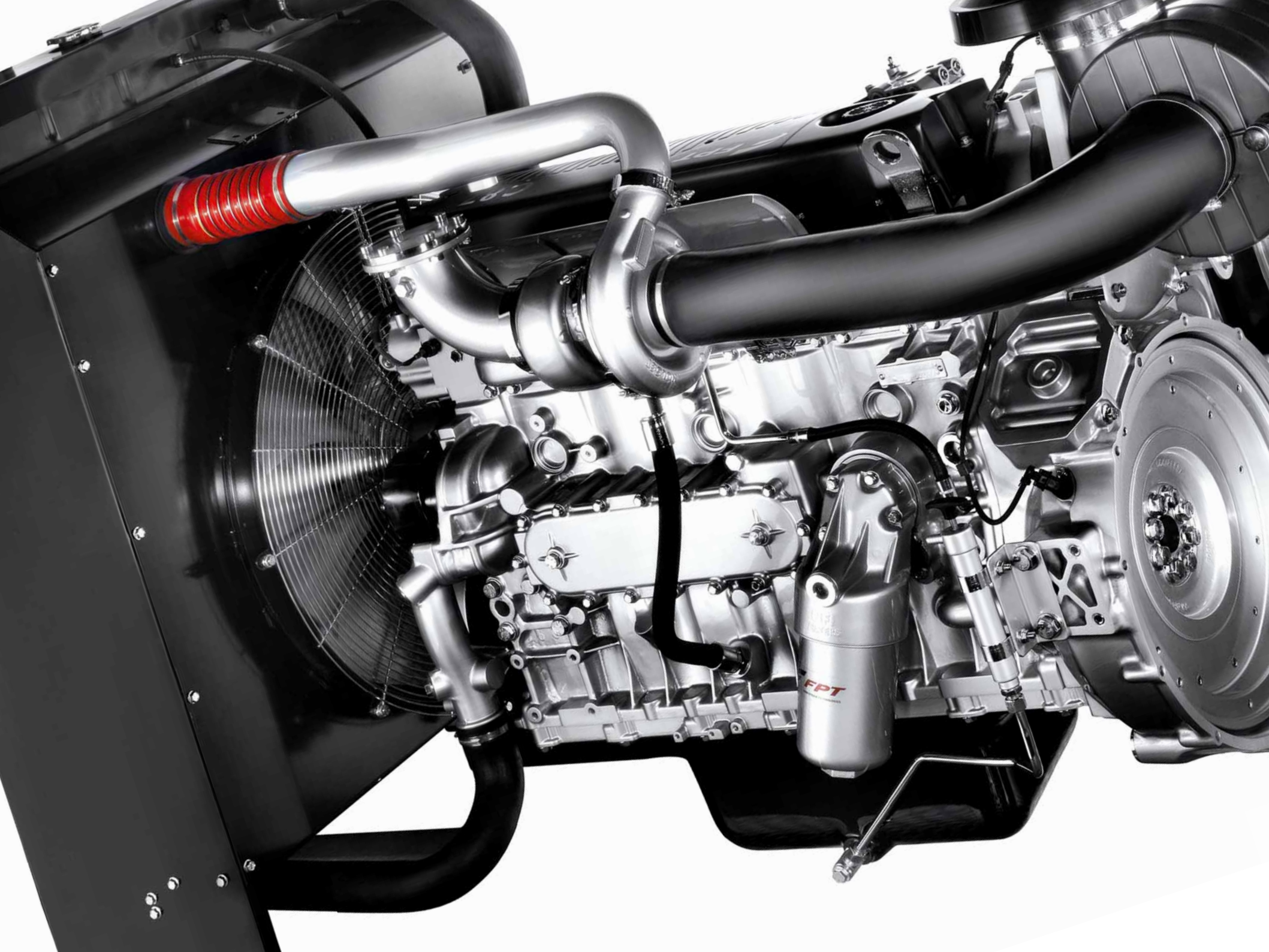
FIAT INDUSTRIAL

ENGINES RANGE FOR POWER GENERATION APPLICATIONS.

THE ENERGY OF INNOVATION.

FPT POWERTRAIN TECHNOLOGIES


FPT

Power and technology.

Wherever energy has to be delivered rapidly and reliably, FPT Industrial provides the optimal answer with its state-of-the-art range of engines for Power Generation applications. Respect for the environment is one of the primary drivers of product development at FPT Industrial, where the increasingly stringent standards for Diesel engines emissions were considered as a challenge to continuous improvement.
To fulfil market requirements, FPT Industrial developed two different engines ranges respectively compliant with Tier 3 in US and Stage II emissions levels in Europe.
FPT Industrial products offer functional layouts, hi-tech contents and carefully selected top quality components as well.

FPT Industrial offers superior technology and enormous advantages.

• PERFORMANCE

- Excellent transient load response for several power generation applications
- High performance guaranteed in all conditions
- High engine power density

• RESPECT FOR THE ENVIRONMENT

- Low emissions products
- Noise reduction

• RUNNING COSTS REDUCTION

- Lower oil and fuel consumption
- Best in class maintenance intervals (600 hours)
- Lower running costs in continuous operating power

• FLEXIBILITY

- Tailor-made products with wide range of options for extremely various applications
- Availability of cold starting accessories
- Compatibility with alternative fuels
- Compact engines layout
- Engines compliant with both Tier 3 and Stage II homologations

FPT Industrial engines line up for Power Generation applications. European market.

ENGINE MODEL	NO. OF CYL/ AIR FEEDING	INJECTION SYSTEM	DISPLACEMENT LITERS	STAND-BY NET POWER KWM		HOMOLOGATION CLASS	HOMOLOGATION POWER SETTING	
				1500 RPM	1800 RPM		1500 RPM	1800 RPM
F32 AM1A	4L/NA	M	3,2	30,5	35	Stage II*	32	-
F32 SM1A	4L/TC	M	3,2	41,5	-	Stage II*	42	-
F32 TM1A	4L/TAA	M	3,2	51,5	-	Stage II*	52	-
N45 AM1A	4L/NA	M	4,5	45	-	Stage II*	47	-
N45 SM1A	4L/TC	M	4,5	59	65	Stage II*	60	-
N45 SM2A	4L/TC	M	4,5	73	72	Stage II*	74	-
N45 TM1A	4L/TAA	M	4,5	85	95	Stage II*	87	-
N45 TM2A	4L/TAA	M	4,5	96	107	Stage II*	98	-
N67 SM1	6L/TC	M	6,7	121	138	-	-	-
N67 TM2A	6L/TAA	M	6,7	125	140	Stage II*	130	-
N67 TM3A	6L/TAA	M	6,7	152	165	Stage II*	156	-
N67 TE2A	6L/TAA	ECR	6,7	193	215	Stage II*	198	-
C87 TE1D	6L/TAA/I-EGR	ECR	8,7	255	276	Stage II*/Tier 3**	263	290
C10 TE1D	6L/TAA/I-EGR	EUI	10,3	286	311	Stage II*/Tier 3**	300	335
C13 TE2A	6L/TAA	EUI	12,9	330	360	Stage II*	345	-
C13 TE3A	6L/TAA	EUI	12,9	387	398	Stage II*	400	-
V20 TE1	8V/TAA	ECR	20,1	610	670	TA LUFT***	610	-
V20 TE2	8V/TAA	ECR	20,1	670	740	Tier 2****	-	770

*Stage II: 2002/88/EC
**Tier 3: EPA/CARB
***TA LUFT: Technische Anleitung zur Reinhaltung der Luft.
****Tier 2: EPA

LEGEND

ARRANGEMENT
L: In line configuration
V: V configuration

AIR INTAKE
NA: Naturally aspirated
TC: Turbocharged
TAA: Turbocharged aftercooled

INJECTION SYSTEM
M: Mechanical
ECR: Electronic Common Rail
EUI: Electronic Unit Injector

EMISSION TECHNOLOGIES
I-EGR: Internal EGR

FPT Industrial engines line up for Power Generation applications. US market.

ENGINE MODEL	NO. OF CYL/ AIR FEEDING	INJECTION SYSTEM	DISPLACEMENT LITERS	STAND-BY NET POWER KWM		HOMOLOGATION CLASS	HOMOLOGATION POWER SETTING	
				1500 RPM	1800 RPM		1500 RPM	1800 RPM
F32 SM1X	4L/TC/I-EGR	M	3,2	-	46,5	Tier 3**	-	48
F32 TM1X	4L/TAA/I-EGR	M	3,2	-	56,5	Tier 3**	-	58
N45 SM1X	4L/TC/I-EGR	M	4,5	-	57	Tier 3**	-	59
N45 SM2X	4L/TC/I-EGR	M	4,5	-	67	Tier 3**	-	69
N45 TM2X	4L/TAA/I-EGR	M	4,5	-	95	Tier 3**	-	98
N67 TM1X	6L/TAA/I-EGR	M	6,7	-	141	Tier 3**	-	148
N67 TE1X	6L/TAA/I-EGR	ECR	6,7	-	165	Tier 3**	-	172
N67 TE2X	6L/TAA/I-EGR	ECR	6,7	-	200	Tier 3**	-	395
C87 TE1D	6L/TAA/I-EGR	ECR	8,7	255	276	Stage II*/Tier 3**	263	290
C10 TE1D	6L/TAA/I-EGR	EUI	10,3	286	311	Stage II*/Tier 3**	300	335
C13 TE3X	6L/TAA/I-EGR	EUI	12,9	-	371	Tier 3**	-	395

*Stage II: 2002/88/EC
**Tier 3: EPA/CARB

LEGEND

ARRANGEMENT
L: In line configuration

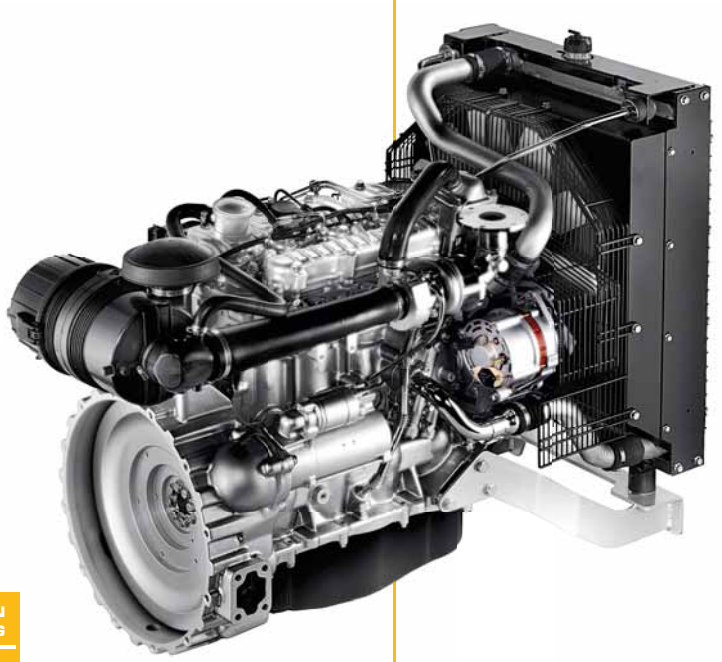
AIR INTAKE
TC: Turbocharged
TAA: Turbocharged aftercooled

INJECTION SYSTEM
M: Mechanical
ECR: Electronic Common Rail
EUI: Electronic Unit Injector

EMISSION TECHNOLOGIES
I-EGR: Internal EGR

The F series.

Featured by customer oriented design, the F series stands out for low operating costs and extremely easy maintenance thanks to single side servicing. These benefits are combined with excellent performance, which allows the engines to be used for the most demanding missions (eg high engine inclination, cold starting at temperatures down to -25°C).



ENGINE MODEL	NO. OF CYL./ AIR FEEDING	INJ. SYSTEM	DISPLACEMENT LITERS	STAND-BY NET POWER KWM		HOMOLOGATION CLASS	HOMOLOGATION POWER SETTING	
				1500 RPM	1800 RPM		1500 RPM	1800 RPM
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F32 SM1A	4L/TC	M	3,2	41,5	-	Stage II*	42	-
F32 TM1A	4L/TAA	M	3,2	51,5	-	Stage II*	52	-
F32 SM1X	4L/TC/I-EGR	M	3,2	-	46,5	Tier 3**	-	48
F32 TM1X	4L/TAA/I-EGR	M	3,2	-	56,5	Tier 3**	-	58

*Stage II: 1500 rpm only.
**Tier 3: 1800 rpm only.

LEGEND

ARRANGEMENT
L: In line configuration

AIR INTAKE
NA: Naturally aspirated
TC: Turbocharged
TAA: Turbocharged aftercooled

INJECTION SYSTEM
M: Mechanical

EMISSION TECHNOLOGIES
I-EGR: Internal EGR

FEATURES

BENEFITS

Performance
Class G2 of ISO 8528 standard certification of excellent performance related to load acceptance.

EXCELLENT TRANSIENT LOAD RESPONSE FOR SEVERAL POWER GENERATION APPLICATIONS.

Mechanical injection system
Based on simple and proven mechanical rotary pump, F engines have a direct fuel injection system which is state-of-the-art for accurate fuel delivery. The mechanical pump is the best compromise between performance and easy engine installation.

SIMPLE AND EASY TO INSTALL SOLUTION, CONSISTENT WITH STANDARD AND ALTERNATIVE FUELS.

Engine design
Camshaft in crankcase, suspended oil pan, balancer counterweights incorporated in crankshaft webs.

VIBRATION & NOISE REDUCTION.

Specific features
New engines, but run in; lean layout; starting temperature without auxiliaries down to –10°C (with grid heater down to -25°); Tier 3 performance achieved without external EGR, VGT or electronics; mechanical system with high perfomance.

HIGH PERFORMANCE GUARANTEED IN ALL CONDITIONS.

Air handling
"F" series engines are available in Naturally Aspirated, turbocharged and turbocharged with aftercooler versions, in order to reach the highest engine performance in terms of load acceptance and fuel consumption. These features allow OEM customers to optimise their engine installation & final Genset performance.

HIGH ENGINE POWER DENSITY WITH THE SHORTEST LOAD RESPONSE TIME.

600h oil interval change
Optimum engine design in terms of mechanical clearances, piston rings, engine oil system calculation and optimized engine structure to limit cylinder liners deformation.

REDUCED MAINTENANCE NEEDS AND OPERATING COST.

Component integration
Integrated CCV (Closed Crankcase Ventilation) system and engine design oriented to high component integration. Water-oil cooler, oil and water pumps with by-pass are fully integrated in the block.

LEAKAGE PREVENTION.

Serviceability & maintainability
One side (left) engine maintenance layout and worldwide service network.

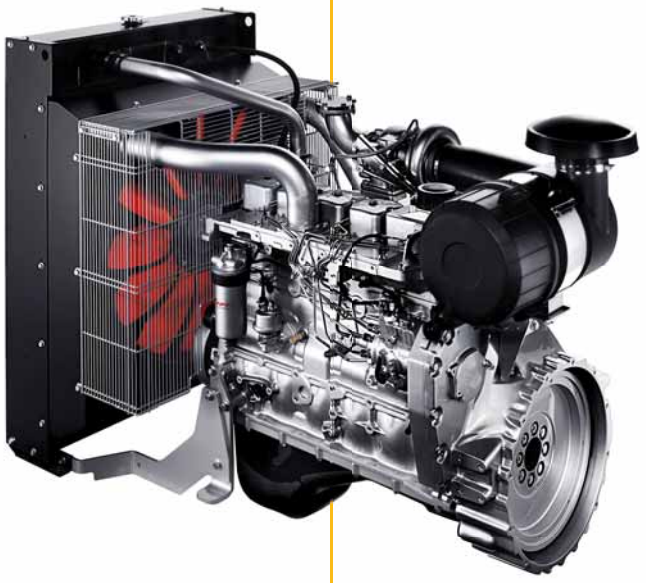
QUICK SERVICE SUPPORT AND FAST MAINTENANCE ACTIVITIES.

Option list
Options for electronic speed governor; hot part guards, water jacket heater, alarm senders, oil drain systems, front radiator guard.

CUSTOMER ORIENTATION AND SPECIFIC ENGINE ARCHITECTURE BASED ON APPLICATION TYPE.

The N series.

Developed to satisfy the most demanding customer requirements, the N series is the evidence of FPT Industrial technological excellence. Available in 4 and 6 cylinders, with mechanical or Common Rail injection system, the N series stands out for reliability and reduced fuel consumption.



ENGINE MODEL	NO. OF CYL / AIR FEEDING	INJ. SYSTEM	DISPLACEMENT LITERS	STAND-BY NET POWER KWM		HOMOLOGATION CLASS	HOMOLOGATION POWER SETTING	
				1500 RPM	1800 RPM		1500 RPM	1800 RPM
N45 AM1A	4L/NA	M	4,5	45	-	Stage II*	47	-
N45 SM1A	4L/TC	M	4,5	59	65	Stage II*	60	-
N45 SM2A	4L/TC	M	4,5	73	72	Stage II*	74	-
N45 TM1A	4L/TAA	M	4,5	85	95	Stage II*	87	-
N45 TM2A	4L/TAA	M	4,5	96	107	Stage II*	98	-
N67 SM1	6L/TC	M	6,7	121	138	-	-	-
N67 TM2A	6L/TAA	M	6,7	125	140	Stage II*	130	-
N67 TM3A	6L/TAA	M	6,7	152	165	Stage II*	156	-
N45 SM1X	4L/TC/I-EGR	M	4,5	-	57	Tier 3**	-	59
N45 SM2X	4L/TC/I-EGR	M	4,5	-	67	Tier 3**	-	69
N45 TM2X	4L/TAA/I-EGR	M	4,5	-	95	Tier 3**	-	98
N67 TM1X	6L/TAA/I-EGR	M	6,7	-	141	Tier 3**	-	148
N67 TE1X	6L/TAA/I-EGR	ECR	6,7	-	165	Tier 3**	-	172
N67 TE1X	6L/TAA/I-EGR	ECR	6,7	-	200	Tier 3**	-	208
N67 TE2X	6L/TAA/I-EGR	ECR	6,7	-	200	Tier 3**	-	395

*Stage II: 1500 rpm only.
**Tier 3: 1800 rpm only.

LEGEND

ARRANGEMENT
L: In line configuration

AIR INTAKE
NA: Naturally aspirated
TC: Turbocharged
TAA: Turbocharged aftercooled

INJECTION SYSTEM
M: Mechanical
ECR: Electronic Common Rail

EMISSION TECHNOLOGIES
I-EGR: Internal EGR

MECHANICAL ENGINES

FEATURES

BENEFITS

Performance
Class G2 & G3 of ISO 8528 standard certification of excellent performance related to load acceptance.

EXCELLENT TRANSIENT LOAD RESPONSE FOR SEVERAL POWER GENERATION APPLICATIONS.

Injection system
Mechanical rotary pump, with high worldwide serviceability, is the heart of the "N" mechanical engine family. The system, is based on direct fuel injection for accurate fuel delivery and is consistent with standard and alternative fuels. The "N" mechanical injection system is the best compromise between product cost effectiveness and performance.

RELIABLE AND COST EFFECTIVE SOLUTION, CONSISTENT WITH STANDARD AND ALTERNATIVE FUELS.

Dual speed mode
Possibility to switch from 1500 rpm to 1800 rpm (only one homologation engine rate).

ENGINE AVAILABLE FOR SALE ALL OVER THE WORLD.

Specific features
Minimum cold starting temperature without auxiliaries down to -10°C (with grid heater down to -25°); Tier 3 performance achieved without external EGR, VGT or electronics.

HIGH PERFORMANCE GUARANTEED IN ALL CONDITIONS.

Air handling
"N" series engines are available in Naturally Aspirated, turbocharged and turbocharged with aftercooler versions in order to reach the highest engine performance in terms of load acceptance & fuel consumption. These features allow OEM customers to optimise their engine installation & final Genset performance.

HIGH ENGINE POWER DENSITY WITH THE SHORTEST LOAD RESPONSE TIME.

600h oil interval change
"N" family engines adopt combustion chambers optimized to reduce oil dilution and are designed with an optimum engine design in terms of mechanical clearances, piston rings and engine oil system calculation.

REDUCED MAINTENANCE NEEDS AND OPERATING COST.

Serviceability & maintainability
Worldwide service network. Engines featured with a proven mechanical injection system without electronic interfaces and without external EGR.

QUICK SERVICE SUPPORT AND FAST MAINTENANCE ACTIVITIES.

Component integration
Integrated CCV (Closed Crankcase Ventilation) system and engine design oriented to high component integration. Water-oil cooler, oil and water pumps are completely integrated in the engine block.

LEAKAGE PREVENTION.

Engine design
Balancer counterweights incorporated in crankshaft webs, rear gear train layout, camshaft in crankcase, suspended oil pan, ladder frame cylinder block.

VIBRATION AND NOISE REDUCTION.

Option list
Options for electronic speed governor; hot part guards, water jacket heater, alarm senders, oil drain systems, front radiator guard.

CUSTOMER ORIENTATION AND SPECIFIC ENGINE BASED ON APPLICATION TYPE.

ELECTRONIC ENGINES

FEATURES

Performance
Class G2 & G3 of ISO standard certification of excellent performance related to load acceptance.

Injection system
Accurate fuel delivery, provided by a very compact direct injection 2nd generation Common Rail @ 1.600 bar to achieve top performance in terms of load acceptance and top power with the minimum fuel consumption.

Dual speed mode
Possibility to switch from 1500 rpm to 1800 rpm. User friendly tanks to interface card (only one homologation engine rate).

Specific features
New engines, but run in; lean layout; starting temperature without auxiliaries down to -10°C (with grid heater down to -25°); Tier 3 performance achieved without external EGR, VGT or electronics.

Air handling
"N" series engines are available in Naturally Aspirated, turbocharged and turbocharged with aftercooler versions in order to reach highest engine performance in terms of load acceptance & fuel consumption. These features allow OEM customers to optimise their engine installation & final Genset performance.

600h oil interval change
"N" family engines adopt combustion chambers and high pressure injection system optimized to reduce oil dilution. Optimum engine design in terms of mechanical clearances, piston rings and oil system calculation.

Serviceability & maintainability
Engine ECU (Electronic Control Unit) with CAN-BUS control & monitoring interfaces may be used for advanced real time diagnosis.

Engine design
Multiple injections, balancer counterweights incorporated in crankshaft webs, rear gear train layout, camshaft in crankcase, suspended oil pan, ladder frame cylinder block.

Component integration
Integrated CCV (Closed Crankcase Ventilation) system and engine design oriented to high component integration. Water-oil cooler, oil and water pumps are completely integrated in the engine block.

Option list
Options for hot part guards, water jacket heater, alarm senders, oil drain systems, front radiator guard.

BENEFITS

EXCELLENT TRANSIENT LOAD RESPONSE FOR SEVERAL POWER GENERATION APPLICATIONS.

FLAT TORQUE AND HIGH ENGINE THERMODYNAMIC PERFORMANCE WITH LOW FUEL CONSUMPTION.

ENGINE AVAILABLE FOR SALE ALL OVER THE WORLD.

HIGH PERFORMANCE GUARANTEED IN ALL CONDITIONS.

HIGH ENGINE POWER DENSITY WITH THE SHORTEST LOAD RESPONSE TIME.

REDUCED MAINTENANCE NEEDS AND OPERATING COST.

QUICK SERVICE SUPPORT AND FAST MAINTENANCE ACTIVITIES.

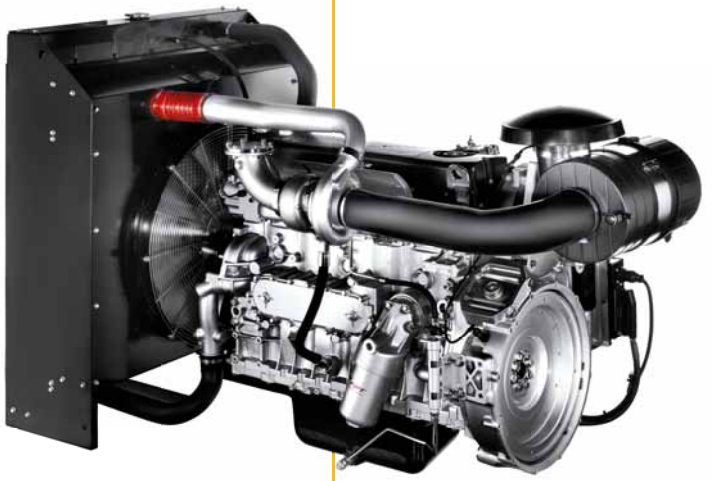
VIBRATION & NOISE REDUCTION.

LEAKAGE PREVENTION.

CUSTOMER ORIENTATION AND SPECIFIC ENGINE ARCHITECTURE BASED ON APPLICATION TYPE.

The C series.

If you are looking for top power, fast load acceptance and high power density together with the lowest fuel consumption, C series is the best choice you can do. Characterized by outstanding performance, the C series is dedicated to stationary applications from 255 to 387 kW. Superb performance is just one of the benefits of these engines: high reliability, long maintenance intervals, which means extremely low operating cost, are the core values of the range. Thanks to continuous technological evolution the C series has been recently extended with the new C87, introducing second generation Common Rail injection system.



ENGINE MODEL	NO. OF CYL./ AIR FEEDING	INJ. SYSTEM	DISPLACEMENT LITERS	STAND-BY NET POWER KWM		HOMOLOGATION CLASS	HOMOLOGATION POWER SETTING	
				1500 RPM	1800 RPM		1500 RPM	1800 RPM
C87 TE1D	6L/TAA/I-EGR	ECR	8,7	255	276	Stage II*/Tier 3**	263	290
C10 TE1D	6L/TAA/I-EGR	EUI	10,3	286	311	Stage II*/Tier 3**	300	335
C13 TE2A	6L/TAA	EUI	12,9	330	360	Stage II*	345	-
C13 TE3A	6L/TAA	EUI	12,9	387	398	Stage II*	400	-
C13 TE3X	6L/TAA/I-EGR	EUI	12,9	-	371	Tier 3**	-	395

*Stage II: 1500 rpm only.
**Tier 3: 1800 rpm only.

LEGEND

ARRANGEMENT
L: In line configuration

AIR INTAKE
TAA: Turbocharged aftercooled

INJECTION SYSTEM
ECR: Electronic Common Rail
EUI: Electronic Unit Injector

EMISSION TECHNOLOGIES
I-EGR: Internal EGR

FEATURES

BENEFITS

Performance
Class G3 of ISO 8528 standard certification of excellent performance related to load acceptance.

EXCELLENT TRANSIENT LOAD RESPONSE FOR SEVERAL POWER GENERATION APPLICATIONS.

Injection system
Accurate fuel delivery to achieve top performance in terms of load response and top power with the minimum fuel consumption: C87 with very compact 2nd generation Common Rail System; C10 & C13 with electronic controlled unit injectors.

HIGH ENGINE THERMODYNAMIC PERFORMANCE WITH LOW FUEL CONSUMPTION.

Dual speed mode
Possibility to switch from 1500 rpm to 1800 rpm. User friendly tanks to interface card.

ENGINE AVAILABLE FOR SALE ALL OVER THE WORLD.

Specific features
Minimum cold starting temperature without auxiliaries down to -10°C (with grid heater down to -25°); Tier 3 performance achieved without external EGR, VGT or electronics.

HIGH PERFORMANCE GUARANTEED IN ALL CONDITIONS.

Air handling
Turbocharged with air-to-air charge cooled air system with 4 valves per cylinder to increase engine efficiency thanks to the optimization of thermodynamic performance in terms of load response & fuel consumption.

HIGH ENGINE POWER DENSITY WITH THE SHORTEST LOAD RESPONSE TIME.

600h oil interval change
"C" family engines adopt combustion chambers and high pressure injection system optimized to reduce oil dilution. Optimum engine design in terms of mechanical clearances, piston rings and oil system calculation.

REDUCED MAINTENANCE NEEDS AND OPERATING COST.

Serviceability & maintainability
Worldwide service network. Engine ECU (Electronic Control Unit) with CAN-BUS control & monitoring interfaces may be used for advanced real time diagnosis.

QUICK SERVICE SUPPORT AND FAST MAINTENANCE ACTIVITIES.

Engine design
Multiple injections, balancer counterweights incorporated in crankshaft webs, rear geartrain layout, camshaft in crankcase, suspended oil pan, ladder frame cylinder block.

VIBRATION & NOISE REDUCTION.

Component integration
Integrated CCV (Closed Crankcase Ventilation) system and engine design oriented to high component integration. Water-oil cooler, oil and water pumps are completely integrated in the engine block.

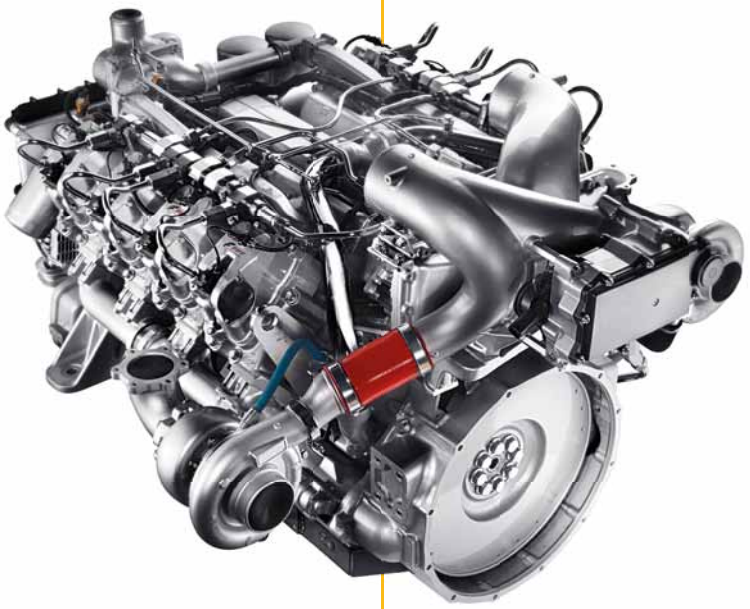
LEAKAGE PREVENTION.

Option list
Options for hot part guards, water jacket heater, alarm senders, oil drain systems, front radiator guard.

CUSTOMER ORIENTATION AND SPECIFIC ENGINE ARCHITECTURE BASED ON APPLICATION TYPE.

The V series.

The V series, with its compact design and state-of-the-art injection system, is FPT Industrial answer to high power demand. Thanks to 1000 hours maintenance intervals and low oil consumption, engine operating costs are the lowest in its category.



ENGINE MODEL	NO. OF CYL / AIR FEEDING	INJ. SYSTEM	DISPLACEMENT LITERS	STAND-BY NET POWER KWM		HOMOLOGATION CLASS	HOMOLOGATION POWER SETTING	
				1500 RPM	1800 RPM		1500 RPM	1800 RPM
V20 TE1	8V/TAA	ECR	20,1	610	670	TA LUFT*	610	-
V20 TE2	8V/TAA	ECR	20,1	610	740	Tier 2**	-	770

*TA LUFT: Technische Anleitung zur Reinhaltung der Luft.
**Tier 2: EPA

LEGEND

ARRANGEMENT
V: V configuration

AIR INTAKE
TAA: Turbocharged aftercooled

INJECTION SYSTEM
ECR: Electronic Common Rail

EMISSION TECHNOLOGIES
I-EGR: Internal EGR

FEATURES

BENEFITS

Performance
High performance related to load acceptance. Class G3 of ISO 8528 standard certification.

EXCELLENT TRANSIENT LOAD RESPONSE FOR SEVERAL POWER GENERATION APPLICATIONS.

Electronic common rail system
Direct injection fuel system, based on a compact 2nd generation Common Rail System; to ensure accurate in fuel delivery with achieving top performance in terms of load acceptance and power with the minimum fuel consumption.

HIGH ENGINE THERMODYNAMIC PERFORMANCE WITH LOW FUEL CONSUMPTION.

Engine design
V8 engine architecture, responsive injection system and minimum noise sources, cast iron single cylinder head, reinforced engine block, rear geartrain layout, suspended oil pan.

VIBRATION & NOISE REDUCTION.

Dual speed mode
Possibility to switch from 1500 rpm to 1800 rpm. User friendly tanks to interface card.

ENGINE AVAILABLE FOR SALE ALL OVER THE WORLD.

Specific features
Minimum cold starting temperature without auxiliaries down to -10°C (with grid heater down to -25°, with water and oil heater down to -30°C); performance achieved without EGR or VGT; high engine inclination.

HIGH PERFORMANCE GUARANTEED IN ALL CONDITIONS & MISSIONS.

Air handling
Turbocharged with air-to-air charge cooled air system with 4 valves per cylinder to increase the engine efficiency by the optimization of thermodynamic performance in terms of load response & fuel consumption.

HIGH ENGINE POWER DENSITY WITH THE SHORTEST LOAD RESPONSE TIME.

1000h oil interval change
Optimum engine design in terms of mechanical clearances, piston rings, engine oil system calculation in order to reduce oil consumption and maintenance needs.

REDUCED MAINTENANCE NEEDS AND OPERATING COST.

Serviceability
Enhanced engine serviceability and diagnosis thanks to the Electronic Control Unit on the engine with CAN-BUS control & monitoring systems interface.

QUICK SERVICE SUPPORT.

Component integration
CCV, oil pump and all oil piping and all water circuit integrated in the engine block.

LEAKAGE PREVENTION.

Option list
Options for hot part guards, water jacket heater, alarm senders, oil drain systems, front radiator guard.

CUSTOMER ORIENTATION.

At your service everywhere.
Sales and Services.

FPT Industrial counts on a worldwide organization including over 1500 sale & service points able to assist Customers in their purchase and to provide them with engine maintenance and parts.

Thanks to frequent training courses, FPT Industrial network will be pleased to assist you wherever and whenever necessary, supplying only original parts of proven quality.

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FPT Industrial S.p.A.

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