

INDUSTRIAL ENGINE

POWER REPORT

Caterpillar Industrial Power Special Issue

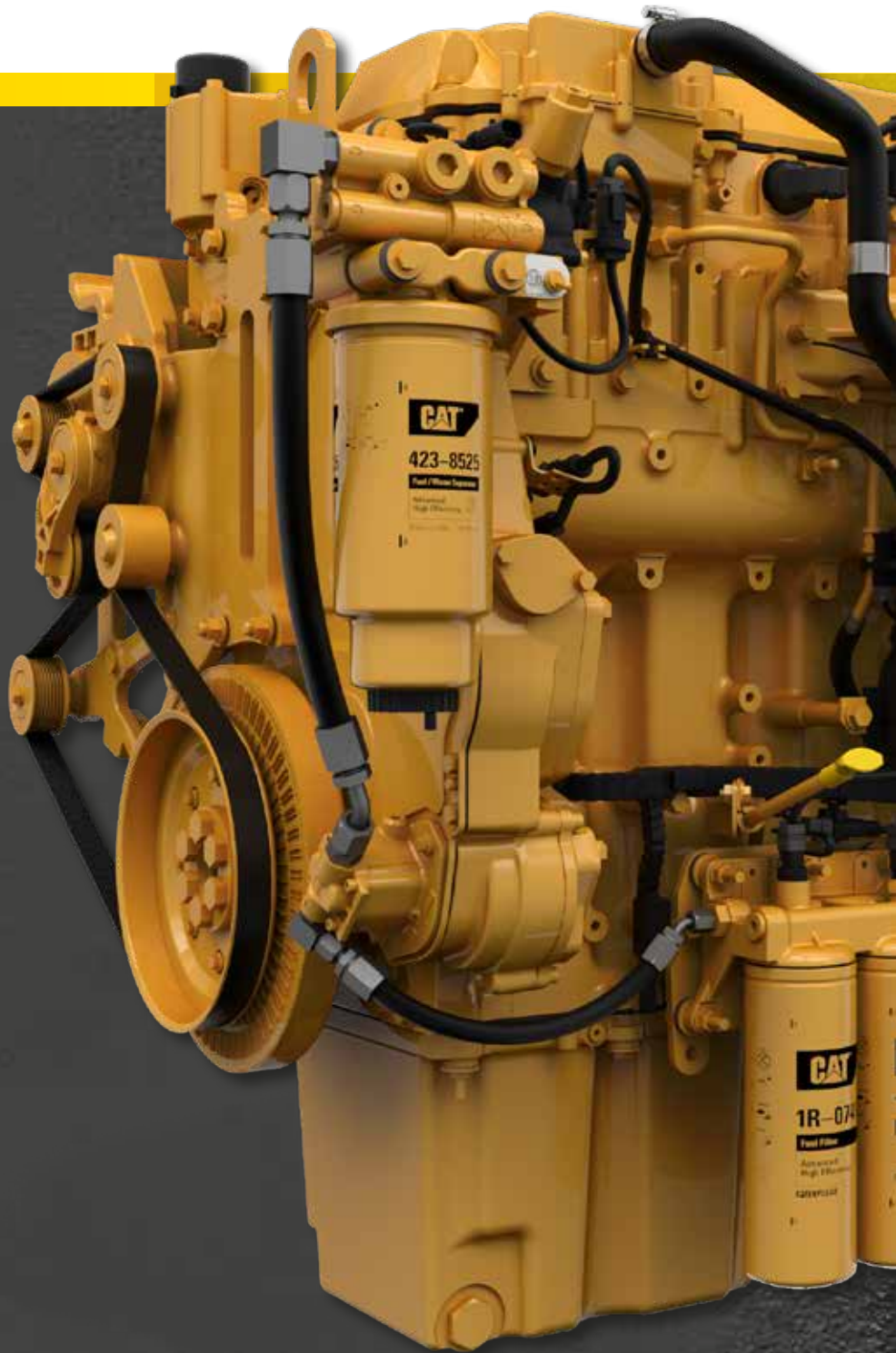
THE NEW C13B SIZE DOWN, POWER UP

ALSO IN THIS ISSUE:

VALUE OF THE CAT®
DEALER NETWORK

A SIMPLER SOLUTION
FOR STAGE V

CLEARING THE AIR
ON EMISSIONS



CATERPILLAR IS COMMITTED



Steve Ferguson
VICE PRESIDENT, INDUSTRIAL POWER SYSTEMS

As a long-time employee for Caterpillar, I am excited to now be a part of the industrial power systems team. Caterpillar has always been, and continues to be, a leader in diesel engine design and manufacturing. We are committed to delivering engines to original equipment manufacturers (OEMs) around the world and making sure customers are backed by world-class product support from our Cat® dealers.

In addition, we are positioned to help you meet EU Stage V emission standards. That means we offer a comprehensive lineup of Stage V industrial engines – all focused on increasing performance and driving down installation and operating costs – along with the expertise to customize a solution for any application.

In fact, we are fully immersed in developing world-class emission-reduction technology. We also work closely with your Cat dealer to help you leverage engine and aftertreatment advancements for your proprietary equipment.

This edition of Industrial Engine Power Report gives you insight into our complete Stage V product offering, the power and value of the Cat dealer network and other timely topics.

You will learn more about emissions in general, but also specifically about what we're doing as it relates to the rollout of Stage V emission standards.

You'll discover why Caterpillar's Stage V offering is the most comprehensive range in the industry.

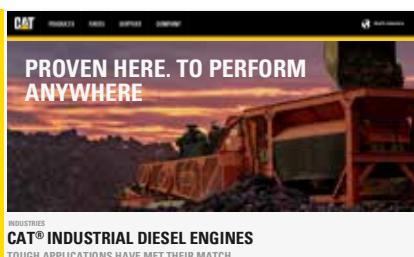
We go in depth on the introduction of the C13B engine, featuring design improvements that will increase power and torque while reducing system complexity.

Plus, you will find out how we are using digital technology solutions to transform data into insights, which helps you make better, more informed decisions.

Other articles cover Caterpillar's commitment to meeting the needs of rental equipment companies, the Caterpillar value differentiation for customers and the benefits of customer service agreements.

Overall, we cover a lot of exciting news, as well as practical, timely information to help you. ●

FOR MORE INFO, VISIT
www.cat.com/industrial



POWER REPORT

- 2** PROVEN READY
- 3** CLEARING THE AIR ON EMISSIONS
- 4** A SIMPLER SOLUTION TO MEET EU STAGE V
- 6** THE CAT® VALUE DIFFERENTIATION
- 7** SIZE DOWN, POWER UP
- 8** UPTIME...ALL THE TIME
- 9** CAT ENGINES POWERING RENTAL EQUIPMENT
- 10** POWER IN PLANNING
- 12** THE CAT DEALER NETWORK
- 13** VALUE BEYOND THE ENGINE



LET'S DO THE WORK.™

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PROVEN READY

Caterpillar's EU Stage V Offering Is the Most Comprehensive Range in the Industry

Caterpillar has developed a full line of EU Stage V industrial engines designed to meet emission standards while keeping performance high and cost of ownership low. From 2-cylinder 0.5-liter and 8 hp (6 kW) engines to 16-cylinder 78-liter and 2100 hp (1566 kW) offerings – all fully supported by Cat® dealers – the Cat lineup is built around customers' needs.


"With more than a billion hours worth of real-world, off-highway experience across our industrial core engine and diesel particulate filter (DPF) technologies, our Stage V focus has not been merely on emission compliance," said James Schnuriger, Product Marketing Manager of 9- to 13-liter engines. "We've also used this opportunity to upgrade our product lineup in a number of cases – with a focus on delivering value by increasing performance and driving down installation and operating costs."

The Stage V lineup includes new platforms such as the C2.8 and C3.6 engines – a pair of new, modular 4-cylinder offerings designed to deliver quiet power in a compact, flexible package that reduces installation complexity. Caterpillar also completed a number of platform upgrades to increase power density, such as the C7.1, C9.3B and C13B. The C9.3B engine delivers up to 19 percent more power and 21 percent more torque while reducing system weight by 12 percent. In other cases, as with the C15 and C18 engines, the technology at Stage IV (U.S. EPA Tier 4 Final) has been directly carried over via recertification to Stage V without any required changes to impact performance or installation. This completely eliminates changeover concerns.

"Beyond addressing performance and package size, we have also turned our attention to lowering operating costs. In each product across our range, we have selected technologies that are focused on minimizing fuel and diesel exhaust fluid (DEF) consumption – two key elements that directly contribute to our customers' bottom line," Schnuriger said.

"When we talk about productivity, we're also talking about maximizing uptime, and we deliver that in a number of ways," Schnuriger stated. Caterpillar Stage V platforms are global and modular, serving lesser-regulated markets with common core engines and controls architecture. This allows global customers to align products, parts, training and service regardless of where the engine is operating. Caterpillar diesel particulate filter (DPF) technologies necessary to meet Stage V are fit for life in products 7 liters and below, and up to 5,000 hours for products between 9 and 18 liters. Beyond that, the new emission standards are met with a maintenance-free diesel oxidation catalyst (DOC) solution.

Lastly, whatever Cat engines they use, original equipment manufacturers (OEMs) and their customers can rely on the Cat dealer network to provide product support needed out in the field. "There's nothing more critical than keeping our customers' machines running, and we're coming at it from all angles," Schnuriger added. ●

For more information on Stage V, visit:
www.cat.com/emissions101 

CLEARING THE AIR ON EMISSIONS

Keeping up with the ever-changing landscape of emission standards can be challenging. The list of emission-related acronyms alone is rather daunting. You also have to understand how standards differ across countries, power categories and engine families, and how aftertreatment systems affect engine durability. There is a good chance you have a lot of questions. Luckily, we have answers. Here is a quick Q&A about EU Stage V standards.

1

WHAT IS THE GOAL OF EU STAGE V EMISSION STANDARDS?

The goal of Stage V standards is to limit harmful substances in engine exhaust gas, such as carbon monoxide (CO), hydrocarbons (HC), particulate matter (PM) and nitrogen oxides (NOx).

2

WHAT ENGINES DOES CATERPILLAR OFFER FOR STAGE V STANDARDS?

Caterpillar has developed a full range of industrial engines – from 2-cylinder 0.5-liter and 8 hp (6 kW) to 16-cylinder 78-liter and 2100 hp (1566 kW) – to meet Stage V standards. These engines can be customized to meet customer needs in any application. Our goal is to meet new standards while offering tangible value to original equipment manufacturers (OEMs) and their customers.

3

DOES CATERPILLAR OFFER STAGE V SUPPORT?

The Cat® dealer network gives you access to world-class engineering expertise and product support wherever and whenever you need it. That includes giving you the facts, figures and advice you need to be able to make informed decisions.

4

DO YOU HAVE ANY MORE INFORMATION ON STAGE V?

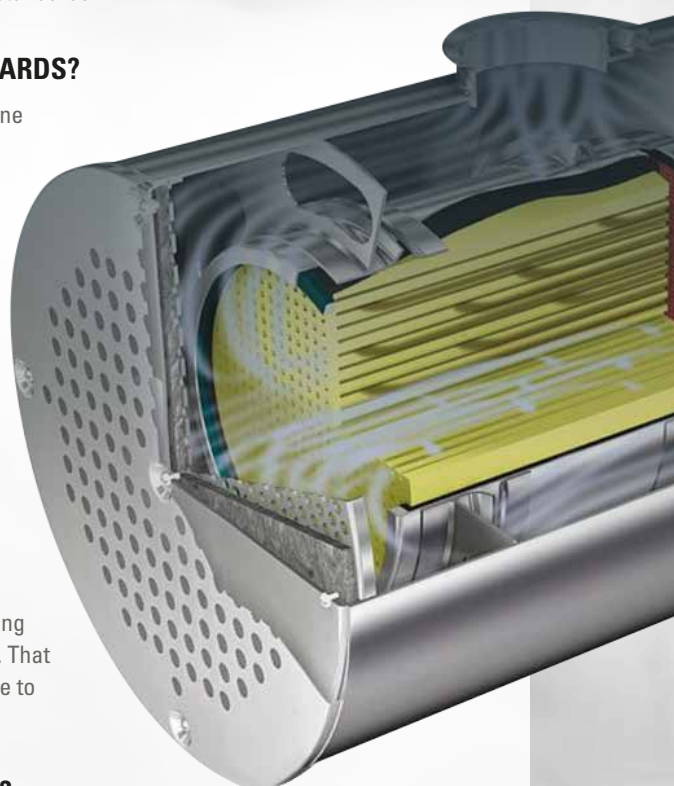
We want to help you navigate the process of meeting Stage V standards. Therefore, we have provided a URL (at the bottom of this page) that links to helpful online articles. These provide deeper explanations of emission standards – including Stage V – and what those standards mean for the bottom lines of OEMs and their customers.

Reading the articles will help you gain a good perspective on aftertreatment systems and the challenges engine manufacturers face to ensure those systems can handle tough environments and applications. You also will learn more about diesel particulate filters (DPFs) and many of the misconceptions about them.

In addition, the resources you can access via the URL below will give you a solid understanding of how Caterpillar supports your redesign efforts to accommodate new engines, and how maintenance can affect productivity, costs and uptime.

And finally, you will see that we have provided a review of the emissions landscape – where things stand today, how far we've come and where we might be headed. ●

www.cat.com/emissions 



A SIMPLER SOLUTION TO MEET EU STAGE V

Caterpillar's DOC Solution Will Help You Meet the Challenge of Stage V Emissions with Less Expense and Hassle

As the European Union moves on to EU Stage V, the next level of emission standards, original equipment manufacturers (OEMs) and their customers can count on Caterpillar for a simpler solution. Three large Cat® engine models – the C18, C27 and C32 – with power ratings in the 755 hp – 1125 hp (563 kW – 839 kW) range offer two big advantages. All three models feature diesel oxidation catalyst (DOC) aftertreatment, eliminating the need for diesel exhaust fluid (DEF) and all the infrastructure that goes with it. They are also dual-certified to meet Stage V and U.S. EPA Tier 4 Final emission standards.

“These are global engines,” said Mark Borst, Product Marketing Manager of 9- to 13-liter engines. “That means OEMs don’t have to worry about building a Stage V model for the EU and also a U.S. Tier 4 Final machine for North America. Instead, they will have a single engine installation that can be sold into the EU and North America. This truly simplifies OEM machine design, development and inventory management.”

The DOC-only aftertreatment also contributes to greater simplicity. The system streamlines equipment design and installation because it requires less total space claim than a selective catalytic reduction (SCR) requiring a DEF tank. The DOC-only aftertreatment eliminates the need to route lines for DEF and additional wiring harnesses for monitoring and controlling the aftertreatment. Also, the DOC is a maintenance-free item that requires no service until a major engine overhaul.

“By eliminating the need for DEF fluid altogether, the DOC aftertreatment allows end-users to avoid the cost and maintenance requirements that go along with it. That is a powerful selling point,” Borst stated. “Plus, our DEF-free engines are ideal for cold-weather conditions. End-users do not have to worry about taking extra precautions to prevent DEF fluid from freezing when equipment sits outdoors.”

The DOC aftertreatment is available as remote /chassis-mounted for maximum flexibility in installation, or as engine-mounted from the factory for maximum convenience and a more compact size. The engine-mounted solution features a bracket system that has been tested thoroughly to ensure that it meets Caterpillar’s high standards for ruggedness and vibration resistance and further simplifies installation.

“Overall, these engines work in a wide variety of applications, including construction equipment; chippers, grinders and shredders; pumps; larger compressors; and an array of industrial equipment,” Borst added. “We look forward to helping OEMs fulfill the equipment needs of customers around the world.”

The C18, C27 and C32 industrial engines are available now for order. ●



FOR MORE INFORMATION OR TO PURCHASE ONE OF THESE ENGINES, REACH OUT TO YOUR CAT DEALER TODAY.

www.cat.com/en_US/support/dealer-locator.html





STAGE V IS EASIER WITH CATERPILLAR'S DOC-ONLY AFTERTREATMENT

- **EASIER DESIGN / DEVELOPMENT
OF EQUIPMENT**
- **EASIER ENGINE INSTALLATION**
- **EASIER INVENTORY PLANNING
FOR GLOBAL APPLICATIONS**
- **EASIER EQUIPMENT MAINTENANCE
FOR END-USERS**



C18 INDUSTRIAL ENGINE

Exceptional power density enables standardization across numerous applications. Features a simple and efficient turbocharger or series turbocharger for high-power applications. Multiple installation options minimize total package size. Ideal for equipment with narrow compartments. Offered in ratings ranging from 755 to 801 hp (563 to 597 kW).



C27 INDUSTRIAL ENGINE

Fuel consumption optimized to match operating cycles of a wide range of equipment and applications while maintaining low operating costs. Offered in ratings ranging from 801 to 1050 hp (597 to 783 kW).



C32 INDUSTRIAL ENGINE

Industry-leading range of factory configurable ratings and options for agricultural, material handling, construction, mining, aircraft ground support and other industrial applications. Offered in ratings ranging from 1000 to 1125 hp (746 to 839 kW).

THE CAT[®]

VALUE DIFFERENTIATION

Delivering the Lowest Operation Cost & Highest Return Over the Life of the Product

“OUR VALUE DIFFERENTIATION IS BASED ON THE BELIEF THAT OUR CUSTOMERS WILL MAKE MORE MONEY WORKING WITH CATERPILLAR THAN THEY WOULD WITH OUR COMPETITORS.”



When it comes to industrial engines, everything Caterpillar offers revolves around power:

- **The power of engines that deliver premium performance in the toughest conditions**
- **The power of a broad product line (0.5- to 296-liter engines)**
- **The power of an unmatched dealer network**
- **The power of insights derived from digital technology**

All of that collective power adds up to one key advantage: greater profit potential for original equipment manufacturers (OEMs) and end-users. “Our value differentiation is based on the belief that our engine customers will make more money working with Caterpillar than they would with our competitors,” said David Nicoll, Global Director of Marketing and Dealer Operations. “We want to help them drive profitability.”

EXPERT ENGINE DEVELOPMENT

The power of Cat[®] engines begins with two important aspects: product design and engineering, both based on knowledge gathered from thousands of machine applications. “Caterpillar is developing world-class engines with outstanding performance and fuel economy, and also provides through Cat dealers the engineering needed to install engines into OEM machines,” Nicoll stated. “We are committed to delivering engines that are well-matched and properly integrated with OEM machines, so that owners and operators ultimately get the level of performance they demand.”

BROAD OEM COMPATIBILITY

Caterpillar offers customers a wide range of industrial engines and works with OEMs of all sizes. “Some OEMs need industrial engines for just a few machines, while others require engines for a wide array of machines. All of them can gain added value by working with Caterpillar and the Cat dealer network,” Nicoll said. “We provide engine solutions that are compatible with many different types of OEM machines. Our customers produce machines for wide-ranging applications and working conditions.”

SUPERIOR AFTER-SALE SUPPORT

The commitment to end-users continues with reliable after-sale care. The Cat dealer network provides technical advice and a variety of service solutions, including Customer Service Agreements. In addition, OEM dealer networks receive support from Caterpillar’s Industrial Service Dealer program to keep each customer’s engine performing properly. “OEMs can rest assured that once their machines are in the hands of end-users, our world-class product support through Cat dealers will be available to help ensure optimum uptime,” Nicoll said. “It’s about being reliable and available when those end-users need expert assistance.”

ADVANCED ENGINE MANAGEMENT

Caterpillar also helps end-users drive profitability via digital technology. This capability transforms engine data into insights that help them make better, more informed decisions. For example, data insights can point to proactive measures, such as predictive maintenance and other targeted solutions that help keep engines running through the entire lifecycle. ●

SIZE DOWN, POWER UP

CATERPILLAR'S NEXT GENERATION 13-LITER ENGINE

With the introduction of the Cat® C13B industrial engine, original equipment manufacturers (OEMs) and customers have a lot to be excited about. The C13B builds on a proven, reliable core engine with over 123 million off-highway field hours, and integrates design improvements that increase power and torque while reducing system complexity. This allows OEMs to downsize their engine platforms, lower installation costs and maximize uptime.

The C13B engine meets EU Stage V and U.S. EPA Tier 4 Final emission standards and is available in multiple power ratings from 456 hp (340 kW) to 577 hp (430 kW) with peak torque reaching 2634 Nm (1943 lb.-ft.).

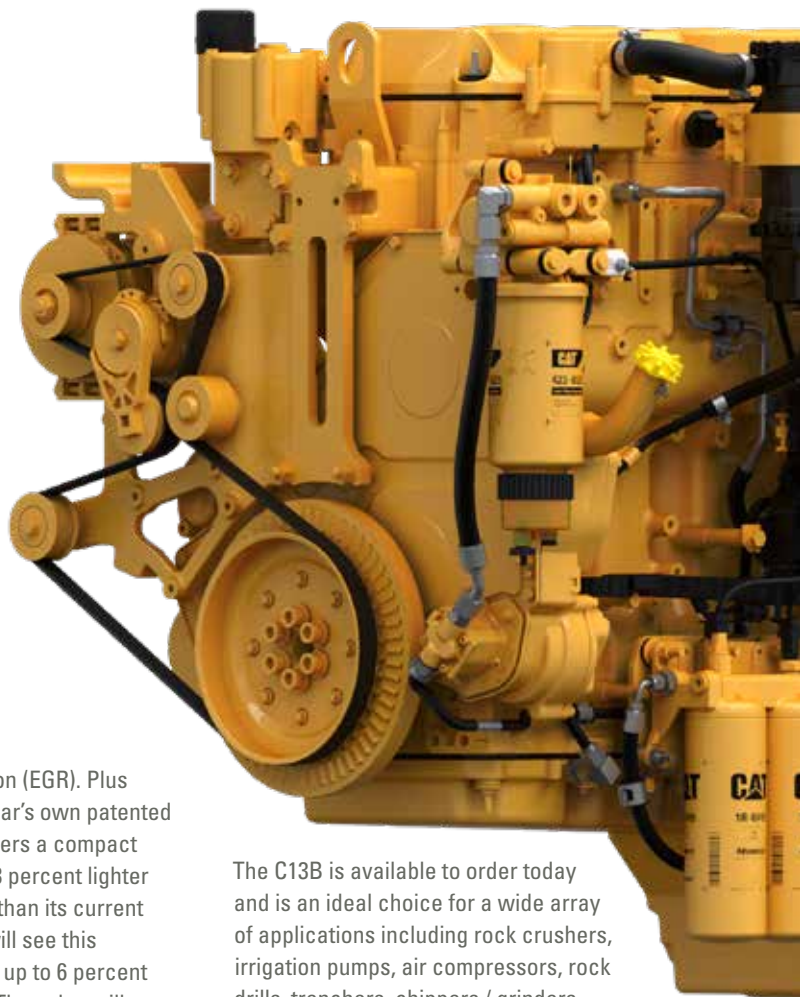
"By adding 20 percent more power and 19 percent more torque, we have significantly increased the capability of our 13-liter engine platform and how OEMs can utilize it," said James Schnuriger, Product Marketing Manager of 9- to 13-liter engines. "The increased performance allows them to downsize and consolidate engine platforms, and we have also upgraded the electronics, turbocharger and aftertreatment management hardware to further reduce installation complexity. Allowing our customers to do more with less is really the name of the game."

The new aftertreatment system utilizes diesel oxidation catalyst (DOC), diesel particulate filter (DPF) and high-efficiency selective catalytic reduction (SCR) technologies, eliminating the need for

exhaust gas recirculation (EGR). Plus the addition of Caterpillar's own patented design technology delivers a compact aftertreatment that is 63 percent lighter and 65 percent smaller than its current equivalent. End users will see this technology pay off with up to 6 percent less fuel consumption. They also will benefit from aftertreatment regeneration that is designed and validated to be transparent to the operator, ensuring optimum machine performance and maximum uptime.

"With a proven, reliable core engine, extensive DPF experience and a push to meet Stage V emission standards, our focus for the C13B has been on improving performance, simplifying design and reducing installation complexity," Schnuriger said.

The C13B is fully configurable with a wide variety of factory-installed options. These include a choice of transmission interfaces, rotating electrics and many other machine interface options. The engine also is available with factory-installed radiators and engine-mounted aftertreatment. All of these plug-and-play solutions help to minimize machine design, validation and installation costs. "We understand that not all OEMs have the resources to design, manufacture and validate on the same scale, so we have designed a product with the flexibility to reduce this burden," Schnuriger stated.



The C13B is available to order today and is an ideal choice for a wide array of applications including rock crushers, irrigation pumps, air compressors, rock drills, trenchers, chippers / grinders, combine harvesters and agriculture tractors. "This new engine is a great example of how we are delivering real value – improving performance, improving efficiency and lowering operating costs – while meeting Stage V emission standards," Schnuriger added. ●

**"OUR FOCUS FOR
THE C13B HAS BEEN
ON IMPROVING
PERFORMANCE,
SIMPLIFYING DESIGN
AND REDUCING
INSTALLATION
COMPLEXITY."**

**For more information about
Cat C13B engines, visit:**

<https://www.cat.com/c13b> 

**Learn more about the full range of
Cat engines at:**

www.cat.com/industrial 



UPTIME... ALL THE TIME

Caterpillar EU Stage V Technology Solutions Keep Customers Up and Running in the Toughest Conditions

For customers, uptime is critical to the success of their business. Their livelihood depends on engine productivity. Take mining for example: If a crusher goes down, the excavator and haul trucks also come to a halt. An entire productivity ecosystem is affected.

Therefore, an original equipment manufacturer's (OEM) adoption of EU Stage V technology must take into account its effect on engine performance and reliability.

Caterpillar is helping OEMs do exactly that. By leveraging extensive off-highway field experience – along with the latest industry developments and its own patented technologies – the company is delivering compact, lightweight aftertreatment systems that are designed and validated to be transparent to the operator, without impact to machine performance for maximum uptime.

“Our development programs have combined simulation with extensive lab and field validation to prove that we can maintain engine aftertreatment and therefore machine performance in the most challenging environments and applications. This includes low load and transient duty cycle in low temperatures,” said James Schnuriger, Product Marketing Manager for 9- to 13-liter engines. “Even in these extreme cases, we have been able to maintain cleanliness through normal operation, thereby maximizing productivity for our customers and their customers.”

In order to control emissions while maximizing uptime for end users, OEMs also must consider the importance of diesel particulate filters (DPF). Caterpillar's unrivaled industrial DPF experience – more than one billion off-highway field hours and counting – ensures that Cat® Stage V technology not only meets emission standards, but also optimizes thermal management strategies.

“With DPF technology now required for a wide power range at Stage V, thermal management definitely is a key differentiator for the construction industry. Our off-highway design expertise and proven field experience will ensure that our customers are always working,” said Schnuriger. ●

For more information about transparent thermal management, visit:

www.cat.com/emissions 

EVEN MORE UPTIME ENHANCERS

Caterpillar offers other engine technologies that help keep equipment performing effectively. These include:

- Latest catalyst substrate and high efficiency selective catalytic reduction (SCR)
- Reduced engine temperature required for regeneration
- More sophisticated fuel injection strategies to vary timing
- Tightly controlled particulate matter and nitrogen oxide in-cylinder
- Thermally efficient aftertreatment to reduce heat loss
- Latest hardware to control engine temperature (e.g., intake throttle valve)



CAT® ENGINES POWERING RENTAL EQUIPMENT

Caterpillar's Commitment to Rental Runs Deep

Not long ago, diesel engines had relatively simple designs: air and fuel in a combustion chamber was enough to get equipment running. However, today's engines require a greater level of complexity, with extra hardware added to meet customer demands for better engine lifecycle utilization and cleaner engine emissions.

These advanced engine technologies have changed the way in which rental companies view equipment for their diesel-powered rental fleets. They want engines that are durable, run reliably, operate efficiently and can be used globally in order to satisfy their customers.

The rental companies and their customers must also consider one additional aspect: how well their rental-equipment engines can be adequately serviced and supported.

CATERPILLAR IS FOCUSED ON DELIVERING ENGINE SOLUTIONS THAT MEET THE NEEDS OF THE RENTAL INDUSTRY.

Caterpillar is committed to serving the rental market by providing dependable, rugged industrial engines to power rental equipment – in fact, the same engines that power Cat® equipment.

"Of course, original equipment manufacturers (OEMs) have engine choices for the equipment they build," said Andy Zuckerman, Global Rental Manager. "However, they know that rental companies choose the equipment that brings the best value. That's why we design and build Cat engines to provide the best value for their fleets."

The Cat engine lineup includes a full array of products. For rental fleets, these are primarily focused in the 0.5- to 18-liter sizes. Every engine features a robust design and offers excellent fuel economy to deliver the operating efficiency, high utilization, low downtime and minimized maintenance and repair costs demanded by rental companies and their customers.

Caterpillar also incorporates advanced aftertreatment systems that help OEMs meet the latest global emission standards, including EU Stage V and U.S. EPA Tier 4 Final. These systems encompass selective catalytic reduction (SCR), diesel particulate filter (DPF) and diesel oxidation catalyst (DOC) technologies.

After-sale support is another important aspect to consider when specifying engines for rental equipment. OEMs can be assured that the world-class Cat dealer network stands ready to assist rental companies and their customers. Cat dealers have the right knowledge, expertise and resources to help them maximize equipment uptime and manage maintenance costs. Furthermore, as the rental market continues to grow and engine technology continues to advance, the Cat dealer network will continue to evolve and realign to address the needs of the rental industry.

"Caterpillar's commitment to meeting the highest standards in engine products and services is the rental channel's guarantee of satisfaction – our pledge to help maximize rental companies' return on investment," Zuckerman stated. "We believe when rental companies have a choice, they will ask for Cat engines from OEMs." ●

To find out more about Cat rentals, go to:

https://www.catrentalstore.com/en_US/locations.html 



POWER IN PLANNING

THE TRUE VALUE OF CUSTOMER SERVICE AGREEMENTS

Customer Service Agreements Maximize Uptime
and Help Customers Reach Next-Level Availability



FOR DECADES, CATERPILLAR CUSTOMERS HAVE RELIED ON CUSTOMER SERVICE AGREEMENTS (CSAs)

CSAs are longer-term agreements between end users and Cat® dealers to provide parts and services. Those services can be customized to whatever budget the customer has and whatever type of work is needed, from general oil changes to complete overhauls over a specified period of time.

“These agreements are truly about bringing value to the customer. While there is no doubt that service is at the heart of this, we are providing an overall partnership for a positive customer experience,” said Brian Snyder, Sales Manager for Cat brand aftermarket parts. “We’re maximizing that experience, because our Cat dealers are already working on the engine, and they have the expertise to help the customer with the overall envelope of their original equipment manufacturer (OEM) machine.”

Often, a CSA is deemed so successful, the customer will choose to renew it – and even agree to expand the scope of it. “Two to three months before a CSA expires, the Cat dealer and the customer will have a conversation about it,” Snyder said. “They may decide to increase the CSA scope of work because the customer recognized the benefit of partnering with the Cat dealer.”

A CSA IS CRITICAL FOR ANY ESSENTIAL ENGINE APPLICATION

“Maybe it’s a chipper shredder that a municipality only uses when a storm rolls in, or it could be a rock crusher that’s crushing 20 hours a day, and the only time they have downtime is during shift changes and general maintenance schedules,” Snyder said. “So by understanding the customer applications, load factors and operational expectations, the Cat dealer can customize services and contribute to the customer’s success.”

CSAs are focused on maximizing uptime, reducing ownership costs and increasing productivity by preventing unscheduled maintenance caused by premature component failure or wear out. A high-quality service agreement will authorize the Cat dealer to provide services such as inspections, maintenance steps and proactive repair work.

Customers covered by CSAs also do not need to worry about disposing of used oil and filters or analyzing scheduled oil samples (SOS). The Cat dealer does all of that work for them and disposes of the used materials in an environmentally friendly way. All the customer has to worry about is scheduling the work – and the Cat dealer can use Cat Connect technology to notify the customer when it is time for maintenance.

Predictive analysis is an additional service to consider including in a CSA. Using tools such as Cat Electronic Technician, factory training and SOS analysis, the Cat dealer can make sure there are no critical signs or events looming.

“Overall, the value of a CSA comes down to the fact that partnering with a Cat dealer for scheduled maintenance reduces unscheduled downtime,” Snyder said. “A customer’s profitability is better protected. That’s the ultimate advantage of having a CSA in place.” ●



FOR MORE INFORMATION ABOUT CUSTOMER SERVICE AGREEMENTS, VISIT:

https://www.cat.com/en_US/support/protect-your-investment/customer-supportagreements.html



THE CAT[®] DEALER NETWORK

In an Ever-Changing World, the Commitment from the
Cat Dealer Network Remains Unchanged



**ORIGINAL EQUIPMENT
MANUFACTURERS
(OEMs) AND CUSTOMERS
CHOOSE CAT[®] ENGINES
NOT ONLY FOR THE
QUALITY, RELIABILITY AND
PERFORMANCE THE ENGINES
PROVIDE, BUT ALSO FOR THE
OUTSTANDING SUPPORT
THEY GET FROM THE CAT
DEALER NETWORK.**

With 168 dealers, more than 2,150 locations and 157,000 dealer employees, the strength of the Cat dealer network is unparalleled in the industry. However, the network's prominence amounts to more than just numbers. The close relationship between Caterpillar and its independent dealers is unique: It was developed intentionally over Caterpillar's nearly 95-year history to help ensure customers' success through a thorough understanding of their needs and by tailoring solutions to meet those needs.

"Our dealers take great pride in providing customers the solutions they require," said Brian Tomsovic, Global Dealer Operations Manager. "The dealers are dedicated to truly understanding the challenges OEMs and customers face, and creating solutions that meet or exceed their expectations requires a high level of expertise."

KNOWLEDGEABLE, CURRENT, CAPABLE
One specific way in which each Cat dealer exceeds expectations is through close collaboration with OEMs to ensure Cat

engines are properly matched to the size and performance characteristics of their machines.

The engine expertise Cat dealers have developed comes from having a deep understanding of each engine offering, completing regular training on new products and technologies, and collaborating with other dealers and Caterpillar experts to create custom engine solutions. By continually learning about advancements in engine aftertreatment, fuel injection, cooling, digital technologies and aftermarket solutions, the Cat dealer network has always adapted to help OEMs and customers thrive in an increasingly competitive market. As new engine technology is being driven by emission standards and Cat dealers are responding by staying current with that new technology as well.

A key strength of the independent Cat dealer network is having a regionally focused dealer who understands how equipment and engines perform in local


climates, geographies and altitudes. With keen awareness of local conditions, the Cat dealer stands ready as a valuable resource. "Essentially, the Cat dealer network helps OEMs win and helps make sure their customers win," Tomsovic said.

EMBRACING NEW TECHNOLOGIES

As new technologies emerge, Cat dealers are well positioned to adapt and help ensure that OEMs and customers succeed. One example of this is dealer acclimation to the emergence of digital technology solutions – the process of transforming data into insights, which helps customers make better, more informed decisions.

"Our dealers will adapt responsively to other evolutions in the pipeline as well, as they always have," Tomsovic stated. With more exciting engine innovations on the horizon, the future looks bright indeed. ●

For more information, visit:

www.cat.com/industrialsupport 



VALUE BEYOND THE ENGINE

Caterpillar's Digital Solutions Enable Customers to Optimize Assets

At Caterpillar, providing digital solutions is about the process of transforming data into insights that help customers make better, more informed decisions about their operations. This translates into reduced asset downtime, optimized performance and better lifecycle utilization. As a result, customers can make more money with Cat® engines than they could with engines from other manufacturers. Here are the three components of a well-developed digital solution:

1. ASSET MANAGEMENT

A high-quality digital solution begins with asset management. Caterpillar uses a systematic approach that allows customers to increase visibility and availability of all equipment that is linked with Cat® technology. "If you are a customer, we enable you to know the location of your assets by linking them through the power of connectivity," said Jamaal Crayton, Senior Digital Strategist. "This provides a safety component too. We've had customers find equipment that was stolen because sensors in the equipment sent out location status reports."

2. SERVICE MANAGEMENT

A proper digital solution also includes Caterpillar service management, which can help the customer reduce costs and, therefore, increase profits. "With service management in place, we are able to pull a machine's data off an engine control module (ECM) and into a telematics unit, and then detect and address any potential problems. That can optimize an engine's lifecycle and prevent engine failure," Crayton said. "Customers can even set up text alerts that allow them to monitor and gain insight about various machine aspects that are specific to their business."

Service management also is bolstered by the fact that Caterpillar has telematic connections with a broad and ever-widening machine population. The company is able to gather cross-population data from that large landscape of engines, and then make recommendations based on that data to improve and lower the cost of machine service for customers.

3. OPERATIONS MANAGEMENT

In addition to asset performance management and service management, operations management is another important component of an effective digital solution. Essentially, it helps optimize decision flows throughout the value chain. "Let's say you have an operator who maybe isn't using a piece of equipment properly. With our telematics and proprietary digital capabilities, the equipment owner can detect problems such as engine overspeed, and then determine if better training is needed," Crayton said.

AN EFFECTIVE DIGITAL SOLUTION ALSO REQUIRES PEOPLE WITH ENGINE EXPERTISE

"The deep knowledge we have of Cat engines is what allows us to provide a superior level of service to customers using our Caterpillar telematics and digital solutions," Crayton stated. "Our digital team provides the technical aspects and expertise, and the Cat dealer network works with our customers on a day-to-day basis, providing the right tools, the right parts and the right service expertise."

Every worksite has the potential to generate incredible amounts of data with connectivity. Harnessing this data is how Caterpillar helps customers work more efficiently and more profitably. ●

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