



CUMMINS G-DRIVE ENGINES

POWER BY DESIGN 10 - 2033 kW_e



Introduction

Introduction

G-Drive engines – for reliable power

Cummins Power

Today's diesel power means Cummins Power – With a new generation of engines from 3.3 to 60 litres setting unbeatable power standards. Cummins is now the world's leading manufacturer of diesel engines across the 50-2000kW range, with a massive annual investment in research and engineering - based on worldwide sales in 2005 of \$9.92 billion. A global manufacturing and distribution operation, together with over 80 years of experience, backs every new Cummins diesel for generator set applications.

Cummins Technology Solutions

Cummins is uniquely positioned as a vertically integrated engine manufacturer with subsidiary companies manufacturing subsystems necessary for the production of fuel efficient and high performance engines. These include such technologies as turbo chargers (Cummins Turbo Technologies), filtration (Cummins Filtration), fuel systems and electronics. The interaction between all of these components is essential to achieve high performance and low exhaust emissions.

G-Drive CoolPac Engine

The Coolpac program was created in response to a demand for a fully integrated G-Drive product. CoolPac engines provide Central Area G-Drive customers with a packaged radiator, either fitted to the engine or as a loose part, delivering a complete engine solution.

Key benefits of CoolPac are:

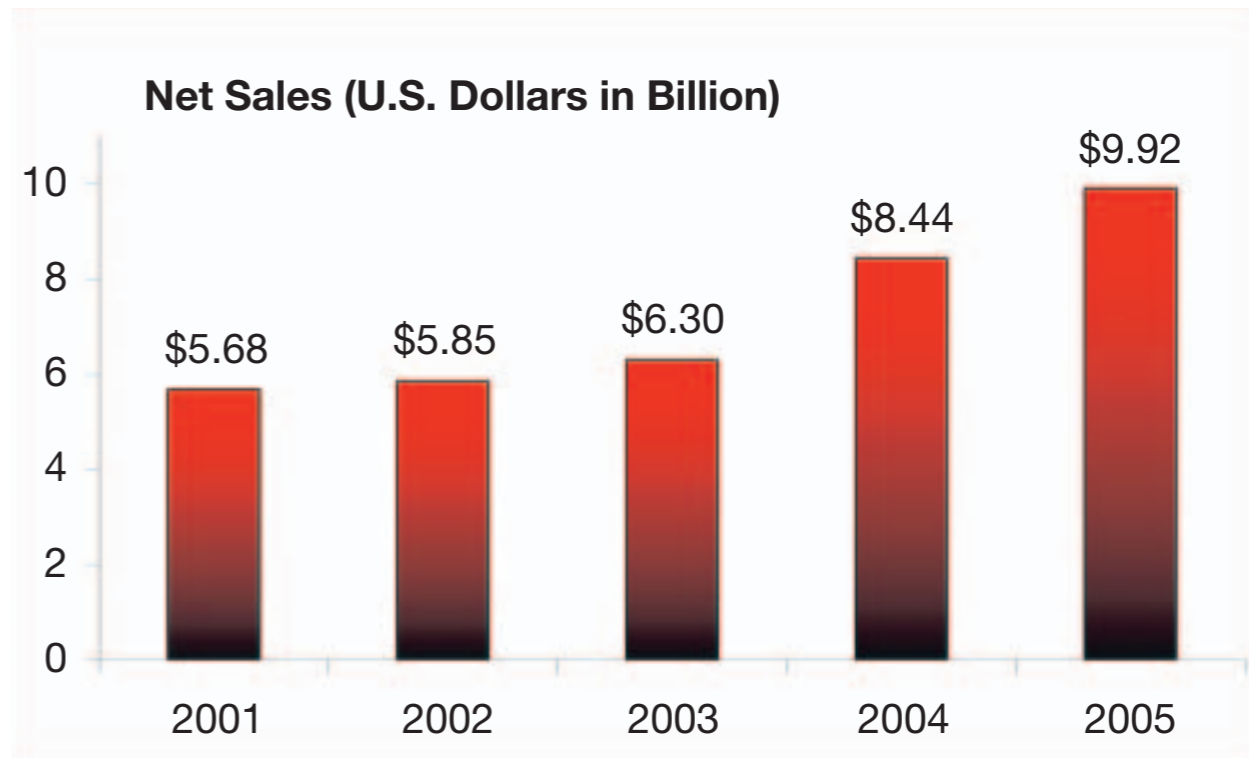
- Provides complete solutions to GOEMs
- Improved speed to introduce new products due to supply of key components such as cooling system and air filter
- Provide high performance/tested/ high ambient capability solutions
- Competitively priced

Cummins Worldwide

With engine manufacturing operations in 8 countries, Cummins is a global supplier of diesel power. In Europe, Cummins has built up its largest manufacturing operation, outside the

USA, to serve a fast growing customer base.

Throughout the world Cummins has an enviable presence in over 130 countries with 500 distributors, 5,000 dealers and more than 5,800 service locations.



Daventry Engine Plant

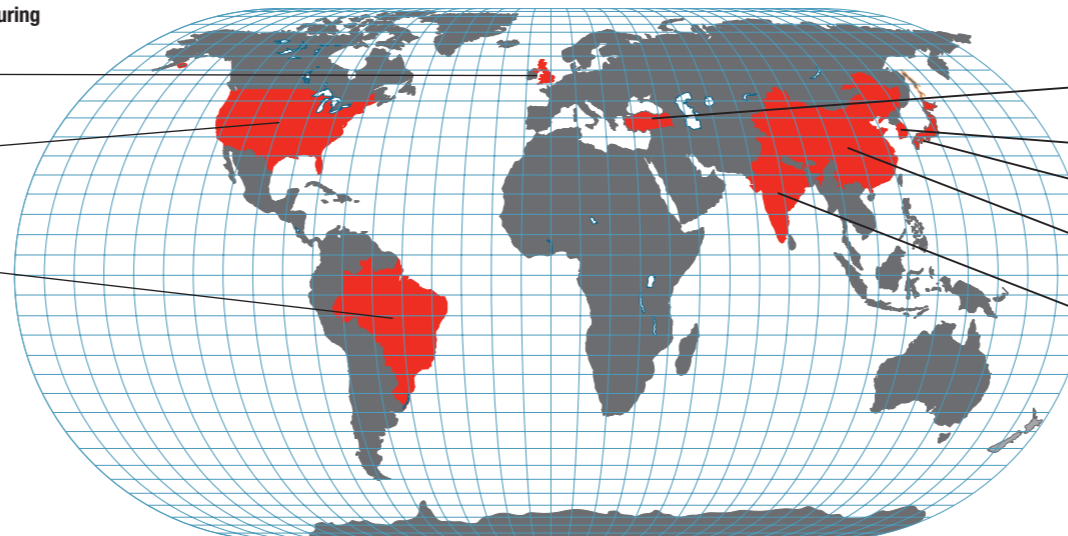


Global Engine Manufacturing

United Kingdom
Darlington, Daventry

United States
Columbus, Rocky Mount,
Seymour, Jamestown

Brazil
São Paulo



Turkey
Izmir

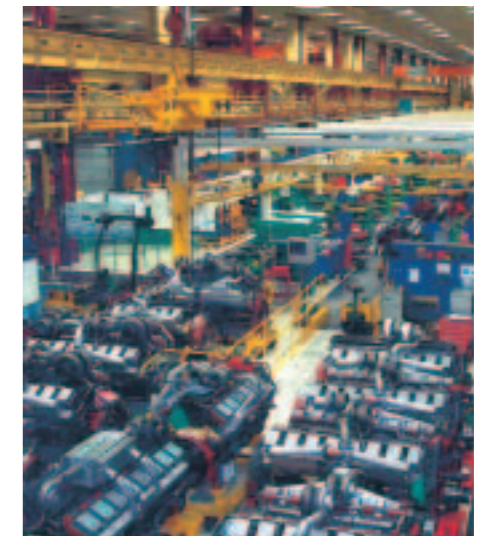
South Korea
Seoul

Japan
Oyama

China
Chongqing, Xiangfen

India
Jamshedpur, Pune

Daventry Engine Plant

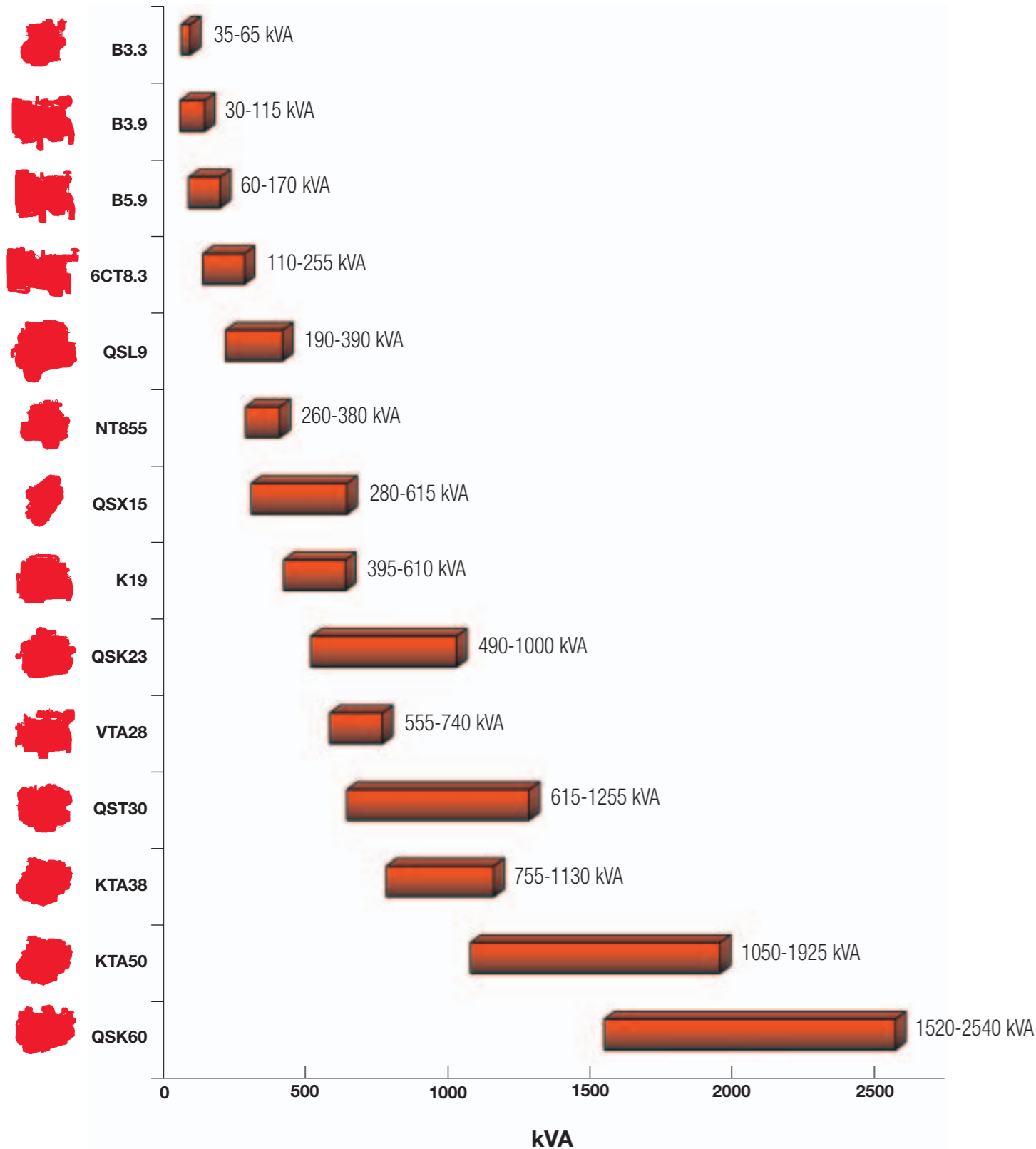


Engine Range Chart

G-Drive engines – power range

G-Drive engines – model summary

Current Coolpac product range:



Further information relating to new Tier-2 emissionised products including QSK19, QST30, QSK50 and QSK60 can be found in "Low Emissions Technology", available from mid October 2006.

Engine	kVA PRP 50 Hz	kVA ESP 50 Hz	kWe PRP 60 Hz	kWe ESP 60 Hz	Dual Hz	Limiting Ambient Temp @13mmH2o	Cooling	Flywheel SAE Type	Electrical System	Mechanical Governor	Elec Governor or EFC	FAE ECM + Harness	Fan	Radiator & Guards	Normal Duty Air Filter
4B3.3G1	35	38	32	35	Y	TBC	JW	4/10	12v	•	x	x	Fitted	Fitted	Fitted
4BT3.3G2	50	55	45	50	Y	TBC	JW	4/10	12v	•	x	x	Fitted	Fitted	Fitted
4BT3.9G3	53	59	48	54	Y	60	JW	3/11.5	12v	•	x	x	Fitted	Fitted	Fitted
4BT3.9G4	64	70	55	60	Y	51	JW	3/11.5	12v	•	x	x	Fitted	Fitted	Fitted
4BTA3.9G3	80	88	73	80	Y	50	JWAC	3/11.5	12v	•	oo	x	Fitted	Fitted	Fitted
4BTA3.9G4	91	100	82	90	Y	49	JWAC	3/11.5	12v	x	•	x	Fitted	Fitted	Fitted
6BT5.9G6	107	119	100	110	Y	49	JW	3/11.5	12v	•	x	x	Fitted	Fitted	Fitted
6BTA5.9G3	136	150	114	125	Y	54	JWAC	3/11.5	12v	x	•	x	Fitted	Fitted	Fitted
6BTA5.9G4	107	119	100	110	Y	56	JWAC	3/11.5	12v	•	oo	x	Fitted	Fitted	Fitted
6CT8.3G2	135	150	121	134	Y	53	JW	2/11.5	24v	•	x	x	Fitted	Fitted	Fitted
6CTA8.3G2	182	200	160	175	Y	55	JWAC	2/11.5	24v	•	x	x	Fitted	Fitted	Fitted
6CTAA8.3G3	200	220	182	200	Y	48	AA	2/11.5	24v	x	•	x	Fitted	Fitted	Fitted
QSL9G2	225	250	210	230	Y	55	AA	2/11.5	24v	x	•	x	Kit	Kit	Fitted
QSL9G3	250	275	227	250	Y	50	AA	1/14	24v	x	x	•	Kit	Kit	Fitted
QSL9G4	275	300	250	275	Y	50	AA	1/14	24v	x	x	•	Kit	Kit	Fitted
QSL9G5	300	330	275	300	Y	49.9	AA	1	24v	x	x	•	Kit	Kit	Fitted
NT855G6	320	350	260	288	Y	58	JW	1	24v	x	x	•	Kit	Kit	Fitted
NTA855G2	320	361	275	300	Y	55	JWAC	1	24v	x	•	x	Kit	Kit	Fitted
NTA855G4	365	400	x	x	N	54.7	JWAC	1	24v	x	•	x	Kit	Kit	Fitted
QSX15G4	410	450	360	400	Y	60	AA	1	24v	x	x	•	Kit	Kit	Fitted
QSX15G6	455	500	360	400	Y	57	AA	1	24v	x	x	•	Kit	Kit	Fitted
QSX15G8	500	550	360	400	Y	54.7	AA	1	24v	x	x	•	Kit	Kit	Fitted
KTA19G4	500	550	455	500	Y	50	JWAC	0	24v	x	•	x	Kit	Kit	Fitted
QSK23G2	750	825	682	750	Y	50	AA	0	24v	x	x	•	Kit	Kit	Kit
QSK23G3	810	900	727	800	Y	50	AA	0	24v	x	x	•	Kit	Kit	Kit
VTA28G5	636	700	545	600	Y	50	JWAC	0	24v	x	•	x	Kit	Kit	Fitted
QST30G3	910	1000	818	900	Y	51	JWAC	0	24v	x	x	•	Kit	Kit	Fitted
QST30G4	1000	1100	910	1000	Y	50	2P2L	0	24v	x	x	•	Kit	Kit	Fitted
KTA38G3	910	1000	818	900	Y	52	JWAC	0	24v	x	•	x	Kit	Kit	Fitted
KTA38G5	1000	1100	x	x	N	50	JWAC	0	24v	x	•	x	Kit	Kit	Fitted
KTA38G7	910	1000	x	x	N	40	2P2L	0	24v	x	•	x	Kit	Kit	Fitted
KTA50G3	1275	1400	1135	1250	Y	55.6	JWAC	0	24v	x	•	x	Kit	Kit	Fitted
KTA50G7	1275	1400	x	x	N	40	2P2L	0	24v	x	•	x	Kit	Kit	Fitted
KTA50G8	1400	1675	x	x	N	50	2P2L	0	24v	x	•	x	Kit	Kit	Fitted
KTA50G9	x	x	1295	1500	N	-	2P2L	0	24v	x	•	x	Kit	Kit	Kit
QSK60G3	1875	2063	x	x	N	54.1	2P2L	0	24v	x	x	•	Kit	Kit	Kit
QSK60G4	2000	2250	x	x	N	55.7	2P2L	0	24v	x	x	•	Kit	Kit	Kit

Information provided as a guide in good faith and subject to change. Consult Application Engineering for up-to-date product information.

Key:- • = Standard with engine
 x = not supplied
 oo = Can be supplied, Optional

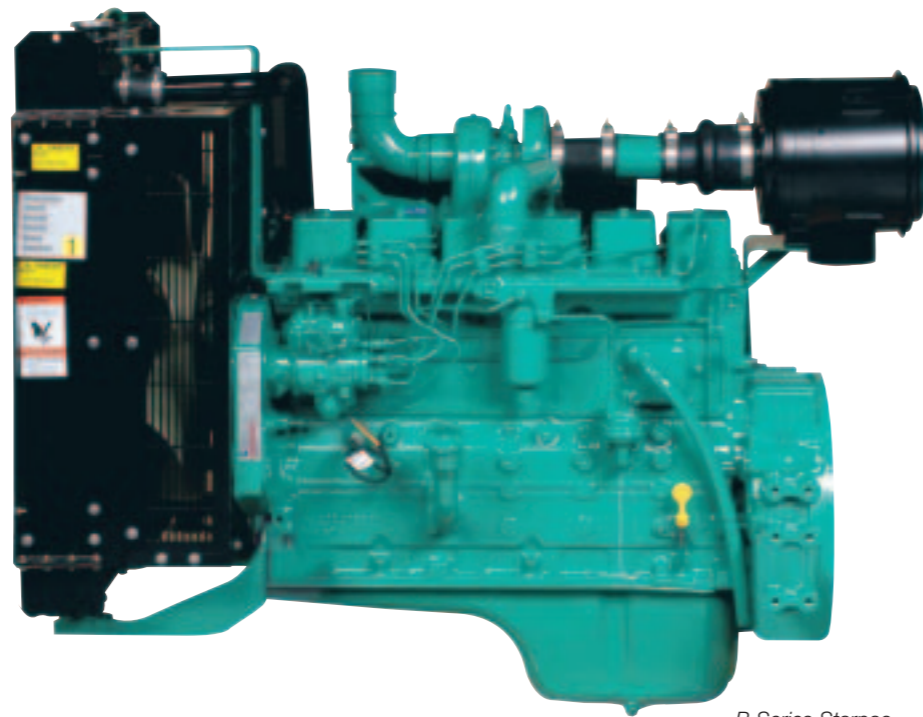
B-Series

Small engine – **big possibilities**

The B3.3 has all the strength and reliability the genset industry has come to expect from the B Series range but in a smaller, lighter and more economical package.

The B3.3 features direct fuel injection, resulting in cleaner quieter and more fuel efficient performance. With a highly compact 4 cylinder envelope and extremely low heat rejection the engine offers a high degree of installation flexibility. The B3.3 offers outstanding value in terms of installation simplicity and servicing. For example, valve clearance checks are not required until 2000 hours – twice the industry standard. The 3.3 litre engine design has established an enviable reputation for reliability in construction equipment, working under severe duty cycles.

Starpac gives the generator set builder and user the advantages of excellent fuel consumption, substantial cooling capability, low noise, low weight, compact size, high power output per litre and first class reliability.



B Series Starpac

B Series 'Starpac'

3.3/3.9/5.9 litre, 4/4/6 cylinder

	1500 rpm (50Hz) kVA (kWe)		TYPICAL	1800 rpm (60Hz) kWe (kVA)		TYPICAL
	Standby	Prime		Standby	Prime	
4B3.3-G1	38 (31)	35 (28)		4B3.3-G1	35 (44)	32 (40)
4BT3.3-G2	55 (44)	50 (40)		4BT3.3-G2	50 (63)	45 (56)
4BT3.9-G3	59 (47)	53 (43)		4BT3.9-G3	54 (68)	48 (60)
4BT3.9-G4	70 (56)	64 (51)		4BT3.9-G4	60 (75)	55 (69)
4BTA3.9-G3	88 (70)	80 (64)		4BTA3.9-G3	80 (100)	73 (91)
4BTA3.9-G4	100 (80)	91 (73)		4BTA3.9-G4	90 (113)	82 (103)
6BT5.9-G6	119 (95)	107 (86)		6BT5.9-G6	110 (138)	100 (125)
6BTA5.9-G3	150 (120)	136 (109)		6BTA5.9-G3	125 (156)	114 (143)
6BTA5.9-G4	119 (95)	107 (86)		6BTA5.9-G4	110 (138)	110 (138)

C-Series

Custom built for power applications

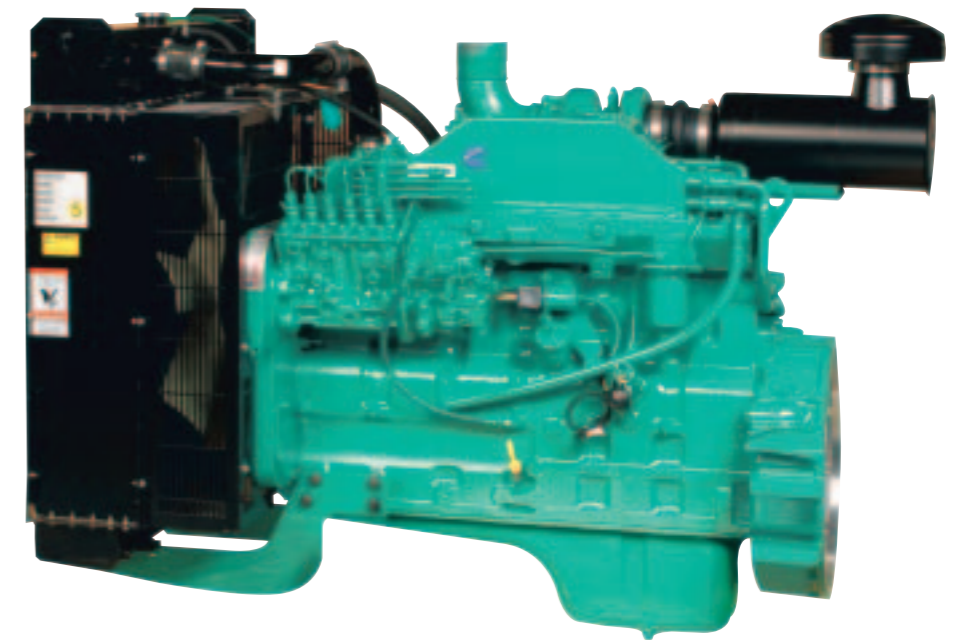
Complementing the advanced efficiency of the Starpac design is the availability of models incorporating the B3.9-G or C8.3-G Cummins Engines.

The B and C Series engines have established an unrivalled reputation for reliability. The B and C series incorporate features designed to maximise engine integration within OEM installation. The C series incorporates reliability enhancing, maintenance reducing features to meet the most demanding requirements of generator set operation.

The specification for Starpac includes the following equipment:

- Radiator
- Blower Fan
- SAE 3 Flywheel housing – B series
- SAE 2 Flywheel housing – C series
- Front and Rear Engine feet
- Mechanical governor
- Dry exhaust manifold
- 90° exhaust elbow (Turbocharged engines)

- Normal Duty air cleaner
- Full flow lube oil filters
- B series equipped with 12 volt electrical equipment
- C series equipped with 24 volt electrical equipment comprising starter and alternator
- Fuel Valve energised to run
- High Water temperature coolant switch
- Low oil pressure Switch



C Series Starpac

C Series 'Starpac'

8.3 litre, 6 cylinder

	1500 rpm (50Hz) kVA (kWe)			TYPICAL	1800 rpm (60Hz) kWe (kVA)			TYPICAL
	Standby	Prime	Base Power		Standby	Prime	Base Power	
6CT8.3-G2	150 (120)	135 (108)	113 (90)		6CT8.3-G2	134 (168)	121 (151)	97 (122)
6CTA8.3-G2	200 (160)	182 (146)	149 (119)		6CTA8.3-G2	175 (219)	160 (200)	139 (173)
6CTAA8.3-G3	220 (176)	200 (160)	128 (102)		6CTAA8.3-G3	200 (250)	182 (228)	172 (215)

35 - 156 kVA

113 - 228 kVA

For those of you who know there is no substitute for power, the QSL9 is the engine for you. The Cummins QSL9 comes with a torque rise of up to 50% and a peak torque of 1200 lb-ft. It handles the toughest work conditions. At the same time, the QSL delivers better fuel economy, has better cold-starting capability and is up to 50% quieter in operation.

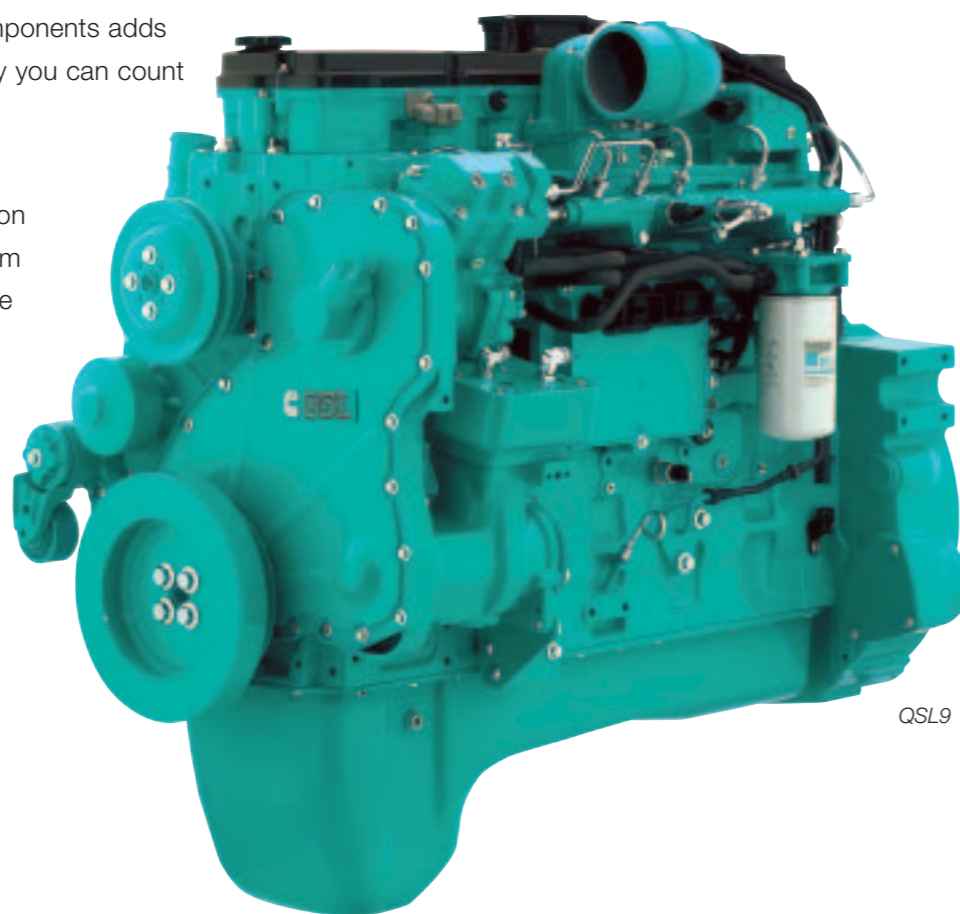
The heavy-duty design of the QSL engine block and components adds reliability and durability you can count on every day.

The QSL9 features a High-Pressure Common Rail (HPCR) fuel system for strong performance at every rpm. A low-maintenance filter assembly is just one of many standard features that minimize downtime for maintenance.

The QSL9 is compatible with high sulphur fuels, so wherever you are in the world, the QSL is a workhorse you can count on - Every time.

QSL Series engines will meet every Tier 3/Stage IIIA emissions standard* with minimal changes. The advanced QSL engine platform will be carried forward to Tier 4/Stage IV through 2015.

*(G1, G2, G3)



QSL9

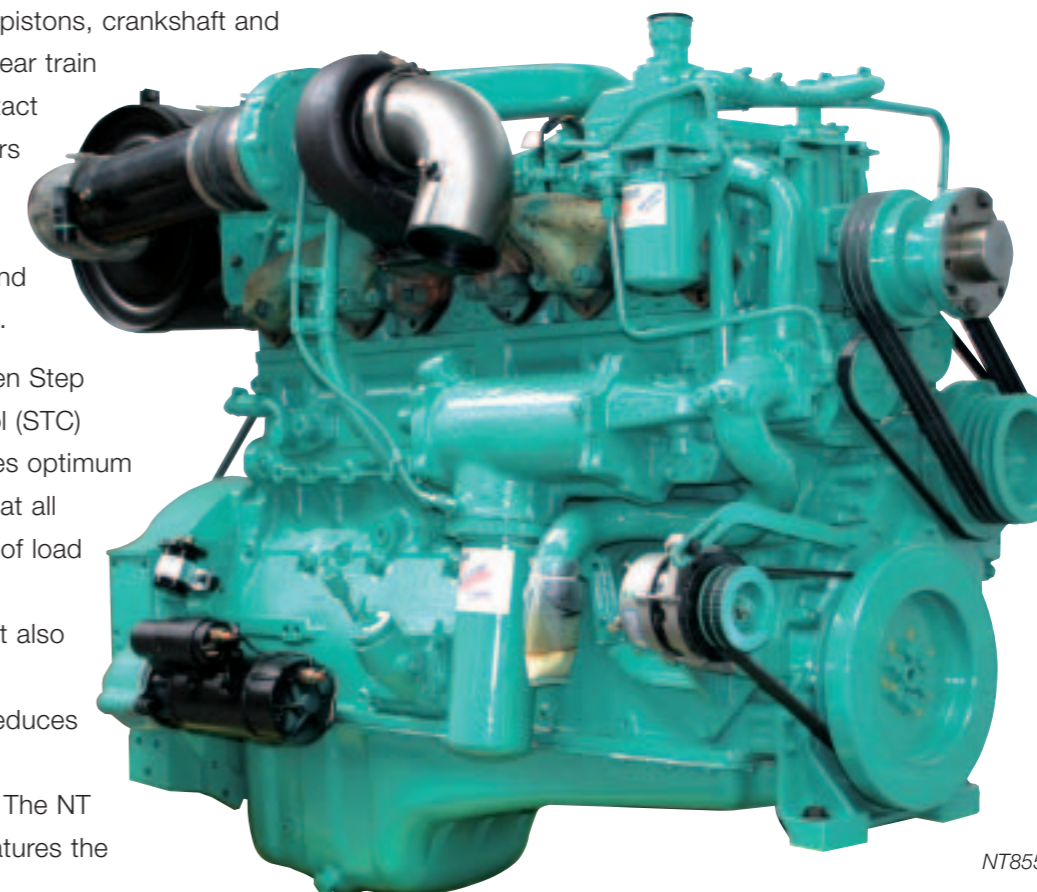
Cummins N series engines have been service proven through millions of hours of operation in some of the world's most demanding applications. The latest evolution of the N series, the NT855 meets the most critical generator set operator requirements as well as satisfying the stringent European and EPA-MOH emissions requirements.

As part of the design process the new NT range has been engineered to handle higher injection pressures, with redesigned overhead arrangement, pistons, crankshaft and camshaft. A gear train with high contact ratio spur gears eliminates unwanted thrust loads and reduces noise.

The well proven Step Timing Control (STC) system ensures optimum engine timing at all combinations of load and ambient temperature. It also improves cold starting and reduces light load fuel consumption. The NT series also features the

simple and dependable PT type fuel system. The big cam shaft also provides an increase in pressure.

The NT series now delivers wide ranging benefits – fuel efficiency, low oil consumption, reliable long life, high power density and low emissions.



NT855

QSL9 Series 'Stanfast'

9 litre, 6 cylinder

	1500 rpm (50Hz) kVA (kWe)			TYPICAL	1800 rpm (60Hz) kWe (kVA)			TYPICAL
	Standby	Prime	Base Power		Standby	Prime	Base Power	
QSL9-G2	250 (200)	225 (180)	191 (153)		QSL9-G2	230 (288)	210 (263)	175 (219)
QSL9-G3	275 (220)	250 (200)	TBC		QSL9-G3	250 (313)	227 (284)	TBC
QSL9-G4	300 (240)	275 (220)	●●●		QSL9-G4	275 (344)	250 (313)	●●●
QSL9-G5	330 (264)	300 (240)	254 (203)		QSL9-G5	300 (375)	275 (344)	229 (287)

NT Series 'Stanfast'

14 litre, 6 cylinder

	1500 rpm (50Hz) kVA (kWe)			TYPICAL	1800 rpm (60Hz) kWe (kVA)			TYPICAL
	Standby	Prime	Base Power		Standby	Prime	Base Power	
NT855-G6	350 (280)	320 (256)	259 (207)		NT855-G6	288 (360)	260 (325)	222 (277)
NTA855-G2	361 (289)	320 (256)	286 (229)		NTA855-G2	300 (375)	275 (334)	229 (286)
NTA855-G4	400 (320)	365 (292)	306 (245)					

191 - 375 kVA

259 - 375 kVA

QSX15

KTA19

A revolution in diesel power generation

Outstanding **durability**

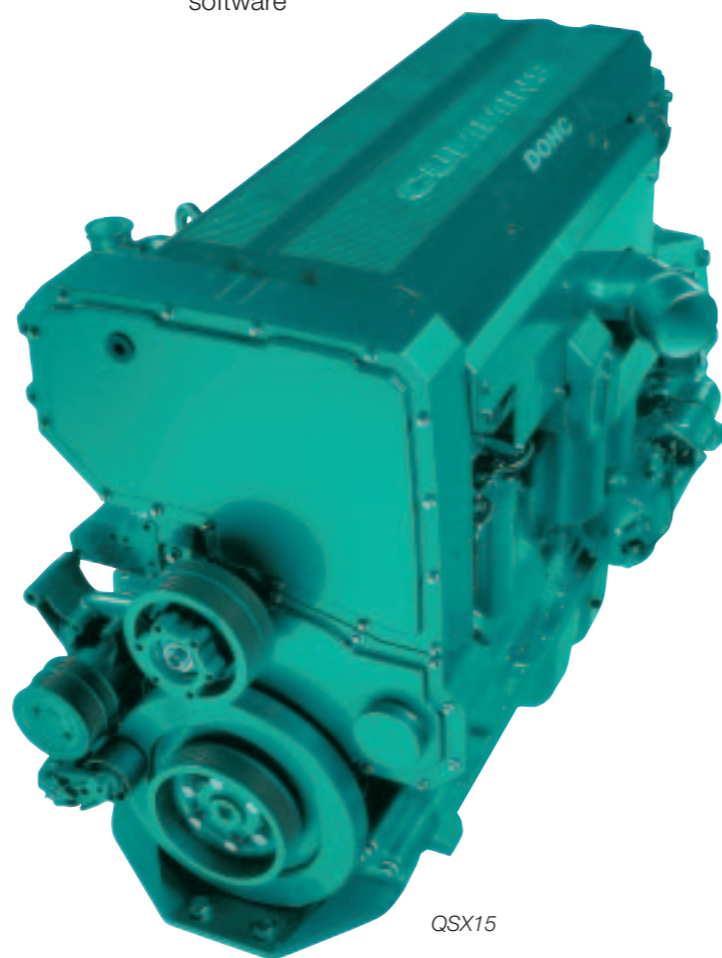
The QSX15 is a revolution in diesel power generation. The QSX15 provides uncompromising power and efficiency in a compact package.

The QSX15 is a fully integrated electronic engine – and the first heavy duty diesel with 24-Valve dual overhead camshaft technology. Yet the engine has an impressive 30% fewer parts than comparable diesels and a utilised design which eliminates external lube, coolant and fuel lines. The result of this is far higher reliability than previously thought for such a high power output.

The QSX15 builds on a wealth of experience in heavy duty generator drive applications that few other engine companies can match. Not only does the QSX15 offer a considerably smaller envelope but also reduced maintenance and longer service intervals. In addition, a new combustion process combines with smart electronics to meet EPA Tier II and European emission stage II demands with no compromise on fuel efficiency.

This 15 litre engine is ideally suited to both open and containerised applications in static or portable genset equipment. Equipped with Cummins GCS electronic capability, the QSX15 can be matched to meet specific duty cycle and operating conditions of the genset.

On site adjustments to gain, droop and speed can be quickly completed without the need for software

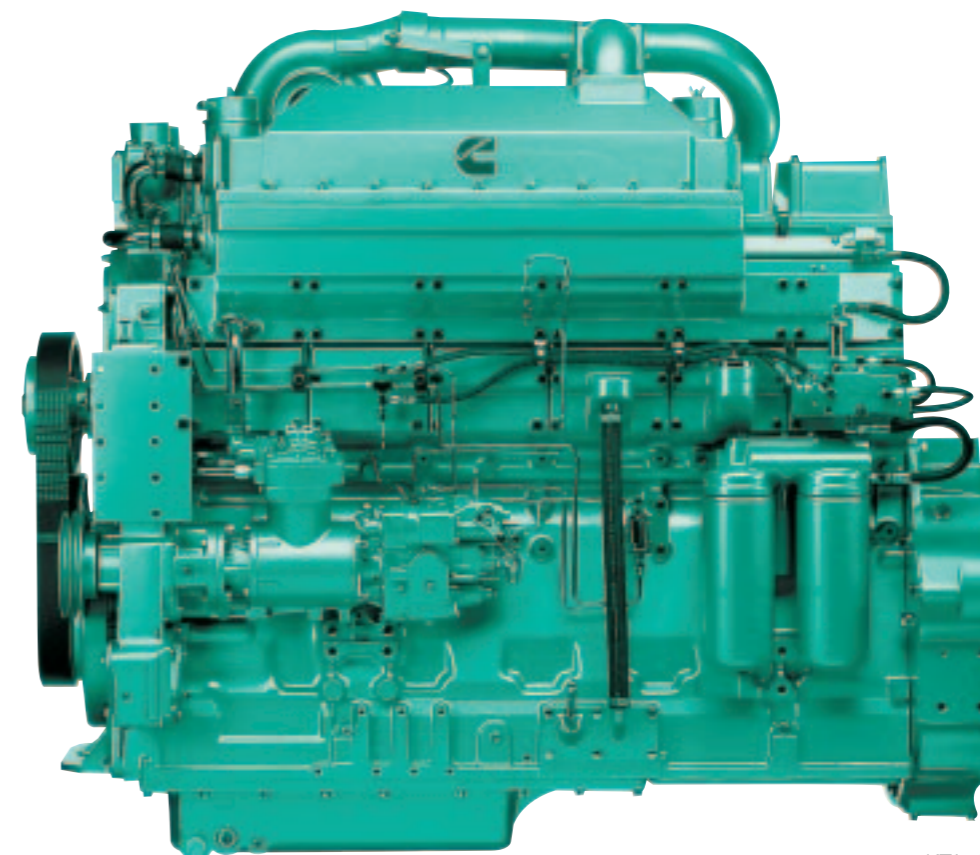


QSX15

The K19 family is one of Cummins' most proven engine designs, incorporating all of Cummins' heavy duty diesel experience. The customer requirement for power, size, cost, durability and serviceability were an integral part in the design of the K19 Engine.

The six Cylinder, in-line configuration incorporates a large 76mm diameter camshaft to permit short injection periods, resulting in excellent combustion efficiency and fuel economy.

The crankshaft is induction hardened deep enough for up to four regrinds. The circular water jacket surrounding each cylinder liner is designed to provide even coolant flow. A high externally mounted water pump provides an excellent cooling margin for better temperature control.



KTA19

Highly reliable Step Timing Control (STC) ensures optimum engine timing at all combinations of load and ambient temperature, improves cold starting and reduces fuel consumption.

QSX15 Series 'Stanfast'

15 litre, 6 cylinder

	1500 rpm (50Hz) kVA (kWe)			1800 rpm (60Hz) kWe (kVA)		
	Standby	Prime	Base Power	Standby	Prime	Base Power
QSX15-G4	450 (360)	410 (328)	280 (224)	400 (487)	356 (445)	245 (307)
QSX15-G6	500 (400)	455 (364)	320 (256)	400 (487)	360 (450)	245 (307)
QSX15-G8	550 (440)	500 (400)	351 (281)	400 (487)	360 (450)	248 (310)

KTA19 Series 'Stanfast'

19 litre, 6 cylinder

	1500 rpm (50Hz) kVA (kWe)			1800 rpm (60Hz) kWe (kVA)		
	Standby	Prime	Base Power	Standby	Prime	Base Power
KTA19-G4	550 (440)	500 (400)	393 (315)	500 (400)	455 (569)	368 (460)

280 - 487 kVA

393 - 400 kVA

QSK23

VTA28

High performance for tough applications

Cost effective power

Providing the power between 392 kWe and 805 kWe, the QSK23 is designed to meet present and future competitive pressures and worldwide emissions regulations whilst delivering high fuel economy and high power density.

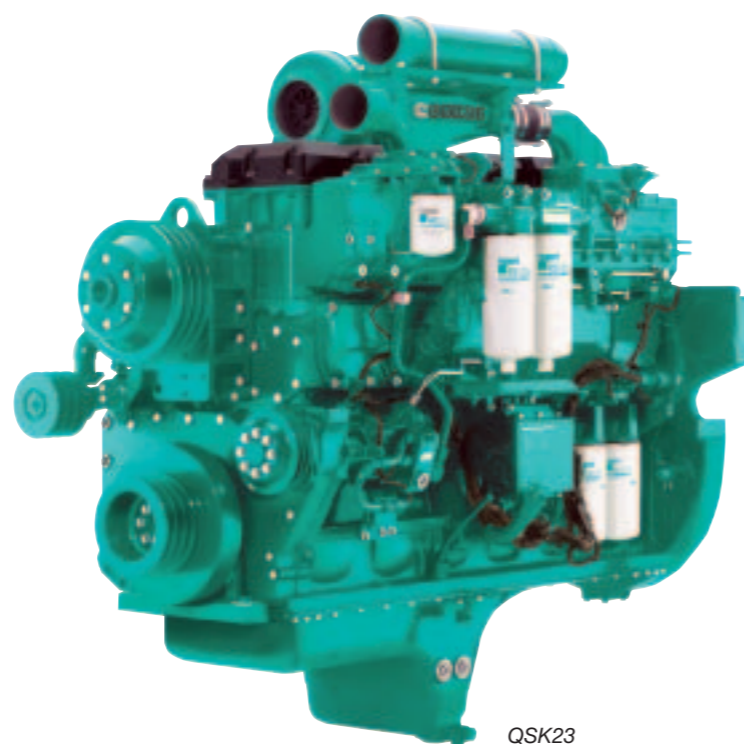
In order to meet legislative and customer requirements regarding emissions several advanced engine technologies are used. These include a high pressure injection (HPI-PT) full authority electronic fuel system, cast iron pistons, and low temperature air-to-air aftercooling.

Unusually for this high level of power output, the QSK comes with the benefit of an inline, six cylinder configuration offering a narrower, shorter installation and easier service access. This format also comes with inherently fewer parts, which means a higher reliability factor. Importantly for operators, the QSK23 is expected to achieve 20,000 hours before overhaul in most applications and is then capable of several rebuilds dramatically reducing life cycle costs.

Even operating under full load the QSK23 displays a remarkable level of refinement for an engine of this size, with the high-pressure fuel injection and sophisticated electronic control ensuring a seamless power delivery. An innovative rear gear train design results in significant packaging benefits with a major reduction in engine noise.

With Cummins electronic intelligence, your genset is equipped with a multitude of value adding features and faster, more precise diagnostics capability. Highly accurate sensors located through the engine send data to the generator control system (GCS), a high capacity electronic unit specifically designed by Cummins for genset applications. The GCS continually adjusts fuelling and timing to ensure optimum engine performance and fuel economy.

Automatic engine protection means all critical parameters and sub-systems are self monitored, so you can rely on the engine to look after itself.



QSK23

The V28 engine benefits from many years of technical development and Cummins' brand of innovative engineering, to keep pace with changing generator set requirements.

In its latest form the engine offers higher performance and a range of reliability and durability enhancing features. The robust and reliable V28 engines gained their impressive reputation in some of the most severe climatic conditions, consistently producing quality results in some of the most demanding situations around the world.

The V28 is widely recognised as the most cost effective engine in its power range for the generator set market.

Design Features

- **Aftercooled:** Two large capacity aftercoolers result in cooler, denser intake air for more efficient combustion and reduced internal stresses for longer life.
- **Camshaft:** Dual camshafts precisely control valve and injector timing. Lobes are induction hardened for long life.



VTA28

QSK23 Series 'Starpac'

23 litre, 6 cylinder

	1500 rpm (50Hz) kVA (kWe)			TYPICAL	1800 rpm (60Hz) kWe (kVA)			TYPICAL
	Standby	Prime	Base Power		Standby	Prime	Base Power	
QSK23-G2	825 (656)	750 (600)	551 (441)		QSK23-G2	750 (948)	682 (864)	560 (700)
QSK23-G3	900 (720)	810 (648)	614 (491)		QSK23-G3	800 (1000)	727 (909)	583 (729)

VTA28 Series 'Stanfast'

28 litre, V12 cylinder

	1500 rpm (50Hz) kVA (kWe)			TYPICAL	1800 rpm (60Hz) kWe (kVA)			TYPICAL
	Standby	Prime	Base Power		Standby	Prime	Base Power	
VTA28-G5	700 (560)	636 (509)	556 (445)		VTA28-G5	600 (750)	545 (681)	442 (552)

551 - 1000 kVA

556 - 750 kVA

QST30

Proven performance around the clock

The Cummins Quantum series QST30 engine utilises sophisticated electronics and premium engineering to provide outstanding levels of performance from its compact 30 litre V12 configuration.

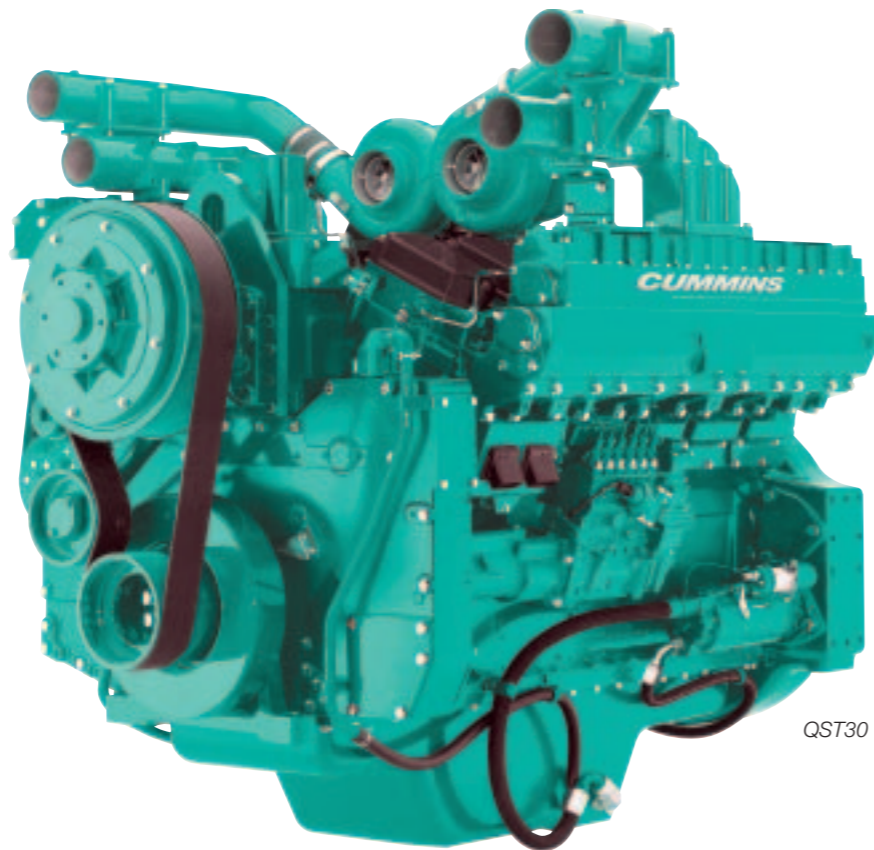
The electronic controls provide superior performance, efficiency and diagnostic capabilities for generator set builders. In addition the engine has its own protection systems and built in test features which can be interfaced with genset control systems. The electric fuel lift pumps eliminate the need for manual priming of the fuel system and provide for quicker, more reliable starts.

The QST30 engine makes use of Ductile Iron pistons - which provide increased strength and durability to handle increased cylinder pressures for longer life to overhaul, hardened liners and high efficiency turbochargers to deliver optimum performance and significantly improved durability. The QST30 delivers more power and more torque in a smaller package than competitive diesels. Known for its flexible calibrations,

excellent power density, economical operation and exceptional uptime, the QST30 sets the standard for rugged dependable power.

The combination of premium hardware and innovative engine control software provide lower emission levels, meeting the stringent European and EPA-MOH requirements.

The QST30 utilises the GCS controller common with QSX15, QSK23, QSK60 engines.



QST30

QST30 Series 'Stanfast' 30 litre, V12 cylinder

	1500 rpm (50Hz) kVA (kWe)			1800 rpm (60Hz) kVA (kWe)		
	Standby	Prime	Base Power	Standby	Prime	Base Power
QST30-G3	1000 (800)	910 (728)	730 (584)	900 (1125)	818 (1029)	655 (819)
QST30-G4	1100 (880)	1000 (800)	791 (633)	1000 (1250)	910 (1146)	752 (940)

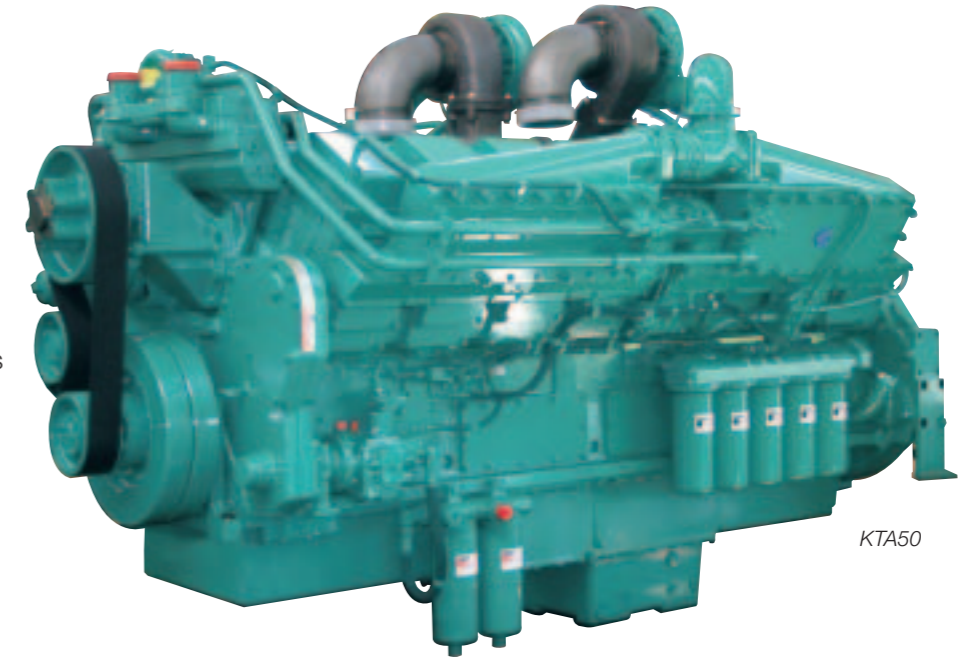
KTA38/KTA50

Premium high performance power

The Cummins KTA engines have an excellent reputation and because of this, have gained a major part of the power drive market. With a choice of V12, 38 Litre and V16, 50 Litre formats and ratings up to 1540 kWe, these engines are an economic solution to the most demanding generator set applications.

The latest KTA engine range is jacket water aftercooled with a 2 pump 2 loop cooling system design* - which significantly enhances engine performance. Like many of the engines in the Cummins power range, the KTA series enjoys very low derating thresholds for temperature, altitude and humidity - making these engines top performers in the harshest conditions.

The overall objective in the design of these 60 degree vee engines was to develop a capability of over 100hp per cylinder with maximum reliability and durability.



KTA50

Across the power range the KTA series is equipped with the well proven step timing control system (STC). The STC ensures optimum engine timing at all combinations of load and ambient temperature, improves cold starting and reduces light load fuel consumption and greatly enhances engine efficiency.

*G8/G9 models only.

KTA38/KTA50 Series 'Stanfast' 38/50 litre, V12/V16 cylinder

	1500 rpm (50Hz) kVA (kWe)			TYPICAL	1800 rpm (60Hz) kVA (kWe)			TYPICAL
	Standby	Prime	Base Power		Standby	Prime	Base Power	
KTA38-G3	1000 (800)	910 (728)	754 (603)		900 (1125)	818 (1023)	703 (879)	
KTA38-G5	1100 (880)	1000 (800)	755 (604)		1250 (1563)	1135 (1418)	924 (1154)	
KTA38-G7	1000 (800)	910 (728)	749 (599)		1500 (1875)	1295 (1619)	1141 (1427)	
KTA50-G3	1400 (1120)	1275 (1020)	1052 (842)					
KTA50-G7	1400 (1120)	1275 (1020)	1001 (801)					
KTA50-G8	1675 (1340)	1400 (1120)	1282 (1025)					

730 - 1250 kVA

749 - 1875 kVA

Superior **performance** and **durability**

Cummins engineering took power generation a major step forward with the QSK60 engines, combining sophisticated electronics with premium engineering to excel in every aspect of power productivity.

Equipped with Cummins electronic intelligence, the genset is loaded with value adding, user friendly features. On-site adjustments to gain droop and speed can be quickly completed without the need for a software interface and means the engine can be moulded to the customer's exact needs.

With brand new parts, utilising advanced materials and precision engineering, the engines are able to withstand the most rigorous standby, prime or base load applications, in fact the engine will achieve over 20000 hours operation before overhaul. Advanced combustion techniques ensure the engine meets stringent European and EPA-MOH emission requirements with the further benefit of virtually smoke free operation. Oil consumption has been dramatically reduced compared to other engines of this size, while lower noise and vibration levels add to overall

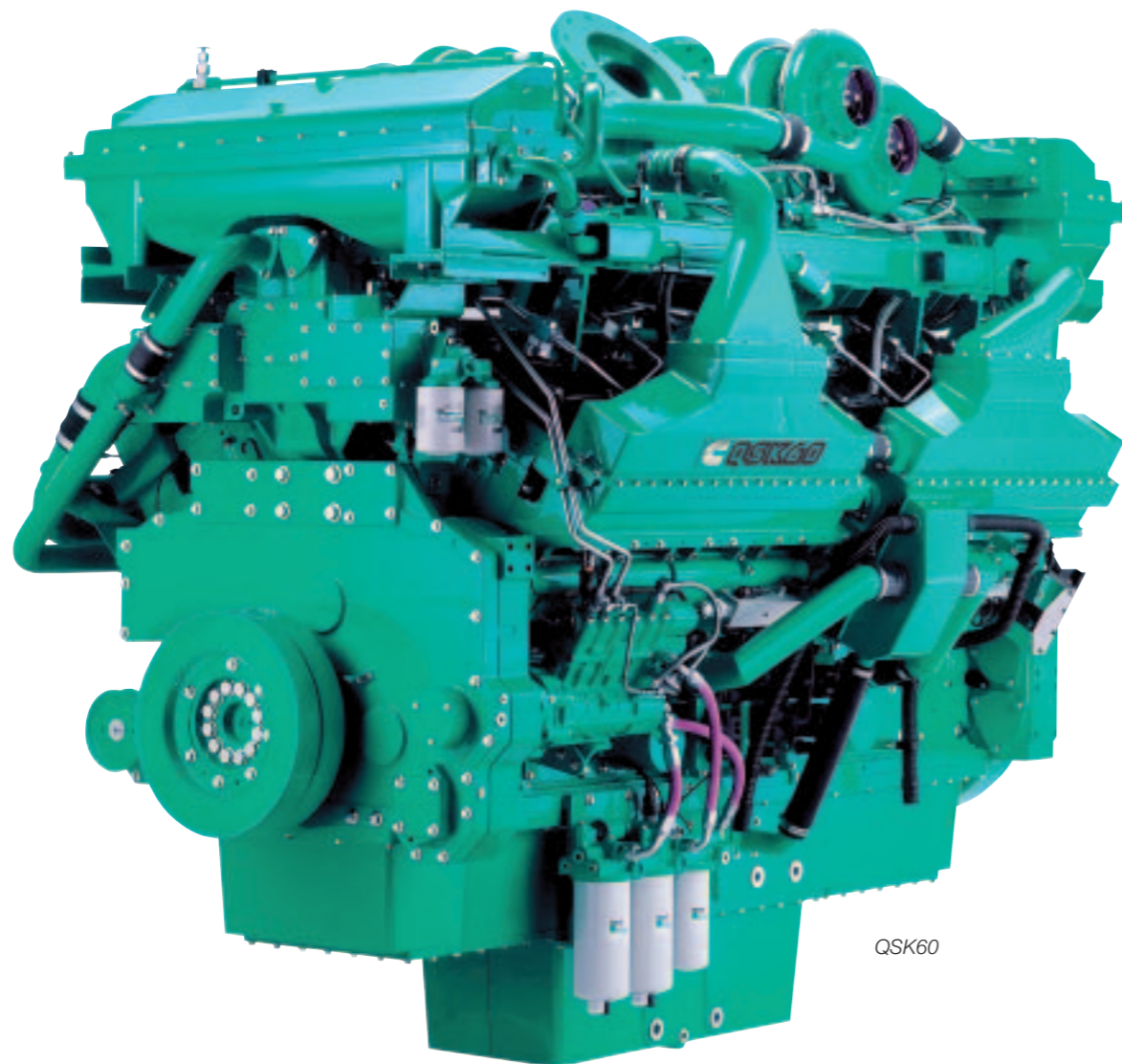
refinement. With the option of an Eliminator oil purification system on the engine, service intervals can be extended to a huge 4000 hours.

Quantum system - the power of innovation

These elements are all part of Cummins Quantum system, a complete package of innovative design features and sophisticated electronics that sets a new benchmark for lowest cost of operation, with their completely new component design. Building on the exceptional level of reliability of the proven KTA38-G and KTA50-G series engines, these new quantum series engines can dramatically extend service intervals.

Built stronger to last longer

Durability is a critical factor in reducing cost of operation. The QSK60-G engine components are specifically designed for an extended life. The camshaft is 38% larger than its predecessor and is reusable at rebuild. An extra wide gear train with high contact ratio spur gears is designed to handle higher capacities and provide greater durability. The air intake system features large capacity, low temperature after cooling with long life core for lower emissions standards and improved fuel economy.



QSK60

Features

- Full authority electronic engine
- Modular common rail fuel system
- 60 L displacement
- Dual speed capability
- Improved power density
- Low noise

Options

- InPower™ service support software
- Centinel™ oil renewing system – extends oil changes up to 4000 hrs
- Eliminator™ oil purification system for dramatically reduced oil and filter service intervals

QSK60 Series 'Stanfast'

60 litre, V16 cylinder

	1500 rpm (50Hz) kVA (kWe)		
	Standby	Prime	Base Power
QSK60-G3	2063 (1650)	1875 (1500)	1524 (1219)
QSK60-G4	2250 (1800)	2000 (1600)	1656 (1325)

1524 - 1600 kVA

1524 - 1600 kVA

A **Quantum leap** in innovation

Cummins GCS controller

The Cummins Governor Control System (GCS) is a high capacity electronic unit specifically designed by Cummins for genset applications. It utilises sensors located in key positions within the engine which constantly monitor critical parameters and adjust fuelling and timing for optimum performance.

The GCS is a 2-slot card cage which may be customer mounted into the genset control box or other off-engine location close to the genset.



For: QSK15, QSK23, QST30, QSK45 & QSK60

It incorporates a fuel system board to meet the specific requirements for operating different Cummins fuel systems. Each engine is supplied with a harness for interfacing the sensors with the GCS. The controller stores trend and event data which can be quickly downloaded using inPower™.

The following features have been integrated into the GCS to eliminate the need for an external speed governor:-

- Run/Stop switch input
- Idle/Rated switch input
- 50/60Hz selection switch input
- Isochronous/Droop governing
- Speed adjustment
- Speed bias inputs for synchronising and load sharing
- Smoke limiting on start-up
- Engine protection
- Fault report relay drivers
- Fault flash-out
- 1mA meter drivers
- Programmable meter gain and offset
- Monitoring via RS484 data link using Modbus protocol
- Communications to PC based programming and service tool

InPower™ electronic service tool

InPower CD based service tool software helps you unleash the full potential of smart electronics. Install InPower onto your PC and connect to the engine using a Datalink cable and security device. From then on you have got a window into your engine, checking fuel-efficiency trends, pinpointing faults, viewing operational history, running tests and much more. All this can be done real-time with the genset under load or by downloading data from the engine management system memory.

Not only can key parameters be viewed but they can be easily adjusted. Factory trims can be changed to reflect new application requirements, response speed on start-up can be made faster or ramp-up made slower to reduce emissions. Using the Power Limiter

feature the engine can be optimised for standby, prime or base load applications.

InPower can minimise engine downtime with easier and faster engine diagnostics. The software evaluates service requirements using fault screens, precise diagrams and step-by-step directions, prognosis capability enables service and maintenance to be scheduled.

Utilising the full potential of the Windows operating system users can quickly navigated the tool folders and access the information they require. Data is easily displayed in tabular or graphic format using built-in tool utilities. In multiple set installations, the operating performance of individual engines can be compared.

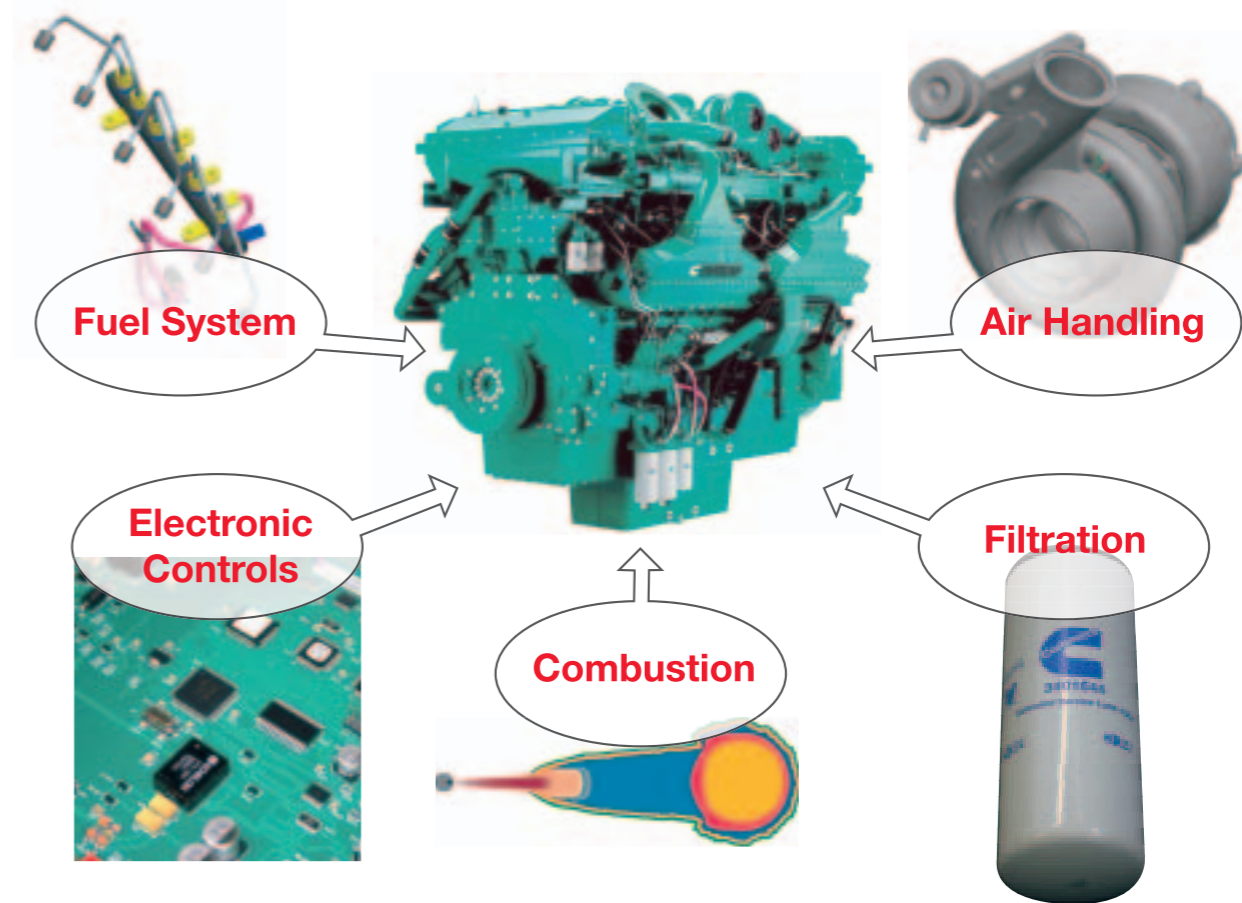
Used with: QSK15, QSK23, QST30, QSK60

Quantum Technology

Cummins Quantum System engines use proprietary electronic controls to manage everything from fuel delivery and power curve shaping to protection features and data management. All Quantum System engines are designed to work with a common set of application and diagnostic software, to simplify engineering installation as well as servicing. These engines deliver exceptional durability in the world's most demanding work sites.

For OEM's and operators, this means that the same electronic tools and software can be used to access engine data, monitor performance and undertake diagnostics across an exceptionally wide engine range.

- Fully integrated sub-systems designed and manufactured by Cummins
- Provides a unique capability to meet emissions requirements with enhanced performance
- Purpose-designed for high load factors / high hours
- Broad range with Quantum commonality:
 - electronics & diagnostics
 - base engine & turbo-charging
 - power cylinder & fuel systems





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