratio		22	
Displacement (swept volume)	l	1.7	
Piston speed	m/s	NA	
Combustion system		Indirect injection	
Charged air cooling system		-	
Maximum permissible load factor of PRP during 24h	%	100	
Lubrication system			
Type		PAROIL E (Mineral)	
Capacity of oil system (including filters + sump)	l	7	
Oil pressure at rated speed	kPa	245 - 343	
Maximum Lubrication oil temperature	ºC	125	
Air intake system			
Air consumption 25ºC (PRP)	m³/min	1.1	1.32
Air consumption 25ºC (ESP)	m³/min	1.1	1.32
Max allowable air intake restriction	kPa	2	
Air filter cleaning efficiency	%	99.8%	
Air filter capacity	m³/min	-	
Cooling system			
Coolant		Parcool	
Capacity of engine	l	5.5	
Total capacity (radiator, hoses...)	l	9	
Fan power consumption at nominal speed	kW	0.2	
Fan material		Plastic	
Coolant flow	l/s	-	
Air mass flow (25ºC)	m³/s	0.43	0.53
Fuel filter		Water Separator	
Max pressure	bar	2.07	
Temperature	ºC	-40 to 121	
Volume	l	NA	
Flow Rate	l/h	170	
Emission compliance		EU STAGE 3A	
No X + HC	g/kWh	-	-
CO	g/kWh	-	-
PM	g/kWh	-	-
SO2	g/kWh	-	-
CO2 (at optimal working point)	%	-	-

***These values are extracted from official engine datasheet.**

4. Alternator

		QAS 14 Kd	
	rpm	1500	1800
General			
Manufacturer		Leroy Somer	
Model		LSA 40 S3	
Standard		IEC 34-1 / ISO 8528-3	
Rated net power (ESP: 50Hz 27ºC / 60 Hz 40ºC)	kVA	16.5	16.5
Number of bearings		1	
Number of wires		12	
Voltage regulator accuracy		+/-1%	
Degree of protection / Insulation class		IP 23/H	
Environment Protection		System 2 (Humid atmosphere)	
Number of poles		4	
Number phases		3	
Over speed	rpm	2250	
Air flow	m³/s	0.06	0.06
Total Harmonic Distortion THD		no load < 3%-linear load < 5%	
Waveform: NEMA = TIF		< 50	
Xd Direct axis synchro reactance unsaturated	%	190	190
X'd Direct axis transient reactance saturated	%	16.8	16.8
X"d Direct axis subtransient reactance saturated	%	8.4	8.4
Excitation system		Shunt	
Sustained short-circuit current	%	180% (1,8x In)	
Time sustained short-circuit current	s	20	
AVR			
Model		R 220	
Sensing		1 phase	
Voltage regulation	%	±0.5	
Voltage sensing	V	≤140	

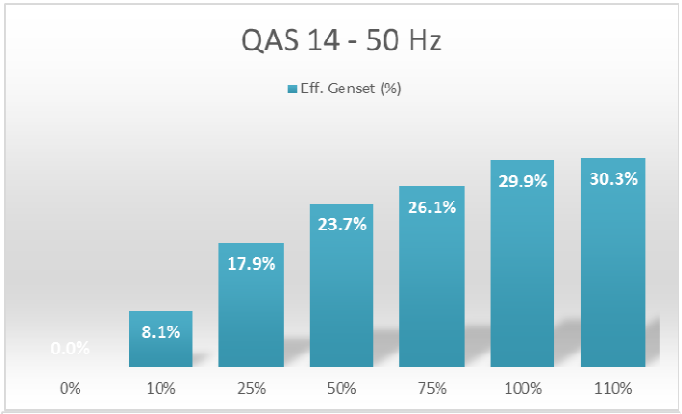
The Leroy Somer LSA alternators are designed for heavy duty continuous applications:

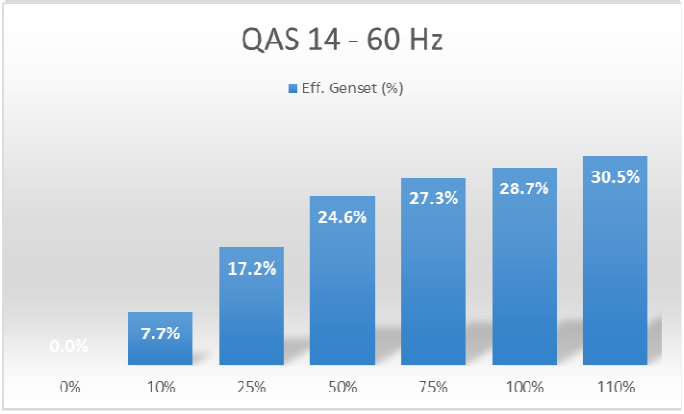
- System 2 protection (relative humidity >95%) for tropical environment (except coastal areas). With high performance dielectric varnish and reinforced over-coating on main stator and rotor
- 4 pole brushless design with single bearing, Class H insulation and IP23 rating
- Voltage regulation +/- 0.5%
- Full Load acceptance of prime power rating
- Standard excitation system is SHUNT (Self excited). As option (check Electrical options) you can have additional excitation system as:
    - PMG
    - Auxiliary winding

5. Generator

		QAS 14 Kd	
	rpm	1500	1800
Energy Balance			
Engine			
Heat rejection to exhaust	kW	10	12
Heat rejection to coolant	kW	9.3	11
Heat rejection to radiation	kW	0.9	1.1
Alternator			
Efficiency at full load	%	86.00%	

Genset Efficiency





Exhaust System			
Flow (PRP)	m³/min	2.48	3.23
Flow (ESP)	m³/min	2.48	3.23
Exhaust gas temperature "after turbine" (PRP)	ºC	490	
Exhaust gas temperature "after turbine" (ESP)	ºC	490	
Max. Backpressure (Without / with spark arrestor)	kPa	7 / -	
Output pipe diameter	mm	50.0	
Battery			
Quantity		1	
Voltage	V	12	
Capacity	Ah	74	
Connection		-	
Dimensions (L x W x H)	mm	278x175x190	

		QAS 14 Kd	
	rpm	1500	1800
Cold cranking current	A(EN) / A(DIN)	680 / -	
Starting power	kW	-	
Weight (wet)	kg	16.6	
Sensor			
Oil (temp, pressure & level)		STD	
Coolant (temp & level)		STD	
Fuel (feed pressure)		NA	
Charge air (temp & pressure)		NA	
Fuel Level		STD	
Water in Fuel		STD	
Generator Voltage		STD	
Mains Voltage		NA	
Generator Current transformer		STD	
Transformer Maintenance Changeover feedback		NA	
Reply: Mains CB opened/closed		NA	
Reply: Generator CB opened/closed		NA	
Air Inlet Pressure Switch		NA	
Low Coolant Level Shutdown/Warning		NA	

***Confirm with Atlas Copco technical support**

6. Power Output

		QAS 14 Kd	
	rpm	1500	1800
Circuit Breaker			
Brand		Schneider	
Model		IC60N Curve B	
Poles		4	
Rated current (In)	A	0,5 - 63	
Thermal release, regulated (It)	A	20	
CB tripping point	A	19.8	19.8
Overload protection (Ir)	A	3,5 x In	
Fault current protection, residual current release (Idn)	A	0,03-30	
Motor Driven DC voltage	V	NA	
Motorized		NA	
Life operating cycles without maintenance		20000	
Terminal Board			
Bolts diameter	mm	10	
Terminal type		Plug	
Sockets Available*			
Sockets 1 Phase			
PIN Domestic (1x) 2p + E 16 A/230 V		OP	
RIN Domestic (1x) 2p + E 16 A/230 V		OP	
CE Domestic (1x) 2p + E 16 A/230 V		OP	
Sockets 3 Phase		OP	
Configuration Remarks**		CEE form 3p + N + PE 16 A/400 V CEE form 3p + N + PE 32 A/400 V	

***Sockets are enable for 50Hz and disable for 60Hz**
****For a different configuration/scope contact Atlas Copco support**

STD – Standard; OP – Option; NA – Not Available

7. Options

		QAS 14 Kd	
	rpm	1500	1800
Mechanical Options			
Special Equipment			
Spark arrestor		OP	
Material		S235 JR G2	
Inlet shutdown valve		NA	
Design pressure	bar		
Max/Min Temperature	ºC		

Spark arrestor is a device that is designed to trap any exhaust particles or combustible materials, such as sparks or other flaming debris, from escaping into hazardous areas where they might cause fires. Exhaust particles are centrifuged in the spark arrestor, then collected and stored in a reservoir until emptied by an operator. An air shut-off valve serves to stop the engine by closing the air intake once the controller detects an over speed in the engine.

Fuel System		
External fuel tank connection		OP
Material		Brass 0011 5204 03
Test pressure	bar	1
Overpressure	bar	2
Open pressure	bar	1±0,1
Max/Min Temperature	ºC	-30 to +80
External fuel tank connection with quick coupling		OP

The EFT enable the generator to run for long periods of time on an external fuel supply without having to refuel. We can also provide quick couplings to enable easy and fast connection to the fuel tank

AFT Automatic fuel transfer		NA
Additional fuel filter		STD
Design pressure	bar	
Test pressure	bar	
Volume	l	
Max/Min Temperature	ºC	
Max flow rate	g/h	
Skid fuel tank (long autonomy)		NA
Capacity	l	
Material		
Fuel level sender (*Changes automatically for different fuel tank)		STD
Oil level maintainer		NA
Capacity of oil tank		-
Cold start synthetic first oil filling		OP
Type		PAROIL Extra
Temperature (min / max)	ºC	-15 to 40ºC
Density (Ambient temperature)	g / cc	0,86 (15ºC)
Cold flow		Antifreeze fuel additives in 0,2% composition

		QAS 14 Kd	
	rpm	1500	1800

Mechanical Options

Undercarriage option		
Undercarriage adjustable towbar with brakes		OP
Number of axles		1
Permissible mass on each axle	kg	1300
Maximum speed	km/h	140
Dimensions (L x W x H)	mm	3370 x 1400 x 1722
Brake connections		Mechanical
Wheel	r	14"
Loose ball coupling		OP
Adapter 24V road signalization		OP
Towing eye		
Towing eye DIN		OP
Towing eye NATO		OP
Towing eye BALL coupling		OP
Towing eye ITA		OP
Towing eye AFR		OP

Depending on the size, units have a two-wheeled, single axle trailer, or a double axel with 4 wheels. Both types of trailer have an adjustable towbar and road signalization.

Special options		
Special color undercarriage		OP
Special color wheels		OP
Special color canopy		OP
Special color frame		OP
Witness test		OP

Guided and face to face testing of the machine. Including Transient test and Heat Run Test.

Electrical Options

		QAS 14 Kd
Coolant Heater		
Electric driven coolant heater		OP
Voltage	V	240
Power	kW	1
Current	A	4.2
Thermostat Range	ºC	38 / 49
Fuel driven coolant heater		NA
Electrical power	W	
Rated voltage	V	
Operating pressure	bar	
Flow rate at 0,1 bar	l/h	

Its main mission is heat the coolant so that the temperature of the engine is always high enough to start straight away, even in temperatures as low as minus 25 degrees Celsius. Not for all models but a fuel powered version is available, which is ideal for remote areas without mains supply.

Frequency and Voltage configuration		
Frequency/Voltage/Phases 50 Hz / 400V / 3ph		STD
Dual frequency switch 50Hz-60Hz		OP

***If the unit is dual frequency, DV and MV versions are NA**

Dedicated frequency 50 Hz 230V 1ph		OP
Dual voltage 50 Hz 400 V 3ph - 230V 3ph (Norway)		OP
Dual voltage 50 Hz 400 3ph - 230V 1ph		OP

		QAS 14 Kd	
	rpm	1500	1800
Electrical Options			
Battery			
Battery charger*		OP	
Temperature	ºC	-30 to 55	
Input frequency	Hz	47……64	
Output voltage	V	12	
Output current	A	5	
Output power	W	60	
Dimensions (L x W x H)	mm	165 x 305 x 110	
Recommendable with Qc2103 and Qc4003			
Battery cut off switch		OP	
Operations	V / A	24 / 1500	

Battery charger is necessary for stand-by applications because the controller is always on, ready to start at any time. Battery cut off switch allows the battery to be disconnected when storing the unit, thus preventing the battery from becoming drained.

Electronic speed regulator (Governor)		STD
Model		
Connection to engine		
Sensors/Switch	ºC and kPa	
Earth Protection		
Neutral TNS		STD
Neutral EDF (TT)		OP
Neutral IT		OP
Earth leakage detection Relay (ELR)		OP
	mA	30
Insulation Monitoring Relay		OP
Earth PIN		STD
Length	mm	450

Alternator excitation system		
Permanent magnet (PMG		NA
AVR		
Sustained short-circuit current	%	
Time sustained short-circuit current	s	
Operating temperature	ºC	
No load voltage	V	
Stator Phase/Phase resistance (20ºC)	Ω	
Auxiliary winding		OP
AVR		R438
Sustained short-circuit current	%	300% (3x In)
Time sustained short-circuit current	s	10

The PMG or Permanent Magnet Generator is a separate device to power the AVR and is ideal for motor starting and distorted loads as provides the generator 3 times its nominal current during 10 seconds. Auxiliary winding system is an extra winding layer in the alternator that provides same benefits than the PMG.

Controllers		
Qc1103		STD
Qc2103		OP
Qc4003*		NA

***with Qc4003+ PMS Atlas Copco recommends: Battery charger + Coolant heater**
***Just 1 ph socket available**
***Qc4003 includes always communication cables and needed adaptors**

Qc1103: is the controller dedicated for island operation or remote start
Qc2103: has in addition the possibility of detect a mains failure
Qc4003: is the high spec controller prepared to work synchronized with several units (IPP) and/or the mains

CONTROLLERS KEY FEATURES QC 1103 & 2103 CONTROLLERS

Auto start or automatic mains failure applications

Monitoring of electronic or non-electronic engines
J1939 as standard

Gen-set and busbar control & protection

Improved inputs/outputs
Up to 11 digital inputs, 5 analogue inputs and 8 relay outputs

Modbus communication rs485

Configurable for other applications
PARUS configurable

Graphical display
Multi-language

CONTROLLERS KEY FEATURES QC 4003 CONTROLLER

Controllers key features Qc 4003

Paralleling between generators and mains power supply

Full engine monitoring
CAN communication J1939

Gen-set and busbar control & protection

Multiple configurable inputs/outputs

Modbus communication RTU/RS485

Easy software with m-logic programation
PARUS 3

PARALLELING APPLICATIONS
Load Take Over, Mains Export/Import, AMF, Peak Shaving, Transformer Maintenance, Fix power and PMS (CAN