

Industrial Engine


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MOBILE CRUSHING WITH CAT® POWER



METSO ADDS THE CAT® C6.6 ACERT® AND STANDARDIZES ON CAT POWER IN ITS MOBILE CRUSHING LINE

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MOBILE CRUSHING WITH CAT® POWER

METSO ADDS THE CAT® C6.6 ACERT® AND STANDARDIZES ON CAT POWER IN ITS MOBILE CRUSHING LINE.

Rocks and minerals take quite a journey on their way from quarries and mines, through refining and manufacturing, into end products and infrastructure projects — and on into recycling and reuse. Being a part of every stage of this processing chain is what makes Tampere, Finland-based Metso's range of products and services so unique.

All around the world, you'll find Metso's equipment in quarrying, construction, ore processing, metals production, materials handling and recycling applications.

In the construction, recycling and quarry contracting applications specifically, Metso has partnered with Cat power. The Metso mobile crushing line, made up of about 30 different models, is now powered exclusively by Cat industrial engines. Similarly, its mobile screening line is powered by Cat engines, although not exclusively.

To date, the company utilizes the Cat® C6.6 ACERT®, C9 ACERT, C13 ACERT, C15 ACERT and C18 ACERT in its mobile crushing line. Metso's

mobile screens also rely on Cat engine platforms; however, the range includes the C6.6 ACERT and C4.4 ACERT (in prototype stages).

"The C6.6 ACERT is utilized in our smallest mobile crushing plant [LT96] and in our largest screening plant [ST620]," explains Hugo van Benthem, marketing communications manager for Metso. "We use the same engine, but a crushing plant requires very different power requirements than a screening plant. For example, the LT96 produces between 500 to 2,000 tons of crushed material a day."



The Cat® C6.6 ACERT® powers both Metso crushers and screeners.

"When our machines incorporate Cat® engines, it's a better fit for our customers."

Hugo van Benthem, Metso



The LT96 is the smallest crusher in the Metso lineup, and its Cat® C6.6 ACERT® provides 225 hp (168 kW) at 2,200 rpm.



The Metso Minerals LT96 crushing plant (left) and the ST620 screening plant (right) are both powered by a Cat® C6.6 ACERT®.

STANDARDIZING ON CAT IN CRUSHING LINE

Metso's most recent crushing plant, the LT96, is the last in the crushing line to house a Cat® engine.

"The LT96 was upgraded several years ago from its predecessor, the LT95, and at the same time we changed the engine package," notes Sami Permi, Metso manager, power transmission and hydraulics.

The Cat C6.6 ACERT was the engine of choice for the LT96, not only for its appropriate power requirements [225 hp (168 kW) at 2,200 rpm], but also to allow Metso to maintain a standard engine package for its entire crushing line.

"Our customers worldwide are familiar with Cat engines and equipment," notes Permi. "And the Cat dealer service network is quite good."

"This was the last crusher in our line to incorporate Cat power and we have found that when our

machines are delivered to the end customer with a Cat engine, it's a better fit for our customers," adds van Benthem. "It's much easier for everyone involved if we incorporate Cat engines in our machines."

POWER SPECIFICS

The Cat engine is used to power hydraulics or gears on all Metso crushers and screeners. Smaller machines are typically hydraulically driven where larger machines are driven via direct drives.

In either instance, Cat engine power is used to drive the machine's tracks so it can travel to and from a jobsite. Engine power is also used to run the conveyors, feeder, crusher and sometimes a crusher/screen combination on the crushing line; and screens and conveyors on the screening line.

Cat engines are housed and shipped from Cat dealer Wittraktor in Finland to Metso's Tampere plant, where they are packaged into power packs. Before they are shipped, Wittraktor equips the engine with the

necessary auxiliary equipment and modifications according to Metso's requirements and stores them for just-in-time delivery to the OEM. After the engines arrive at Metso's Finland plant, Metso adds hydraulic pumps, piping, hydraulic oil tank, control box, side-by-side air coolers, engine bed and an engine cover.

"We design our engine packages as modular units," explains Permi. "The transportability of our mobile crushers/screeners is critical [which is determined by height, weight and power requirements]; therefore, our engine package has to fit into our envelope."

LOOKING AHEAD

The future of crushing and screening continues to be mobile, says van Benthem. The rental market is also growing for Metso's dealer network.

The business plan, according to van Benthem, is to grow and continue to serve customers all across the globe.

"We were the first in this business and we want to continue in this business. We'll do whatever we can to meet our customers' crushing/screening needs with powerful, reliable and durable equipment." ▲



THE WORLDWIDE MAKING OF METSO CRUSHERS

Several years ago, Metso added a mobile crushing production facility in the United States to better serve its North and South American markets.

Today, manufacturing at the Columbia, S.C. facility is under full swing — with the manufacturing of three mobile crushing plants.

The Lokotrack LT200HP cone crusher (shown here), LT106 jaw plant and LT1213 impact crusher plant are now made in this South Carolina facility. All three models rely on Cat engines. (The Cat® C13 ACERT® powers the LT200HP and LT1213 at 415 hp (310 kW) at 2,100 rpm. The Cat C9 ACERT operates in the LT106 at 300 hp (224 kW) at 2,100 rpm.)

The company continues mobile crushing production in Tampere, Finland, as well as operates additional business lines in Sweden, Germany and the United States.

CAT[®] INDUSTRIAL OPEN POWER UNITS



C7 ACERT[®] and C9 ACERT join the Caterpillar Industrial Open Power Unit lineup for industrial applications.

The Cat[®] C7 ACERT[®] and C9 ACERT Industrial Open Power Units (IOPU) recently joined the Cat lineup of IOPUs for industrial applications.

Available in multiple engine ratings, these new offerings allow customers to conveniently order preconfigured power packs for a variety of applications including irrigation, industrial and mining pump applications.

"The introduction of these units continues the Caterpillar commitment to providing additional value to our OEM and end-user customers," explains Cat industrial engine marketing manager Mike Reinhart.

"And because these units are backed by the most responsive global support network in the world, they deliver outstanding performance," he adds.

CAT[®] IOPU BENEFITS

Both C7 ACERT IOPU (225 to 300 hp/168 to 224 kW) and C9 ACERT IOPU (275 to 375 hp/205 to 280 kW) are Tier 3, Stage IIIA certified.

Included in each complete power package is the radiator, flywheel, alternator and alternator wiring — all preassembled for fast, straightforward installation into a number of OEM applications.

Additional options include auxiliary crank pulleys, battery cables, bases and clutches, making an IOPU an even more compact and versatile option for dealers and OEMs.

Features of each IOPU include:

- **Complete Package** — The C7 ACERT and C9 ACERT offer a complete power source in a compact package. These units incorporate the latest Cat technology, providing low emissions and reduced fuel consumption while maintaining reliability and durability.

- **Cooling System** — A high-capacity cooling system provides engine cooling for ambient temperature in excess of 126 degrees F (52 degrees C) without engine derating.

- **Safety System** — The standard safety shut-offs and instruments provide total engine safety, allowing unattended engine operation.

- **Accessory Pulley** — An accessory pulley provides a drive for an external belt-driven generator.

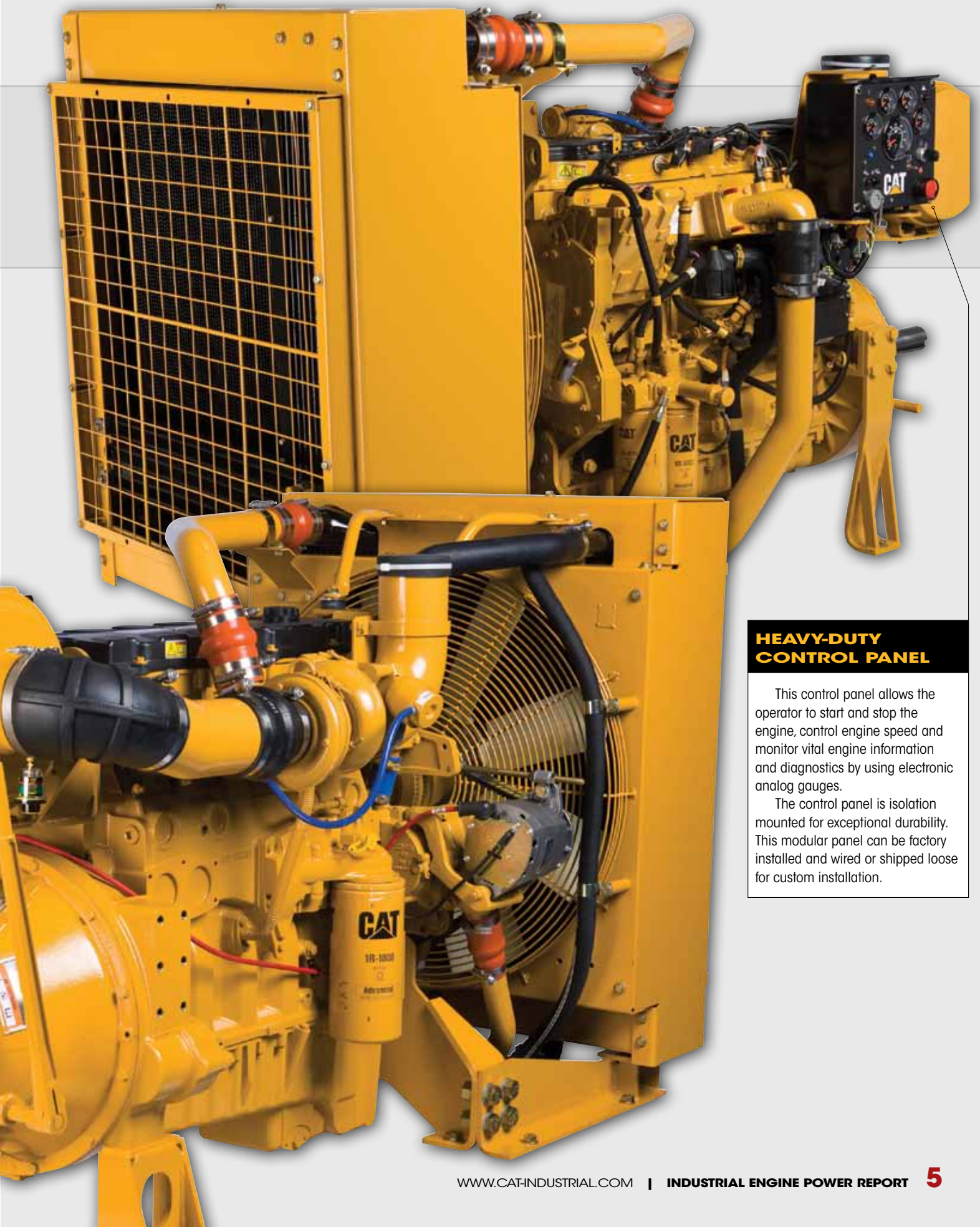
- **Air Filters** — Large-capacity, heavy-duty, dual-element air cleaner provides full engine protection with longer life between filter replacement. The air filter service indicator alerts the user when to replace the filters.

- **Serviceability** — Turbine air precleaner automatically ejects dust, eliminating the need for daily cleaning. The adjustment-free direct injection fuel system eliminates frequent and costly adjustments.

- **Product Support** — Unbeatable product and parts support are available through your local Cat dealer. For more information on available Cat IOPU models, contact your local Cat dealer. ▲



CAT [®] Industrial Open Power Units			
Model	hp Range	KW Range	RPM
C1.1	24	17.9	3,000
C1.5	32.5	24.2	3,000
C2.2	49.6 & 55.9	37 & 41.7	2,800 & 3,000
C4.4	88.5 & 99.2	66 & 74	2,200
C4.4 ACERT	134.4	100.2	2,200
C6.6 ACERT	173.7 to 225.3	129.5 to 168	1,800 to 2,500
C7 ACERT	225 to 300	168 to 224	1,800
C9 ACERT	275 to 375	205 to 280	1,800



HEAVY-DUTY CONTROL PANEL

This control panel allows the operator to start and stop the engine, control engine speed and monitor vital engine information and diagnostics by using electronic analog gauges.

The control panel is isolation mounted for exceptional durability. This modular panel can be factory installed and wired or shipped loose for custom installation.



BREAKING NEW G

McCLOSKEY EXPANDS ITS PORTABLE LINEUP TO INCLUDE CRUSHING PLANTS POWERED BY CAT® C9 ACERT® AND C13 ACERT.



A Cat® C9 ACERT® powers the McCloskey C50 Jaw Crusher. Above left photos: The C44 Cone Crusher is powered by a Cat C13 ACERT. Above right photos: The 512 Trommel Screener is powered by a Cat C4.4 ACERT.

Since its inception in 1986, McCloskey International has been a pioneer in trommel design and innovation.

With a keen focus on listening to customers' needs, the company developed and patented the remote-control 180-degree Radial Stockpiling Conveyor with variable discharge height. This development, along with other pioneering features such as the solid rubber wheel drive system, has made McCloskey a leading trommel manufacturer in North America.

Twenty-plus years later, McCloskey has expanded its manufacturing facilities from Peterborough, Ontario, to the United Kingdom. The company now manufactures portable trommel screeners, vibrating screeners, stacking conveyors and, most recently, crushing equipment for compost screening, waste recycling, construction, demo-

lition, road maintenance, landscaping and wood recycling industries.

BREAKING GROUND

Building on its proven trommel screening line (powered by Cat® C4.4 ACERT®), McCloskey International recently broke new ground with the introduction of its C50 Jaw Crusher.

The first of McCloskey's full line of crushers, the C50 Jaw Crusher is powered by a Cat C9 ACERT. The machine incorporates a 50-in.-wide Telsmith Jaw (the widest jaw in its class) and a user-friendly control panel.

With class-leading material throughput and capacity, the largest stockpile height in its class, and a standard extended-side conveyor, the new C50 crusher continues McCloskey's focus on quality, durability and productivity.

Following its introduction of the

C50 Jaw Crusher, the company has most recently added the C44 Cone Crusher to its portable crushing plant line.

The new C44 Cone Crusher, powered by a Cat C13 ACERT, offers high material capacity and throughput, large stockpile capacity and customer-focused features.

"The launch of our new crusher range is a natural progression for our business," says owner Paschal McCloskey. "We can now supply our customers with a complete solution for all their crushing, screening and recycling needs."

BUILDING ON THE PLATFORM OF QUALITY

Taking care of customers is top priority for this Northern Ireland manufacturer.

"As a privately owned company, we are able to respond to our customer and dealer needs and react



ROUND

“Partnering with Caterpillar makes sense for our global company.”

Seamus Doyle, McCloskey International

quickly to market changes,” says McCloskey sales manager Seamus Doyle. Doyle is located in the company’s United Kingdom office in Northern Ireland.

“We sell our products on the platform of quality, durability and user friendliness,” he adds. “Our customers appreciate the quality of our machines, which can last up to 10 years depending on how they are maintained.”

Paralleling on the issue of quality, McCloskey relies on supplies of the same caliber.

Cat engines are the engine of choice for all of McCloskey crushers, screeners and conveyors.

Two versions, the Cat C4.4 and C4.4 ACERT are utilized on McCloskey trommel screeners — a mechanical version with ratings of 100 hp (74.5 kW) and an electronic version

with ratings of 129 hp (96.5 kW).

The C50 Jaw Crusher relies on a Cat C9 ACERT with ratings of 350 hp (261 kW). The C44 Cone Crusher uses a Cat C13 ACERT with ratings of 440 hp (328 kW).

PARTNERING WITH CAT

“Throughout our worldwide customer base, for the most part we see a preference toward Caterpillar power,” says Seamus. “Overall our customers are familiar with Cat equipment and engines and the Cat dealer network is the most extensive. Partnering with Caterpillar makes sense for our global company.”

McCloskey’s local Cat dealer in Northern Ireland, McCormick Macnaughton, has been a true partner for the OEM during this time of evolutionary product development.

“We work with McCloskey throughout all stages of development,” explains Colin Kirkwood, sales manager with McCormick Macnaughton. “We advise their design team on power requirements and capabilities, as well as engine attachment offerings. We

then work with them throughout the design phase. Once the machine is designed, we continue our partnership through the auditing process and finally, we provide service, support and supply. We do house engines for their needs as well.”

LOOKING AHEAD

“We are continuing to expand our product line and our market reach,” says Doyle. “And in this time of economic uncertainty, if we don’t

grow at the pace we desire, we’ll surely hold our ground in the markets we currently serve.”

At McCloskey, those markets are always evolving.

“For example, the significant iron ore mining industry in Australia and India has dried up due to the current low price of iron ore,” Doyle concludes. “However, we are responding by finding new pockets of the world where our machines can be used.” ▲



The C50 Jaw Crusher is the first of McCloskey’s full line of crushers. It is powered by a Cat® C9 ACERT® and is rated at 350 hp (261 kW) at 2,100 rpm.

TIER 4 INTERIM/



C7.1 ACERT®

STAGE IIIB LINEUP EXPANDS

The C7.1 ACERT® and C9.3 ACERT are the latest additions to the Caterpillar Tier 4 Interim/Stage IIIB engine lineup.

The Caterpillar lineup for Tier 4 Interim/Stage IIIB for the industrial and off-highway markets is continuing to expand. The most recent additions — the Cat® C7.1 ACERT® and the C9.3 ACERT — join eight previously launched engines to form a family of 10 Tier 4 Interim/Stage IIIB-compliant engines ranging from 11 hp (8.2 kW) to 400 hp (298 kW). The entire Cat industrial engine lineup provides emissions compliant power solutions in every horsepower band from 11 hp to 6,500 hp (7 kW to 4,851 kW).

These two engines offer customers additional power choices in the very important 175- to 400-hp (130 to 298 kW) power range.

C7.1 ACERT

This new engine is a 7.01-liter platform designed to be capable of 175 to 300 hp (130 to 225 kW). This broad horsepower range translates into increased power density from a smaller platform which allows customers the flexibility of a smaller engine package for high-demand applications.

Original equipment manufacturers will benefit from the flexibility provided by the Cat Clean Emissions Module design that allows attachment to the chassis in the most convenient configuration.

Equipped with a two-stage SMART Wastegate turbocharger, the C7.1 ACERT delivers excellent low-speed response and torque as well as class-leading power density at higher speeds.

Other features include multi-vee belts for longer service intervals and service-free hydraulic tappets. The new 7-liter platform has been designed for maximum fuel economy and is a powerfully versatile choice for mid-range industrial applications.

C9.3 ACERT

To provide additional customer value and further leverage successful platforms, the C9.3 ACERT offers increased displacement with a wide range of ratings from 275 to 400 hp (205 to 298 kW). It

can also be configured to produce peak power up to 440 hp (328 kW).

Utilizing a simple, innovative asymmetric turbo design for more efficient air management, in addition to a Cat Common Rail Fuel System, the new 9.3-liter engine is designed to maximize reliability, durability and fuel efficiency.

Equipped with a robust, fully integrated Cat Clean Emission Module, the new platform has been extensively tested in a wide variety of applications to provide original equipment manufacturers with the optimum flexibility for clean, efficient, reliable Cat power.

With common connection points and similar electronics, the C9.3 ACERT can be easily engineered for installation into OEM applications currently powered by the C9 ACERT engine.

As the engine of choice for many Cat machines, the C9.3 ACERT benefits from the Caterpillar legacy of deep integration experience. As with other Caterpillar earth moving machines, this new engine platform will be used in many demanding applications including rock crushers, rock drills and air compressors.

EXPANDING ON PROVEN PLATFORMS

As with all Caterpillar Tier 4 Interim/Stage IIIB compliant engines, the C7.1 ACERT and C9.3 ACERT utilize the full complement of ACERT Technology building blocks to achieve a significant 90% reduction of particulate matter and a 45% reduction of oxides of nitrogen.

Backed by the most extensive dealer network in the world, the new Cat C7.1 ACERT and C9.3 ACERT provide customers with the best choices for their most demanding industrial applications.

Contact your local dealer for more specific information, including the availability of the C7.1 ACERT and C9.3 ACERT, as well as additional Cat Tier 4 Interim/Stage IIIB engines. ▲

ENGINES UNVEILED



**AT INTERMAT,
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CATERPILLAR® AND CAT® DEALERS ARE YOUR LINK TO TIER 4 READ

Caterpillar is known for being a step ahead of the game — in product development as well as meeting current and future emissions requirements.

Upcoming Tier 4 Interim, European Stage IIIB and Japan MLIT Step 4 mobile nonroad emissions regulations that take effect in the year 2011 are no exception.

Caterpillar, along with its worldwide network of Cat® dealers, has stepped up its game for Tier 4 readiness with Tier 4 Integration Workshops, which are supportive of the Caterpillar New Product Introduction (NPI) Process.

NEW PRODUCT INTRODUCTION

New Product Introduction is just one process Caterpillar uses to develop products and services for customers worldwide. Employees, suppliers, dealers and customers are involved throughout the NPI process,

which is focused on gathering customer information and requirements early in the product development stage.

NPI is a core business practice that has been continuously updated by Caterpillar for almost four decades. Product development, through the well-defined NPI process, helps match customer and business needs with technical and process solutions in order to produce the best product at the lowest possible cost — all in less time.

NPI is a disciplined process that applies enterprise knowledge and drives boundary-less collaboration of a skilled workforce through the use of common practices and tools to produce predictable and consistent results.

TIER 4 INTEGRATION WORKSHOPS

Through its dealer network, Caterpillar is not only creating customer awareness of Tier 4 emissions requirements, but also educating its customers on the upcoming emissions standards through Tier 4 Integration Workshops (TIW). These workshops are held by Cat dealers for OEM customers and:

- Detail packaging and integration installation
- Explain the differences between Tier 3/Stage IIIA and Tier 4/Stage IIIB
- Provide direct contact with Caterpillar technical experts
- Maximize integration opportunities
- Help Caterpillar better understand the voice of its dealers and customers

TAP INTO DEALER KNOWLEDGE

From the moment you make contact with your local Caterpillar dealer, you're assured that you have the power of total support including a quality product backed by a wealth of technical expertise and full support services.

Knowledge is power; and your Cat dealer is no exception. Cat dealers around the world are trained in a well-



“**Employees, suppliers, dealers and customers are involved throughout the Caterpillar New Product Introduction process.**”



INESS

rounded, comprehensive manner that assures they will provide you with a level of service that fits your needs.

THE DLMS TOOL

Another tool Caterpillar utilizes to reach and train its dealers is the Power Systems Learning Campus. This virtual online campus consists of sub campuses representing four of the Caterpillar Power Systems industries: Marine, Industrial, Petroleum and Electric Power. Each sub campus has a curriculum and multiple certification options.

Within the Power Systems Learning Campus is a dedicated Industrial training and certification program for Cat dealer personnel.

Called the Dealer Learning Management Systems (DLMS), this subscription-based learning system is available to Cat dealer employees, managers and training administrators and is a powerful tool for them in managing personal growth and development.

DLMS is available worldwide in several different languages and serves as a one-stop shop for Cat dealer training and e-learning.

FOR YOUR BENEFIT

What does all this additional training by, and for, Cat dealers mean for you? Simple — it means that Cat dealers are not only your industrial engine experts; they are your personal Tier 4 consultants.

Through extensive and ongoing training, with the Tier 4 integration workshops as one example, Cat dealers are equipped with the knowledge to help you with all your engine needs. They are also linked to Caterpillar and the entire Cat dealer network for an even broader range of support. You can count on Cat dealers to stand by their work and engine installations. ▲



RELIABLE SUPPORT

No one knows more about Caterpillar engines than your authorized Cat dealer. Trust your dealer to provide you with the experience, advice, products, computer software and support that you need to maximize your engine investment.

Relying on your Cat dealer guarantees you a customized, total support solution. Here is just a sampling from an extensive list of support services offered by Cat dealers:

- On-site preventive maintenance
- Equipment financing
- Service turnaround
- On-site technicians
- Planned component replacement
- Parts availability guarantee
- Rental/lease arrangements
- Engineering and emissions regulations assistance
- S.O.S. fluid analysis
- Guaranteed parts delivery
- Technical inspections
- Maintenance record keeping
- Preventive maintenance kits
- Operator training

As reliable as they are durable



Cat[®] diesel engines deliver rugged reliability in the most demanding industrial applications

Cat industrial engines continue the heritage of legendary durability. Using proven ACERT Technologies, Cat Tier 4/Stage IIIB compliant engines can reduce particulate matter by over 90% and NOx by 45%. Around the world, Cat customers count on the Cat Dealer Network for high quality parts and responsive service and support.

Learn more about how Cat diesel power can help lower your cost of ownership. Call your Cat dealer or visit www.cat-industrial.com today