

CAT MAGAZINE

A 2,000-MILE ANTARCTIC TREK:

PREPARING TWO D6N AND FINNING ENGINEERS

RENTAL EQUIPMENT RULES AT
MONGOLIA'S OYU TOLGOI MINE

IN JORDAN, JALLAD GROUP CALLS ON A HYBRID
SYSTEM TO POWER A CELLULAR TOWER



STRAIGHT TO WORK



The new Cat® F-Series backhoe loaders are equipped with a range of improvements to give you more flexibility, increased productivity and greater efficiency.

The extended bucket reach, integrated load-sensing hydraulics and improved visibility are just a few of the enhancements combined to give you faster loading cycle times, maximum power even at low engine speeds, and a more comfortable day on the job.

Get straight to work with the new Cat® F-Series backhoe loaders.

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At one of the world's biggest gold and copper mines, Cat rental equipment is helping build an extensive infrastructure.



Dear reader,

Around the world, Caterpillar® customers face a myriad of challenges, including everything from weather and terrain to the economy and parts availability. Those challenges give us the chance to become a single-source problem solver and solutions provider.



As we work to extend our customer reach, people at Caterpillar continue to use innovative and creative methods to serve our customers. That includes everything from technology to face-to-face support and facilities to shorten delivery time. A perfect example is the opening of the Middle East Parts Distribution Center in Dubai toward the end of 2012. With growth driven by the Middle East and Africa, Caterpillar invested in a new distribution center close to Middle Eastern and East African customers. The new facility further extends the Caterpillar parts distribution network and enhances service and parts delivery to customers.

Parts availability and distribution have always been a strategic focus for Caterpillar. In this issue, that importance, for dealer and customer, is clearly seen. In the first article, you'll read about the challenges faced when delivering parts to the middle of Mongolia's Gobi Desert. Another article shows how a Cat® dealer helps keep its quarry customer's machines up and running in the Middle East.

This first 2013 issue is full of other remarkable Cat achievements. A 320D L plays a starring role in the latest James Bond film, *SKYFALL*. Two D6N are helping lead an expedition in extreme conditions across Antarctica. The first-ever D7E fuel challenge is issued. And, a customer takes delivery of the 25,000th Cat wheeled excavator in Germany. It still amazes me to see all the incredible stories from around the world that proudly carry the Cat name.

Paolo Fellin,
Vice President Caterpillar



Will a six-month Antarctic trek be a walk in the park for two D6N? Find out.



In the new James Bond movie *SKYFALL*, a 320D L steals some of the spotlight.



Jallad Group shows Orange the value of using hybrid systems to go green.

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Above is just a taste of what's in this issue – you'll find plenty more news and views inside. If you have an idea for a story for a future issue, contact our publishers on CatMagazine@cat.com

PUBLISHER: Ulrike Schwarzendahl, Caterpillar S.A.R.L. **EDITOR-IN-CHIEF:** Laetitia Baudrion, Caterpillar S.A.R.L. **DEALER CO-ORDINATION:** Anneloes de Jong **CHIEF WRITER:** Trevor Baker **ART DIRECTION:** Ron Strik **CONCEPT & REALISATION:** Centigrade for Caterpillar S.A.R.L. www.centigrade.com

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MONGOLIA'S BIGGEST CONSTRUCTION PROJECT SUPPORTED BY CAT RENTAL EQUIPMENT

1987-1989

First geological surveys

1990

The geological information becomes public, which interests western companies

1997

Initial exploration license given to Australian mining company Broken Hill Proprietary (BHP)

2000

Ivanhoe Mines acquires 100 percent of Oyu Tolgoi

2001

The first of many gold and copper discoveries

2002-2003

Environmental studies begin



SOUTHERN OYU OPEN PIT

Trucks carry out ore 263 tonnes at a time

In Mongolia's South Gobi region sits Oyu Tolgoi mine – the world's largest undeveloped gold and copper site. Based on Ivanhoe Mines' discoveries over the last 11 years, Oyu Tolgoi, which means "turquoise hill" in Mongolian, contains almost 37 billion kilograms of copper and more than 1.3 million kilograms of gold.

When Cat Magazine visited Oyu Tolgoi, the site was close to going into the operations phase, although it was still in the construction phase. This is the three to four years of the mine's life when the physical infrastructure for the entire operation is constructed. When commercial

production begins in early 2013, the mine is expected to produce an initial throughput of 100,000 tonnes of ore per day from the Southern Oyu open pit. Meanwhile, an underground, block-cave mine is being developed that will produce 85,000 tonnes of ore per day. Underground mining is scheduled to commence in 2017 and the mine should be at full production by 2018.

LOCATION:
OYU TOLGOI
GOBI DESERT,
MONGOLIA



2006

Ivanhoe Mines and Rio Tinto PLC announce partnership

2009

Mongolian government acquires a 34 percent interest in Oyu Tolgoi

2010

Rio Tinto named site manager

2012 (September)

First ore goes into the concentrator

2017

Underground 'block cave' to be operational



OVERLAND CONVEYOR

Transports ore 2.4 km to the coarse ore storage building

ORE STORAGE BUILDING

From the primary crusher, ore is stored here before further processing

PEBBLE CRUSHER

Further reduce ore for processing

CONCENTRATOR COMPLEX

State-of-the-art processing to produce the copper and gold

The Oyu Tolgoi mine is about 550 km south of Ulaanbaatar, and 80 km north of the Mongolia-China border.



OYU TOLGOI CAPITALIZES ON THE ADVANTAGES OF RENTING

According to Oyu Tolgoi, more than 15,000 people have been employed during the construction phase, including 10,000 Mongolians. This is due to the phase's short time period and the need to create infrastructure. It's the biggest construction project in Mongolia's history. And, thanks to the mine, Mongolia's gross domestic product is expected to increase by 35 percent with a vast majority of the minerals going to China.

WAGNER ASIA RISES TO THE OCCASION

An expansive mine of this scale means lots of infrastructure needs to be created. That's a great opportunity for Wagner Asia. Established in 1996 with its headquarters in the capital city of Ulaanbaatar, Wagner Asia is the official Cat® dealership in Mongolia. The Cat dealer was growing along with the development of the country. And when the mining boom hit Mongolia, Wagner Asia saw a sharp rise in the need for rental machines and equipment, an option that would bring the proper value and solutions to customers.

Today, one of their biggest customers is the Oyu Tolgoi mine. "We've been involved with Oyu Tolgoi in one way or another from the start. We have a wide range of equipment there involved in creating

the infrastructure. Because they're a self-sufficient operation in a remote area, Cat machines are helping build power stations, roads, buildings, even an airport and many other industrial projects related to the operation of the mine," says Steve Potter, General Director of Wagner Asia Equipment LLC.

A SUCCESSFUL PARTNERSHIP BEGINS WITH RENTAL

While the relationship between Wagner Asia and Oyu Tolgoi has always been a strong one, the dealership felt it was important to provide even better support for the remote mine site. After all, when a customer as big as Oyu Tolgoi is more than 500 kilometers away, it's difficult to provide the kind of service and support for which the Cat dealer network is so renowned. Tselmun G., Director of Rental and Used Equipment Division told us, "Other companies were managing and servicing equipment from Ulaanbaatar. So we decided to open a branch at Khanbogd, which is much closer to our customer. We have machines there. We have technicians there. We have parts there. It's all to support our rental equipment. It makes a big difference."

Wagner Asia's Khanbogd branch was established in March 2009. Located just 40 kilometers away

STEVE POTTER

General Director of Wagner
Asia Equipment LLC.



Just why did Oyu Tolgoi choose to rent so many pieces of equipment rather than buy? Well, there are lots of reasons. By renting machines, Oyu Tolgoi reduces equipment risks that come with ownership associated with building the on-site infrastructure. By keeping those risks on Wagner Asia, the mine can focus on completing the construction phase. "Work goes on 24/7 at Oyu Tolgoi. So while a typical rental machine may work 15 to 2,000 hours a year, a contract rental, like you'll find at the mine, will work as much as 6,000 hours a year. They definitely get put through their paces," said Steve.

Another benefit is the fact that production needs can easily be satisfied depending on construction peaks and what machines are needed. In other words, by renting, Oyu Tolgoi gets the type and number of machines when needed. This way equipment isn't sitting around unused. Steve offered this insight, "Rental provides a flexible option to outright purchases – even for somebody like Oyu Tolgoi who's going to be here for the next 60 to 100 years. If you're using equipment for a short-term project, you don't want to be burdened with that capital."

In addition, the availability of a wide range of equipment is important. In April 2010 there were about 700 people working on site. During the construction phase's height, there were more than 14,000. "Mining is booming here. We needed equipment. Coal mining needed

equipment. Machines were needed to build roads. Chinese contractors brought in around 600 pieces of equipment. No one could forecast what would be needed next. Rental was an excellent solution for us. Not only from an availability standpoint, but also because of the faster turnaround and delivery time," emphasized Dale Derby, Operation and Maintenance Manager for Oyu Tolgoi. The bottom line is that by being a single-source provider that fills many needs, Wagner Asia makes itself a more valuable business partner.



from the mine, the rental location was opened to help keep mine construction running at optimum productivity. "Part of what makes this story a success is the fact that we invested in putting a branch near our customer. We wanted to put people and parts closer to the machinery than anyone else," said Steve.

To open the branch, Wagner Asia made significant investments. "We've already put in about \$700,000 in the Khanbogd branch. But we're investing about \$9 million more in the 425-person land camp, which will be built for our employees for the long-term. It will include

"Cat machines are helping build power stations, roads, buildings, even an airport. . ."

Steve Potter, General Director of Wagner Asia Equipment LLC.

housing, a cafeteria, basketball court, grocery store, septic system and everything else," said Chris Foster, Technical Director for Wagner Asia. By the end of 2013, 250 people are expected to be living at the camp.

The Khanbogd branch also operates The Cat Rental Store and typically has about 45 pieces of Cat rental equipment and 30 building construction products available. The location has its own dedicated branch manager, rental coordinator, parts coordinator and seven technicians on staff. The Cat dealer branch also has a full-service

workshop and parts counter as well as an office house and accommodations for resident employees and guests. "The Khanbogd branch is a great advantage for Oyu Tolgoi. We have technicians there, as well as on site at the mine, so we can fix issues any time of the day or night," added Chinbat Ts., Major Account Sales Representative.

Cat equipment is serviced at the Wagner Asia on-site workshop.



Tselmun G., Director of Rental and Used Equipment Division explains the importance of Wagner Asia's rental business and their Khanbogd branch.





“Wagner understands the importance of being a proactive partner.”

DALE DERBY

Operation and Maintenance Manager for Oyu Tolgoi LLC. Wagner Asia helps keep his operations running smoothly and is a preferred partner for rental equipment.

ON-SITE PRODUCT SUPPORT MEETS MAINTENANCE CHALLENGES

Creating an infrastructure for an operation of this magnitude is a daunting task. Everything from spoons and forks to heavy machinery has to be considered. Roads have to be created. Buildings have to be constructed. Pipes and cables have to be buried. It’s a seemingly endless list.

Availability is key when it comes to renting, but once machines are on the jobsite, it’s all about reliability. “During construction we ran only 4 percent downtime, which is pretty unheard of, so having parts available is critical. We basically built a warehouse that holds an average of \$14 million worth of parts. Much of the stock was Ground Engaging Tools, or GETs,” says Dale. The “stuff” he is referring to includes tools such as blades, cutting edges and teeth. “It’s tough to get in-country support for all the equipment we have. We were running more than 100 pieces, which is another reason we had to build our own stock house.”

To Dale, reliability means one thing – machines working when needed. The more reliable a machine is, the more uptime it can provide. To help maximize productivity, Wagner Asia works at Oyu Tolgoi on-site workshop so preventative maintenance, service and repairs could be done as quickly as possible. “The workshop at Oyu Tolgoi is very important. We have about 50 pieces of Cat rented equipment there. We are responsible for all the upkeep, parts, repairs, everything. Having a facility there staffed with our technicians who can handle whatever comes up means we can service the customer more efficiently and keep productivity at a high level,” added Ulziisaikhan, Khanbogd Branch Manager.

Depending on the size of the equipment, the workshop can hold up to eight machines at once. Wagner Asia technicians service about 15 machines

every day. There are 10-hour day and night shifts with about 14 technicians working each.

Regardless of the Cat machine type, service is performed every 250 hours. Brad Turner, Senior Advisor Mobile Maintenance for Oyu Tolgoi explains, “We pushed up the normal preventative maintenance time frame because of the dust and climate out here. Our machines run around 15 to 18 hours a day, so preventative maintenance helps keep everything running and we can catch issues before they become big problems.” Long operating hours and constant machine invasion by desert sand

“Rental was an excellent solution for us.”

Dale Derby, Operation and Maintenance Manager, Oyu Tolgoi LLC

are only made worse by the area’s dramatic temperature swings. During summer, temperatures can climb close to 40° C and plunge as low as -30° C in winter.

PARTS AVAILABILITY TAKES ON A WHOLE NEW MEANING

Even though Mongolia is more than 604,000 square miles, it’s still a remote country in the heart of Asia. Even more remote are Wagner Asia’s Khanbogd branch and the Oyu Tolgoi mine. That means getting parts can be, to put it delicately, challenging. “It’s not just the huge distances, lack of roads or severe summers and winters. There are also regulatory issues. You can’t get to Mongolia without crossing Russian or Chinese borders,” remarks Steve.

Wagner Asia is on a 90-day cycle for most stock orders. The biggest parts challenges, however, are emergency down situations. The airport that currently serves the Khanbogd branch and the Oyu Tolgoi mine can only

Cat equipment helps build the runway for the new Oyu Tolgoi Khanbumbat Airport.



CAT RENTAL MACHINES AT OYU TOLGOI MINE:

- 13 wheel loaders
- 8 off-highway trucks
- 8 motor graders
- 7 hydraulic excavators
- 7 track-type tractors
- 5 wheel tractor scrapers
- 4 telehandlers
- 4 vibratory soil compactors
- 1 modified articulated lube truck
- 1 wheel excavator
- 1 skid steer loader

CAT NEW MACHINES ONSITE:

- 11 wheel loaders
- 4 motor graders
- 2 hydraulic excavators
- 1 telehandler
- 1 track-type tractor

CAT USED MACHINES ONSITE:

- 4 off-highway trucks
- 3 backhoe loaders
- 3 telehandlers
- 2 wheel loaders
- 2 soil compactors
- 1 hydraulic excavator
- 1 track-type tractor
- 7 vibratory soil compactors



handle relatively small airplanes, so cargo space is at a premium. A new airport is currently under construction (using Cat equipment), but until it's operational, Wagner Asia brings in parts from Beijing, China and makes final delivery by rail or road. "Our colleagues in Denver, Colorado have a distribution center 20 minutes down the road. Their idea of an emergency is if parts aren't there the same day. We do well to get parts here in five days. It's an ongoing exercise in looking at how we can make it better than it was yesterday," Steve added.

So what's the perspective on parts availability and delivery from a customer point of view? We once again turned to Dale for answers. "Well, that depends on who you're dealing with. There are instances where if we got something within six weeks, we'd be doing pretty well. Quite often though, Wagner Asia could put parts on a plane and get them here before they even received the purchase order. The competitors just don't have the stock." Another Wagner Asia benefit is the dealership's cap system, which allows Dale and his crew to connect to the dealer's parts stock directly so they know what's available and when. Wagner Asia was also the first to provide Oyu Tolgoi with an on-site parts person who is responsible for keeping up with stock and acts as a direct line of contact for the customer.

A CAT DEALER THAT'S ALSO A SOLUTIONS PROVIDER

For Oyu Tolgoi, Wagner Asia is more than just a vendor or a line on a spreadsheet; it is also a solutions provider. If Oyu Tolgoi needs parts, Wagner Asia supplies them. If a machine need service, Wagner Asia's on-site workshop provides it. If new, used or rental equipment is required, delivery is on time and according to customer needs and machine usage.

Wagner understands the importance of being a proactive partner. Rather than sit back and hope that

Oyu Tolgoi business would come to them, they brought their business to Oyu Tolgoi – quite literally. "Working with Wagner Asia is a complete success. When we parachuted equipment and people in here, there were always delays. But Wagner, really honestly, was always there to support us through that. I think we tried all the other companies for rentals and that didn't go well. But Wagner was always good," Dale confidently says. ■

ULZISAIKHAN

Khanbogd Branch Manager,
Wagner Asia Equipment LLC.

A small army of 773D off-highway trucks help advance landfill operations.





STAGE ONE THE WARM UP BEFORE THE COLDEST JOURNEY ON EARTH



Sir Ranulph Fiennes, called the world's greatest living adventurer, will lead The Coldest Journey On Earth.

This is the first in a series of five stories covering "The Coldest Journey On Earth." We'll follow Sir Ranulph Fiennes and his team of six explorers as they attempt the first-ever Antarctic winter crossing. It's a six-month, 2,000-mile epic journey, most of which will take place in complete darkness. Two specially modified Cat® D6N track-type tractors are accompanying the expedition.

ADVENTURE CALLS

Sir Ranulph Fiennes and his expedition left London in December 2012, however the team won't step foot on the frozen continent until late March 2013. Cat Magazine will be tagging along, figuratively, of course, as the team, including two Finning engineers, battles unrelenting wind and bitter cold temperatures as low as -70°C.

The greatest challenge may still be ahead, but perhaps the most important part of the journey isn't the journey at all. It's the planning, preparing and training, which are what this story is all about.

CAT DEALER FINNING UK ASKED TO BE EXPEDITION MEMBERS

To successfully complete an expedition of such magnitude, having dependable equipment is critical. To help lead the way, Sir Ranulph Fiennes put his trust and confidence in the capabilities of two Cat D6N. Needless to say, Finning UK, who provided the expedition with the two machines along with maintenance, service and two engineers, were proud to be expedition partner. It's a testament to the reliability of Cat equipment and Finning UK support expertise.

PREPARING THE D6N FOR EXTREME CONDITIONS

As the lifeline of the expedition, each Cat D6N will pull special cabooses that carry food, shelter, equipment and 70,000 liters of fuel. The track-type tractors were chosen for their ability to perform – all day, every day. Expedition member Spencer Smirl, Engineer with Finning Canada, shared some D6N advantages. "I think they were chosen for their power-to-weight ratio. And, because of sea ice and crevasses, you want light machines. Industry-leading fuel economy was also a big factor, since we're pulling along our own fuel."

...most of the expedition will be in complete darkness.

The machines were tested in Arjeplog, Sweden and equipped with ground-penetrating radar to identify chasms and crevasse fields. Each was modified with adaptations to stop batteries from losing power and prevent drive belts from snapping. Tests also included fuel burn measurements and maneuverability exercises through a manmade crevasse field while pulling 17 tons. Spencer added, "We also tried out the grouser traction extensions and thermal tents used to cover the machines when performing maintenance and were happy with the results."





Discover more about The Coldest Journey on Earth and follow the expedition at thecoldestjourney.org and on ourcoldestjourney.com. For more information, contact Gabriela De Paula via De_Paula_Gabriela@cat.com.



Sir Ranulph Fiennes (5th from left) with his expedition and training teams in Sweden.

17 September 2012:

Announcement on BBC, press launch at London's Royal Society

20 November 2012:

Antarctic supply vessel, SA Agulhas, arrives in London

06 December 2012:

Prince Charles visits the SA Agulhas before the ship departs London

22 December 2012:

SA Agulhas arrives in Cape Town, South Africa

31 December 2012:

Media event in Cape Town

14 January 2013:

SA Agulhas arrives at Russian Antarctic base Novilazarevskaya

21 March 2013:

First footfall of challenge

June/July 2013:

The Ice Group reaches the South Pole

21 September 2013:

The Ice Group arrives in McMurdo Sound

November 2013 - March 2014:

The Ice Group returns to London

THE MEN WHO WILL OPERATE THE MACHINES

The Cat machines weren't the only team members tested. Two Finning engineers had to endure physical and mental testing to make sure they could handle the extreme stresses and challenges of such crippling conditions. "Being from Northern Canada I'm not scared of the climate, but I do respect it," said Spencer.

Over three weeks, Finning UK instructors created faults in a D6N to test the engineers' ability to perform under pressure. And, to see how the engineers perform in the cold, they spent 14 chilling February days in Arjeplog, Sweden working with a D6N. Spencer recalls, "They assessed our personalities and mental state when we were at our weakest – cold and tired."

MOTIVATIONS BEHIND VOLUNTEERING

Why would one volunteer for such an extreme expedition? Spencer says, "It's a rare opportunity. To be part of the first team to successfully complete this trek is something I never saw myself doing. I always wanted to race something. I just never thought it would be across Antarctica with a bulldozer. It gives me a huge sense of company pride."

THE EXPEDITION'S PRINCIPAL MISSIONS

The expedition has two main purposes. One is to collect data to further the understanding of climate change and its effects. The other is to raise \$10 million for Seeing Is Believing, a global initiative that helps tackle avoidable blindness around the world.

Coming up in the May 2013 issue of Cat Magazine, we'll take you along as the expedition takes the first footsteps toward the South Pole as we check in on their progress. How are they dealing with the punishing cold? What challenges and dangers have they faced? It's all in the next issue as the realities of a 2,000-mile march takes hold of the team. ■

CAT IN BRIEF



SMALL CONSTRUCTION MACHINES WORK AT THE TOP OF THE WORLD



When Pon Equipment Norway received a delivery order for three compact machines, (a 301.8C, a 308D CR Swing Boom and a 906H High Flow), it was business as usual, even though that delivery was headed to the globe's 78th parallel north. The machines arrived for duty to support larger Cat® equipment (2 track-type tractors, 8 wheel loaders, 5 off-highway trucks and 2 hydraulic excavators) at the Svea port facilities in Svalbard, Norway. As expected, however, there are lots of challenges working this far north.

Svalbard is an archipelago half way between the tip of Norway and the North Pole. Bitter cold temperatures (an average low of -10° C), mean machines are equipped with cold-start and after-starting systems. One unexpected challenge, however, is dry air, which dries out the machines' rubber parts, making them brittle.

Accordingly, Pon performs additional inspection routines and keeps a higher stock of rubber components handy. Plus, the dealer has a service technician on-site at all times so issues with the customer's fleet can be taken care of immediately or prevented altogether.

THE NEW CAT MOBILE PHONES TALK TOUGH

You can drop them, submerge them in water or expose them to dirt and dust. The new Cat® phones can handle it all, living up to the Cat product reputation for durability and reliability. The two new models are the Cat B10 and the Cat B25. On the job or at play, both are designed to withstand tough worksite environments as well as life's every day drops, bumps and rattles.

THE CAT B10

Built to last without sacrificing features or functionality. A reinforced body protects the B10 from jolts, it can survive immersion in one meter of water for 30 minutes, and, the phone is impervious to dust.

The Cat B10 is one serious piece of equipment and has:

- an Android operating system
- capacitive multi-touch screen
- a 5.0-megapixel rear-facing camera and, 0.3-megapixel front-facing camera
- access to more than 500,000 apps

THE CAT B25

If you want compact and straightforward, this is the phone for you. The Cat B25 has a more traditional keypad, but it's still loaded with goodies including a 2-inch screen and 2.0-megapixel camera that can take videos.

Plus, there's expandable storage up to 8GB, a built-in LED flash and hands-free speakerphone. Like the B10, the B25 will survive immersion in one meter of water for 30 minutes and is impervious to dust.

For all the specifications and details, more information and to receive updates, sign up on catphones.com.



CAT MAGAZINE 2013

WEEK	1	2	3	4	5	5	6	7	8	9
	JANUARY					FEBRUARY				
MO		7	14	21	28		4	11	18	25
TU	1	8	15	22	29		5	12	19	26
WE	2	9	16	23	30		6	13	20	27
TH	3	10	17	24	31		7	14	21	28
FR	4	11	18	25		1	8	15	22	
SA	5	12	19	26		2	9	16	23	
SU	6	13	20	27		3	10	17	24	

WEEK	9	10	11	12	13	14	15	16	17	18
	MARCH					APRIL				
MO		4	11	18	25	1	8	15	22	29
TU		5	12	19	26	2	9	16	23	30
WE		6	13	14	27	3	10	17	24	
TH		7	14	21	28	4	11	18	25	
FR	1	8	15	22	29	5	12	19	26	
SA	2	9	16	23	30	6	13	20	27	
SU	3	10	17	24	31	7	14	21	28	

WEEK	18	19	20	21	22	22	23	24	25	26
	MAY					JUNE				
MO		6	13	20	27		3	10	17	24
TU		7	14	21	28		4	11	18	25
WE	1	8	15	22	29		5	12	19	26
TH	2	9	16	23	30		6	13	20	27
FR	3	10	17	24	31		7	14	21	28
SA	4	11	18	25		1	8	15	22	29
SU	5	12	19	26		2	9	16	23	30

WEEK	27	28	29	30	31	31	32	33	34	35
	JULY					AUGUST				
MO	1	8	15	22	29		5	12	19	26
TU	2	9	16	23	30		6	13	20	27
WE	3	10	17	24	31		7	14	21	28
TH	4	11	18	25		1	8	15	22	29
FR	5	12	19	26		2	9	16	23	30
SA	6	13	20	27		3	10	17	24	31
SU	7	14	21	28		4	11	18	25	

WEEK	35	36	37	38	39	40	40	41	42	43	44
	SEPTEMBER					OCTOBER					
MO		2	9	16	23	30		7	14	21	28
TU		3	10	17	24		1	8	15	22	29
WE		4	11	18	25		2	9	16	23	30
TH		5	12	19	26		3	10	17	24	31
FR		6	13	20	27		4	11	18	25	
SA		7	14	21	28		5	12	19	26	
SU	1	8	15	22	29		6	13	20	27	

WEEK	44	45	46	47	48	48	49	50	51	52	1
	NOVEMBER					DECEMBER					
MO		4	11	18	25		2	9	16	23	30
TU		5	12	19	26		3	10	17	24	31
WE		6	13	20	27		4	11	18	25	
TH		7	14	21	28		5	12	19	26	
FR	1	8	15	22	29		6	13	20	27	
SA	2	9	16	23	30		7	14	21	28	
SU	3	10	17	24		1	8	15	22	29	



JORDAN TRACTOR'S CUSTOMER ORANGE GOES GREEN



THE JORDAN TRACTOR HYBRID SYSTEM:

- 7 kW photovoltaic solar cells
- Three mounted wind turbines (1 kW each)
- Two battery banks with 24 batteries (total)
- One Cat 13.5 kVA diesel generator on standby

One hour to the west of Karak, Jordan, and about 150 kilometers south of Amman, there is a lone cellular phone tower. Its name is 63AQ. And, in this remote area, having equipment that helps people reliably communicate is important. The tower is owned and operated by Orange. When you first see 63AQ, it looks just like any other cell tower, except for one important detail – the tower's power supply comes from a hybrid system supplied by Caterpillar®.

Caterpillar has plenty of experience using generators to reliably power remote telecommunication base stations. But the number of remote stations that have no grid access is quickly increasing. As a result, companies like Orange are looking for alternatives to generators that burn expensive diesel fuel. More and more they are seeking out reliable, cost-effective power, and Cat® offers a variety of hybrid systems.

TRADING DIESEL POWER FOR HYBRID POWER

Previously, tower 63AQ was powered using two conventional generator sets, which consumed about 1,800 liters of diesel fuel and 16 liters of engine oil per month. In addition, Orange technical staff had to visit the site every month to replace used fuel and perform any needed maintenance. It was costly and time-consuming.

Then, during a visit to the Cat dealer Jordan Tractor, Tamer Nasr, Power System Department Head Manager, told Orange representatives about the hybrid system supplied by Caterpillar. "Orange has sites powered by solar only, but they were very interested in the potential our hybrid system offered. With rising fuel prices and an operational life of about two years before generator sets need an overhaul, Orange asked us to make a proposal."

Jordan Tractor quickly went to work drafting different hybrid configuration options and designing site plans before making a presentation. "There was a lot of engineering work done to create the most effective system. We also studied wind maps and solar intensity. Everything had to work together," added Tamer. A short two months later, 63AQ was running on solar and wind power.

SAVING EMISSIONS AND SAVING MONEY

The hybrid system uses an intelligent Cat remote control and monitoring system, several photovoltaic solar panels (7 kW total), three wind turbines (1 kW each) and two battery banks. The solar panels and wind turbines provide carbon-emissions-free energy and are the main sources of power used to charge the battery banks. In turn, the batteries power the telecoms equipment. And, should there be a lack of sun or wind, the batteries can power the tower for up to four days. There is also a Cat 13.5 kVA diesel generator (on standby), which can keep 63AQ up and running for 40 days.

The goal of the project is to make more efficient use of the world's natural resources and reduce unnecessary impact on the environment. It's working well. Thanks to a carefully calculated balance of solar and wind energy, the

"We eliminated CO₂ emissions and the back-up generator has not been needed during the last 16 months."

Aziz Aranki, Power & A/C Operations Manager at Orange

system operates perfectly during the summer and winter. "In summer, most of the power comes from solar, and in the winter, most comes from the wind," added Tamer.

Since going live, there has been no diesel fuel or engine oil consumed and no need for repairs. Aziz Aranki, Power & A/C Operations Manager at Orange Jordan also highlighted the project's success: "The system was installed during May 2011. During the first year of operation, we had a €20,000 reduction in operating expenditure. In addition, we eliminated CO₂ emissions and the back-up generator has not been needed at any time during the last 16 months."

There has also been a significant reduction in monthly operating costs. For example, powering 63AQ using the two diesel generator sets cost



about \$2,400 per month. The hybrid system, however, costs only about \$100 per month.

SITE MONITORING

While the equipment at 63AQ was relatively new, quick monthly site visits were still performed just to visually check on the equipment. Now there's no need. "There is no service or repairs to be done. And because the equipment doesn't consume any fuel, there's nothing to refill. And, the site automatically sends us full reports electronically about its operating performance, which we pass on to Orange," says Tamer.

STANDARDIZED SYSTEMS FOR A GROWING MARKET

Caterpillar will release mainly high volume standard hybrid solutions to the Cat Dealer network. In some instances Caterpillar and Cat dealers will offer customized solutions for specific and targeted projects," Tamer went on to say. Knowing that the number of remote telecommunication base stations is on the rise, it's safe to say that Jordan Tractor will be configuring a wide range of hybrid systems in the near future. ■





A TWO-DECADE EVOLUTION OF CAT WHEELED EXCAVATORS

From Left to Right: Peter Gerstmann, Zeppelin CEO; Werner Baumann, BMTI CEO; Bernd Karsten, BMTI Technical Manager and Brian Abbott, Caterpillar Wackersdorf Product Manager wheeled excavators during the handover celebration.

Caterpillar® has been making wheeled excavators since 1992. And today, they're just as popular as ever. Germany continues as the largest wheeled excavator market, but other emerging economies, such as Africa and the Middle East (AME), the Commonwealth of Independent States (CIS) and Asia are growing and developing.

Customers who use Cat® wheeled excavators use them for a variety of tasks. "People who buy this kind of equipment work with municipalities or in metropolitan areas," says Randall Crow, Product Marketing for Excavation in Geneva. "These machines are perfect for working in tight spaces, with underground utilities, for fine grading, city street repair; it's all about versatility. Plus, Cat wheeled excavators have best-in-class lifting capacity and are very fuel efficient."

Another wheeled excavator advantage is speed. It won't win any Formula 1 races but can travel up to 37kph. Brian Abbott, Worldwide Product Manager for Cat wheeled excavators added, "Two of the wheeled excavator's

biggest appeals are that it can be driven on public roads, and that it can easily move around the construction site."

FROM PAST TO PRESENT

In the late 1980s, German Cat dealer Zeppelin went into the wheeled excavator business. Built by what is now a Caterpillar competitor, they were branded under the Zeppelin name. Caterpillar quickly saw the success Zeppelin was having and created its own Cat wheeled excavator using a different contractor.

Several years later in 1994, the first Cat M300 platform was launched, followed by the next generation M300C in the early 2000s. In 2005, Caterpillar bought out the remaining partners and moved production in house to Grenoble, France.

The M300D Series soon followed in 2007 and met Stage IIIA emission requirements. And, more recently, Caterpillar kicked off the new product introduction program for the F Series wheeled excavator. It will be Stage IV, EPA Tier IV compliant and available in early 2015.



SMARTBOOM™, THE NAME SAYS IT ALL

A major factor that differentiates Cat wheeled excavators is SmartBoom. SmartBoom “thinks” for operators so they can concentrate on production. Operators can activate and de-activate work options to become more productive when it comes to performing a variety of tasks such as hammering, loading/unloading or fine grading. It’s perfect for saving fuel as well, because the machine runs more smoothly, efficiently and effectively.



THE 25,000TH WHEELED EXCAVATOR IS PRODUCED AND DELIVERED

That brings us to the end of July 2012. After more than a 20-year history, Caterpillar has produced the 25,000th wheeled excavator, an M318D. To celebrate this milestone, Cat dealer Zeppelin handed over the specially decorated M318D to Strabag BMTI during a ceremony in Munich, Germany. “Our business depends on the availability of machines and on how quickly – should the need arise – a mechanic can be at the construction site and the required part can be supplied. This is not only true for Germany and Austria, but throughout Europe,” says Werner Baumann, Manager at BMTI/Strabag.

WHEELED EXCAVATOR EVOLUTIONS

Over the decades, Cat wheeled excavators have improved considerably and the next evolution is no exception. “For the F Series, one major focus is on incorporating

“It performs well in tight spaces and is perfect for fine grading.”

Randall Crow, Product Marketing for Excavation in Geneva

new technology to reduce fuel consumption, especially through the hydraulics,” says Brian. “For example, we’ll replace fixed gear pumps with electronically controlled variable displacement pumps. This way, hydraulic oil flow is automatically adjusted based on demand. So if the machine is idling, less oil is delivered. That reduces demand on the engine and saves fuel.”

The biggest focus, however, will be on improving reliability. “The most important thing to owners and operators is that machines work when needed,” says Brian. That’s why the production facility in Grenoble is having a \$20 million transformation to follow Caterpillar production principles for a consistent and significantly more reliable machine.

RESPONDING TO CHANGING MARKETS

While many of the evolutions incorporated into the next line of Cat wheeled excavators are natural progressions, some are in response to specific markets – especially Europe.

“The EU is a sophisticated market. Operators want a lot of complex hydraulics, to use different tools and a high-level operator environment,” says Brian. “So we

now have three different seat options and monitors are 40 percent larger with greater resolution. There’s SmartBoom, joystick steering and ride control that uses air cushions to counteract bumps when traveling on the road, plus a list of other advancements.”

Caterpillar has the goal of becoming the worldwide leader in wheeled excavators by 2020. The company’s sights are set on Asia, AME and the CIS. “The CIS, and especially Russia, is the biggest opportunity behind Germany and Korea,” Brian added. That’s because Russia has a long legacy with wheeled excavators. The challenge is to deliver machines that match a different concept of price for value proposition. Brian went on to say, “What we’re doing is adapting the design from a configuration standpoint to offer more basic machine options so we can deliver the right price points and to keep machines easier to own and operate.”

In 2014, Caterpillar will also start producing machines in China to serve continually growing and important markets such as Asia, AME and the CIS. Doing so will mean Caterpillar can meet growing demands in each market. ■

Werner Baumann, CEO of BMTI, Baumaschinentechnik International GmbH, subsidiary of Strabag Group.

“We have only a fraction of the 25,000 wheeled excavators produced, but are delighted with this anniversary edition. Of our 800 Cat machines, many are wheeled excavators.”



MACHINE CARE PAYS OFF

Dubai, United Arab Emirates has one of the most beautiful skylines in the world. But there was a lot of tough work that took place behind the scenes to create the mega malls, beaches and landmarks, such as the 160-story Burj Khalifa tower and the Palm Resort, for which the city is so famous. Helping build these groundbreaking structures is a sizeable fleet of Cat machines at Industrial Quarry & Cement (IQC) that has withstood harsh quarry conditions to load and haul thousands of tons of solid rock every day.

Established in 2004, IQC is a leading limestone quarry based in the UAE. The quarry produces 10,000 to 11,000 tons of aggregate, road base, armor rock and crushed sand per day. To keep up with those kinds of production numbers, IQC depends on Cat equipment, including a D9R, a 980G, four 972G, six 771D, a 226B and two 345C – a wide-ranging collection of equipment. But, what's more impressive, is the fact that most of these large quarry machines have nearly 30,000 hours on

them and have only undergone minor repairs over their seven- to eight-year life. Mohsin Al-Mishari, General Sales Manager at Al-Bahar (Cat dealer for UAE, Kuwait, Qatar, Oman and Bahrain) says, "Some minor repairs have included control valve reconditioning, water pump rebuilds, changing nozzles and fixing receding hydraulic cylinders. IQC certainly knows rigorous maintenance is important and it's paid off for them in a big way."

To help keep the fleet running at its best, daily reports are made about machine condition. It starts at the beginning of each shift and before the equipment is started with a walk-around inspection. Then, among other checks, fluid levels are checked and maintenance points are greased. "I firmly believe in daily inspections and preventative maintenance. They help keep machines performing at their best and increase the resale value as well. Quarry work is tough. I need to do everything I can to prevent breakdowns," said Jamal Hilles, General Manager at IQC.

Al-Bahar PSSE Mahmoud Odeh (right) goes over a machine condition report with IQC quarry manager Jamal Hilles.





Jamal's approach and vigilance is proving to be very successful. It was not until a remarkable 18,000 to 21,000 hours when top-end overhauls were performed for two 771D and a 972G. No other major or top-end overhauls have been needed and brake system reconditioning wasn't done until 6,000 to 8,000 hours on the off-highway truck fleet. Another benefit of Jamal's attentiveness has meant the quarry has maintained operations during the last five years, including the recession period, at optimum production capacity and low operation costs. "If you love your machine, your machine will love you back and serve you more and more," says Jamal. "The uptime and continuous productivity of these Cat machines backs that up."

TOGETHER, DEALER AND CUSTOMER EXTEND MACHINE LIFE

Adding to the number of people keeping a watchful eye on the fleet are those who are most familiar with the heavy-duty machines – the customer's operators. Operators are thanked for quickly reporting any warning lights, malfunctions or irregularities. Jamal added,

"After researching and hearing other customer experiences, we found Cat performance and durability the best."

Jamal Hilles, General Manager, Industrial Quarry & Cement

"Our operators have crucial roles when it comes to production and machine health. And, to make sure they are involved and passionate about it, operators not only receive training from an Al-Bahar demonstrator, we reward operators who report problems early."

Of course, another vital member of this team approach is Cat dealer Al-Bahar. Their support throughout the entire life cycle of the equipment is crucial. "We took several steps to give IQC added value. We did a production study to match the right machines according to required production levels. We created guidelines for optimal maintenance practices. And, we showed IQC why it's important to use Cat Genuine Spare Parts," said Mohsin.

PROACTIVE DEALER SUPPORT

Obviously, matching machines that are the correct size and rigorous maintenance practices are crucial for longevity. But having the right parts available to fix scheduled and unscheduled repairs is equally important for maintaining uptime and productivity. From a customer standpoint, this is a key differentiator. "One of my main requirements is parts availability and Al-Bahar does an excellent job. I would say they have 90 percent of all the parts I need in

stock. The other 10 percent are made available within 24 to 48 hours," Jamal confidently said.

Another way Al-Bahar is helping IQC prevent unplanned downtime is by having their Product Support Team monitor the quarry's machines through comprehensive, on-site inspections. This exercise features detailed condition monitoring and assessment, which results in professional diagnostic reports that are shared with IQC on a regular basis. The reports include a performance analysis and recommended courses of action to address any problems. This way, even minor issues can be caught immediately to help prevent breakdowns. "Those inspections and reports are important for us because we would rather correct or repair issues before failure. Solving problems in the earliest stages will save us a lot, both in terms of downtime and money," said Jamal.

A SUCCESSFUL PARTNERSHIP

Working 16 hours a day extracting tons of aggregate in the extreme conditions of the UAE is enough to test any piece of heavy-duty equipment to its limit – even famously durable Cat equipment. But an on-going commitment to preventative maintenance and regular inspections is proof positive that good service practices can go a long way. And in the case of IQC, that's 30,000 hours worth. ■

At Industrial Quarry and Cement in Fujairah - Al Tawain, the fleet of Cat machines works 16 hours every day.





A FIRST-EVER FUEL EFFICIENCY C

TECHNICAL SPECS

- Engine: Cat® C9.3 engine with ACERT™
- Meets EU Stage IIIB emission standards
- Operating weight (WHA SU blade): 28 908 kg / 63,730 lb
- Drive train: Electric
- Fuel tank: 409 l / 108 gal

It all started during a meeting between Jonathan Davies, Strategic Account Manager with Cat® dealer Finning UK and Vinod Mehroke, Veolia Environmental Services' General Manager, London Landfill.

Veolia was looking to replace their D8T waste-handling track-type tractor at the Rainham site in Essex, UK with one that was tailored to meet its specific contract requirements. Jonathan's strategy and value proposition was to offer a smaller, yet still powerful tractor that would provide substantial fuel savings and reduced CO₂ emissions over the life of the machine.

THE IDEAL CANDIDATE FOR THE JOB

"When Jonathan came to me suggesting we purchase a D7E, the capital costs were somewhat substantial. But, when I compared the fuel savings of the D7E over five years against the D8T, and even against what we would anticipate for a standard D7R, it was obvious the money saved could be considerable," said Vinod.

With its innovative hybrid electric drive system, the D7E is the most advanced track-type tractor available. The Cat C9.3 ACERT™ Stage IIIB engine drives a generator that produces alternating current. As a result, the D7E is 50 percent quieter than previous models.

Even taking all that into consideration, Vinod wasn't quite sold yet. Still to consider were the D7E's pushing power, its robustness and operator reactions as well as how it fit into the current and anticipated waste streams.

So, with the cooperation of Caterpillar®, a D7E was put on trial at Veolia's Rainham site for four days to compare its performance with their current D8T. Finning also provided 12 full hours of training before the handover. After the trial Vinod said, "We found that the D7E has excellent power on steep and shallow inclines as well as during longer pushes. The accessibility and visibility was also great. And because of the blade set-up, operators can see what they are working with." In fact, Jonathan told us operators found the D7E electronic hydraulics more responsive and were reluctant to go back to the D8T.

THE D7E FUEL EFFICIENCY CHALLENGE

Now that the D7E had proved its worthiness, Jonathan's next challenge was to demonstrate that the D7E was indeed capable of meeting, and even beating, his fuel efficiency expectations to make the sale worthwhile for Veolia. With unwavering confidence, he presented to Veolia the first ever warranted fuel consumption program. "Basically, they told us to put our money where our mouth is," said Jonathan. "So we did. And it's for the life of the machine."

For the D7E, Finning guaranteed 20 percent less fuel consumption versus the D8T. But it was an unfair comparison. Fuel consumption needed to be compared to a machine in the same, smaller class since it was this size equipment Veolia was considering.

Following some intensive negotiations an acceptable solution was reached in terms of underwriting the





GUARANTEE

performance. And while establishing a benchmark was one thing, reaching or exceeding that benchmark with so many variables is another. According to Vinod, “We did a lot of measuring. We calibrated the fuel tank. We checked it every two hours. We looked at the body of waste we were handling and how hard the D7E needed to push. We were pretty aggressive in the beginning.” Finning also gathered data. “We created a day-to-day

“I thought we’d get a 20 percent savings, but I think we’re going to end up with a 24 or 25 percent fuel savings.”

graph that showed fuel burn and aligned that to the machine’s tasks. One key consideration was that if the landfill’s working conditions changed substantially, there is a negative impact of fuel burn,” said Jonathan.

THE RESULTS

The D7E has been in service since November 2011. Both Finning and Veolia are extremely pleased with the results. Jonathan was proud to say that, “There were some big savings there for Veolia – in excess of the 20 percent projection. Vinod also said that he expects to see even larger fuel savings as a result of Eco-Drive™ training. While some Eco-Drive™ methods were used to help reduce fuel consumption, Finning is currently working with Veolia to develop a comprehensive training program.

A SUSTAINABLE LEAP FORWARD

With its cutting edge technology, the Cat D7E is clearly an industry leader. It’s built to do more work and consume fewer resources over its life. That includes fluids, replacement parts, raw materials and, of course, fuel, which means lower CO₂ emissions.

The D7E’s hybrid engine is also built to last longer. Compared to a D7R Series II, for which an engine overhaul typically takes place between 12,000 to 14,000 hours, the D7E can run 16,000 to 20,000 hours before needing that kind of service. Plus, Jonathan also said Veolia was able to reduce maintenance costs by about 8 percent, proving that the D7E is truly efficient in every aspect. ■

LOCATION:
RAINHAM SITE,
ESSEX,
UNITED KINGDOM



THE D7E SUSTAINABILITY BENEFITS:

- Uses 10 to 30 percent less fuel than D7R Series II, resulting in lower lifetime greenhouse gasses
- Moves 10 percent more material each hour
- Has a 25 percent more material moved per gallon of fuel
- Electric power drive has 60 percent fewer moving parts

SKYFALL

007[™]



AGENT 007 AND THE CAT 320D L PUT A WHOLE NEW TWIST ON CATCHING A TRAIN

Famous for exciting opening sequences, James Bond is back again for the 23rd film, *SKYFALL*. In the movie, James Bond, played by Daniel Craig, sees his loyalty to M (Judi Dench) challenged after discovering secrets from her past. During the opening sequence, the British Secret Service agent, turns to a much larger piece of non-MI6-issued equipment – a Cat 320D L.

ABOUT CAB SWITCH

Cat aficionados will notice the cab on the 320D L is on the wrong side. Darren Litten explained, "Because of pre-visualizations, the location and interaction between Bond and Eve, it only worked if the cab was on the other side."

Changing all the electronics and hydraulics was a huge task for the special effects department. "Probably 50 percent of the work done to that machine was changing the cab around," said Darren. The 320D L also needed to perform many operations the exact same way and at the same speed every single time.

Planning for the excavator's participation began in July 2011. Art Director, James Foster, who collaborated on the early plans for the scene, said "We originally had three ideas for this stunt during the opening scene, including using the 320D L somehow on a flatbed train carriage. It was the idea that leapt out at us as a cool thing to do and we liked the idea that the excavator's boom is Bond's arm reaching out to grab the train."

In the opening sequence, Bond is engaged in an epic chase, part of which takes place on and around the 320D L. Speeding down the tracks at 70kph, the flatbed carriage carrying the excavator is uncoupled from the rest of the train. To continue the chase, the ever-resourceful Bond uses the excavator's arm and bucket to grab hold of the separated train. Bond then uses the arm as a bridge over which he precariously crosses to continue the chase.

... it took a crew of about 300 people to complete the shoot.

The thrilling stunt, took extensive coordinating and planning. "We had a rehearsal period of about four months and then another two months shooting the scene," says Martin Joy, the Location Manager in Turkey.

Adding to the challenge was the fact that this kind of stunt had never been attempted before. Gary Powell, the Stunt Coordinator, said, "There were a lot of unknowns so we started with simple studio testing. When we eventually arrived in Turkey, we made test runs of the train's entire route to check for hazards such as low cables. Then, we incorporated all the excavator's actions so we knew what could take place and where." When filming did begin, it took a crew of about 300 people to complete the shoot.

SHOOTING A SAFE, HIGH-SPEED CHASE

A lot of time and effort also went into making sure actors, stunt people, crew and bystanders were safe. For example, the excavator was held to the train using a metal track so the 26-ton machine could travel along the length of the rail car and not fall off. "Safety was critical," says Chris Corbould, Special Effects Supervisor.

For the 320D L, some creative "set dressing" was used to make the stunts as safe as possible. James Foster said, "We discretely added hand holds and used grills to cover some of the hydraulics. We also used a grippy paint finish on certain areas of the 320D L so there was extra traction."

ON LOCATION IN ADANA, TURKEY

The crew chose Adana because railways there went through the right kind of landscape. Plus, one of the five tracks had the kind of bridge needed for the end of the scene. Not all filming was done in the countryside, however. "At times, the set was two kilometers long and went right through town," Martin added. "I think the people there enjoyed it though."

As it turns out, getting two 320D L excavators to the location and adjusting train schedules was not as difficult as expected. "Obviously these machines are wider than the permissible load in most countries. Luckily, there was a shipping company that went from Bristol, UK, to a port close to Adana," said Darren Litten, Action Vehicles Coordinator.

And when it came to shooting the train and excavator while speeding down the track, Ian Lowe, Special Effects Floor Supervisor for the 2nd Unit, said, "The Turkish government was fantastic in helping us, whether it was track time or using train carriages. We could film from 8:00 to 18:00. That's a good time window."

Cat dealers Finning UK and Borusan Makina were also integral. Finning UK assisted special effects with technical support and supplied parts for the two 320D L excavators. Locally, Borusan Makina provided on-site expertise and services as well as equipment, such as generator sets, skid steer loader and mini hydraulic excavator, for the shoot. ■





WANT TO HELP DESIGN THE NEXT LINE OF CAT MACHINES?

LEAVE YOUR MARK ON THE NEXT CAT® MACHINE.



Join the Cat Customer Panel

Where do many ideas for Cat® equipment adaptations and innovations come from? You might be surprised. They come from the Cat Customer Panel and people like you!

Available in eight languages, the Cat Customer Panel is a group of customers, including, company owners, operators, fleet managers and service managers. Exclusive to Cat Customers, panel members share their opinions about Cat machines to help guide our product specialists in the development of solutions that, ultimately, will maximize the customers' return on investment.

Through the panel, your recommendations and feedback are collected for five products groups:

- motor graders
- wheel loaders
- track-type tractors
- hydraulic excavators
- wheeled excavators

The information is then analyzed and could be incorporated into future Cat products. Then, we follow-up and provide the results to you. Be part of the team that designs your next Cat machine. Visit <http://core.mycatvoice.com/join>. ■

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