



between the BRANCHES

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CHANGING THE SYSTEM

Gentz Forest Products faces new realities head on, transitioning from high volume chipping to processing in Michigan hardwood.

— Paul Iarocci

Gentz Forest Products (GFP) began in 1990, back in the heyday of the pulp industry in Michigan. The company is based in Manistee on the picturesque eastern shoreline of Lake Michigan, a region deeply rooted in the forest industry. Dave and Melissa Gentz bought the company outright in 2006 and remain the sole owners. Throughout most of the history of GFP, Dave had a multitude of pulp mills to market his product to. The tree-length operation made use of feller bunchers and skidders followed by slashing and chipping. Peak chip output was 2,500 tons (2 270 t) per week and the timber sales were on large tracts, minimizing the time and cost associated with moving.

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Dave is pleased with the high availability rates of the 630D skidders.

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Dave now finds the local industry and consequently, his business, in transition. The mills have disappeared, save for one pulp mill in Manistee and a Weyerhaeuser OSB mill in Grayling. “This year chipping has really dropped off,” says Dave. “There is less consistency out of the [Manistee] mill and changing ideas. For instance, the mill is running more round wood through their own chipping system. Also, the big jobs and large blocks have run out. 80 acres is now considered large and many state timber sales are only 25 to 40 acres.”

In response, Dave has changed his entire business model by adjusting his harvesting system to create additional products that are viable and marketable and by continually seeking out new markets. Instead of producing a high volume of hardwood chips marketed to a few large mills, he is producing 500–800 tons of pulp and fuel chips while optimizing each stem for more lucrative products like pallet wood and the high grade saw logs. Everything else is ground for the mulch market. Now Dave has over 20 customers. Success for GFP is now all about optimization and full utilization, as opposed to volume.

To accomplish this, Dave has moved toward a hybrid harvesting system. Drive-to-tree feller bunchers handle the felling. Skidders pull full trees from the

outlying parts of the tract to a secondary deck and leave the closer bunches alone. Using a track harvester, the trees are processed and merchandized for grade timber, pallet wood and pulpwood at the secondary decks as well as within the cut block. Minimum diameter is 10 in (255 mm) for saw logs, 5–10 in (125–255 mm) for pallet logs and minimum 3 in (75 mm) for pulpwood.

Forwarders move the logs from the cut block and secondary deck to roadside. The harvesters separate the tops under three inches which are later skidded

and decked. Eventually the chipper, which is shared between the crews, comes in and makes fuel chips from the tops. Depending on the market, the pulp can either be transported as chips or round wood. Dave continues to use skidders primarily to deal with the tops and to reduce forwarding distances.

Aside from realizing more value from each tree, the transition from slashing to processing has had other benefits. One big advantage is far less reliance on the big timber sales. “We buy our own timber and with the processor we don’t have to go far and wide looking for the big timber sales that will make chipping economical,” explains Dave. “We can stay within an hour’s drive of home. We get our sales mostly from word of mouth. The harvester is much more flexible for smaller jobs.”

“Also, the big jobs and large blocks have run out. 80 acres is now considered large and many state timber sales are only 25 to 40 acres...With the processor we don’t have to go far and wide looking for the big timber sales that will make chipping economical.”

That said, Dave finds running the wheel buncher ahead of the processors to be much more efficient than felling and processing with the harvester. “The harvester doesn’t have to cut every little stick. We have gained a 50% increase in production with the buncher while saving a lot of bars and chains.”

Previous to 2012, Dave had never considered the purchase of Tigercat equipment. For one, there is currently not a dealer servicing the region. Also, he already had a strong relationship with an equipment supplier in the area. But as Dave recalls, “I had developed a relationship with [Tigercat’s US sales manager] Kevin Selby and when things went bad with another brand of



Operator Scott Savich in front of his machine.



TigerCAT H822C equipped with a TH575 harvesting head. The processors work infield and at secondary decks. Merchandising with a single grip processor has changed the GFP business model.

I like the power and that there is no gear shifting. It has good visibility and a comfortable ride. It is a good machine and it doesn't break down. And it out-pulls everything else."

Dave's most recent TigerCAT purchase was an H822C harvester equipped with a TigerCAT TH575 harvesting head in mid-2013. Operator, Bob Morgan, has 30 years under his belt as an operator and a contractor and Dave values his opinions. So far Bob is happy with the performance of the machine. Dave utilizes the deep experience of his operators by heavily involving them in the company's decision making process. "My guys have the right attitude and I am always asking myself, 'How can I support and help them.'

If I was gone tomorrow, everything would continue on. I feel I have a really good group of guys. They take care of stuff that I don't even know about." GFP employs nineteen operators and technicians and turnover is very low.

Dave expects his business and the industry in general to continue to evolve. He speculates that, "In the future we may move to a pure cut-to-length system. We are still in a crossover period now, but I think in the next couple of years, skidders and tree length will go away and cut-to-length will come on strong." ■

skidder that I had purchased, I called him up and got a price on a 630D." Considering Dave's close proximity to the factory, Dave ended up purchasing the machine as a direct sale from TigerCAT. "We were very impressed with it and decided we wanted one more identical machine before they went to Tier 4. We have never been happier with any other brand of equipment. It is a complete breath of fresh air to have machines working every day. TigerCAT has let the machines prove themselves."

Dave appreciates TigerCAT's openness and rapport with the end users and technical responsiveness. "There is a big difference in attitude. The company is much more transparent. We know that if we have a problem, there is somebody there to fix it."

Scott Savich is one of GFP's skidder operators and a highly experienced one at that. "I've run every skidder there is and I was pretty much finished [skidding] with back problems and all the rest of it. I can run this skidder. I feel good.



Dave Gentz (front) talks with operator, Bob Morgan, about the new TigerCAT harvester.

A quick history of logging in Michigan

Michigan is a historically important commercial forestry region in the United States. As early as 1840, industry insiders were realizing that the supply of coveted white pine was running out in Maine and New York just as demand was increasing. Soon lumber producers began looking west and Michigan had it all – the white pine, and abundant network of rivers for log transport and access to the Great Lakes system for shipping.

By 1870 Michigan was a top producer, apexing in 1889 at 5,5 billion board feet.¹ The loggers of the day became less selective, cutting lower quality wood to meet ever rising demand for building material but the production increases could be partially explained by technology and efficiency improvements.



The logging wheel in operation in a Michigan forest.

Log Type	Price per 1000
MAPLE	24.00
SOFT PINE	25.00
LEARNWOOD	4.00
HORN PINE	4.00
ASH	4.00
BIRCH	4.00

Log specifications and prices in Glen Haven, 1895.

Traditionally the harvesting season was in winter, when horses could pull sleds of logs over frozen ground to the nearest river. The combination of cold temperatures and heavy snowfall was required both for skidding the logs and to ensure there was enough spring runoff to get the logs downstream to the sawmills that were often located at the mouth of a river.

All that changed with the invention of the Michigan logging wheel by Manistee resident, Silas C. Overpack. The first wheel skidder allowed loggers to work outside the winter season. The logging wheel consisted of an oversized set of specially designed wagon wheels with adequate flotation properties for year-round use. A team of horses could pull several tree-length logs at once. The load was held by a chain that suspended the logs underneath the axle. The logging wheels were eventually marketed throughout the world and used well into the 20th century.

Logging in the 1800s was a labour intensive activity occurring in sparsely populated areas. Labourers in Michigan earned around \$20 per day plus room and board and often came from New England, New York and Canada. The end of the century saw vast numbers of Scandinavian immigrants in Michigan, many of which populated the logging camps.

Years of timberland mismanagement took its toll and near the end of the 1800s consequences were being observed with increasing fires, erosion, and of course, deforestation. Attempts to convert logged tracts to farmland often proved unsuccessful. The dire situation inspired early attempts at conservation and one man who took it upon himself to become a protectorate was David Henry Day.

Day moved to Glen Haven in 1878 to manage a cordwood station for Northern Transit Company. He eventually bought the steamship company and also invested in a sawmill. He developed and improved Glen Haven as a company town for both enterprises.

Recognizing the breakdown and loss of northern Michigan's forests, he developed a number of forest management principles and founded the Michigan Hardwood Lumber Association. In 1920, he donated 32 acres (13 ha) of Lake Michigan shoreline near Glen Haven, creating the D.H. Day State Park. The park is now part of the very impressive Sleeping Bear Dunes National Park.



The visionary and entrepreneurial David Henry Day.

1. "Lumbering in Michigan" *Great Lakes Informant* (Series 3, Number 2), Maria Quinlan, 1975



Mike is working to optimize the duty cycle in tough conditions and more closely match component lifespan with structural life.

PAST, PRESENT AND FUTURE

Mike Nadeau looks at the past and present for cues on how to evolve White Oak Inc. along a sustainable path to the future in Northern Maine.

— Paul Iarocci

Mike Nadeau, who co-owns White Oak Inc. with his father, asks a lot of questions. A progressive thinker, he sometimes receives ideas and answers from unlikely places. When he presents to me a recently discovered article profiling his grandfather's logging operation in the April 1959 edition of *The Northeastern Logger*, it is obvious he has already scoured the short piece for practical information, drawing interesting parallels between past and present.

Titled, "The Patrick Nadeau Logging Operations", the article reads, "As Mr. Nadeau recalls, the illness of men was one of his most serious problems. They had to be conveyed to the nearest hospital, which was

about one hundred miles away, by teams in sleds." Mike emphasizes that it was not just the sick men that were lost but also the healthy ones that had to guide them out of the bush.

The article goes on to describe the changes that Patrick saw over his lifetime: improved camps with electricity, hot running water, refrigerators and "good sleeping quarters" replaced log cabins insulated with moss, stuffed straw mattresses and barrels of water sourced from the nearest stream.

Fast forward to the 21st century. While the technological aspects of the business have changed

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drastically, from horse teams to rudimentary tractors and dozers to the complex fly-by-wire marvels of today, some challenges remain nearly the same and they are invariably tied to the human factor. Let's face it, people haven't changed nearly so much as logging machines in the last 70 years. "It takes one year for an operator just to learn the basics," says Mike. "When you create a good operator you need to keep him."

Although Mike is a third generation logger, he does not own a third generation business. When his grandfather retired, the business retired with him and his three sons went their separate ways. That is when Mike's father, Vernal, went into trucking.

Mike describes how Vernal expanded from one to three trucks in 1982, with Mike driving one for many years. In 1988, Mike and Vernal expanded into loading with a new venture, White Oak Inc. By 1990, White Oak was harvesting wood for J.D. Irving. As Mike puts it, "We were good at trucking and loading but not so good at logging."

Irving expanded its land ownership in Maine, and by 2000, had 27 contractors. Mike felt that White Oak needed to become more efficient, noting that with one exception, all the contractors at the time were doing 200–400 cords per week. The exceptional contractor produced about 700 cords while achieving the same quality as everyone else. What was this contractor doing differently?

Mike questioned the man at length and could only discover two differences. "When I asked what time he ate his lunch, he chuckled and said there was no set time. And many times he forgot to eat. The second thing, he burned twice as much fuel as us."

Adjusting attitudes

After much thought, Mike decided the reason the man forgot to eat lunch was because he was so extremely focused. It was his attention on the task at hand that was important and consequently he worked the machine harder. "It is like driving a car, when half the time you don't remember the last town you drove through," explains Mike. "Who is doing the driving, you or the car? We needed to be the driver because at the time we were going pay check to pay check and everything we tried was not working."

After countless hours of research, Mike learned some valuable information. *The Dream Manager*, by Matthew Kelly, described a janitorial company with 250 employees and a 75% employee turnover ratio. Three years later, the company employed 750 and went three months with no turnover. "First thing, you must have a plan," says Mike. "Then you get the employees to believe in your company and the direction you are going." After reading *Good to Great* by Jim Collins, Mike realized that he must implement a structure for the men to follow, no matter how small the detail. "We also learned that we must take what we are good at, simplify, and become better at it."

Mike recalls that getting started was an enormous challenge. "First we met with the twelve men we had working at the time and told them about our plan. We were going to shorten the hours from fourteen to eleven with the same or more pay. We put bigger fuel tanks on the skidders, so the operators didn't have to refuel as often and we installed better entry steps, better lights and better windows on all the equipment." Mike also supplied transportation from home to jobsite, started an employee health insurance program and increased the number of holidays. "All this would improve the working conditions for the men, which in turn would improve their quality of life. When they went home, they were less fatigued, which would create a better family atmosphere and on Monday morning they were happy to come to work, more times than not." The idea was that improved quality of life would reduce turnover.

"The cost of this structure—and there is always a cost—was that I needed them to do the driving and stay focused 100% of the time. There was initially some pushback from the crew; two men quit the first Monday morning that we implemented the structure. But by the third week most everyone had calmed down and adjusted to the new norm." White Oak's production tripled not because of the introduction of some new technology or technical process, just the implementation of a structure that, in turn, adjusted the mindset of the crew.

Beating inflation

White Oak's next challenge came in the form of a squeeze with lower rates on one side and ever

escalating costs on the other. Everything from fuel to insurance to wear items became more expensive and Mike became determined to beat the inflation.

White Oak traditionally ran full-tree thinning systems with a track buncher, skidder and stroke delimeter at roadside. Smarter planning was a big step toward improved efficiency and reduced fuel consumption. Today, it is an established best practice for the foreman to study the topography of the site, planning the main skidder road so that it flows downhill to the corner of the yard with no 90 degree turns. Secondary buncher trails are also planned according to topography to make the wood flow as smooth as possible.

Armed with GPS, the feller buncher operator follows the map, making practical adjustments where required and then submits the revised map to the skidder and limber operators. The skidder operators use the maps to mark off trails that have been skidded so everyone on the crew knows where the wood is, eliminating unnecessary travel. In addition, the operators record all fuel consumption to be later input into Mike's extensive set of software models that track all aspects of the business. "Before these best practices were

instituted, fuel consumption averaged 1.4 gallons for every ton [5,8 L/t] that was put to roadside. Now we are around one gallon per ton [4,2 L/t] on average. Fuel consumption is the key to everything."

Mike has put similar structures in place, governing every aspect of the business. "Everything in my shop is automatically reordered. Every wear item, paper towels, everything. This saves me a lot of time. I am never on the phone ordering anything, unless there is a breakdown." Each crew has an on-site service trailer set up and stocked identically with a system in place for the employees to quickly find, track and replenish inventory. We always try to make the job easier and safer. If there is a problem, we always ask, 'How did it happen? How do we prevent it?' Then and only then do we fix it."

The future: machine lifespan

According to Mike, employing highly trained operators with the right attitude improves production and extends machine lifespan. When Mike showed me the spreadsheet for his ten-year debt/equity projections, he did some quick math. Assuming a 20,000 hour machine life and 3% annual inflation rate for the price of new machinery, "My payments would increase from \$50,000 to \$89,000 per month ten years from now. We are not talking about anything else, just equipment. With that in mind, can the land companies increase rates enough to keep up with inflation?" Performing some sensitivity analysis, Mike bumps the skidder and buncher lifespan up to 25,000 hours. The result? His payments stay the same and he doesn't lose any equity in the projection. "So the question arises, how do we get to where we want to be?"



An 822 buncher opens a new yard. The yards are very carefully located to optimize wood flow.

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Good planning. White Oak plans yards and trails according to terrain conditions. Skidder operators mark off which trails have been skidded.

Today, White Oak's Tigercat equipment fleet consists of six 822 series feller bunchers (including the pink one, reported in *BTB*, July 2013), four 822 series harvesters, five 630C skidders, two excavator-based stroke delimiters and one 1055B forwarder. Two other forwarders round out the CTL crews. So far, the oldest Tigercat buncher has clocked over 17,000 hours and the two oldest harvesters (converted from feller bunchers) have 27,000 hours. In trying to wrap his mind around the inflation problem at the time, Mike first asked himself, "Do we have the right machines? And can we get to where we want to be with them?"

"We determined that with Tigercat equipment, we can get to where we want to be. For we feel they are the best machines on the market with the longest potential structural life," Mike asserts. He also hit on an idea to further extend lifespan by modifying his harvesting system and machine mix. In 2012, Mike began the transition from delimiters to processors. He is projecting a processor lifespan of 35,000 hours and plans to repurpose 20,000 hour feller bunchers into processors. This new tactic has already resulted in reduced monthly payments and enhanced the debt-to-equity ratio.

Mike has also introduced best practices to extend useful life. When it was observed that skidder drive systems were not lasting long enough compared to machine structure, he analyzed the duty cycle and fuel consumption. Mike determined that in tough terrain, the operators were putting too much demand on the driveline components. To remedy, he added a second skidder to the crews and cut down the grapple tongs to decrease the size of the loads. "Now we are seeing much longer tire life and no more chunks of rubber gone and I can extend my skidder lifespan to 25,000 hours, with two sets of drive systems."

White Oak introduced similar best practices for feller buncher operation with focus on shortening the boom envelope. "Even though the machines can lift the trees at full reach, it doesn't mean you have to every time,"

says Mike. Feller buncher trail spacing was reduced from 100 ft (30 m) between trails to 75 ft (22 m), effectively decreasing feller buncher travel. "Now we get the skidder to double up the bunches instead. Just the trail spacing we implemented saves approximately 2,275 feet [690 m] of tracking between trails on every acre that we harvest." On average, the bunchers harvest about ten acres (4 ha) per day over a 42 week year. "We are looking at a savings of 800 miles [1 300 km] a year of tracking. Hopefully with these changes and many others, we will survive."

Another area of concern was an imbalance between White Oak's winter and summer volumes. "As a consequence, we would have to hire additional operators in winter that were not as well trained or did not believe in the structure," Mike explains. "This extra volume came at much higher cost per ton."

For example in summer 2011, White Oak put 12,100 hours on the two full-tree systems, which in turn produced 118,000 tons, averaging 0.98 gal/ton. The following winter, with six additional men and a shorter timeframe, the two crews did 12,200 hours but only produced 90,000 tons at a cost of

1.42 gal/ton. “We lost approximately \$400,000. So the question arose again, how do we get to where we want to be?”

In the spring of 2012, Mike met with Seven Islands Land Company, asking if it was possible to switch some of the winter harvest volume to summer. “They were interested only if we would convert two of our full tree systems over to cut-to-length systems.” Mike switched two systems that spring and converted a third in 2013. “This eliminates hiring additional untrained workers for just three months per year. Hopefully with steadier employment we will establish a core group of employees on the cut-to-length system and this will be the answer to our cash flow shortfall in the winter months.”

The CTL systems are double shifted. Two single-shift full tree crews work for Orion. Total annual production is about 300,000 tons, almost entirely selective felling. White Oak has 36 employees

including Mike’s wife, Leisa, who is the office manager and oldest son Charlie, an operator training to be a foreman. Vernal owns 50% of the business and looks after timber transport with a fleet of six trucks.

Aside from the structural integrity of the Tigercat machines, a big factor in the purchase decision for Mike is the well managed service department, strong technicians and excellent parts availability at Frank Martin Sons. “They want to keep me in business,” he says, adding that FMS always gives the customer options, for example, offering new or reconditioned parts and working to improve or repair the machine faster to reduce downtime.”

“I can also talk directly to the Tigercat engineers and owner about future plans,” says Mike. “When I spoke to the owner [Ken MacDonald] about the plan to extend the life of our machines, he said he gets upset when he hears that someone traded their machine at 10,000 hours. He told me that besides the major

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components, the machines should get between 25,000 and 40,000 hours. He said a customer just upgraded a processor that had 48,000 hours on it. The glow he had when he told me this story demonstrated how proud he was.”

For Mike, this is one of many reasons he chose Tigercat as White Oak’s primary manufacturer and Frank Martin to sell and service the machines. “We can no longer take the bad with the good and hope for the best. We must explore every opportunity, turn over every rock and question everything. Unless we all work together as partners—the equipment manufacturers, the landowners, the dealers and most of all, the employees—we will never be able to overcome inflation.” ■



The 630C delivers a load to the yard.

See ‘Patrick Nadeau’ insert reprinted with permission, Northeastern Loggers’ Association, Inc.



Setting the Industry Standards



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product news

470 MULCHER

Tigercat has added a new model to its expanding line of mulcher carriers. The new 470 mulcher is equipped with the Tigercat FPT C87 Tier 4i 245 kW (328 hp) engine. It is narrow and agile with extremely low ground pressure, rated at 20,9 kPa (3 psi). The 470 is best suited to tough terrain and sensitive site ROW, pipeline maintenance, and oil and gas exploration projects.

The 470 is equipped with a high capacity cooling system with a variable speed, automatic reversing fan. A dedicated pump powers the attachment and an efficient closed loop drive system propels the tracks. Inside the cab, the operator has ergonomic electronic joystick steering with CRF (counter-rotate function) for 'turning on a dime' at the touch of a button. The heavy duty steel engine enclosure and precleaner guard eliminates the requirement for a rear canopy. All structural components are designed for full time forest duty.



For over two decades Tigercat has designed and built forestry equipment with increasingly complex hydraulic and electronic systems that are able to survive some of the harshest operating environments on the planet. This knowledge and experience has resulted in a line of mulchers with more reliability, higher uptime, a longer useful life and greater productivity and efficiency than competing products.

875 LOGGER

The hugely successful 880 logger has a new junior companion. The 875 logger is a 36 000 kg (80,000 lb) carrier with two boom options for loading or processing applications. It is equipped with the new Tigercat FPT N67 Tier 4i engine, producing 210 kW (282 hp). Designed for extremely fuel efficient operation, the 875 is equipped variable speed cooling



and Tigercat's unique closed loop energy recovery swing system.

The twin swing drive system provides powerful swing torque and reduced gear tooth loads for excellent performance and reliability in demanding processing applications. The new F7-150 heavy duty forestry undercarriage provides a stable base of operations, improving performance and operator comfort.

The operator's cabin is very spacious with excellent all-around visibility. Floor windows provide a clear view of the tracks. The engine compartment is open and spacious. Access to daily service points is very convenient and major components are readily accessible. The engine and hydraulic components are shielded and compartmentalized.

SKIDDER COMPETITION IN LES GETS, FRANCE

As reported by Piers Eyre-Walker, Clohse Group

Clohse Group, the Tigercat dealer for France, Belgium, Netherlands and Germany, decided to launch the new 610C DW mountain skidder at a skidding competition that is probably the only one of its kind anywhere in the world. The 610C DW is equipped with a dual winch, hydraulic fairlead and Tigercat's new EHS drive. It can be operated by full remote control. What better platform to introduce the machine to the European market than a competition?

The machine arrived in Belgium just in time to be shipped on to the Elmia Wood Exhibition where it made its world debut in June. Immediately after the exhibition it returned to Belgium where our operator, Michaël, had under two days to get used to the machine before driving down to the French Alps for the competition.

For the fifth time, a group of passionate forestry workers who created the club, Les Cognées, organised the bi-annual skidder competition in Les Gets, Haute Savoie, in the French Alps. Because of the nature of the competition, and the time available, it is limited to fifteen participants.

Competition rules

The rules are simple: skid four logs of fifteen metre length around a steep and challenging course against the clock without touching the gates. Penalties are given for touching the gates with either the skidder or the logs. Each competitor had two runs, one on Saturday and one on Sunday. Easy, you may think, but the course was designed to make it very difficult, requiring a lot more skill than speed.



Pushing the competition.



The competition

Saturday morning was the draw for the starting order after which each competitor was allowed ‘free training’ (without the logs) so they could get to know the course and plan their strategy for the competition. Saturday afternoon saw the first run. We drew the ninth starting place. Our aspirations were not high as Michaël, who normally drives a 630 series grapple skidder, had only a few hours preparation with the machine and cable skidding is something we don’t really do in Belgium.

Of course all eyes were on the Tigercat as Clohse Group had announced the launch in the French national press. Traditionally this event is dominated by Camox machines and dubbed ‘the Camox family reunion’. We were determined to change this! Apart from Camox, HSM, Deere and Timberjack machines were also in the line up as well as an ancient Caterpillar. Camaraderie was high and the other competitors helped Michaël to attach his logs for his first run.

The result

The first times were quite slow at around 22–25 minutes and we were shocked to hear Michaël’s time of seventeen minutes. We knew the EHS was fast and Michaël had assured us that even if he wasn’t



The 610C DW mountain skidder made its European debut in the French Alps.

The mountain skidder

The 610C DW is based on a standard 610C with a number of unique modifications. The machine is equipped with a dual winch. The two independently controlled hydrostatic drive drums can pull two loads at the same time with 16 000 kg of pulling force. The winches have a 220 m capacity with a 14 mm diameter cable.

When the hydraulically operated movable winch shield is lowered, it acts as an anchor for the machine.

In addition, the 610C DW is equipped with a two-cylinder, two-tong blade grapple for short wood decking and stacking duties.

All drive, winch, blade and blade grapple functions can be operated by wireless remote control with a 440 m range. A safety cut out is activated if the wireless connection is lost.

The 610C mountain skidder is specially designed and specified for low impact forestry applications in the most mountainous regions in Europe, including the Alps and Pyrenees ranges, as well as other areas with extremely steep hillsides ill-suited to conventional mobile equipment.

Winching is generally performed uphill. The radio control system allows a single operator to operate the machine and cables without constantly entering and exiting the operator’s station.

On extremely narrow mountain tracks with no opportunity to turn the machine, Turnaround™ is a very important advantage. It allows the operator to comfortably travel winch-forward for the long distances that are often required.

fast through the gates, he would be very fast between them, and he was! He flattened one gate (more penalty points than touching it) and touched two others but still ended the day in third place. Better than we could have even dreamed of!

On the second day, there were not so many people to help him or give him advice when he was attaching his logs. The times were considerably faster than the first day, the weather held and the spectators numbered around 8,000. While the final result was being calculated, the competitors had another ‘free run’. This time they were allowed to push one another if the one in front was too slow. On the longer steep ascent it was clear that the EHS was more powerful and faster than the competition, even the Camox with 260 hp was pushed up the hill by the 190 hp Tigercat.

This was a perfect platform to pit a Tigercat skidder with the new EHS against the direct competition and dispel any doubts the French forestry community

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had about a 'new' brand on the market. Our third place finish was very respectable. The contest generated a lot of interest in Tigercat and has opened the door to the market for dual winch Tigercat skidders in the mountainous regions of Europe as well as grapple skidders in their respective European markets.

For more information, photos and video coverage visit: www.lescognees.fr ■

The 610C DW gets put through its paces on the extremely challenging mountain course.



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FPT DELIVERS TIGERCAT'S TIER 4 ENGINE SOLUTIONS

Tigercat and FPT Industrial are pleased to announce an alliance for the supply of state-of-the-art FPT Tier 4 diesel engines. The Tigercat FPT N67 Tier 4i engine was the first to appear in Tigercat machines. The new E-series skidders, including the 620E, 630E and 635E are all powered by this engine. In addition, the 726E feller buncher and M726E mulcher are equipped with the Tigercat FPT C87 Tier 4i engine effective October 2013.

The engines supplied by FPT Industrial meet the stringent Tier 4 emission levels without the need for variable geometry turbochargers, an EGR system, a higher capacity cooling system, an intake throttle body or a diesel particulate filter. Furthermore,



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they offer improved reliability and lower long-term maintenance costs. Most of the new emission equipment is found in the exhaust or after-treatment system. The key is the selective catalyst reduction (SCR) which converts the harmful components of the exhaust gas stream into water, nitrogen, and carbon dioxide.

For the operator, other than refilling Diesel Exhaust Fluid or DEF tank, (DEF is commonly known as urea) no other action is required for the SCR system to function.

The biggest benefit for Tigercat machine owners is that the FPT engine series is fully supported by Tigercat, including all parts, service, warranty and technical support.

Thanks to its European roots, FPT Industrial has been able to gather significant know-how on emissions reduction, starting to work on this issue as early as 1995 and having produced over 350,000 engines equipped with its own patented SCR technology.

FPT Industrial is a company of FIAT Industrial dedicated to the design, production and sale of powertrains for on/off-road vehicle, marine and power generation applications. The company employs approximately 8,000 people worldwide, in ten plants and six R&D Centres. FPT Industrial's sales network consists of 100 dealers and over 1,300 service centres in about 100 countries. A wide range of products (five engine ranges from 31 to 740 kW and transmissions with maximum torque of 300 to 500 Nm) and a close focus on R&D activities make FPT Industrial a world leader in industrial powertrains. ■



These high capacity chipping systems are very sensitive to workflow issues and Daniel collects detailed production data to manage and optimize the flow of wood. In very large wood, a 630D can pull enough trees to fill a chip van in as little as two drags.

CHIPPING IN CHILE

KBM owner Daniel Hermosilla talks to BTB about the equipment and human resources required to produce chips efficiently in Chile.

Owned by Daniel Hermosilla, KBM Chile was established in March 1994 in Los Angeles, Chile. Initially, the company's focus was silviculture and site preparation. In 2001, KBM expanded into harvesting eucalyptus. Since then, the company has grown to 90 employees and specializes in infield chipping. Three chippers are deployed full time in infield operations, each headed by an operations manager whom in Daniel's words "owns" the system, operating according to a budget and guidelines.

Daniel sees a lot of advantage in his organizational structure. "There is no chain of command to work through compared to when we had one operations manager. The flattened structure provides better accountability. It costs more in salary expenses but in the long run it is better," he asserts. "Problems get solved very quickly and the manager works directly

with the client 99% of the time right up to the contract manager."

In total, KBM operates seven systems. The fourth system is stationed at a mill, chipping 7 m shortwood because the mill was having issues with high bark content using its own system. The other three systems operate on a part-time basis as required at each of the infield operations. When extended maintenance or repairs must be performed, the back-up chippers go into production, thereby securing a minimum volume for KBM's clients.

KBM operates two different types of chipping systems. The older Peterson-Pacific units with the flail and chipping functions integrated into one unit produce around 70 tonnes per hour and can load a truck in as little as 20 minutes.

The newer and higher capacity system is based around a Peterson-Pacific flail and chipper combination that is best suited to larger trees and higher production. This chipper has a capacity of approximately 120 tonnes per hour. But the higher capacity means that the chipper is more sensitive to workflow issues. “It is thirteen minutes to load a truck, so if a truck is ten minutes late, it is a big deal,” comments Daniel.

Many of the plantations that KBM harvests are typically eighteen-years old with 1 000–1 100 trees per hectare. There is currently a lot of Chilean plantation wood in this age range with average piece size as high as 0,85 m³. It is in this wood—beyond optimal single grip harvesting head size—that the large chipper is deployed. The bunchers end up losing production on account of the necessity for double cuts. Daniel figures that KBM will be in this size of wood for five or six years. Then the rotation will fall back to a more optimal 14–15 years. The smaller chipper works in plantations of 650 m³ per hectare and in some cases the system can produce 80 tonnes per hour in ideal conditions.

Daniel keeps a close eye on chip van load times. It tells him a lot about the overall efficiency of his operation and he measures this in three ways: total load time, stopwatch timing that takes machine stoppages into account and hour meter load time which Daniel explains, is basically the total hour meter time for the shift divided by the number of loads.

Also important to KBM’s tracking system are the iPads that are installed in the chippers. “We are quite modern in that sense,” says Daniel. Ironically KBM first tried industrial computers but they wouldn’t stand up to the tough operating environment. “So we thought, let’s try an iPad that is \$1000 cheaper. We wrote our own software and interface to download the information wirelessly to the mobile office. Then it is synced with the database in the main office.”

Using the iPads, the chipper operators must account for all work stoppages and have a number of pause codes available to choose from. The feller buncher and skidder operators input their data into the industrial computer in the mobile office once per shift and later the information is synced to the main office. “We

can use the data to improve the numbers by analyzing the different properties such as the operator, type of wood, the terrain conditions or machine issues. It is basically a management tool that ties into fuel consumption as well.”

Of the many facets of KBM’s operations, Daniel emphasizes the importance of human resource management. Problems related to people must be solved very quickly and that is where KBM’s management structure shines. The operations manager is empowered to solve problems without working



The Tigercat 860C cutting eighteen year old eucalyptus. While track feller bunchers always open new stands, when conditions permit, KBM deploys lower cost wheel feller bunchers.

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through a chain of command and this rapid response keeps the operators happy. Retaining good operators and keeping turnover to a minimum has a measurable positive effect on production, machine lifespan and safety.

“In general there is a shortage of operators,” explains Daniel. “We hire and train from scratch. Our system for training was not great but recently we have been focusing on it and it is improving. Now we have training procedures in place and [we teach] if/then scenarios for every conceivable variable or issue that the operator may face.”



Daniel says that this timber has grown beyond optimal size but the company has adapted to it and he expects to be chipping these older stands for the next four to five years.

Although operators are not responsible for daily maintenance, they must be involved and are required to perform visual inspections, check fluid levels and generally must get to know the machines. “But we don’t want to force them to do maintenance tasks and we do have a separate maintenance crew,” adds Daniel.

The initial training period for a brand new operator is three months. Daniel explains that it takes one and a half years to get to the 80% effectiveness mark and six to seven years to approach 100% effectiveness.

As a matter of necessity, operators are trained on the job. While they may be productive after a short time on an easy site, if any type of complication is added, suddenly the wood flow slows down. Learning how to respond to sudden challenges and complications makes a good operator and this is why the if/then scenarios are so important.

Daniel also explains that less experienced operators are definitely harder on the machines. “They have a hard time with pace when it is hot and we see increased incidence of overheating. It is sort of a turtle and hare thing and you can compare an experienced operator to the turtle. The new operator simply cannot adapt as well from site to site and cannot deal with change. Thankfully we have lots of seven-year operators now.”

Daniel has observed over the years that when he hires experienced operators, they almost seem to fit in too well. “They tend to go with the flow and don’t optimize the machine and minimize the hours. Even though they might be able to work faster and produce more in a given number of machine hours, they adjust their own pace to the general flow of the operation. This has the effect of dragging things out and makes it difficult to improve the productivity of the system.”

Standard practice has been to run the machines to 30,000 hours.

“Our conditions are easier than say, Canada,” says Daniel. “We find the older machines to be equally productive when they are working but the downtime increases and skidders tend to get beat up the most.” Daniel keeps back-up machines in case of extended downtime and has been considering reducing the lifecycle to 16,000 hours to keep availability rates up while preserving a high resale value.

Operations manager, Martin Durruty, took us to a couple of jobsites, first to see an 860C feller buncher opening up a new stand, then to see the extraction

and infield chipping. Martin explains that the 860C opens the stand by first cutting the perimeter. Even on a dead flat site where wheel feller bunchers will perform the felling, it is much more efficient to cut the perimeter with a track machine because it can swing around to throw the trees behind as it creates the corridor. In the large eucalyptus, production rates are about 250 trees per hour.

If the terrain is favourable, a drive-to-tree feller buncher is deployed to cut the rows. Normal production in the rows is 300 trees per hour. In the right terrain conditions, a wheel buncher produces the same as a track buncher, so rubber tire bunchers are used whenever possible. The feller bunchers generally work ahead of the rest of the system. How far ahead depends on many factors. The most significant is related to the optimal drying period before debarking, says Martin.

Martin took us to a second site where the chipper and skidders had just moved in. A single skidder opens the site initially, pulling the bunches that are very close to the deck. Once this wood is consumed and the congestion abates, the second skidder starts up and the two machines alternate between long and short skids to keep the correct volume of wood in front of the chipper. Bark is returned to the cut block and used to form a road or mat upon which the skidders travel. This is especially important in muddy sites and in rocky terrain where the feller buncher cuts slightly higher stumps to preserve tooth life. The thick brush layer softens the effects of the stumps on the skidders and operators. In very large wood, KBM's 630D skidders can fill a chip van with two 15-tonne drags and the 620Ds accomplish the same with three 10-tonne pulls.

Daniel first recalls seeing Tigercat machines back in 1998 at the Atlanta equipment expo. "I was with my Canadian partner and the name stuck in my head. At the time I

was doing site prep with a [Deere] 748." Then in 2000 as Daniel was contemplating his move into the harvesting business, he began researching machinery and looked up Tigercat on the internet. "Tigercat looked like an interesting brand. I liked the concept and idea."

The same year Daniel travelled to both Canada and the southern US and saw Tigercat machines working in both countries. "I was up in Thunder Bay and had the opportunity to talk to a Tigercat dealer salesman. Then I went to the southern US and saw [drive-to-tree] feller bunchers. Everyone said how good they were. I got good information from operators and owners and I liked what they said." At that point, Daniel decided Tigercat was the brand for him.

Upon his return to Chile, Daniel contacted the newly minted Tigercat dealer, Latin Equipment with an already formulated list of equipment requirements. At the time Tigercat was virtually unknown in Chile but that didn't deter Daniel. "I was not always one to follow the crowd. It depends on if I agree with the crowd or not. I don't try to be different but I will if I think it is a better way to go. They certainly were not the cheapest. Overall I am very satisfied."

To see a video of KBM's operations, please visit www.tigercat.com and click 'Tigercat TV'. ■



The skidder operators build up the main trails with brush to combat wet soil and to soften the impact of the stumps.

dealer news



TOP SALES AWARD FOR PARKER-PACIFIC IN 2012.

John Galbraith (Parker-Pacific sales specialist), Ron Montgomery (Canadian sales manager, Tigercat), Steve Carter (Parker-Pacific sales specialist), Fil Rinaldis (project engineer), Glen Holbrook (Parker-Pacific sales specialist)

inside Tigercat

SKIDDER GROUP EXPANDS AND REORGANIZES

Continued growth of machine shipments combined with aggressive new product development and expansion of internal development efforts for Tigercat drivetrain components have resulted in an expansion and reorganization of the Tigercat skidder engineering group.

Since drivetrain product manufacturing takes place at the MacDonald Steel facility on Avenue Road, axles and transmission engineering as well as the advanced engineering and product development for skidders have also relocated to Avenue Road. Skidder product manager, Shawn Pette retains responsibility for all skidder engineering but has moved with the powertrain component development and advanced engineering group and will concentrate his efforts there. The group includes Ken Shantz, Jason Schneider, Ben Blackman and Nathan Henry.

Reporting to Shawn, Jeremy Piercy has assumed the role of group leader for the current skidder product

line, coordinating the activity of the engineering team at Tigercat's Savage Drive facility. This work consists of skidder design, product enhancement and refinement, as well as the development of skidder-based off road industrial products such as sprayers and aerial device carriers. The group, comprising of Mansour Moshiri, Dan Gordon, Henry Nymann, Iryna Chorna, Dean Simon and Andrew Franklin, also provides technical expertise to the production, sales and service departments. Kevin Henson, also a member of the skidder engineering team, is remotely located and will work with both groups.

NEW PARTS DISTRIBUTION CENTRE

Tigercat has maintained a parts warehouse in Vidalia, Georgia for over 14 years. In an effort to better serve customers in the southeastern US where Tigercat's most dense machine population is located, Tigercat recently purchased a 2 970 m² (32,000 ft²) building on 30 ha (73 acres) in Ailey, Georgia. Building renovations are currently underway. When complete, the result will be greater inventory and increased access to replacement parts for our American dealers.

LETTERS TO THE EDITOR:

E-mail: comments@tigercat.com

Internet: www.tigercat.com

Facebook: www.facebook.com/Tigercat

Tel: 519.753.2000

Mail: P.O. Box 637, Brantford, ON Canada, N3T 5P9

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