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Giti BIG TEST

Keeping it clean

Story Colin Smith
Photos Gerald Shacklock

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Caption

GLEAMING WHITE PAINT, BLUE AND RED STRIPING, polished alloy and plenty of attention in the wash bay gives the Tranzliquid Logistics fleet a sparkling clean appearance.

And the Mt Maunganui-based operation is cleaning up in another arena – by putting the first Euro 6 compliant Cummins X15-powered Kenworth to work on New Zealand highways.

The Kenworth T610 6x4 tractor unit was delivered in April this year. Look closely and it's identified by a subtle variation of the blue/red Tranzliquid signage and wears Euro 6 badges each side of the bonnet to signal its special status in the feet.

The back story to the inclusion of this truck in the Tranzliquid Logistics fuel-hauling operation runs like this.

Since late 2018 Cummins has been field testing a small number of X15 Euro 6-engined trucks across the Tasman. There have now been 12 units involved in the Australian programme – with Tranzliquid's T610 (rego number TLL 41) adding some Kiwi input to the programme as it makes bulk fuel deliveries across the North Island.

The E6 version of the Cummins 15-litre six-cylinder has been reworked to not only meet the more stringent emission standard but also to continue the power, torque and fuel efficiency evolution of the X15. The Performance Series variant in the Tranzliquid Kenworth develops 466 kilowatts/625 horsepower and 2279 Newton metres/2050 pound foot of torque – ample to cart bulk fuel loads to Tranzliquid customers.

Southpac Trucks, Cummins – both here and in Australia – and Kenworth are all taking a close interest in the performance of the Tranzliquid T610 out in the field as they prepare to introduce Euro 6 engine choices in the Kenworth range for NZ delivery in 2022.

Tranzliquid Logistics is an obvious partner for the E6 X15 trial. It has been an early adopter of new Kenworths, putting its first T610s to work in 2017. The firm now has 22 of them on its fleet (powered by Cummins Euro 5 615hp engines) and was also the first operator in the world to use fuel-spec T610s in 8x4 configuration.

Apart from one DAF with PACCAR power and also a single CAT-powered Kenworth, the balance of the Tranzliquid lineup is some variation of the Kenworth-Cummins recipe.

Tranzliquid co-owner and CEO Greg Pert explains:

"Standardisation is the key for us. The main reason is better risk management."

The choice of the flagship 625hp unit from the X15 Performance Series fits with the company's standard practice of choosing high output engine solutions: "It's all about productivity. Our trucks aren't underloaded and they're not overloaded. Big horsepower helps with reduced driver fatigue, good fuel efficiency and dependability – and a better average speed," Greg says.

"The other big focus we have is safety. We select every safety feature that is available at the time of build."

So, this truck has the full Bendix Wingman Fusion electronic/active safety package, comprising adaptive cruise control with engine braking, a collision mitigation system with autonomous emergency braking, lane departure warning and electronic stability programme. Plus, Tranzliquid now selects LED headlamps.

Pert also says the Kenworth product keeps getting better: "After the first one has come down the line, they don't just keep building the same truck. They are constantly making a better truck," he says.

It might be part of a trial, but TLL41 gets no special treatment when the jobs are handed out. Like most the Tranzliquid fleet, the Kenworth is doubleshifted seven days a week. It pulls a six-axle, disc-braked 50MAX B-train combo from Tanker Engineering Specialists in Auckland.

"It's a great test bed," says Greg Pert: "It's constant work and most of it is done fully loaded, which provides valuable information for Cummins, Kenworth and Southpac about how the new engine performs in NZ's topography."

From fleet manager Mick Pullar's viewpoint, the introduction of the

Caption

E6 unit has been seamless: “The truck came onto the fleet and you if didn’t notice the Euro 6 badges and the slightly different signage we put on it, you wouldn’t know it was something different. It’s been really seamless and hasn’t caused us any problems.

“We did a download at Cummins at 71,000 kilometres and the overall fuel consumption was at 1.98kms per litre. It’s been in top gear for 62% of that distance and the top gear consumption is 2.61km/L. The AdBlue consumption is up quite a bit – but that’s how they achieve Euro 6.

“When it comes to fuel economy, so far we’re talking only fractions better than our 615hp T610s doing the same work.”

The download has recorded 10 complete diesel particulate filter re-gens – with no incomplete re-gens.

Pullar says early working knowledge of Euro 6 engines will prove useful to Tranzliquid as the technology becomes more widely adopted and environmental requirements are tightened: “You can’t hide from it. It’s here to stay and we have to learn to roll with it,” he says.

NZ Truck & Driver catches up with TLL 41 with the truck already having clocked up 88,000kms. Mt Maunganui-based driver Kerry Rusling reckons he’s driven a bit more than half of those Ks and his recent experience in one of Tranzliquid’s Cummins 615-powered T610s offers a useful benchmark to talk about the gains and differences with the E6 unit.

Kerry is a third-generation truckie, with his father and grandfather both being owner-drivers. He’s been driving since he was 18 and after a stint in Australia hauling fuel from Port Hedland out to the mines with a 150-tonne Volvo FH 700 tanker combo, he came home and joined Tranzliquid five and half years ago.

Making his usual 2am start, Kerry has already made a run to Te Kuiti in the early hours before reloading at Mount Maunganui. Matamata will be his second destination for the day – for a service station delivery – before he knocks off at 2pm and hands the T610 over to Matt Norton.

We join Kerry and TLL 41 at the company’s Mt Maunganui depot for a fully laden SH29 and SH24 run over the Kaimais to showcase the talents of the X15 Euro 6.

Early on Kerry says he’s a pretty much a yes or no guy in terms of conversation....but he undersells himself and provides plenty of observations gained from driving the new truck.

He likes the variety of driving his job provides: “Fuel work is pretty much a 24/7 job. If we’re working around this region, we’ll do two or three trips a day,” he says.

“I’m lucky. I might go to Gisborne, Napier, Wellington, New Plymouth, or Waipapa up north....and everywhere in between – and it’s never the same two days in a row.

“I’ve done linehaul for about 10 years, but that’s the same places and the same roads a lot of the time. Fuel is 24 hours, seven days a week and a few of us get to travel the whole island. And we get to do it in nice gear.”

Kerry says the Kenworth isn’t the biggest or the most powerful truck he’s driven, but it is the nicest: “It’s nice to hop into gear where you know it’s going to do what it’s designed to do, because then half your stress is gone from your day. It allows you to focus on the roads and

Caption

what everyone is doing around you.

"On long days it's good know you can take the gear out of the equation – because it's going to do the job it's designed to do, and you're not going to be shattered at the end of the day."

As a summary, Kerry rates the Euro 6 T610 as an across-the-board improvement. The combination of more accessible torque, reduced fuel consumption, improved driveability and lower noise levels all play a part in the improved workday Kerry has enjoyed since he started driving the E6 truck. And those improvements are alongside the ongoing refinement of the T610 cab layout and the fitment of advanced safety systems.

The truck has an Eaton RTLO20918B 18-speed Roadranger manual transmission and Kerry says it's the behaviour of the gearbox that best reflects the subtle performance gains of the Euro 6 engine.

"The last one I had was a 615 and I'm probably half a gear up on that in a lot of places," he says.

"When it's empty, I usually make full gearchanges and when it's loaded, I'll split them.

"Fuel consumption is better on it. I know we're down to about 2.0kms per litre on the fuel and I'm loaded about 70% of the time.

"The whole unit is quieter, especially the engine and the exhaust noise. It's a lot quieter than anything else we've had.

"I'd say the engine braking in this is better than my last one. It's only a little bit, but you do notice it." The X15 data from Cummins shows that the Euro 6 X15 Performance Series' engine braking has an edge on the retardation provided by the E5 X15 up to around 1950rpm (where it's offering approximately 470hp/350kW), then fades a little to a 500hp/372kW peak at 2050rpm (compared to the E5's 510hp/380kW maximum).

Among other refinement benefits is an improved re-gen mode for the diesel particulate filter.

"The DPF does a burn whenever it decides it needs to. It's better than the other ones: If they were doing a burn and you had to stop the truck it would kill the whole operation. With this, if you stop the truck and do whatever you're doing, as soon as you start it back up it carries on.

"The burn is quieter too. The only time you'll notice it is parked at a set of lights or a stop sign – and the revs are higher."

Kerry admits he's a fan of the cab comfort of the Euro trucks, like the Volvo he drove in Australia, but he says Kenworth is improving this aspect of its trucks: "This cab is way better than the 409s. Kenworths had a habit of being quite tight in their cab space but the T610 is wider, with more window space and especially more leg space for us taller buggers, which is nice.

"Kenworth have been making progress to make the trucks more driver-friendly and easier to ride in. They give you an easier day and you're not hopping out absolutely shattered."

He says that climbing aboard or exiting the T610 is easy and the only time he encounters any problems is when he swaps to another truck and forgets that exiting a cabover K200 or one of Tranzliquid's T610 8x4 units isn't as user friendly.

"Then you might find yourself out in thin air," he laughs.

The T610, he adds, is "nice and comfortable and one thing Kenworth have done is give you better vision. It's a whole new look out the front

windows."

Inside the cab is the familiar Kenworth T610 Day Cab layout, with leather seats and a Southpac-supplied handy custom storage box between the front seats.

Says Kerry: "All the layout is nice. They've kept nearly everything basically the same, so it's easy to go from truck to truck. The only thing they've done different on this one is the engine brakes are now where our trailer control used to be." Trailer control moves to a switch on the central dash and engine braking is now on a right-hand steering stalk.

"The layout is good and it's nice when you can hop into someone else's truck in the dark and you know where pretty much everything is," says Kerry.

"You could always do with a bit more space. One thing they did to make more space is they shifted the seats back fractionally so the little bit of space you had behind the seats has been taken up. But I would rather have the legroom."

"Mick (Pullar) sets them up nice, with leather seats. I'm not that much of a princess that I need a seat warmer, but I know some of them do come out with them."

Along with the easy performance, the safety features optioned on TLL41 help with reducing driver stress.

"All our trucks have the computer eye (he's talking about the radar and camera combo in the integrated suite of safety features) in the front telling how far in front the next vehicle is and giving a warning as the gap closes. We have discs on our trailers and if we do have to stop it will stop in a hurry.

"Southpac points out that this adaptive (or active) cruise system, when paired to a manual gearbox - as this one is - operates the same as it does with an AMT...except that the driver obviously has to make necessary gearshifts to avoid the the engine struggling up hills; it disengages each time the clutch is used to change gears and the driver has to engage it again; and if it autonomously slows to a halt (because the vehicle ahead is doing likewise), the driver has to engage the clutch to avoid the engine stalling."

Continues Kerry: "The new LED lights are so much better. When we started getting the T610s they were bulbs and then Mick started changing over to LEDs. They are so much better – there's so much more light on the road."

He says it took a couple of months to really become familiar with the performance of the new combination and get the best out of the new powertrain: "It took a while when I went from the 615 to this one. Just while the truck sort of bedded itself in and settled down I sometimes second-guessed myself about what to do gear wise."

He says it clicked following a run to Napier: "One day I was chatting with Mick about coming up the Mohaka and I realised I was a half a gear up going up the cutting, going about 6 kays quicker than before. It all started to make sense."

As we reach the first Highway 29 climb from Ruahihi to McLaren's Falls, Kerry points out the optional 7.0-inch touchscreen data display at the centre of the dash: "We put the new computer screens in the trucks. That was something Greg wanted to do and that gives us more gauges and everything we need to know sits on there."

The T610 climbs in fifth high using about 1400rpm. Kerry says the engine will happily lug down to 1100rpm, which isn't surprising when that peak torque number of 2279Nm/2050 lb ft is being delivered at 1000rpm.

continues on page 33

Caption

Cleaner and...

EVOLUTION RATHER THAN revolution best describes how the Cummins X15 has achieved Euro 6 emissions compliance.

Cummins announced the first details of this engine in 2016 and while much of the focus is on treatment of the exhaust gases – most importantly a substantial reduction in NOx and particulate emissions – that isn't the full story.

The Euro 6 version boasts a broad range of solutions aimed at burning less fuel while developing more horsepower – at the same time as emitting fewer greenhouse gases.

The 15-litre six-cylinder architecture gets a significant upgrade that includes a new wastegate turbocharger and air intake throttle, a slightly increased compression ratio (from a revised piston shape) and a focus on reducing friction through measures such as a redesigned water pump and gear train. There's an upgraded XPI common rail injection system and more powerful ECM software.

An interesting aspect of Cummins' approach to achieving Euro 6 compliance for the X15 is an EGR-free design philosophy for the Australasian market.

The biggest innovation on the emissions side can only be viewed by getting down and taking a look under and between the frame rails of the Kenworth T610.

That's where Cummins' single module aftertreatment (SMA) system is going about its cleaning work. It's a five-phase treatment system that sends exhaust gases through a diesel oxidation catalyst (DOC), a soot filtering DPF, an AdBlue decomposition reactor, a NOx-reducing selective catalytic reduction (SCR) system and an ammonia slip catalyst (ASC) before reaching the atmosphere.

Being packaged together as a single module offers the advantages of a single pass flow that reduces back-pressure, while also allowing better heat retention and temperature management...which is critical for the performance of the DPF.

And Cummins estimates that the SMA packaging is about 40% lighter (it weighs 85kg) and takes up only 60% of the space required by an equivalent multi-module system.

More intense exhaust aftertreatment sees considerably more AdBlue being injected into the exhaust flow. The upsized stainless steel AdBlue tank on TLL 41 carries 170-litres (compared to 120L on the E5 units). It's identical to the 625mm diameter of the diesel tanks and is neatly integrated directly behind the right-side 360-litre diesel tank.

Cummins estimates AdBlue consumption on the Euro 6 engines at between 7-9% of fuel consumption – up from an average of 5% on earlier Euro 5 engines.

Cummins NZ says Tranzliquid Logistics' fleet is an ideal proving ground, as it has an established fleet of recent Euro 5 trucks doing similar work.

"In Australia, Cummins has been field testing the Euro 6 engine for more than two years," says Eric Carswell, on highway business manager for Cummins NZ.

"It's standard testing for something new like this and most of the work is fine-tuning the calibrations to get the best balance of fuel efficiency, performance and AdBlue consumption.

"There have been 12 trucks over in Australia doing the field testing – and this one in NZ, with Tranzliquid. We've looked at the downloads and one of the early things we've noticed is the DPF doesn't need to work as hard. It's only done 10 re-gens in the first 70,000km."

The X15 Euro 6 lineup is split into Efficiency Series and Performance Series versions.

The Efficiency Series is designed to work in tandem with automated manual transmissions and boasts the ADEPT suite of advanced efficiency systems that includes fuel-saving SmartCoast and Hill Climb Assist functions.

The Efficiency engines have a governed engine speed of 1800rpm, a 20:1 compression ratio and use tall recommended rear axle ratios between 3.21:1 and 3.9:1. It's a combination targeting a 5% improvement in fuel consumption.

When the Euro 6 engines launch fully into the market, the X15 Efficiency Series will be available in 550hp and 580hp versions, both rated at 2050 lb ft of peak torque.

For more rugged applications, the X15 Performance Series is governed to 2000rpm and has a 17.0:1 compression ratio. The Performance Series and can be mated to manual transmissions or AMTs and Cummins recommends a rear axle ratio between 3.9:1 and 4.89:1, depending on application.

On TLL 41 the 18-speed Eaton Fuller RTLO 20918B Roadranger transmission sends power to one of the taller rear axle options at 4.1:1, to run at 90km/h using a relaxed 1410rpm in top gear.

There's wider choice in the X15 Performance Series, with 525hp, 565hp and 605hp, versions – rated with 1850-2050 lb ft of torque. The flagship 625hp/460kW version being field tested in the Tranzliquid Logistics Kenworth T610 develops peak torque of 2050 lb ft/2779Nm at 1000rpm.

All engine versions are being offered in the NZ market and Carswell says: "The first X15 Euro 6 orders are already in the pipeline, with trucks going on the road during 2022." T&D

Caption

continued from page 30

The E6 T610 shares the same 4.10:1 rear axle ratio as the other units in the Tranzliquid fleet and the same peak torque output, although the delivery curve adds some driveability.

"I'll go to fifth low today, maybe. That's as low as I'll need to go," says Kerry.

"The only place I really ever go into low box is the Napier-Taupo coming home. Otherwise, I very rarely come out of high box."

The next – and longer – climb is the 'Cannonball,' approaching the Kaimai summit: "We'll stay in high fifth, sitting maybe on 42km/h and it won't drop much below about 1400rpm fully loaded," says Kerry.

"It will lug down to 1100 or 1200 and still crawl up doing maybe 32-33. The colder it is, the better she will climb.

"We took it up to Cummins in Auckland a couple of months ago and – if I remember correctly – it's under load about 30% of the time. It works when it needs to work and just cruises whenever it can cruise."

During the short run across the Kaimai summit Kerry slows the truck, selects fifth low and switches on the engine fan: "That (the fan) pulls just a little bit more power out of the engine. It'll use about 1900 revs and I might touch the brakes a couple of times, just on those tighter pinches at the top. After you come off that it will usually hold at about 33-34km/h in low fifth."

Rolling away from standstill at the busy Hewletts Rd traffic lights, climbing the Kaimais or picking its way down the Waikato side of Highway 29 my own impression of the T610 Cummins Euro 6 is a truck working well within its capabilities and making easy work of a full load.

Having grown up as a third-generation driver Kerry says he values the 'old school' ways of the industry. But he's also enthusiastic about the high-tech Euro 6 combination of clean emissions, reduced consumption and impressive performance.

The clean theme fits well with how Tranzliquid Logistics goes about its operations: "When the truck arrived, for reasons unknown, Greg and Jackie (Tranzliquid owners Greg Pert and Jackie Carroll) gave it to me," Kerry says.

"It's a clean engine that burns less fuel and it gives me some pride that the boss has decided to give me this engine when there's only one of them in the country."

Kerry likes the driveability and response of the Euro 6 powerplant but also says all of the Tranzliquid trucks are something a bit special.

"Greg likes his gear clean. He gives us good gear to drive, so the boys try to keep it all clean. It can be hard when you get three or four days of rain but as soon as it's stopped raining, the boys are in getting everything tidied up again," says Kerry.

"It's not show-ponying. It's pride in the gear."

He also puts in a vote of confidence in fleet manager Mick Pullar for careful selection of the final specification and local finishing work on Tranzliquid's trucks: It includes touches like "hiding" the air tanks and battery boxes in custom cabinets that give a tidier appearance – and makes the truck easier to clean. On the trailers all of the toolboxes and hose trays are located on the left "working" side and that keeps the right-hand "road" side looking clean.

"It's the way Mick specs the trucks and gets them finished that means we get to drive such nice gear. Mick turns a good truck into a really nice truck," says Kerry. T&D

Hayden Trevor Test

YES IT'S A TRUCK TEST BUT sometimes it's not all about the truck on some of these jobs.

We usually like to test everything the truck has on offer, but with this test the focus is mostly on the engine.

This Kenworth offers a chance to sample the first Euro 6 engine to arrive in the country from renowned enginemaker Cummins. It has this one on trial, powering a T610 in the Tranzliquid Logistics fleet running out of Mount Maunganui, with Kerry Rusling and Matt Norton rotating shifts behind the wheel.

The model, launched here back in 2017, delivered major improvements in cab design and build compared to its predecessors. Kenworth created a roomier and more comfortable cab for improved driver satisfaction – features which we have covered extensively...at the launch of the model and in tests since.

The only real difference I find on this truck – being a 6x4 compared to the 8x4s we have tested in the past – is the cab entry. The third step is a sort of half step and makes cab entry a little more difficult compared to its 8x4 brother. The cab does have a good wide-opening door and well-positioned grabhandles on each side.

The rest of the cab has a very familiar look, featuring the latest Kenworth interior and functions, along with a top-of-the-line ISRI seat for driver comfort. There are controls on the steering wheel, with radio functions on the left and cruise control on the right. On the left stalk are the window wipers and indicators and on the right stalk is the engine brake. The main dash display has the standard dials you need in front of you with a digital display in the centre.

To the left of the driver is a semi-wraparound dash encompassing a 7.0-inch touchscreen display for navigation, phone connectivity, audio and gauges. Below this is the main radio head unit, diff lock controls, airbags and interior lights switches, among others. There are also six more gauges and aircon controls and below all of this is a twin cup holder/storage tray. The mirrors are well positioned on the bottom of the A-frame and offer clear vision down the sides of the truck.

Once we are on our way up the Kaimais,

Hayden Woolston

heading west on Highway 29, the truck performs impressively. The climb sees only a drop to 42km/h in fifth high, with the engine working easily at about 1500rpm.

This new Cummins X15 Euro 6 engine will be available in an Efficiency Series option, with 550-580hp/410-432kW ratings and peak torque of 2050 lb ft/2800Nm...

Or a Performance Series, with 525-625hp/391-466kW and 1850-2050 lb ft/2508-2279Nm maximum torque. The Efficiency Series can only be mated with an automated manual transmission.

The engine in the test truck is a Performance Series unit developing 625hp. It has an 18-speed Roadranger manual transmission, but the Performance Series can also be mated with an AMT.

Along with its 625hp, the unit has that 200 lb ft gain in peak torque, developed from as low as 1000rpm up to 1500rpm.

That's immediately noticeable on the hills in this test drive with the engine map looking strong with its big, flat torque line.

On the return trip to the Mount with the six-axle B-train tankers empty, the truck flies up the Waikato side of the Kaimais.

I'm in top gear and having to slow down for corners, even though my foot is barely pushing the throttle pedal. The power this new engine is throwing to the wheels is phenomenal and the 18-speed Roadranger with the Ezy-Pedal clutch is simple to operate, even for a novice like myself. That's not to say I don't make some mistakes!

The truck has been fitted out with every safety feature available in its model range, encompassing the Fusion driver assist and collision avoidance technologies. That includes adaptive cruise with autonomous emergency braking and lane departure warning.

One big noticeable difference on this truck is the indicators: They make less noise compared to the normal Kenworth indicator and that's something I really like.

Visibility out through the windscreen is excellent, with the T610's sloping bonnet giving extra vision and making positioning the truck on the road easy.

The Tanker Engineering Solutions B-Train setup also tracks really well.

On the downhill run the engine brake is very effective with just under 500hp of braking effect at 2100rpm. It requires only minor footbrake applications in the steeper parts of the descents to hold us back.

Back at the Tranzliquid yard in the Mount it's time to give Kerry his truck back. With this Euro 6 X15 installed in a tanker unit delivering fuel all over the North Island, the engine has been hauling full loads over some of the most challenging roads in the North Island.

Kerry's feedback is that it seems to be outperforming its predecessor and after a chance to drive it I have to agree.

On top of this, Cummins claims that there are fuel savings and a lifecycle maintenance cost reduction in this X15 Euro 6 Performance Series engine – and even bigger savings with the E6 Efficiency Series engine.

If this is correct, how can you complain about that? T&D

• SPECIFICATIONS •
Kenworth T610 6x4

Engine: Cummins X15 Performance Series, inline six, Euro 6

Capacity: 14.9 litres

Maximum power: 466kW (625hp) at 1800rpm

Maximum torque: 2779Nm (2050 lb ft) at 1000rpm

Engine revs: 1410rpm at 90km/h in 8th High

Fuel capacity: 720 litres. AdBlue 170 litres

Transmission: Eaton Fuller Roadranger RTLO20918B 18-speed manual

Ratios:

Low L – 14.40	Low H – 12.29
1st low – 8.56	1st high – 7.30
2nd low – 6.05	2nd high – 5.16
3rd low – 4.38	3rd high – 3.74
4th low – 3.20	4th high – 2.73
5th low – 2.29	5th high – 1.95
6th low – 1.62	6th high – 1.38
7th low – 1.17	7th high – 1.00
8th low – 0.86	8th high – 0.73

Front axle: Meritor MFS66-122 rated at 6600kg

Rear axles: Meritor RT46-160GP with diff lock. 4.1:1 final drive ratio. Rated at 20,900kg

Auxiliary brakes: Cummins engine brake

Front suspension: Taper steel leaf springs rated at 7.1t

Rear suspension: Kenworth Airglide 400 air suspension, rated at 18.1t

GVW: 24,700kg

GCW: 65,000kg

Caption

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