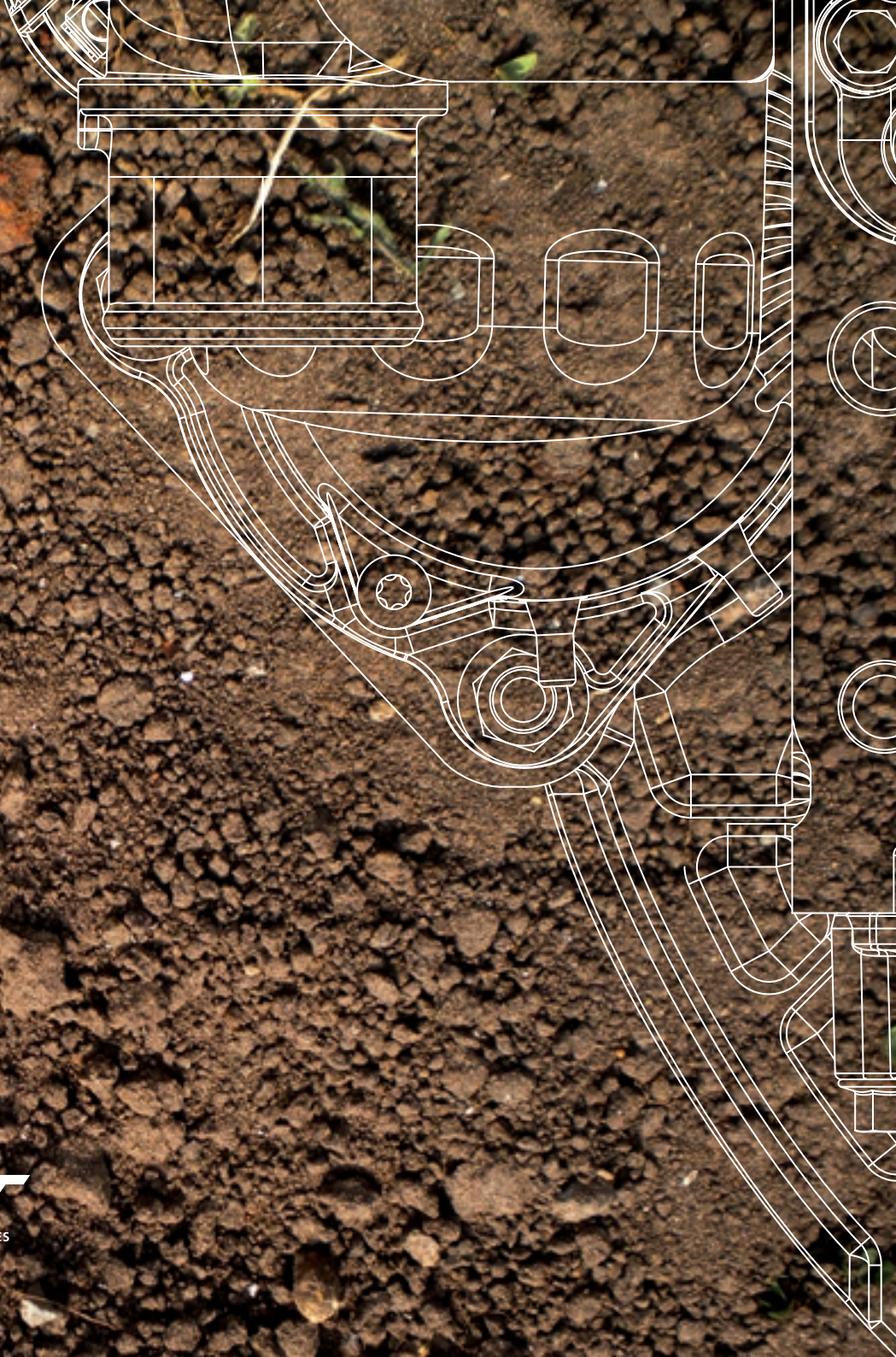


OFFROAD





THE STRENGTH OF INNOVATION

Innovation, performance and constant improvement, these are the drivers for our industrial machinery: earthmoving and construction machinery, agriculture, irrigation and special machines.

Every type of engine is designed to fulfil the needs of all industrial applications, adopting the most advanced technologies: innovative structure, multi-valve systems, fixed or variable geometry turbochargers, state-of-the-art mechanical injection systems, high pressure Common Rail injection systems and electronically controlled unit injectors. The availability of applications, combined with a wide variety of tailor-made engine configurations, helps in matching the variations required in all the sectors.

FPT Industrial succeeded in transforming emission legislation constraints into a competitive advantage for its engines, by exploiting their technological excellence to achieve better performance and lower operating costs.

FPT Industrial offers superior technology and outstanding advantages





THE SOLUTION FOR THE FUTURE, TODAY

SCR ONLY TECHNOLOGY FOR TIER 4B/STAGE IV

Technological excellence and product innovation for FPT Industrial represent the truly determining factor and part of its primary strategic mission. The company is focusing its research and development activities in order to become the innovation leader in the agriculture and construction powertrain field and a reference provider of the most cost efficient powertrain solutions for Tier 4B/Stage IV.

FPT Industrial aims to comply with the new emission limits ensuring a minimal impact on the vehicle architecture and the lowest possible increase in cost, an objective that will be achieved through HI-eSCR technology. The breakthrough patented technology, based on an experience of more than 6 years and 400.000 engines produced, allows our engines to meet Tier 4B/Stage IV guaranteeing a very high NO_x conversion efficiency (over 95% versus 80-85% of best competitors), without resorting to ec-EGR and DPF.







Scenario

During the combustion process, inside a Diesel engine, the chemical energy is transformed into a mechanical one. Because of the chemistry of combustion, several toxic substances are produced, of which the most harmful are Nitrogen Oxides (NO_x) and Particulate Matter (PM).

Since 2011, when Tier 4A/Stage IIIB came into force, many efforts have been made to reduce pollutants that are damaging the environment. Starting from 2014, Tier 4B/Stage IV regulations will firstly concern engines with power above 130kW to be then extended to other power ranges*.

Tier 4B/Stage IV compliance implies a significant reduction of NO_x (-80%) over today's Tier 4 A/Stage IIIB levels, while PM is not affected by further reduction, having already reached a 90% abatement in the previous step.

 *NO_x emissions reduced by 80% compared to Tier 4A/Stage IIIB*

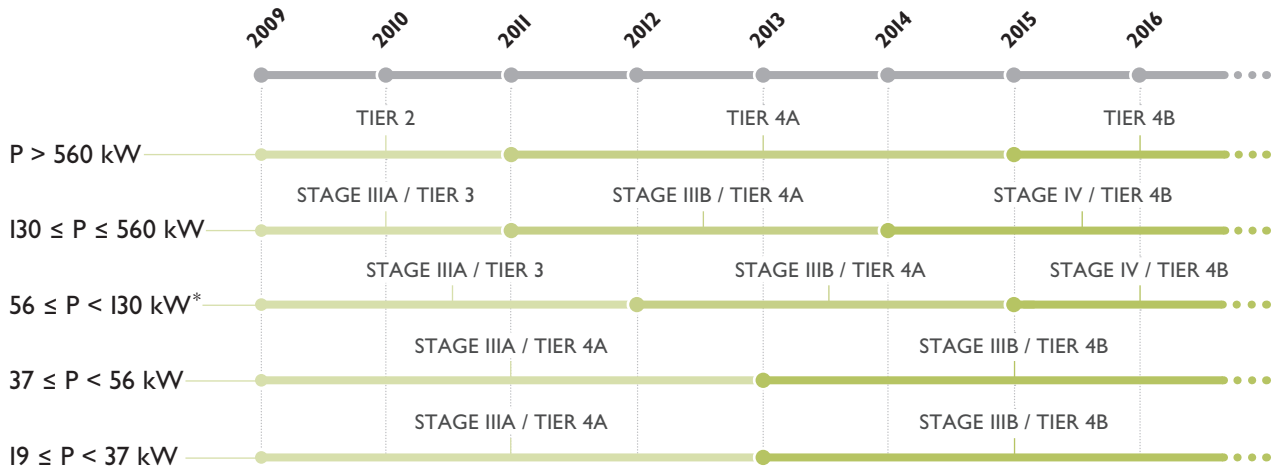
 *Introduction of an ammonia emission limit*

* P < 56kW engines are compliant with Tier 4B/Stage IV



Emission regulations-roadmap

EUROPEAN NON ROAD MOBILE MACHINERY, AGRICULTURAL AND FORESTRY TRACTORS & USA NON ROAD COMPRESSION-IGNITION ENGINE EMISSION STANDARDS



* For $56 \leq P < 130 \text{ kW}$, Stage IV introduction date is 1st October 2014, while Tier 4B is 1st January 2015

Emission Durability Period: 8000 hours, 10 years

No new type approval in Europe for existing emission stage permitted in the year before new emission stage introduction

No emission regulation in Europe for $P < 19 \text{ kW}$ and $P \geq 560 \text{ kW}$

	STAGE IIIA / TIER 3 ⁴				STAGE IIIB / TIER 4A ^{INTERIM}				STAGE IV / TIER 4B ^{FINAL}			
	CO	HC ⁴	NO _x	PM	CO	HC ⁴	NO _x	PM	CO	HC ⁴	NO _x	PM
P > 560 kW ^{US ONLY}	3.5	6.4	0.2		3.5	0.40	3.5	0.10	3.5	0.19	3.5	0.04
130 ≤ P ≤ 560 kW	3.5	4.0	0.2		3.5	0.19	2.0	0.025 ²	3.5	0.19	0.40	0.025 ²
75 ≤ P < 130 kW	5.0	4.0	0.3		5.0	0.19	3.3 ³	0.025 ²	5.0	0.19	0.40	0.025 ²
56 ≤ P < 130 kW	5.0	4.7	0.4		5.0	0.19	3.3 ³	0.025 ²	5.0	0.19	0.40	0.025 ²
37 ≤ P < 56 kW	5.0	4.7	0.4		5.0	4.7		0.3 0.025 ⁶	5.0	4.7		0.03
19 ≤ P < 37 kW	5.5	7.5	0.6		5.5	7.5		0.3	5.5	4.7		0.03

LEGEND

CO Carbon Monoxide
 HC Hydrocarbons
 NO_x Nitrogen Oxides
 PM Particulate Matter
 PN Particle Number

¹ NMHC for US Tier Limits
² US Tier 4A and Tier 4B PM limit is 0.02, but with rounding allowed
 in US this limit is equivalent to 0.024999... ≈ 0.025
³ 3.4 in US
⁴ Tier 2 for P ≥ 560 kW and P < 19 kW
⁵ 8.0 for P < 8 kW
⁶ Tier 4A: 0.3; Stage IIIB: 0.025

Emission Durability Period: 8000 hours, 10 years

No new type approval in Europe for existing emission stage permitted in the year before new emission stage introduction

No emission regulation in Europe for P < 19 kW and P ≥ 560 kW

Tier 4B/Stage IV Engines

By way of continuous technical advances to an already state of the art engine range, Tier 4B/Stage IV sees also the introduction of reengineered engines, allowing our customers to retain their class leading features, such as minimized total cost of ownership. Key to the optimization of combustion efficiency is high mean effective cylinder pressure and high injector nozzle pressures.

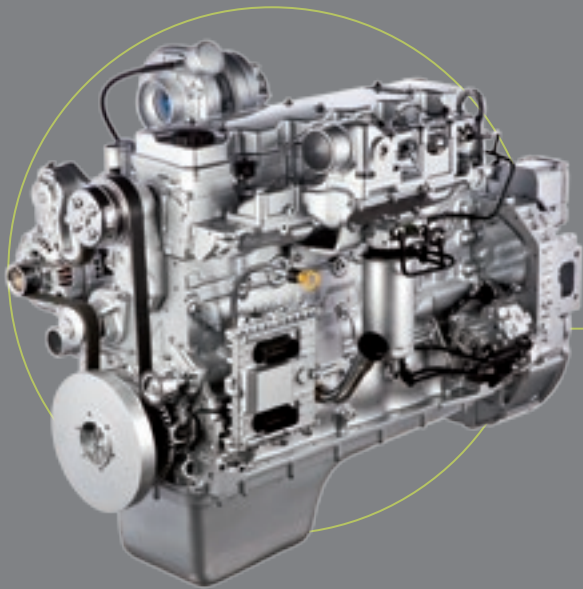
To achieve these aims, important changes to the crankcase and cylinder head design have been made, resulting in an increase in structural rigidity and in swept volume. The engines fitted with the latest generation of multiple events Common Rail fuel injection equipment with peak nozzle pressures of up to 2200 bar. A new Electronic Control Unit has been introduced to manage both engine parameters and accurate control of the after-treatment system.

The new control unit has been designed to optimize packaging and to fully integrate engine and SCR functions. For the very best in environmental performance, the engines were equipped with closed circuit engine

breathing systems even at Tier 4A/Stage IIIB level and this feature is retained for Tier 4B/Stage IV.

In addition, since the engine only breathes clean filtered air, rather than re-circulated exhaust gases, engine wear is maintained very low and oil change intervals are maintained high, with service intervals of up to 600h, without increased oil sump. This too brings advantages in terms of operating costs and reduced downtime for scheduled maintenance.

Advantages



- ✓ Increase vehicle productivity due to better transient response
 - ✓ No additional turbocharger's complexity but performance in line with FPT Industrial competitors
 - ✓ Low operating costs due to low engine wear and long maintenance intervals (up to 600h, depending on the mission)
 - ✓ Engine lean design and state-of-the-art HI-eSCR after-treatment system, flexibility and easy installation
 - ✓ Lean technology improving durability and reliability
 - ✓ No additional cooling system requirements considering both radiator dimensions or fan drive
-

HI-eSCR system

Due to the opposite reaction to combustion temperature, the reduction of either of the combustion products (NO_x or PM) necessarily implies the increase of the other one. In order to further reduce NO_x , as required by Tier 4B/Stage IV, it is necessary to work on different combustion management and exhaust gas treatment system.

This means that Tier 4B/Stage IV emission limits can be reached only through the use of SCR (Selective Catalytic Reduction), either with or without EGR. The use of an EGR system reduces the NO_x emissions in the combustion chamber, through exhaust gas recirculation with a consequential increase in the production of particulate matter (PM) and a reduction in combustion efficiency.

FPT Industrial has chosen instead to increase the engine combustion efficiency to reduce the PM without using EGR or DPF, allowing engines to work at their performance best point without caring about emissions. The NO_x is reduced in the SCR system, while improving fuel consumption reduction, HI-eSCR system performance

and overall power system reliability.

FPT Industrial's HI-eSCR is able to reduce the NO_x levels more than 95%. The SCR Only technology sees the introduction of a new integrated approach that is the result of extensive research by FPT Industrial, research that has led to the creation of numerous significant patents.

Patents



“Closed” loop control to allow precise dosing of NO_x and Ammonia sensors to provide accurate info on the composition of exhaust gases and reduce the use of AdBlue



Adaptive AdBlue dosing system in order to cut the level of NO_x emissions entering the SCR catalyst



Thermally insulated high turbulence mixing, to allow homogeneous hydrolysis of urea, creating correct distribution in exhaust gas flow



Improved exhaust gas temperature control to speed up SCR light-off in the cold part of emission cycle

All the components of the exhaust after-treatment system are contained in a compact, and fully enclosed structure thereby not impeding body building or chassis equipment mounting activities and minimizing the weight impact.

Main Components

HI-eSCR main components are:

- ✓ *The DEF/AdBlue Supply Module*
- ✓ *The DEF/AdBlue Dosing Module*
- ✓ *The Diesel Oxydation Catalyst (DOC)*
- ✓ *The DEF/AdBlue Mixer*
- ✓ *The Selective Catalytic Reduction (SCR)*
- ✓ *The Clean Up Catalyst*

The whole system is fitted with a network of integrated sensors to control the NO_x and any excess of NH_3 (ammonia) emitted.

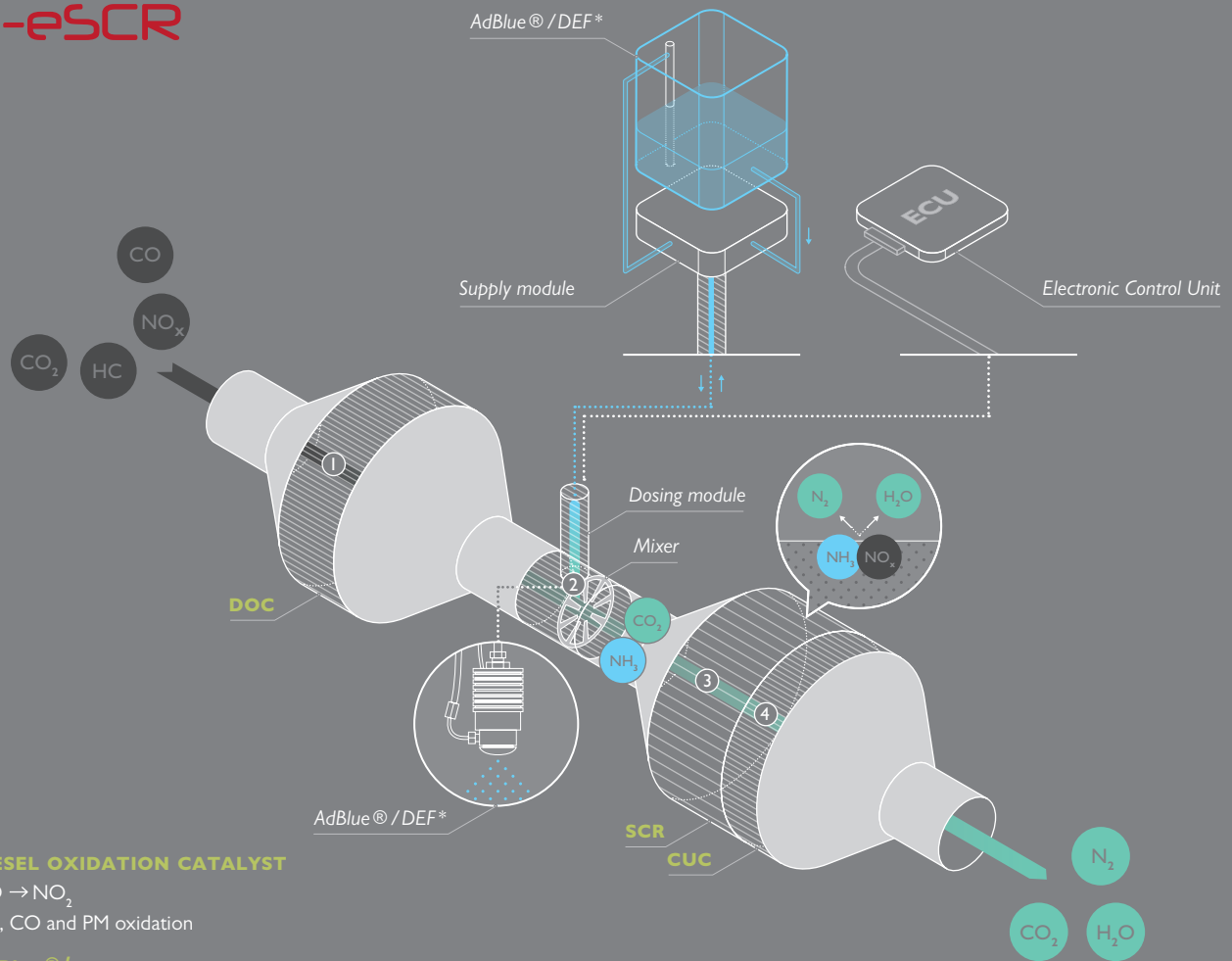
Exhaust gas flow coming from the engine enters the DOC, where NO is oxidised in NO_2 , in order to maximize SCR catalyst's efficiency conversion.

The ECU (Engine Control Unit), the brain behind the HI-eSCR system, checks, through integrated sensors network, the amount of Water-Urea (DEF/AdBlue) solution to be injected in the exhaust pipe. To increase the durability of the injector, Dosing Module is cooled by the engine coolant.

The HI-eSCR after-treatment system adopts a catalyst converting NO_x into Nitrogen (N_2) and Water (H_2O) thanks to the chemical reaction with a Water-Urea solution. In the end, the integrated CUC eliminates the remaining ammonia (NH_3). The result is a reduction of NO_x superior to 95%.



HI-eSCR



1 DIESEL OXIDATION CATALYST

$\text{NO} \rightarrow \text{NO}_2$
 HC, CO and PM oxidation

2 AdBlue® / DEF INJECTION

Hydrolysis $\rightarrow \text{NH}_3 + \text{CO}_2$

3 SELECTIVE CATALYTIC REDUCTION

NO and NO_2 reduction by NH_3 to N_2 and H_2O

4 CLEAN-UP CATALYST

Residual NH_3 oxidation

*AdBlue® / DEF = $\text{CO}(\text{NH}_2)_2 + \text{H}_2\text{O}$

LEGEND

HC Unburnt Hydrocarbons
 NO_x Nitrogen Oxides
 CO Carbon Monoxide
 N_2 Nitrogen
 CO_2 Carbon Dioxide
 H_2O Water

Seven reasons to choose HI-eSCR

1 SCR HERITAGE

FPT Industrial's heritage in SCR technology is well-established. Since 2005 we have equipped more than 400.000 vehicles with this technology

2 OUTSTANDING PERFORMANCE

Our engines are developed to maximize torque and power density with the shortest load response time, without compromising the impact on the environment, due to the use of the HI-eSCR system.

3 FUEL CONSUMPTION

The efficiency of the combustion process optimizes fuel consumption reducing customer running costs

4 COMPACT PACKAGING

Compared to competitor's engines the thermodynamic efficiency of the FPT Industrial solutions allows to maximize power and torque output for each engine space requirement and complexity

5 MAINTENANCE INTERVALS

The optimized combustion process preserves oil physical properties reducing maintenance activities and related downtime. The engines maintain their best in class oil maintenance intervals of up to 600h depending on the mission, without an increased oil sump

6 HIGH RELIABILITY

HI-eSCR system allows the engine to reduce heat rejection of many internal engine components which leads to better reliability

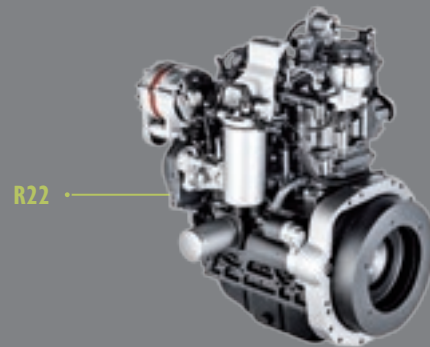
7 PRODUCTIVITY

As the engine breathes clean air, it gives a better transient response and provides a higher level of torque at low revs, bringing great benefits to the machinery's productivity

The R Series

The new R22 engine marks FPT's entry into the low displacement off-road field. The three-cylinder, 2.2 liters provides 33 to 52 kW and up to 250 Nm of torque; compact and efficient, the R22 meets Tier 4B/Stage IIIB emissions regulations.

Versatile and suitable for a wide range of applications such as low horsepower tractors and skid steer loaders, it can be tailored to suite the customer needs.



APPLICATION	MODEL	CYLINDER ARRANGEMENT	AIR INTAKE	TURBOCHARGING	INJECTION SYSTEM	DISPLACEMENT LITERS	POWER			TORQUE			EMISSION STANDARD	EXHAUST SYSTEM
							KW	HP	RPM	NM	KGM	RPM		
● ○	R22 ¹	L3 / TAA	WG	ECR	2,2	33-52	46-71	2600	160-250	16-25	1800	Tier 4B / Stage IIIB	I-EGR + DOC + PMCAT	

LEGEND

APPLICATION

- Agriculture
- Industrial

ARRANGEMENT

- L In line

AIR INTAKE

- TAA Turbocharged aftercooler

TURBOCHARGING

- WG Fixed Geometry Turbo with Wastegate

INJECTION SYSTEM

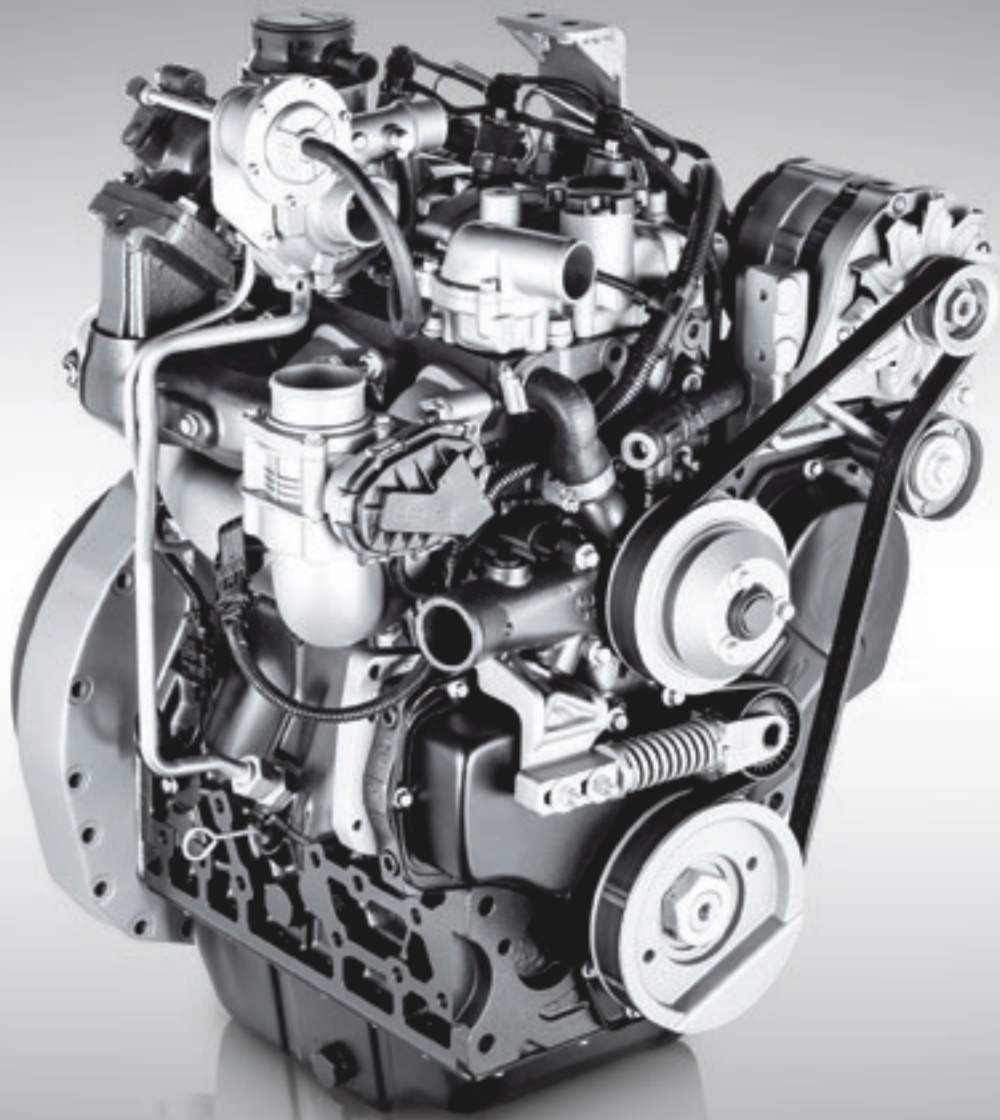
- ECR Electronic Common Rail

EXHAUST SYSTEM

- I-EGR Internal Exhaust Gas Recirculation
- DOC Diesel Oxidation Catalyst
- PM CAT Through Flow Particulate Matter Filter

¹. Preliminary Data





Features

ENGINE PERFORMANCE

R Series engines use a high pressure Common Rail injection system (1600 bar), which optimizes thermodynamic performance and ensures extremely precise injection in all engine operating conditions. The R22 combines impressive torque and power density with minimum fuel consumption.

ENGINE DESIGN

R22 is the most compact engine of its segment. With the intake and exhaust manifolds on the same side of the uniflow cylinder head, the presence of hoses and pipes around the engine is minimized, resulting in a clean layout and easy installation. The “Antiphone” insulated sheet metal front cover reduces engine noise thus improving end user’s working experience. An extremely rigid, small and light tunnel block reduces vibrations and prevents the need for a structural sump, enabling compact dimensions (length x width x height: 519 x 524 x 723 mm) for maximum installation flexibility. Furthermore, the R22 features glow plugs for cold start.

AFTERTREATMENT SOLUTION

To meet specific emission requirements for applications up to 56 kW, the R22 adopts of internal Exhaust Gas Recirculation (EGR) with DOC and PM CAT. This compact and cost-effective solution puts at forefront the value to the customer and the particular operating requirements.

AIR HANDLING

The fixed geometry turbocharger with aftercooler and Wastegate valve optimizes torque curve and transient response, while offering high boost pressure and performance at high altitudes.

SERVICEABILITY & MAINTAINABILITY

All components requiring maintenance are placed on the left side of the engine, ensuring extremely simple maintenance activities. The use of hydraulic tappets, a state-of-the-art technology in terms of lubrication and timing systems, avoids the need for manual adjustment or servicing and helps to further minimize operating costs. The blow-by system is installed on the rocker cover, with a pre-separation system, which minimizes overall dimensions and oil consumption. R22 is best in class for oil change intervals (up to 600 hs). Furthermore, unlike the DPF, the PM-CAT proves to be “maintenance free”.

WIDE OPTIONS LIST

Wide choice of specific options available: fans, alternators, SAE₃/SAE₄ interfaces for transmissions, different starter and power take off positions (frontal or lateral PTO with torque capability of up to 200 Nm), pulleys, and further accessories.

Benefits

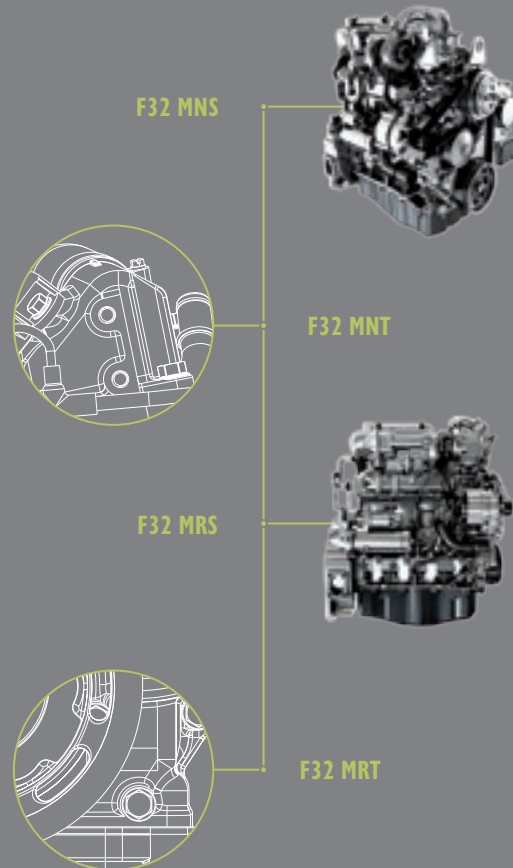
- ✓ **HIGH TORQUE AND OPTIMIZED PERFORMANCE WITH LOW FUEL CONSUMPTION**
- ✓ **SIMPLE AND EASY TO INSTALL, REDUCED VIBRATION & NOISE**
- ✓ **COMPACT AND COST EFFECTIVE LEAN AFTERTREATMENT SYSTEM**
- ✓ **HIGH PERFORMANCE GUARANTEED IN ALL CONDITIONS**
- ✓ **EASY MAINTENANCE, LOW OPERATING COSTS AND REDUCED VEHICLE DOWNTIME**
- ✓ **TAILORED CONFIGURATIONS BASED ON CUSTOMER REQUIREMENTS**



The F5 Series

Featured by customer oriented design, the F5 Series stands out for low operating costs and extremely easy maintenance thanks to single side servicing.

Benefits are combined with excellent performance, which allows these engines to be used for the most demanding missions (e.g. high engine inclination, cold starting at temperatures down to -25°C).



APPLICATION	MODEL	CYLINDER ARRANGEMENT	AIR INTAKE	TURBOCHARGING	INJECTION SYSTEM	DISPLACEMENT LITERS	POWER			TORQUE			EMISSION STANDARD	EXHAUST SYSTEM
							KW	HP	RPM	NM	KGM	RPM		
● ○	F32 MNS	L4 / TC	FGT	M	3,2	55	75	2500	281	29	1250	Tier 3 / Stage IIIA	I-EGR	
● ○	F32 MNS	L4 / TC	FGT	M	3,2	61	83	2500	320	33	1250	Tier 3 / Stage IIIA	ec-EGR	
● ○	F32 MNT	L4 / TAA	FGT	M	3,2	65	88	2500	320	33	1400	Tier 3 / Stage IIIA	I-EGR	
○	F32 MRS ¹	L4 / TC	FGT	M	3,2	53	72	2300	277	28	1250	Tier 3 / Stage IIIA	I-EGR	
○	F32 MRS ¹	L4 / TC	FGT	M	3,2	59	80	2300	310	32	1400	Tier 3 / Stage IIIA	ec-EGR	
○	F32 MRT ¹	L4 / TAA	FGT	M	3,2	65	88	2300	350	36	1300	Tier 3 / Stage IIIA	I-EGR	

LEGEND

APPLICATION

- Agriculture
- Industrial

ARRANGEMENT

- L In line

AIR INTAKE

- TC Turbocharged
- TAA Turbocharged aftercooler

TURBOCHARGING

- FGT Fixed Geometry Turbo

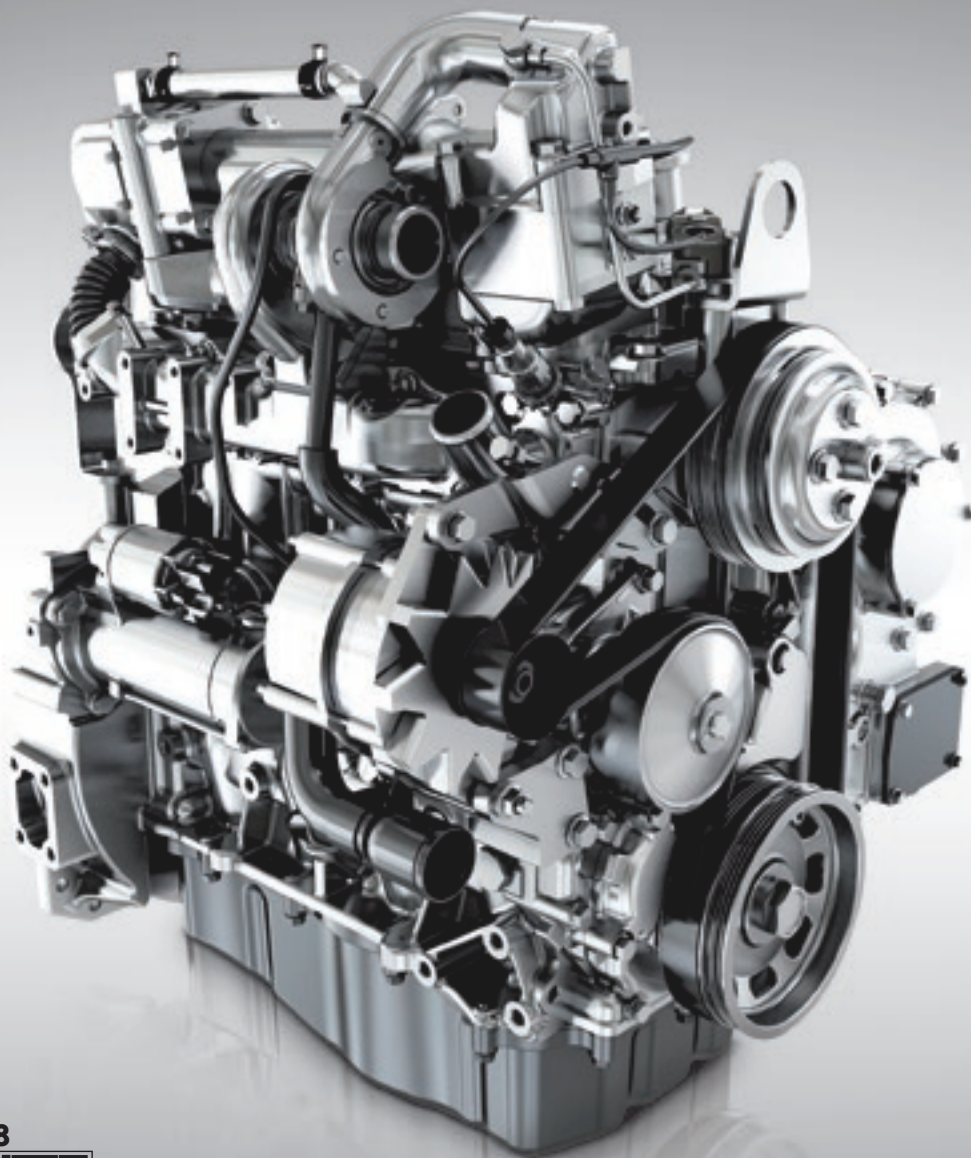
INJECTION SYSTEM

- M Mechanical

EXHAUST SYSTEM

- I-EGR Internal Exhaust Gas Recirculation
- ec-EGR External Cooled Exhaust Gas Recirculation

1. "Structural" engine architecture



2008
DIESEL
OF THE YEAR
FPT Industrial F32



Features

INJECTION SYSTEM

Based on simple and proven mechanical rotary pump, the F5 engine has a direct fuel injection system for accurate fuel delivery. The mechanical pump is the best trade-off between performance and easy engine installation.

ENGINE DESIGN

Camshaft in crankcase, suspended oil pan, balancer counterweights incorporated in crankshaft webs. Countershaft balancer also available as options.

COMPONENTS INTEGRATION

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

SPECIFIC FEATURES

New engine specifically designed for agricultural applications; lean layout; starting temperature without auxiliaries down to -12°C (with auxiliaries down to -25°); performance achieved without VGT or electronics; up to 35° continuous angle of inclination in all allowable directions.

AIR HANDLING

All F5 Series are turbocharged and feature both Internal and External Cooled EGR. The above described features allow OEM's customers to optimize engine installation, machine performance, load response and fuel consumption.

UP TO 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.

SERVICEABILITY & MAINTAINABILITY

One side engine maintenance layout and worldwide service network.

OPTION LIST

F5 engines are available with non-structural and structural engine architecture for agricultural application. Additional options are available radiators, air filters, mufflers, standard transmission interfaces SAE₃/SAE₄; two possible PTO arrangements DIN/SAE A-B; fan position flexibility; air conditioning compressor arrangement; consistency with standard and alternative fuels in compliance with regulatory requirements.

Benefits

- ✓ **SIMPLE AND EASY TO INSTALL
SOLUTION CONSISTENT WITH
STANDARD AND ALTERNATIVE FUELS**
- ✓ **VIBRATION & NOISE REDUCTION**
- ✓ **LEAKAGE PREVENTION**
- ✓ **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**
- ✓ **CUSTOMER ORIENTATION AND
SPECIFIC ENGINE ARCHITECTURE
BASED ON APPLICATION TYPE**

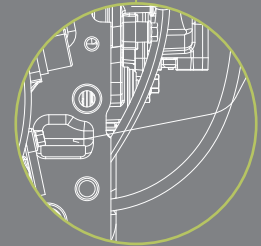


The NEF Series



N45 ENT

N45 ERT



Developed to satisfy the most demanding customer requirements, the NEF Series is the evidence of FPT Industrial technological excellence.

Available in 4 and 6 cylinder configurations, both mechanical and electronic version, with non-structural and structural design for agricultural application. NEF Series electronic engines are equipped with second generation Common Rail injection system, allowing to achieve top performance in terms of load response, maximum torque and top power with the minimum fuel consumption.

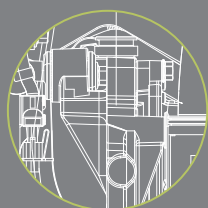
The NEF Series also stands out for its great flexibility and reliability, low fuel consumption and high performance, which make this engine the reference in its category.

N45 MSS





N45 MNT



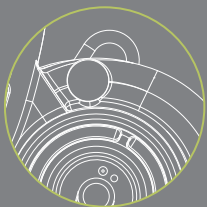
N45 MRT



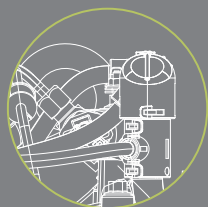
N45 MNS

N45 MRS

N45 MSS X



N67 ENT



N67 MNT



N45 MST

N67 ERT

N67 MRT





NEW HOLLAND

NEW HOLLAND

E305C

APPLICATION	MODEL	CYLINDER ARRANGEMENT	AIR INTAKE	TURBOCHARGING	INJECTION SYSTEM	DISPLACEMENT LITERS	POWER			TORQUE			EMISSION STANDARD	EXHAUST SYSTEM
							KW	HP	RPM	NM	KGM	RPM		
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5	104	141	2200	608	62	1600	Tier 3 / Stage IIIA	I-EGR	
○	N45 ERT ²	L4 / TAA	FGT	ECR	4,5	104	141	2200	608	62	1600	Tier 3/Stage IIIA	I-EGR	
● ○	N45 MNS	L4 / TC	FGT	M	4,5	66	90	2200	400	41	1250	Tier 3 / Stage IIIA	I-EGR	
● ○	N45 MNT	L4 / TAA	FGT	M	4,5	74	101	2200	430	44	1250	Tier 3 / Stage IIIA	I-EGR	
● ○	N45 MNT	L4 / TAA	FGT	M	4,5	93	126	2200	525	54	1250	Tier 3 / Stage IIIA	I-EGR	
○	N45 MRS ²	L4 / TC	FGT	M	4,5	74	101	2200	410	42	1400	Tier 3/Stage IIIA	I-EGR	
○	N45 MRT ²	L4 / TAA	FGT	M	4,5	88	120	2200	515	53	1250	Tier 3 / Stage IIIA	I-EGR	
● ○	N45 MSS X ¹	L4 / TC	FGT	M	4,5	74	101	2200	410	42	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	N45 MSS ¹	L4 / TC	FGT	M	4,5	66	90	2200	400	41	1250	Tier 3 / Stage IIIA	I-EGR	
● ○	N45 MST ¹	L4 / TAA	FGT	M	4,5	74	101	2200	430	44	1250	Tier 3 / Stage IIIA	I-EGR	
● ○	N45 MST ¹	L4 / TAA	FGT	M	4,5	93	126	2200	525	54	1250	Tier 3 / Stage IIIA	I-EGR	
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5	75	102	2200	472	48	1400	Tier 4A / Stage IIIB	SCR	
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5	89	121	2200	549	56	1500	Tier 4A / Stage IIIB	SCR	
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5	110	150	2200	676	69	1500	Tier 4A / Stage IIIB	SCR	
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5	125	170	2200	700	71	1500	Tier 4A / Stage IIIB	SCR	
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5	89	121	2200	549	56	1500	Tier 4B / Stage IV	DOC + SCR	
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5	125	170	2200	710	72	1500	Tier 4B / Stage IV	DOC + SCR	

LEGEND

APPLICATION

- Agriculture
- Industrial

ARRANGEMENT

- L In line

AIR INTAKE

- TC Turbocharged
- TAA Turbocharged aftercooler

TURBOCHARGING

- FGT Fixed Geometry Turbo
- WG Fixed Geometry Turbo with Wastegate

INJECTION SYSTEM

- ECR Electronic Common Rail
- M Mechanical

EXHAUST SYSTEM

- I-EGR Internal Exhaust Gas Recirculation
- SCR Selective Catalytic Reduction

1. Narrow engines with dynamic balancing

2. "Structural" engine architecture

3. Based on Tier 4 engine's hardware

APPLICATION	MODEL	CYLINDER ARRANGEMENT AIR INTAKE	TURBOCHARGING	INJECTION SYSTEM	DISPLACEMENT LITERS	POWER			TORQUE			EMISSION STANDARD	EXHAUST SYSTEM
						KW	HP	RPM	NM	KGM	RPM		
● ○	N67 ENT	L6 / TAA	FGT	ECR	6,7	175	238	2200	1020	104	1500	Tier 3 / Stage IIIA	I-EGR
○	N67 ERT ²	L6 / TAA	FGT	ECR	6,7	181	246	2200	1020	104	1500	Tier 3 / Stage IIIA	I-EGR
● ○	N67 MNT	L6 / TAA	FGT	M	6,7	129	175	2200	770	79	1250	Tier 3 / Stage IIIA	I-EGR
○	N67 MRT ²	L6 / TAA	FGT	M	6,7	126	171	2200	720	73	1250	Tier 3 / Stage IIIA	I-EGR
○	N67 ENT ³	L6 / TAA	WG	ECR	6,7	200	272	2100	1170	119	1500	Tier 3 / Stage IIIA	I-EGR +
● ○	N67 ENT	L6 / TAA	FGT	ECR	6,7	129	175	2200	810	83	1500	Tier 4A / Stage IIIB	SCR
● ○	N67 ENT	L6 / TAA	FGT	ECR	6,7	151	205	2200	960	98	1500	Tier 4A / Stage IIIB	SCR
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7	181	246	2200	1120	114	1500	Tier 4A / Stage IIIB	SCR
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7	210	286	2200	1143	117	1500	Tier 4A / Stage IIIB	SCR
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7	129	175	2200	805	82	1500	Tier 4B / Stage IV	DOC + SCR
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7	151	205	2200	940	96	1500	Tier 4B / Stage IV	DOC + SCR
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7	210	286	2200	1150	117	1500	Tier 4B / Stage IV	DOC + SCR

LEGEND

APPLICATION

- Agriculture
- Industrial

ARRANGEMENT

- L In line

AIR INTAKE

- TC Turbocharged
- TAA Turbocharged aftercooler

TURBOCHARGING

- FGT Fixed Geometry Turbo
- WG Fixed Geometry Turbo with Wastegate

INJECTION SYSTEM

- ECR Electronic Common Rail
- M Mechanical

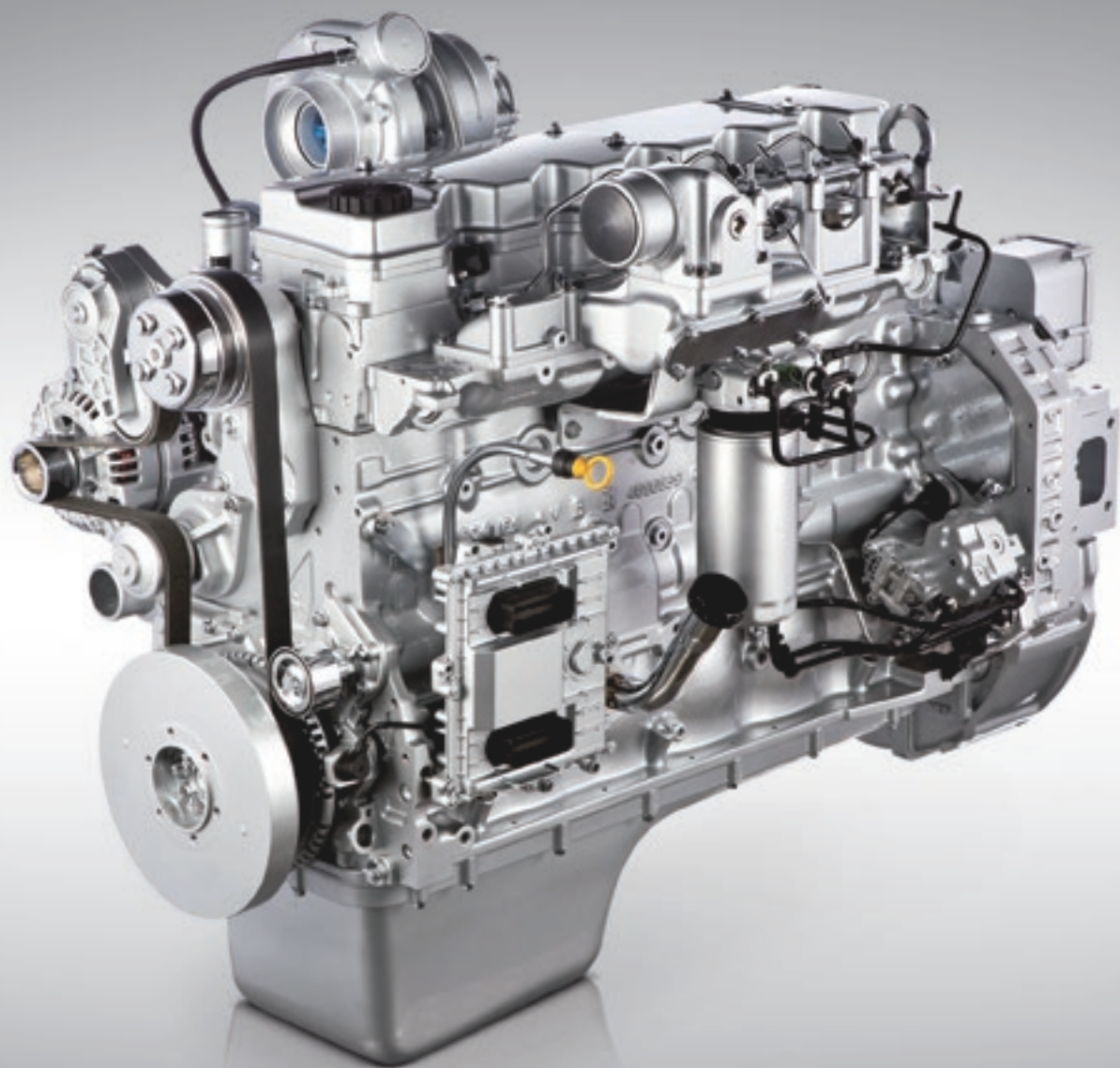
EXHAUST SYSTEM

- I-EGR Internal Exhaust Gas Recirculation
- SCR Selective Catalytic Reduction

1. Narrow engines with dynamic balancing

2. "Structural" engine architecture

3. Based on Tier 4 engine's hardware



Mechanical Versions — Features

Tier 3 Only

INJECTION SYSTEM

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

ENGINE DESIGN

Balancer counterweights incorporated in crankshaft webs, rear geartrain layout, camshaft in crankcase, suspended oil pan, ladder frame cylinder block and, for 4 cylinder engines, countershafts arrangements available as options.

COMPONENTS INTEGRATION

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

SPECIFIC FEATURES

Engine specifically designed for agricultural applications; lean layout; starting temperature without auxiliaries down to -15°C (with grid heater down to -25° , with water and oil heater down to -30°C); engine slope up to 35° continuous angle of inclination in all allowable directions. Tier 3 emissions compliance achieved without external EGR, VGT or electronics.

AIR HANDLING

All NEF mechanical engines are turbocharged and feature Internal EGR. Air to Air intercooler is available as an option in order to reach top engine performance in terms of load response and fuel consumption. The above described features allow OEM's customers to optimize engine installation, machine performance, load response and fuel consumption.

UP TO 600H OIL INTERVAL CHANGE

NEF Series engines adopt combustion chambers optimized to reduce oil dilution; they are developed with an optimum engine design in terms of mechanical clearances, piston rings and engine oil system calculation.

SERVICEABILITY & MAINTAINABILITY

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

OPTION LIST

NEF engines are available with non-structural and structural architecture for agricultural application and with a "narrow" or "wide" gear train distribution. Moreover, options are available for alternators, radiators, air filters, mufflers, oil pans, SAE standard transmission interfaces, PTO arrangement DIN/SAE A-B, air conditioning compressor arrangement; other customer specific options may be available upon request.

Benefits

- ✓ RELIABLE AND COST EFFECTIVE SOLUTION, CONSISTENT WITH STANDARD AND ALTERNATIVE FUELS
- ✓ VIBRATION & NOISE REDUCTION
- ✓ LEAKAGE PREVENTION
- ✓ HIGH PERFORMANCES GUARANTEED IN ALL CONDITIONS
- ✓ HIGH ENGINE POWER DENSITY WITH THE SHORTEST LOAD RESPONSE TIME
- ✓ REDUCED MAINTENANCE NEEDS AND OPERATING COST
- ✓ QUICK SERVICE SUPPORT AND EASY MAINTENANCE ACTIVITIES
- ✓ CUSTOMER ORIENTATION AND SPECIFIC ENGINE ARCHITECTURE BASED ON APPLICATION TYPE



Electronic Versions — Features

Tier 3 – Tier 4A – Tier 4B

INJECTION SYSTEM

State-of-the-art system for accurate fuel delivery, based on a very compact direct injection 2nd generation Common Rail (1.600 bar) to achieve top performance in terms of load response, max torque and top power with the minimum fuel consumption.

ENGINE DESIGN

Multiple injections, balancer counterweights incorporated in crankshaft webs, rear geartrain layout, camshaft in crankcase, suspended oil pan, ladder frame cylinder block and, for 4 cylinder engines, countershafts arrangements available as options.

COMPONENTS INTEGRATION

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

SPECIFIC FEATURES

Engine specifically designed for agricultural applications; lean layout; starting temperature without auxiliaries down to -15°C (with grid heater down to -25° , with water and oil heater down to -30°C); engine slope up to 35° continuous in all allowed directions. Tier 3 exhaust emissions compliance achieved without external EGR, VGT. Tier 4B emission limits reached thanks to in-cylinder PM reduction, due to an optimized combustion process and the adoption of Hi-eSCR, without losing engine performance and improving running costs.

AIR HANDLING

All NEF electronic series engines are turbocharged with Air to Air intercooler and equipped with Internal EGR in Tier 3 and SCR in Tier 4. The above described features allow OEM's customers to optimize engine installation, machine performance, load response and fuel consumption.

UP TO 600H OIL INTERVAL CHANGE

NEF Series adopts combustion chambers and Common Rail injection system optimized to reduce oil dilution. Design is optimized in terms of mechanical clearances, piston rings and oil system calculation.

SERVICEABILITY & MAINTAINABILITY

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

OPTION LIST

NEF engines feature both non-structural and structural architecture for agricultural application. Additional options are available for alternators, radiators, air filters, mufflers, oil pans, SAE standard transmission interfaces, PTO arrangement SAE A-B, air conditioning compressor arrangement. Specific options may be developed on demand. Double configuration for SCR catalyst (vertical and horizontal) for both 4 and 6 cylinder; specific DEF/AdBlue tank for each engine.

Benefits

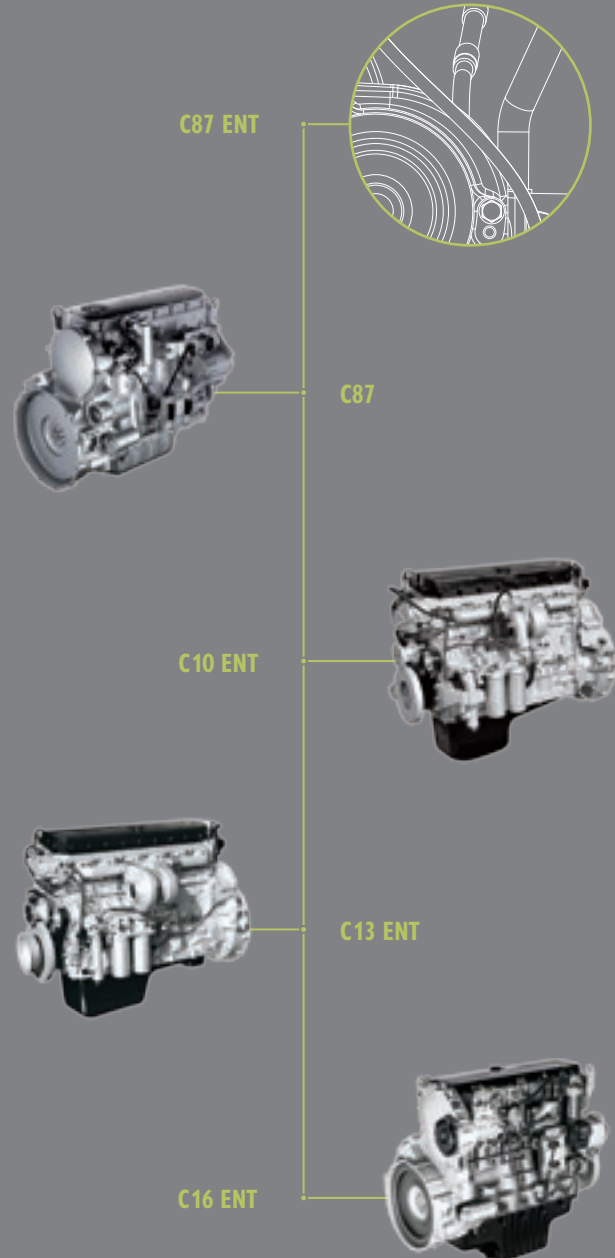
- ✓ **FLAT TORQUE AND HIGH ENGINE THERMODYNAMIC PERFORMANCE WITH LOW FUEL CONSUMPTION**
- ✓ **VIBRATION & NOISE REDUCTION**
- ✓ **LEAKAGE PREVENTION**
- ✓ **HIGH PERFORMANCES GUARANTEED IN ALL CONDITIONS**
- ✓ **HIGH ENGINE POWER DENSITY AND FAST LOAD RESPONSE TIME WITH THE LOWEST FUEL CONSUMPTION**
- ✓ **REDUCED MAINTENANCE NEEDS AND OPERATING COST**
- ✓ **QUICK SERVICE SUPPORT AND EASY MAINTENANCE ACTIVITIES**
- ✓ **CUSTOMER ORIENTATION AND SPECIFIC ENGINE ARCHITECTURE BASED ON APPLICATION TYPE**



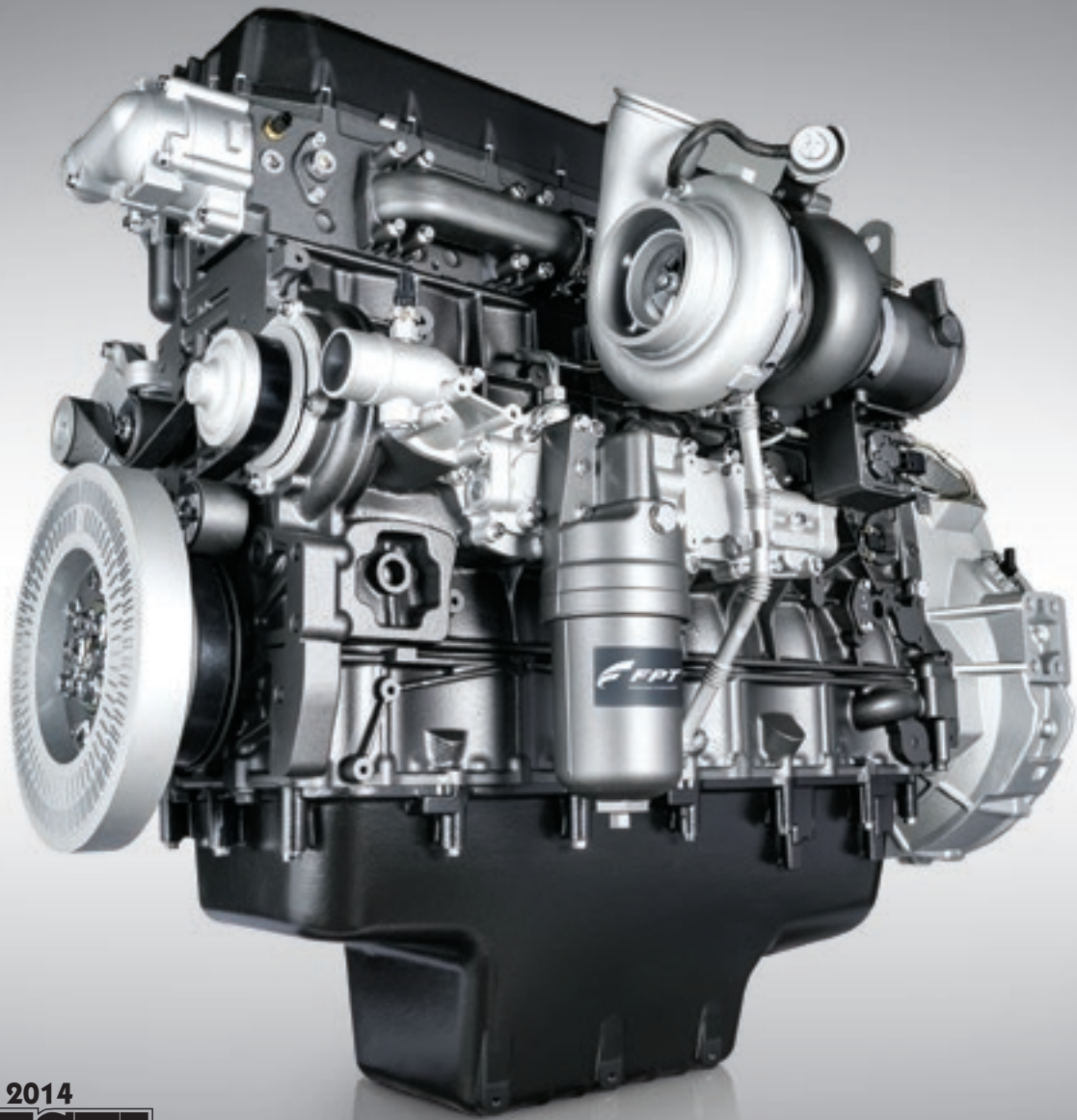
The Cursor Series

If you are looking for top power, fast load response, high power density together with the lowest fuel consumption, **CURSOR** series is the best choice you can do. Featured by outstanding performance, the **CURSOR** series is dedicated to heavy duty applications from 200 to 570 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.







2014
DIESEL
OF THE YEAR
FPT Industrial CURSOR 16

APPLICATION	MODEL	CYLINDER ARRANGEMENT	AIR INTAKE	TURBOCHARGING	INJECTION SYSTEM	DISPLACEMENT LITERS	POWER			TORQUE			EMISSION STANDARD	EXHAUST SYSTEM
							KW	HP	RPM	NM	KGM	RPM		
● ○	C87 ENT	L6 / TAA	FGT	ECR	8,7	200	272	2100	1300	133	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	C87 ENT	L6 / TAA	FGT	ECR	8,7	230	313	2100	1400	143	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	C87 ENT	L6 / TAA	FGT	ECR	8,7	260	354	2100	1500	153	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7	245	333	2150	1430	146	1100	Tier 4A / Stage IIIB	SCR	
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7	269	366	2150	1540	157	1100	Tier 4A / Stage IIIB	SCR	
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7	295	401	2150	1640	167	1300	Tier 4A / Stage IIIB	SCR	
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7	245	333	2100	1510	154	1500	Tier 4B / Stage IV	DOC + SCR	
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7	305	415	2100	1800	184	1500	Tier 4B / Stage IV	DOC + SCR	
● ○	C10 ENT	L6 / TAA	FGT	EUI	10,3	265	360	2100	1700	173	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	C10 ENT	L6 / TAA	FGT	EUI	10,3	290	394	2100	1800	184	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	C10 ENT	L6 / TAA	FGT	EUI	10,3	315	428	2100	1890	193	1500	Tier 3 / Stage IIIA	I-EGR	
● ○	C13 ENT	L6 / TAA	FGT	EUI	12,9	325	442	2100	2140	218	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	C13 ENT	L6 / TAA	FGT	EUI	12,9	350	476	2100	2140	218	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	C13 ENT	L6 / TAA	FGT	EUI	12,9	375	510	2100	2140	218	1400	Tier 3 / Stage IIIA	I-EGR	
● ○	C13 ENT	L6 / TAA	WG	EUI	12,9	332	452	2100	1924	196	1400	Tier 4A / Stage IIIB	SCR	
● ○	C13 ENT	L6 / TAA	WG	EUI	12,9	369	502	2100	2161	220	1400	Tier 4A / Stage IIIB	SCR	
● ○	C13 ENT	L6 / TAA	WG	EUI	12,9	407	554	2100	2400	245	1400	Tier 4A / Stage IIIB	SCR	
● ○	C13 ENT	L6 / TAA	WG	ECR	12,9	384	522	2100	2258	230	1400	Tier 4B / Stage IV	DOC + SCR	
● ○	C13 ENT	L6 / TAA	WG	ECR	12,9	407	554	2100	2407	245	1400	Tier 4B / Stage IV	DOC + SCR	
○	C16 ENT	L6 / TAA	WG	ECR	15,9	480	653	2100	2751	281	1500	Tier 4B / Stage IV	DOC + SCR	
○	C16 ENT	L6 / TAA	WG	ECR	15,9	515	700	2100	2990	305	1500	Tier 4B / Stage IV	DOC + SCR	
○	C16 ENT	L6 / TAA	WG	ECR	15,9	570	775	2100	3320	339	1500	Tier 4B / Stage IV	DOC + SCR	

LEGEND

APPLICATION

- Agriculture
- Industrial

ARRANGEMENT

- L In line

AIR INTAKE

- TAA Turbocharged aftercooler

TURBOCHARGING

- FGT Fixed Geometry Turbo
- WG Fixed Geometry Turbo with Wastegate

INJECTION SYSTEM

- ECR Electronic Common Rail
- EUI Electronic Unit Injector

EXHAUST SYSTEM

- I-EGR Internal Exhaust Gas Recirculation
- SCR Selective Catalytic Reduction
- DOC Diesel Oxidation Catalyst

Features

INJECTION SYSTEM

Direct injection fuel system, state-of-the-art systems for high precision in fuel quantity injection in order to achieve top performance in terms of load response, torque and top power with the minimum fuel consumption:

- C87: featuring very compact 2nd generation Common Rail System up to Tier 4B
- C10 & C13: featuring electronically controlled unit injectors up to Tier 4A
- All Cursor engines: featuring Heavy Duty Common Rail in Tier 4B

ENGINE DESIGN

Superfinished helical timing gears, precise control of fuel injection system, with pilot fuel injection pulse, bed-plate in addition to engine block, crankshaft with net shape counterweights, rear geartrain layout and suspended oil pan. Combustion, both for C13 and C16, is optimised by the use of steel pistons, creating high peak cylinder pressure and, as a result, high power density and low Particulate Matter output. C16 adopts a Compact Graphite Iron (CGI) cylinder head; this high performance material provides high thermal and mechanical resistance.

COMPONENTS INTEGRATION

Improved technical solutions in order to achieve high components integration such as integrated patented CCV (Crank Case Ventilation), integrated oil cooler, integrated oil pump and integrated water pump.

SPECIFIC FEATURES

Functional lean layout; starting temperature without auxiliaries down to -15°C (with grid heater down to -25°); high engine inclination up to 35° continuous in all directions with secondary oil pump. Tier 3 performance achieved without external EGR and VGT.

AIR HANDLING

Turbo compound (for C13 only), Wastegate turbocharged with air-to-air charge cooled air system with 4 valves per cylinder for increase the engine efficiency by the optimization of thermodynamic performance in terms of time to torque, load response and reduced fuel consumption. Ball bearing turbocharger on C16 to further improve fluid dynamic efficiency. The new C16 delivers 18-litre performance in a 13-litre package.

UP TO 600H OIL INTERVAL CHANGE

Optimum engine design in terms of mechanical clearances, piston rings, engine oil system calculation

SERVICEABILITY & MAINTAINABILITY

Worldwide service network. Enhanced engine serviceability and diagnosis by using the Electronic Control Unit on the engine with CAN-BUS control & monitoring systems interface.

OPTION LIST

SAE1 as standard transmission interface; two possible PTO arrangements (SAE-A, B flange 9 or 13 teeth) up to 200Nm torque availability; air conditioning compressor arrangement; turbocharger in low position. Double configuration for SCR catalyst (vertical and horizontal) for C87; specific DEF/AdBlue tank for each engine.

Benefits

- ✓ **HIGH ENGINE THERMODYNAMIC PERFORMANCE WITH LOW FUEL CONSUMPTION & SMOKE REDUCTION DURING THE TRANSIENT**
- ✓ **VIBRATION & NOISE REDUCTION MECHANICAL & THERMAL RESISTANCE**
- ✓ **LEAKAGE PREVENTION**
- ✓ **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**
- ✓ **CUSTOMER ORIENTATION**

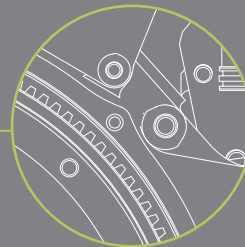


The Vector Series

The **VECTOR Series**, with its compact design and state of the art injection system, is FPT Industrial answer to high power demand. Featured by excellent performance without any need of EGR system or variable geometry turbochargers, **VECTOR Series**, engines allow customer to increase productivity.

Thanks to 1000h maintenance intervals and low oil consumption, engine operating costs are in fact the lowest in their category.

V20



APPLICATION	MODEL	CYLINDER ARRANGEMENT AIR INTAKE	TURBOCHARGING	INJECTION SYSTEM	DISPLACEMENT LITERS	POWER			TORQUE			EMISSION STANDARD	EXHAUST SYSTEM
						KW	HP	RPM	NM	KGM	RPM		
● ○	V20	8V / TAA	FGT	ECR	20,1	565	768	2100	3200	326	1400	Tier 2	—

LEGEND

APPLICATION

- Agriculture
- Industrial

ARRANGEMENT

V 90° "V" configuration

AIR INTAKE

TAA Turbocharged aftercooler

TURBOCHARGING

FGT Fixed Geometry Turbo

INJECTION SYSTEM

ECR Electronic Common Rail





Features

INJECTION SYSTEM

Direct injection fuel system, based on a compact 2nd generation Common Rail System; state of the art systems for accuracy in fuel delivery with achieving top performance in terms of load response, torque and top power with the minimum fuel consumption.

ENGINE DESIGN

8 Vee engine architecture, precise control of fuel injection system, with multiple fuel injection pulse and minimized other noise sources, cast iron single cylinder head, reinforced engine block, rear geartrain layout, suspended oil pan.

COMPONENTS INTEGRATION

CCV (Closed Crankcase Ventilation), oil pump and oil piping and all water circuit integrated in the engine block

SPECIFIC FEATURES

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: 22° continuous in all directions.

AIR HANDLING

Turbocharged with air-to-air or (air-to-water option) charge cooled air system with 4 valves per cylinder to increase the engine efficiency by the optimization of engine performance in terms of top power, load response and fuel consumption.

UP TO 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.

SERVICEABILITY & MAINTAINABILITY

Worldwide service network. Enhanced engine serviceability and diagnosis by using the Electronic Control Unit on the engine with CAN-BUS control & monitoring systems interface.

OPTION LIST

Standard transmission interface SAE1-SAEo; gear housing with option for two water pumps; two PTO SAE B (400Nm each) and air conditioning compressor arrangement.

Benefits

- ✓ **HIGH ENGINE THERMODYNAMIC PERFORMANCE WITH LOW FUEL CONSUMPTION**
- ✓ **VIBRATION & NOISE REDUCTION**
- ✓ **LEAKAGE PREVENTION**
- ✓ **HIGH PERFORMANCE GUARANTEED IN ALL CONDITIONS & MISSIONS**
- ✓ **HIGH ENGINE POWER DENSITY WITH THE SHORTEST LOAD RESPONSE TIME**
- ✓ **REDUCED MAINTENANCE NEEDS AND OPERATING COST**
- ✓ **QUICK SERVICE SUPPORT**
- ✓ **CUSTOMER ORIENTATION**



Questions & answers on HI-eSCR

What is the driver of FPT Industrial strategy to achieve Tier 4 B/Stage IV emissions?

FPT Industrial has chosen to focus on customer's productivity and optimization of the operating costs, recognizing "SCR Only" technology as the best solution for medium & heavy duty engines. "SCR Only" allows to reduce the high operating costs by working on fuel consumption and maintenance intervals (oil change).

How does "SCR Only" technology achieve the emission target?

With the "SCR Only" technology gas reduction is submitted to the after-treatment system outside the engine which is thus capable of performing optimal combustion with lower fuel consumption.

Which advantages does the "SCR Only" technology offer?

For customer of agricultural applications, there are at least 10 valuable reasons by which "SCR Only" is the most convenient choice:

- Lower Fuel Consumption
- Outstanding Performance
- Longer Service Interval
- High Reliability
- Unbeatable Durability
- Compact Packaging
- User Friendly Solution
- Environmental Care
- Advanced Technology
- Wide Fuel Compatibility

Where will the "SCR Only" be commercialized?

"SCR Only" will be commercialized in all the countries where the emission regulations will require Tier 4 B/Stage IV standards.

Will DEF (Diesel Emission Fluid)/AdBlue be distributed also in the USA?

Yes.

Is there any critical issue regarding "SCR Only" introduction in the USA?

No, because by 2011 the DEF/AdBlue distribution network will be developed in the USA (many American engine's manufacturers will adopt "SCR Only" for EPA10 On Road compliances).

What does it happen if DEF/AdBlue tank is empty?

A led on the vehicle's cluster will switch on and the engine will be switch to limp home mode to preserve the safety and emissions compliance

Is the SCR system affected by low temperatures?

No, FPT Industrial HI-eSCR system perfectly works at low temperature. Even in case of cold start with DEF/AdBlue frozen (temperature below $-11^{\circ}\text{C}/12^{\circ}\text{F}$) the engine works properly without any derating.

Has SCR installation constraints?

No. Of course OEM's have to respect FPT Industrial SCR installation guidelines. The system is engineered in order to be easy to install, with flexibility in terms of length of pipes & height positioning.

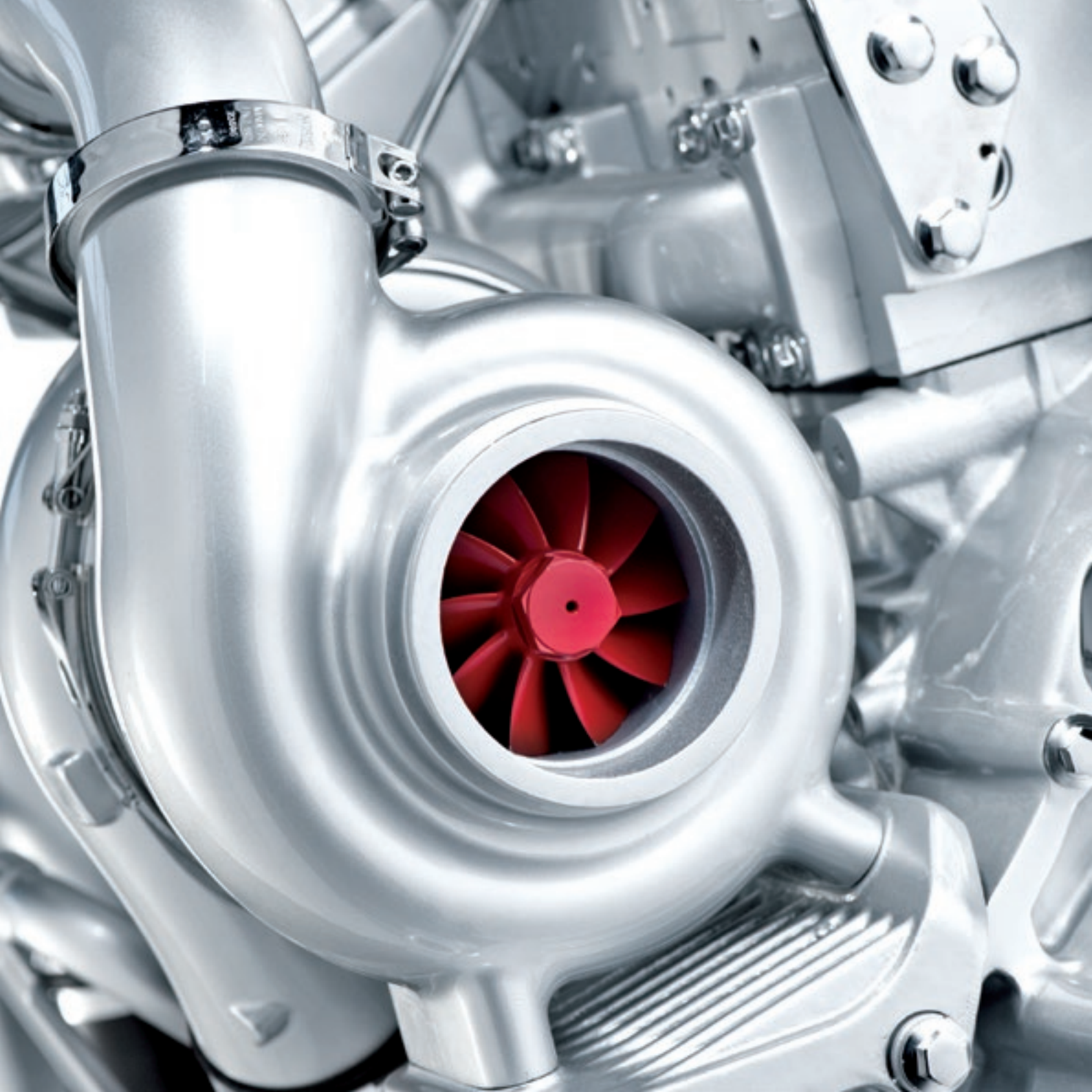
Why can't DEF/AdBlue be mixed in the fuel at the start?

If mixed in Diesel fuel and injected into the cylinder, DEF/AdBlue will decompose and combust due to high temperatures reached during the combustion process. The forming reaction of ammonia will then not occur, causing no reaction to abate NO_x .

What is the maximum storage time for DEF/AdBlue?

If DEF/AdBlue is kept at normal temperatures below $+30^{\circ}\text{C}$, it will last for one year without any problem. In region with hot temperatures, it is recommended to store DEF/AdBlue in a shaded area.





Diesel engines for Off Road application



LEGEND

APPLICATION

- Agriculture
- Industrial

ARRANGEMENT

- L In line
- V 90° "V" configuration

AIR INTAKE

- TC Turbocharged
- TAA Turbocharged aftercooler

TURBOCHARGING

- FGT Fixed Geometry Turbo
- WG Fixed Geometry Turbo with Wastegate
- 2stT Two Stage Turbo

INJECTION SYSTEM

- ECR Electronic Common Rail
- EUI Electronic Unit Injector
- M Mechanical

EXHAUST SYSTEM

- I-EGR Internal Exhaust Gas Recirculation
- ec-EGR External Cooled Exhaust Gas Recirculation
- SCR Selective Catalytic Reduction
- DOC Diesel Oxidation Catalyst
- PM CAT Through Flow Particulate Matter Filter

1. Narrow engines with dynamic balancing
2. "Structural" engine architecture
3. Preliminary Data
4. Based on Tier 4 engine's hardware

All ratings are for intermittent duty. Power at flywheel, compliant within CE 97/68 Directive (without fan) after 50 hours running, 3% tolerance Fuel Diesel EN 590.

Test conditions ISO 3046/1: 100 kPa atmospheric pressure, 25°C air temperature, 30% relative humidity; applicable also to DIN 6271 – BS 5514 SAE J 1349 Standards. Additional rating may be available.

Values may be subject to variations on individual engines.

APPLICATION	MODEL	CYLINDER ARRANGEMENT AIR INTAKE	TURBOCHARGING	INJECTION SYSTEM	DISPLACEMENT LITERS
● ○	R22 ³	L3 / TAA	WG	ECR	2,2
● ○	F32 MNS	L4 / TC	FGT	M	3,2
● ○	F32 MNS	L4 / TC	FGT	M	3,2
● ○	F32 MNT	L4 / TAA	FGT	M	3,2
○	F32 MRS ²	L4 / TC	FGT	M	3,2
○	F32 MRS ²	L4 / TC	FGT	M	3,2
○	F32 MRT ²	L4 / TAA	FGT	M	3,2
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5
○	N45 ERT ²	L4 / TAA	FGT	ECR	4,5
● ○	N45 MNS	L4 / TC	FGT	M	4,5
● ○	N45 MNT	L4 / TAA	FGT	M	4,5
● ○	N45 MNT	L4 / TAA	FGT	M	4,5
○	N45 MRS ²	L4 / TC	FGT	M	4,5
○	N45 MRT ²	L4 / TAA	FGT	M	4,5
● ○	N45 MSS X ¹	L4 / TC	FGT	M	4,5
● ○	N45 MSS ¹	L4 / TC	FGT	M	4,5
● ○	N45 MST ¹	L4 / TAA	FGT	M	4,5
● ○	N45 MST ¹	L4 / TAA	FGT	M	4,5
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5
● ○	N45 ENT	L4 / TAA	WG	ECR	4,5
● ○	N67 ENT	L6 / TAA	FGT	ECR	6,7
○	N67 ERT ²	L6 / TAA	FGT	ECR	6,7
● ○	N67 MNT	L6 / TAA	FGT	M	6,7
○	N67 MRT ²	L6 / TAA	FGT	M	6,7
○	N67 ENT ⁴	L6 / TAA	WG	ECR	6,7
● ○	N67 ENT	L6 / TAA	FGT	ECR	6,7

POWER			TORQUE			EMISSION STANDARD	EXHAUST SYSTEM
KW	HP	RPM	NM	KGM	RPM		
33-52	46-71	2600	160-250	16-25	1800	Tier 4B / Stage IIIB	I-EGR + DOC + PMCAT
55	75	2500	281	29	1250	Tier 3 / Stage IIIA	I-EGR
61	83	2500	320	33	1250	Tier 3 / Stage IIIA	ec-EGR
65	88	2500	320	33	1400	Tier 3 / Stage IIIA	I-EGR
53	72	2300	277	28	1250	Tier 3 / Stage IIIA	I-EGR
59	80	2300	310	32	1400	Tier 3 / Stage IIIA	ec-EGR
65	88	2300	350	36	1300	Tier 3 / Stage IIIA	I-EGR
104	141	2200	608	62	1600	Tier 3 / Stage IIIA	I-EGR
104	141	2200	608	62	1600	Tier 3 / Stage IIIA	I-EGR
66	90	2200	400	41	1250	Tier 3 / Stage IIIA	I-EGR
74	101	2200	430	44	1250	Tier 3 / Stage IIIA	I-EGR
93	126	2200	525	54	1250	Tier 3 / Stage IIIA	I-EGR
74	101	2200	410	42	1400	Tier 3 / Stage IIIA	I-EGR
88	120	2200	515	53	1250	Tier 3 / Stage IIIA	I-EGR
74	101	2200	410	42	1400	Tier 3 / Stage IIIA	I-EGR
66	90	2200	400	41	1250	Tier 3 / Stage IIIA	I-EGR
74	101	2200	430	44	1250	Tier 3 / Stage IIIA	I-EGR
93	126	2200	525	54	1250	Tier 3 / Stage IIIA	I-EGR
75	102	2200	472	48	1400	Tier 4A / Stage IIIB	SCR
89	121	2200	549	56	1500	Tier 4A / Stage IIIB	SCR
110	150	2200	676	69	1500	Tier 4A / Stage IIIB	SCR
125	170	2200	700	71	1500	Tier 4A / Stage IIIB	SCR
89	121	2200	549	56	1500	Tier 4B / Stage IV	DOC + SCR
125	170	2200	710	72	1500	Tier 4B / Stage IV	DOC + SCR
175	238	2200	1020	104	1500	Tier 3 / Stage IIIA	I-EGR
181	246	2200	1020	104	1500	Tier 3 / Stage IIIA	I-EGR
129	175	2200	770	79	1250	Tier 3 / Stage IIIA	I-EGR
126	171	2200	720	73	1250	Tier 3 / Stage IIIA	I-EGR
200	272	2100	1170	119	1500	Tier 3 / Stage IIIA	I-EGR +
129	175	2200	810	83	1500	Tier 4A / Stage IIIB	SCR



LEGEND

APPLICATION

- Agriculture
- Industrial

ARRANGEMENT

- L In line
- V 90° "V" configuration

AIR INTAKE

- TC Turbocharged
- TAA Turbocharged aftercooler

TURBOCHARGING

- FGT Fixed Geometry Turbo
- WG Fixed Geometry Turbo with Wastegate
- 2stT Two Stage Turbo

INJECTION SYSTEM

- ECR Electronic Common Rail
- EUI Electronic Unit Injector
- M Mechanical

EXHAUST SYSTEM

- I-EGR Internal Exhaust Gas Recirculation
- ec-EGR External Cooled Exhaust Gas Recirculation
- SCR Selective Catalytic Reduction
- DOC Diesel Oxidation Catalyst
- PM CAT Through Flow Particulate Matter Filter

1. Narrow engines with dynamic balancing
2. "Structural" engine architecture
3. Preliminary Data
4. Based on Tier 4 engine's hardware

All ratings are for intermittent duty. Power at flywheel, compliant within CE 97/68 Directive (without fan) after 50 hours running, 3% tolerance Fuel Diesel EN 590.

Test conditions ISO 3046/1: 100 kPa atmospheric pressure, 25°C air temperature, 30% relative humidity; applicable also to DIN 6271 – BS 5514 SAE J 1349 Standards. Additional rating may be available.

Values may be subject to variations on individual engines.

APPLICATION	MODEL	CYLINDER ARRANGEMENT AIR INTAKE	TURBOCHARGING	INJECTION SYSTEM	DISPLACEMENT LITERS
● ○	N67 ENT	L6 / TAA	FGT	ECR	6,7
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7
● ○	N67 ENT	L6 / TAA	WG	ECR	6,7
● ○	C87 ENT	L6 / TAA	FGT	ECR	8,7
● ○	C87 ENT	L6 / TAA	FGT	ECR	8,7
● ○	C87 ENT	L6 / TAA	FGT	ECR	8,7
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7
● ○	C87 ENT	L6 / TAA	WG	ECR	8,7
● ○	C10 ENT	L6 / TAA	FGT	EUI	10,3
● ○	C10 ENT	L6 / TAA	FGT	EUI	10,3
● ○	C10 ENT	L6 / TAA	FGT	EUI	10,3
● ○	C13 ENT	L6 / TAA	FGT	EUI	12,9
● ○	C13 ENT	L6 / TAA	FGT	EUI	12,9
● ○	C13 ENT	L6 / TAA	FGT	EUI	12,9
● ○	C13 ENT	L6 / TAA	WG	EUI	12,9
● ○	C13 ENT	L6 / TAA	WG	EUI	12,9
● ○	C13 ENT	L6 / TAA	WG	ECR	12,9
● ○	C13 ENT	L6 / TAA	WG	ECR	12,9
○	C16 ENT	L6 / TAA	WG	ECR	15,9
○	C16 ENT	L6 / TAA	WG	ECR	15,9
○	C16 ENT	L6 / TAA	WG	ECR	15,9
● ○	V20	8V / TAA	FGT	ECR	20,1

POWER			TORQUE			EMISSION STANDARD	EXHAUST SYSTEM
KW	HP	RPM	NM	KGM	RPM		
151	205	2200	960	98	1500	Tier 4A / Stage IIIB	SCR
181	246	2200	1120	114	1500	Tier 4A / Stage IIIB	SCR
210	286	2200	1143	117	1500	Tier 4A / Stage IIIB	SCR
129	175	2200	805	82	1500	Tier 4B / Stage IV	DOC + SCR
151	205	2200	940	96	1500	Tier 4B / Stage IV	DOC + SCR
210	286	2200	1150	117	1500	Tier 4B / Stage IV	DOC + SCR
200	272	2100	1300	133	1400	Tier 3 / Stage IIIA	I-EGR
230	313	2100	1400	143	1400	Tier 3 / Stage IIIA	I-EGR
260	354	2100	1500	153	1400	Tier 3 / Stage IIIA	I-EGR
245	333	2150	1430	146	1100	Tier 4A / Stage IIIB	SCR
269	366	2150	1540	157	1100	Tier 4A / Stage IIIB	SCR
295	401	2150	1640	167	1300	Tier 4A / Stage IIIB	SCR
245	333	2100	1510	154	1500	Tier 4B / Stage IV	DOC + SCR
305	415	2100	1800	184	1500	Tier 4B / Stage IV	DOC + SCR
265	360	2100	1700	173	1400	Tier 3 / Stage IIIA	I-EGR
290	394	2100	1800	184	1400	Tier 3 / Stage IIIA	I-EGR
315	428	2100	1890	193	1500	Tier 3 / Stage IIIA	I-EGR
325	442	2100	2140	218	1400	Tier 3 / Stage IIIA	I-EGR
350	476	2100	2140	218	1400	Tier 3 / Stage IIIA	I-EGR
375	510	2100	2140	218	1400	Tier 3 / Stage IIIA	I-EGR
332	452	2100	1924	196	1400	Tier 4A / Stage IIIB	SCR
369	502	2100	2161	220	1400	Tier 4A / Stage IIIB	SCR
407	554	2100	2400	245	1400	Tier 4A / Stage IIIB	SCR
384	522	2100	2258	230	1400	Tier 4B / Stage IV	DOC + SCR
407	554	2100	2407	245	1400	Tier 4B / Stage IV	DOC + SCR
480	653	2100	2751	281	1500	Tier 4B / Stage IV	DOC + SCR
515	700	2100	2990	305	1500	Tier 4B / Stage IV	DOC + SCR
570	775	2100	3320	339	1500	Tier 4B / Stage IV	DOC + SCR
565	768	2100	3200	326	1400	Tier 2	—





All the pictures, drawings illustrations and descriptions contained in this brochure are based on product information available to FPT Industrial at the time of printing (31/10/2014).

Some of the engine line-ups may refer to a specific market configuration which may not be present or offered for sale available in all other markets. The colors featured in this brochure may differ from the originals.

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