

The Generator

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Palmerston Model Engineering Club
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The Palmerston North Model Engineering Club Upcoming Club Nights

25 April 2019

This is our **Annual General Meeting** at the
Hearing Association Hall Church St Palm North.
All members, friends and visitors are welcome to attend.

A review has been carried out of books and magazines held by the Club library. A number of surplus items will be available at this meeting for members to add to their collections at no cost. This will also be an opportunity for members to bring along books and magazines from their collections that are surplus to requirements to re-distributed in the same manner. Fin will give a demonstration on binding your magazines.

23 May 2019

We are planning to have an **Electronics Evening**
Three of our members will give talks and demonstrations on how
“Electronics fits into Model Engineering”

27 June 2019

Richard will talk about some more photos he found when searching the
National Library Archives.

What's on this month and in the future PNMEC Club Calendar

Track running at Marriner Reserve Railway

April	7 th	1pm - 3pm
April	21 st	1pm - 3pm
May	5 th	1pm - 3pm
May	19 th	1pm - 3pm

The Palmerston North Model Engineering Club
Annual General Meeting is to be held on 25 April 2019.

CNC Machining Centre Leadwell VMC 15 - Part 1

One day I was thinking out loud to my brother-in-law. "Would it be good to make a CNC mill?" and he said "Well how much would you pay for one?"
" I said so much, etc."

Well a few days later he calls me up and told me there was one for sale that was not working. I thought that maybe if the electrics were totalled then you can replace the lot, so let's buy it, and we did. Getting it home was a problem because of the weight, but in the end after looking for a flatbed truck to hire which as it turns out we could not get, and yes, we ended up with a trailer for heavy loads.

So after getting it fork lifted on and home I managed to get it off with a forklift from down the road from me. So now it is home. After some inspection I found that the servo motor encoder was missing, so found one on the internet and ordered it.

The other problem was no 3-phase power in my shed, but I do have it on my property. A week or two later I now have got this wired up for 3-phase with plugs for this machine and also have run ethernet, phone cables, and a water pipe across as well. This is a lot of work along with my full-time job plus other commitments.



Robert Edwards

Letter From England

Stan Compton

When I lived in Canada, a neighbour bought a small British Ford car. He found the steering was lousy so he bought a steering-box and column of a Yankee Ford to replace his English one, after modification the low-gearing he was used to. I wonder how he would have got on driving my Father's three-wheel Morgan four seater? The throttle was a lever mounted on the steering wheel that could only be turned a short way round. He had a brother who was a stonemason working in the Portland Quarries 180 miles from Birmingham and he cycled there just taking two days each way. Not bad for a man with a mobility problem in 1937. On returning he was proud of seeing HMS Hood, the most powerful battleship in the Royal Navy. No one then could visualise it being sunk with just three survivors a few years later in WWII.

The next year he drove the Morgan to Weymouth with his family on holiday. I can still recall that trip because his brother lived in a cottage with his family on Chesil Beach. This forms a safe harbour for Royal Naval ships. I read recently how this large area was used in 1944 to gather a lot of the invasion forces including the Landing Craft which was what I was involved with as a nineteen year old on the River Hamble, close to the Normandy Beaches. Just as well we were not told that half of us were not expected to survive the invasion.

I have just read a book by Frank D Johnson "United States P.T. Boats in WWII in Action". AbeBooks.com. Some were used as motor torpedo boats, others as motor gunboats the same as in the Royal Navy which were shorter in length than the American ones that averaged 80ft against the British 60ft boats suitable for in shore work. The larger boats could operate from Pearl Harbour to the Aleutians and the Pacific Islands, picking off supply barges used by Japanese in various theatres of war. I had no idea the racing boats, such as "Maple Leap IV" built in 1912 by Thornycroft, were the first boats to reach 50knots powered by two 400hp, 12 cylinder engines, the first step in the development of sea-going planning monohull speed boats.

During WWI coastal motor boats were designed by Thornycroft 55ft in length to be fitted with a trough in the stern to carry a Whiteherd torpedo that was launched backwards whereupon the boat was quickly turned out of the way and retreated. Thornycroft also built in 1870 steam powered torpedo boats 84ft long that could reach 18knots at full speed for just three hours.

American vessels all around 80ft in length built in WWII used three Packard marine engines, petrol powered, developing over 3,000hp as torpedo boats. It was found that launching the torpedo's from forward facing tubes lead to problems due to seizures in those tubes. Two of the skippers got together and knocked up a cradle out of scrap designed to hold a torpedo, On being fired the cradle tipped the torpedo over the side into the water and it went on its way, controlled internally. It was so successful a quantity were ordered by the US Navy, this would not have happened in Britain.

Older readers may recall a wealthy American Garfield Wood ordered a boat "Miss America X" in 1933 fitted with Packard marine engines. It held the water speed record at 108 knots in those days. Development of those engines proved invaluable in PT boats a few years later. Some of these boats carried a variety of guns instead of torpedoes. With their shallow draught proved to be useful in wartime in the Pacific Island. Towards the end of hostilities in the Pacific Ocean the Japanese built large numbers of Kamikaze boats called "Shin'yo" boats, powered with petrol engines to take on small vessels.

Technology in Earth Works

by Owen Mudgway

At some point in our lives most of us have used a string line or a level for shooting levels for building foundations. For me it's been pegs for road design on wind farm earthworks. Having been involved with earthworks for 30 years I have seen a lot of changes in not only earth moving equipment, but also how jobs are set out.

Long gone are the days of using wooden pegs with paint marks.

GPS coordinates have arrived in earthworks and are used exclusively to set out jobs.

For me this meant a new digger was needed, so the deal was done and a caterpillar 320 (20 ton) digger was purchased.



Now the fun started: first a SIM card and data account using the cell network was needed to enable an internet connection. Then, second: the operation of the computer software required the purchasing of a license to operate \$\$\$\$.

With all this completed I can now view the job mapped out in full 3D. With the use of the full touch screen pad you have many options of job set up on the display.

The digger also has another feature of full automatic dig function. With one click of a button pulling a fill batter with 300mm offset to allow for top soil. This can be done by just holding the dipper arm lever in one direction and full auto trim is achieved.

I am currently working on the trestle bridge replacement south of Foxton. I'm involved in all aspects of the job, with one of those building a crane pad to a design with .600mm fill lifts at a time, with a Geo grid mesh layer included in



each lift. Mesh was run north south then next layer east west, plus each layer had to pass a compaction test before I could continue. All this to a fill height of 3.5m and (big undercut first) 30x30m square. All this design was in the digger so all fill and grid positions were achieved with GPS.

You ask why go to so much trouble for a crane pad?

600 tonnes will do it, that is the weight of the crane that will be sitting on it, plus the lift that it will complete. That will be another story.

The GPS technology has been around some years in earthmoving, but it's the way it talks to the rest of the machine and speed that it can do it is impressive, plus with the mapping capability it records all excavations.

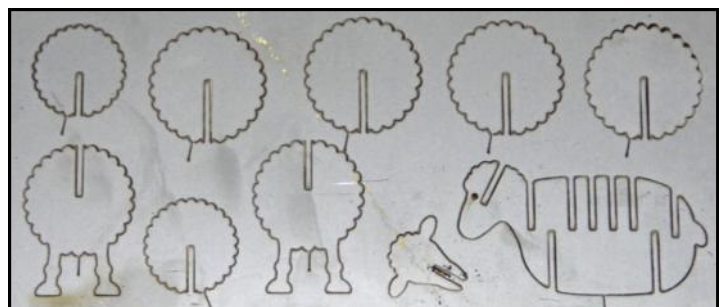


The GPS is used for rock placement for river protection work under water. With the aid of the weigh system built into the digger the tons of rock per meter is achieved with high accuracy. Plus, the customer can have all information regarding the job emailed to them.

The cost is up there. You are looking at 70k plus, on top of the price of a new digger, but set this against the cost of a surveyor to set a job out for someone just to run the pegs over.

PNMEC Visit to ETECH

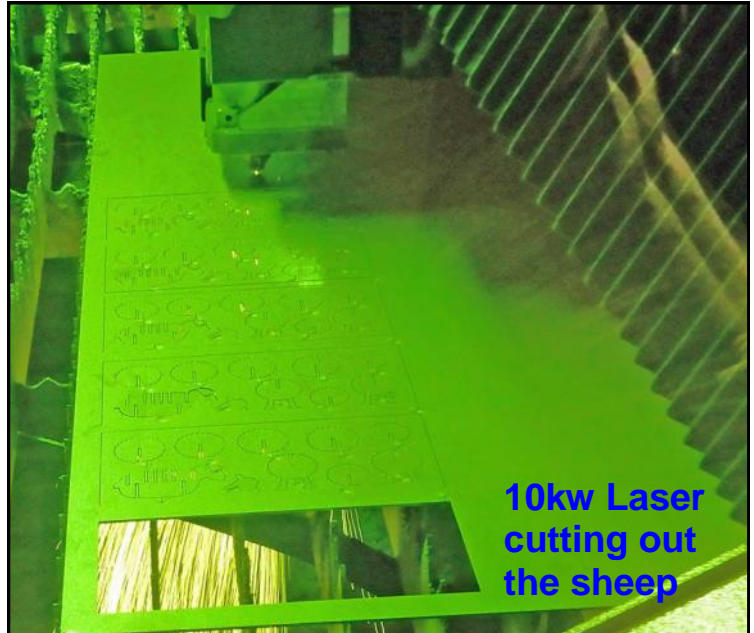
The March 28th Club Night was a visit to ETECH in Kaimanawa Street. This company specialises in precision cutting using high powered lasers. After an introductory talk on the company history and vision we went through into the factory area. The first machine that we saw in operation were a large flat bed cutter capable of cutting up to 22 mm thick stainless steel. The whole cutting compartment was protected by a thick plastic shield. The machine was cutting parts from a plate of 1 mm stainless steel which could be assembled to produce a small sheep.



The second laser cutter was a tube cutting machine which was cutting 25 mm diameter steel tube which will be welded into farm gates.



The cut ends are shaped so they can be welded together with no additional machining. The tube cutter can accommodate tube up to 20 meters long and 254 mm in diameter. Other machines that we saw were a large knuckling machine used to bend the edges of circular pieces of stainless steel plate to form the ends of large stainless steel tanks destined for a pharmaceutical manufacturing plant. There were also several high capacity presses for precision bending of some components cut by the laser cutters. It was quite impressive to see how ETECH has combined their expertise in precision cutting and forming for clients together with a capability to produce high quality and complex stainless steel tanks for the pharmaceutical industry.



I have placed a couple of videos of the plate cutting and tube cutting lasers on the Marriner Reserve Facebook page for those of you who have Facebook accounts. (<https://www.facebook.com/groups/marrinerReserveRailway/>)
Thanks to the management and staff at ETECH for a very interesting and informative evening.
John Tweedie

Don't Forget AGM This Month.

You will also be voting for the member you think who has done the most for the club this year.

If you would like to be notified when this newsletter is published, send us an email with your **Name, Club** and **Email** address to pnmec@trains.org.nz with "**Generator Please**" in the subject line.