

ENGINE ROOM

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JAPAN'S PREMIUM DREAM BUILT IN HOBART

A high speed catamaran, built in Hobart and powered by Caterpillar is now on its way to Japan.

According to Peter Pearce, Area Manager Specialisation at William Adams, the catamaran was fitted with two C32 propulsion motors, one running all the time and one as a backup. It also has two new 4.4 Generator engines.

After EPSA sold the engines, they went to Richardson Devine Marine, the Tasmanian boat builder, where they were installed by William Adams in Hobart. Further to this, William Adams in Melbourne was called in to carry out all elements of the engine testing and verification to satisfy the stringent Japanese Government Certification criteria.

With the catamaran destined to be used for passenger-carrying commercial purposes in Japanese waters, the engines needed to have Japanese Government Certification. This involved William Adams load testing each engine at 20 per cent for three hours, then 50 per cent, 80 per cent, 100 per cent and 110 per cent before the process was reversed and re-tested.

Once the engines had each been load tested, extensive readings needed to be taken for everything including manifold, exhaust, input and output temperatures, boost, oil and fuel pressure, plus many other readings. Then the engines needed to be stripped down to see if there was any wear to the crankshaft, the bearings, pistons and cylinder. Components also had to be measured to make sure they were still in specification.

Finally the engines were re-assembled and tested again. It took approximately two weeks per engine.

As Peter explained: "While the C32 engines have been put through their paces throughout the world, it is still a relatively new model that had not been previously tested in Japan. As a result, a ship inspector from the Government of Japan oversaw all tests". The engines have since passed sea trials in Hobart and the completed catamaran is already Japan bound.



Equipped with two C32 propulsion motors and two 4.4 Generator engines.



Having achieved Japanese Government Certification, this Caterpillar-powered catamaran is bound for Japan.

EPSA'S CAT RENTAL POWER POSITIONED TO GROW

As the newly appointed National Operations Manager, Wade Bailey believes their priority is to keep every customer one hundred per cent within the Caterpillar family, whether that is with rental, sales or servicing through the nationwide dealer network.

"We need to be seen as an extension of the customer's business," Wade elaborated. "If we find that a rental customer wants to purchase, we can refer them. This way we truly provide a seamless end to end service that is supported in all states by an equally dedicated and diligent dealer network".

Before his new appointment, Wade worked for 15 years in the rental division of Atlas Copco. "I worked in different applications from mining to industrial to events markets across a product range from power generation and compressed air through to lighting," Wade explained. Beginning as a Yardman, Wade climbed the corporate ladder to become Branch Manager and finally Operations Manager.

From Wade's perspective CAT Rental Power (CRP) has positioned itself well to grow, with minimal impact from the global economic downturn. In fact, Wade emphasised: "This business is continually expanding".

In particular Wade sees a huge opportunity for power generation to grow. "As power generation is seen more as a utility, specialised companies will become the leaders," Wade explained.

"Mining is riding a rough storm but there will be further exploration in Australia," Wade said.

"As for air compression, I believe companies will come to purchase this like they buy power, paying the supplier a tariff," Wade predicted.

"Where companies generate a product, they'll focus on this and leave their air compression requirements to a specialist provider".

According to Wade, renting not only provides a temporary solution to those building their businesses but also for prudent companies that are looking for alternative ways to stay operating during the downturn. "There are some customers, of course, who will always rent. However, it is just as likely that a customer will use a rental solution as a 'test drive' and once satisfied that this equipment meets their every criteria will prefer to purchase it outright," Wade elaborated.

As such, Wade sees the CAT Rental business and the engine sales businesses sharing a common customer base and depending on whether a customer wishes to rent or purchase, "we can draw referrals for each other's division".

As National Operations Manager, Wade is responsible for various key areas. "I coordinate with the Commercial Build Department, ensuring that CRP creates a quality product. Also the Applications Department which supports the product in the field. Then there is the Major Projects area. This operates to assist branches in putting together large scale projects". Wade emphasised that CAT Rental Power's contribution is very much a team effort and that, of course, includes Caterpillar dealer support.



Wade Bailey is EPSA's CAT Rental Power's new National Operations Manager.

A MULTI-MILLION DOLLAR MONTH

Even though the Governmental Marine Excellence Center (GMEC) has been operating just over two years, the business continues to go from strength to strength. In February alone, and despite the world's economic woes, the GMEC essentially sold \$47 million in equipment for several large projects.

"We're in a strong position and we're getting stronger. If people are looking for an exciting and rewarding career change within the Caterpillar Dealer family, they should look at the GMEC," said GMEC's Neil Vaughan.

Currently the GMEC has quotes out in 23 countries. "We do everything that is not US-funded". The GMEC has an international flavour. "We deal with different cultures and many languages.

It's a good thing we have the support of the global Caterpillar dealers who sometimes have to provide translation and always know the best places to eat," Neil explained.

Even though a relative newcomer, Neil emphasised that the GMEC is increasing its global presence backed by Caterpillar. "We're breaking new ground and going after other types of business. We're going up against the more traditional competitors with a lot more experience and we're winning the contracts".

"The Caterpillar dealerships around the world have also been fantastic," Neil was quick to add, noting that it's a win/win situation. "Having the GMEC enables them to compete for contracts they may not have considered in the past". *(continued following page)*

(A multi-million dollar month continued)

As one example, the GMEC has gained the contract for an LPD based on the Singapore Endurance Class vessels to be built by Singapore Technologies Marine (ST Marine) and supplied to the Royal Thai Navy.

When ST Marine contacted the local Caterpillar dealer, Tractors Singapore, they wanted a complete package to mitigate their risk. So the GMEC was called in to provide a main propulsion and power generation solution that met their technical requirements and budget.

The market in which the GMEC operates is different to the commercial sector. For government departments, technical responses are required in much more depth. In addition to Caterpillar's reputation, the GMEC gained the ST Marine contract because of their fast turnaround and detailed

accurate information. When the Thai Government asked questions of ST Marine, the GMEC was responsive to their technical inquiries.

As Neil noted: "Here we have a strong marine dealer in Singapore asking an Australian company to design and provide complex equipment for a ship destined for Thailand". All in all this is very typical of the way the GMEC works.

"The GMEC has some very challenging technical and commercial times ahead as we build up our workforce to meet increased sales, project management, supply and commissioning of the contracted equipment," Neil surmised. "I would say that the GMEC offers a diverse and challenging career to anyone interested in the marine industry".

WITH CAT IT'S UNDER CONTROL

William Adams and EPSA are proud to be of service to Stawell Gold Mine. John Moelder, Mining Manager from William Adams in Tasmania, said that William Adams (out of its Hallam branch) has continued to support the mine in the maintenance and repairs of its underground mobile equipment fleet, including Load Haul Dumpers (LHDs) and trucks. At the same time, EPSA's CAT Rental Power division has been working with the mine on temperature control.

At 1370 metres, Stawell Gold Mine is one of the deepest mines in Australia to be accessed via a decline. With rock temperature at this depth reaching 43.5 degrees Celsius, temperature control is crucial.

Previously the mine used a wet contact system, but this proved inefficient. "The old system was adding humidity to the air," recalled Anthony Hamilton, vent officer at the mine. "The old system also used cooling towers and there were a lot of dangerous chemicals to manage". However, in January 2008, Stawell Gold Mine began using temperature control provided by CAT Rental Power and is very pleased with how the system is performing.

Initially CAT Rental Power provided four separate spot cooling plants consisting of a 1x500kW Variable Speed Drive Screw Fluid Chiller, two 300kW Fin Fan Air Handlers and all ancillary equipment. Further to these, a 100kW DX Air Conditioning Unit was also placed underground. More recently, Stawell Gold Mine has installed a second DX Air Conditioning Unit for exploration work on another diamond drill platform.

Having the chillers installed in the return airway is not only keeping the work front cool, but is also assisting the natural exhaust air flow. "Basically large primary fans draw over 300m³/s of air

through the return airway making both the cooling and exhaust operations more effective," explained Anthony.

Stawell Gold Mine is in the midst of a vent system upgrade. As Anthony stated: "The mine is undergoing continual expansion and CAT Rental Power temperature control will continue to be used in the forefront of mining operations, and all possible increases in efficiency of these and other systems will continually be assessed".



EPSA's CEO Phil Canning visits Stawell Gold Mine 1370 metres underground to see how well CAT Rental Power's temperature control is performing.

DELIVERING OVER AND ABOVE

Innovation Place in Arthur Street North Sydney was designed with a plant room on the 23rd floor. So when the building facilities manager, Savills, needed to organise standby power for a new tenant – quickly and economically – Caterpillar proved the best solution.

The tenant's requirement was for a 250 kVA generator but Michael Markidis from Norman Disney & Young, the Project Manager, was instrumental in having the generator's capacity increased almost three-fold. From his perspective the building's owner was investing in the vicinity of one million dollars so it made commercial sense to build in plenty of additional capacity to cater for future tenant requirements.

With this in mind a C18 Caterpillar 700 kVA generator was specified. This unit boasts a Caterpillar field-proven lightweight and fuel efficient 18 litre diesel engine. Then combines this with a CAT generator that has been performance-matched to the output characteristics of the engine. In hindsight, this decision was the easy part, compared to the preparation and lead-up work required prior to the installation.

"A high-rope contractor needed to abseil down the building to remove the external louvres on the plant room and some of the building's facade to facilitate access," explained Rick Clarke from

the Sydney branch. In addition, a traffic management plan needed to be cleared with North Sydney Council to close the street from 5am on the Sunday. Then a specialist crane company with a 100-metre mast was enlisted to lift the Caterpillar 4 tonne generator, generator switchboard, attenuators, day fuel tank, exhaust silencer and pipe work into the plant room.

"From here we proceeded with a fairly standard installation that included installing intake and exhaust attenuation and ducting, soundproofing the room, fitting an exhaust silencer and a catalytic purifier, as well as installing and connecting the day fuel tank to the main tank in the basement," Rick recalled.

The Heyday Group was then able to connect the system to the tenant's UPS room located on the 14th floor enabling EPSA to commission the Generator Set. According to Rick: "The final test was conducted at 11pm that same day, when the unit was run at full throttle and passed the Council's compliance test with flying colours".

As Michael Markidis from Norman Disney & Young said: "From our point of view it's always good to deal with contractors that are true to their word and with Rick and Energy Power Systems Australia what they promise they deliver".



Rising to the challenge. With Caterpillar Genset delivery, installation and commissioning – in this high-rise city building – all completed the same day.

A BIGGER, BETTER BARGE POWERED BY CAT



BEFORE – The 114 metre Derrick Pipe Laying Barge before the most recent upgrade.



AFTER – The mid section is pre-cut to enable the upgrade and extended length.

When Clough Singapore Constructor Pty Ltd set about the mammoth task of upgrading its pipe-laying barge, they decided on Caterpillar 3512B Generator Sets to power this vastly improved vessel.

The ABS A1 Derrick Pipe Laying Barge, otherwise known as the 'Java Constructor', had been built in 1982 with an upgrade in 2000. In June 2007, it was deemed that the vessel's length should be extended by 15 metres, with pipe laying and crane lifting capacity increased. As part of this upgrade, more power generation was required.

The barge is used for Clough's work with the upstream oil and gas industry. Prior to the most recent upgrade it was equipped with a 400 tonne pedestal-mounted crane, an eight-point mooring system, helideck and accommodation for 188 personnel. Further to these, it carried the required equipment for pipeline installation. The upgrade undertaken by ST Marine, a shipyard in Singapore, has extended the vessel to 129 metres and the four Caterpillar 3512B Marine Generator Sets, each delivering 1360KW at 1800rpm, will be used to power everything from the lights to all the auxiliary equipment.

In all, the barge upgrade has taken 18 months to engineer with a further 4 months scheduled to complete the shipyard works. The work included the pre-cutting of a 15-metre mid-section that incorporates a new engine room and the power management system, vessel lengthening, along with the upgrading of the heavy-lift crane and pipe laying systems.

EPSA's Project Engineer, Firdause Behramkamdin said that the project management involved procurement of Generator Sets, relevant auxiliary equipment, ABS class certification of the new equipment supplied and now the commissioning of the four Caterpillar Generator Sets. "We also won the contract for doing the design, fabrication and commissioning of the power management system, a purpose-built control system that 'communicates' with the engine from the systems operations point of view," Firdause explained.

In addition to providing an electronic control system for the four main Gensets, a power management system was also required for one Stand-by Generator Set (a CAT 3412DI) that already existed on the barge to bring about standardisation amongst all power generating sets on board the vessel.

As Regional Manager, Laurie Phillips elaborated: "The Gensets were assembled and factory acceptance testing carried out here in Perth by WesTrac with Tractors Singapore, a Caterpillar dealer in Singapore, assisting at the final stages on the commissioning".

"A nominated team from EPSA including a subcontractor has been sent to Singapore to commission the generators and carry out the site acceptance test to ensure that the equipment performs as expected," Project Manager, Tony Warthold added. The commissioning work is estimated to be carried out over a period of 28 days. This is the first project of its kind that EPSA has undertaken for Clough. Hopefully, the first of many more.

CAT PROVIDES POWER IN THE MIDDLE OF NOWHERE

Murrin Murrin is about as remote as you get. A major Nickel-Cobalt mining operation, situated in the North Eastern Goldfields, approximately 60 kilometres east of Leonora in Western Australia.

There had been ongoing problems with an existing power system and blackouts. So two Caterpillar 3512 Generator Sets with the fuel reticulation system were ordered to provide emergency power for the Murrin Murrin Nickel processing plant and its village where over 600 workers are being housed.

As EPG Project Engineer, Pierre Delpont explained: "Essentially what has been delivered is a complete emergency power station with a fuel reticulation system, purpose built to Minara Resources' requirements".

Murrin Murrin is semi-arid. In other words it is hot, dry and dusty. Nickel processing gases are also corrosive, especially for copper. For these reasons, each generator is provided with its own modular enclosure that not only provides protection from the elements, but also attenuates the noise to avoid disturbing anyone in the living quarters nearby.

In addition to the external considerations, all components inside the enclosures needed to be kept separate to minimise air flow over the parts containing copper and to reduce any risks of corrosion, particularly the control and electrical compartment. All circuit boards were specially coated for operation in the corrosive atmosphere.

Each 3x12 metre enclosure, which weighs around 35 tonnes, can be lifted and moved to where it is needed. As Pierre elaborated, "They have been designed to be modular while keeping to the specification so they can be picked up and placed wherever power is required".

The generators along with the bulk fuel system will be assembled and fully tested prior to shipping.



The Caterpillar 3512 Gensets are each housed in soundproof, weatherproof enclosures that can be moved to wherever power is required.

WHEN THE GOING GETS TOUGH, THE TOUGH GET CATERPILLAR.

As part of the 'Australia Unites' Bushfire Appeal, Caterpillar has pledged to match its staff donations, dollar for dollar, up to US\$100,000. But its dealer in Vic/Tas, William Adams, has also been working on the ground, helping at fire-ravaged Marysville through its Cat Rental Store operation.

On February 7, 2009, the Guscott family watched in horror as their beloved Marysville burned. Neil Guscott, owner of Production Stamping, saw his sheds and fences destroyed with large trees crashing to the ground. It was a mess, limiting access in and out of the family's 500-acre farm.

As a general engineering and property development business, Production Stamping is a user of Caterpillar machines. As Lindsay Guscott explained: "We look at The CAT Rental Store as an extension of our fleet. I've always spoken very highly of the people at Caterpillar and its dealer William Adams". But even Lindsay admits that he was

overwhelmed by their generosity when he needed "a machine, and a big one" for clearing, mopping up and opening tracks at Marysville. "In fact, The CAT Rental Store did a deal and came up with a fantastic rate".

The help didn't stop there. As Lindsay elaborated: "The CAT Rental Store floated the D6 from Laverton to Alexandra. Then my cartage contractor got DSE approval to float it into the fire-affected area". As some equipment in the region has been destroyed, the Caterpillar D6 Dozer Crawler was soon in demand.

Before it had even arrived at the Guscott's farm, the Caterpillar D6 had helped the Australian Federal Police gain access to a property. "When we were finished, we were asked by the CFA if we could do a job for them," said Lindsay. "The CAT Rental Store hasn't just helped me, they've helped this community," Lindsay surmised.

GOING WITH THE FLOW

A project for Santos required meeting two very different and often conflicting sets of standards. But the Engineering team in Melbourne was determined to deliver for this important client.

The project involved taking a Flowserve free issued pump and combining it with a Caterpillar engine. This would create a gas engine-driven G3412 Pumping Package for Santos to pump crude oil from the Moomba Depot in NE Australia, down a pipeline, to a depot that is located closer to the coast. But there was much more than the actual engine to consider.

The Caterpillar engine required a gearbox on the back to match the Flowserve pump's running speed. A cooling system needed to be provided for the engine. Also air filtration for the radiator, an exhaust system for the equipment and a torsionally compatible coupling to attach the engine and the pump. What is more, a base needed to be built to support all these components.

According to Glenn Stewart, Project Engineer, the equipment needed to be safe to use in a hazardous atmosphere area. So it was required that not only should Australian Standards apply, but also the more stringent American Petroleum Institute (API) Standards. "Standards are open to interpretation and experience generally comes into play when determining if a part will be suitable," explained Glenn. However, this time we were told that the standards must be taken literally and that each item would need to have documented proof that it complied, evidence that often was not readily available.

As Glenn explained: "Around 15 to 20 individual parts needed to be proven to the nth degree that they would perform to complete satisfaction. We had one guy working for four months doing the documentation exclusively and during this time I was doing a lot of the paperwork myself. For quite a while we were working seven days a week. We wouldn't give up. It was just a case of persevering".

Many elements, not requested initially, were added as the project moved along. Further to the growing list of extras, the American Standards dictated that the base must also accommodate the weight of the piping that Santos would connect on site. The team now had the additional challenge of accommodating equipment they were not supplying.

Neil Beeching, draftsman on the project, added that the base needed to be entirely made of galvanised steel or coated with epoxy paint. Due to the time constraints, painting was the best option but this meant that all parts needed to be accessible and there had to be a drip tray running through the base. "There were also numerous coats and Santos' project consultants sent someone to inspect the paintwork after each coat had dried," Neil elaborated.

Despite the mountain of paperwork, extensive research and a protracted approvals process, the bulk of the project is essentially completed. Now it's just a matter of ensuring that the American parts are finalised to Australian Standards.



The gas engine-driven G3412 Pumping Package is nearing completion.

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