

# CETANewZ



December 2007  
Issue 002

Contact – [info@cetanz.org.nz](mailto:info@cetanz.org.nz)

## Welcome to CETANewZ

Official newsletter for CETANZ

### Inside This Issue

- Health & Safety
- News from the working groups
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## Health & Safety – A timely reminder

With the start of the fine weather and the construction season ramping up fast, now is the time to be reminded of the dangers involved in our work.

A Nelson man was killed early this month when a trench collapsed and buried him up to his neck.

OSH and all its paperwork are never a favourite on anyone's list of things to do, however it is essential for everyone's safety that each job has a completed site specific safety plan and hazards are identified.

Ensure your staff are fully trained in OSH matters and remind them if there is any doubt to ring their supervisor before doing any testing or investigations. Specifically don't overlook new staff as they are more vulnerable to the risks of construction activities.

For guidance on site safety please feel free to contact CETANZ by email [info@cetanz.co.nz](mailto:info@cetanz.co.nz)

Wishing you all a happy new year and a safe construction season

The CETANZ committee



## News from the groups

### Careers & Training Group – *written by Steven Anderson*

#### **New Competency Registers - Institution of Professional Engineers New Zealand (IPENZ)**

As of 1 July 2007 IPENZ opened up three new current competency registers, these are:

1. The register of Engineering Technology Practitioners (ETPract). A national register.
2. The New Zealand section of International Engineering Technologists Register (IntET (NZ)). An international register.
3. The register of Certified Engineering Technicians – (CertETn). A national register.

The first two are for Engineering Technologists and the last one is for Engineering Technicians

As CETANZ members we were invited to a free seminar on 1 November 2007 run by IPENZ and IRHACE to present and promote the registers.

Dr Andrew Cleland the Chief Executive of IPENZ presented the seminar with the assistance of Jeff Wastney the Registrar of IPENZ.

IPENZ already operates registers for Professional Engineers such as the Chartered Professional Engineer (CPEng) and International Professional Engineer (IntPE (NZ)).

IPENZ has acknowledged that in New Zealand we have very low levels of graduating engineers compared with the rest of the world. In order to make the engineering profession more

attractive to students there needs to be some “status and standing” associated with it.

The ETPract and IntET are aimed at those people holding a Bachelor of Engineering Technology degree (BEngTech). The CertETn is aimed at those holding two year diplomas of engineering.

But because this is a competence based system, if you can demonstrate the competency levels required by each register you may achieve registration without these qualifications.

The competency levels are based on the complexity of the engineering:

- Professional Engineer – complex engineering
- Engineering Technologist – broadly defined engineering
- Engineering Technician – well defined engineering

Members of CETANZ are most likely to apply for the ETPract or CertETn.

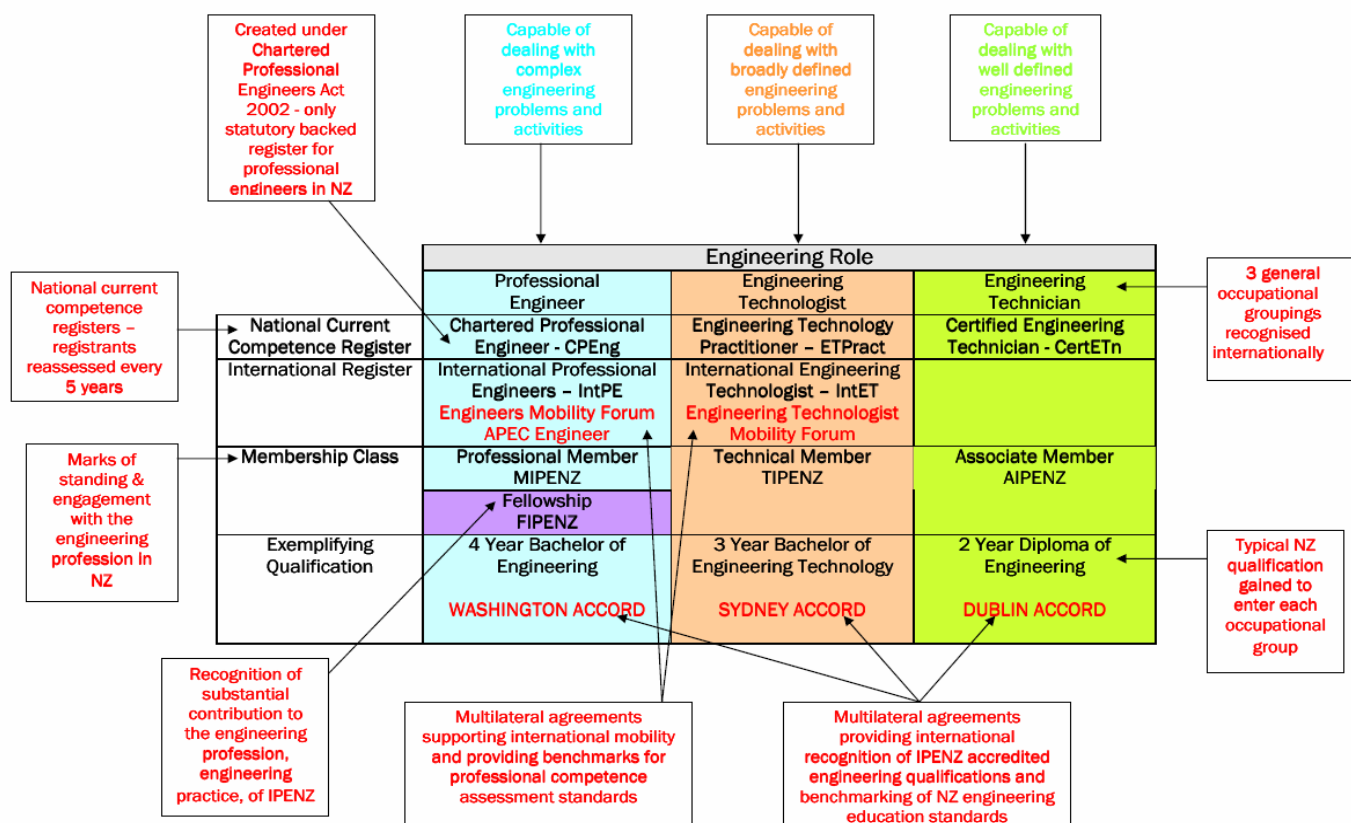
The assessment process is very rigorous and it will typically take 4-5 years of applied work after graduation to develop and evidence the competencies required for registration. Registration is not the end point, to maintain registration you need to provide evidence of continual professional development and you will be reassessed every five years. This process ensures the attainment of registration is prestigious as well as demonstrates an ongoing

high standard of competency and professionalism that can be promoted to employers and regulators.

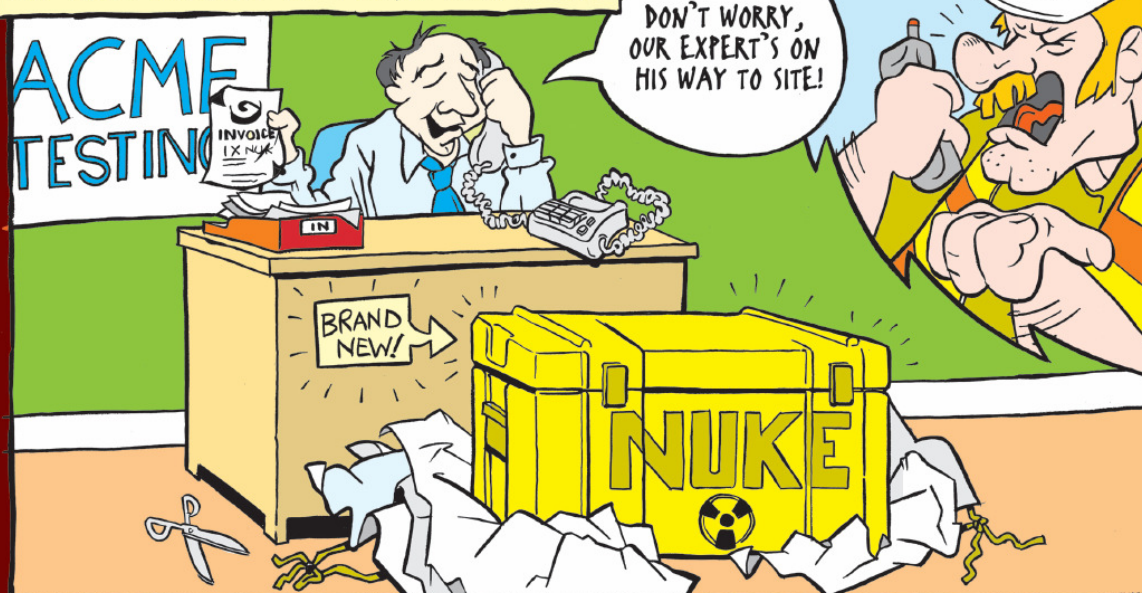
These current competence registers align with IPENZ membership classes for technicians (Associate Membership - AIPENZ) and technologists (Technical Membership – TIPENZ), which can be gained through the same assessment process if you wish.

For more information on the application process you can download the application forms and a Competence Assessment Reference Guide from the IPENZ website. ( [www.ipenz.org.nz](http://www.ipenz.org.nz) )

If you need any further guidance contact CETANZ or IPENZ.



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**GEOTECHNICS**

## Technical Group – written by Jayden Ellis

### NZ Vibe Hammer Test Method Review

It was clearly evident from the CELEC 2006 conference that many Laboratories and contractors alike were experiencing problems with the repeatability of the NZ Vibrating Hammer test. We all seem to agree that different hammers, vague specification, difficult or meaningless calibrations, technician technique and varying aggregate grading all affect the final result. ....

I'm sure like me you've all heard of contractors that struggle with (*what they would call*) unrealistically high results .....some of whom are carrying out multiple testing until they get an answer that works .... ..or you may have produced curves in your own lab, that pass the zero voids line ..... or points that don't seem to fit with the rest of the test data you've plotted.

So what are we going to do????..... Well lets stop debating it .... and get on with... **FIXING IT !**

To that end the Technical Group have started working with Dr Greg Arnold of Pavespec Ltd. Dr Arnold (*formally of Transit*) has a great deal of experience in unbound aggregate pavement performance, and at present provides a Repeated Load Triaxial Testing (RLTT) services to Quarrying and Contracting customers. A big part of his testing/consulting deals with compaction and subsequent performance.

CETANZ and Dr Arnold will be working together to formulate a research project that will focus on developing a methodology that not only is repeatable ... but will provide a compacted pavement that performs as it should.

There are many hurdles to overcome, the first of which is getting industry backing. Dr Arnold and CETANZ will be seeking meetings with industry representative groups over the next couple months to get the endorsement needed to obtain any funding needed to do the research and get the method changed. CETANZ will be looking to its members to help with any proficiency testing and data collection that may be needed. CETANZ will also be looking at what will be needed to get a NZ Standard changed, and likely costs.

Many hands make light work, so if you or your organization can lend your support in any way please contact me through the CETANZ web site.

### CETANZ Proficiency Testing Program

The first samples are ready to go for the start of next years Interlaboratory proficiency testing. The technical group is currently working on a policy based on guidance from IANZ, this policy will set out all the conditions of participation and how the program will need to be run.

CETANZ has now drawn up a DRAFT Program that, along with the policy will be published in the next newsletter for member comment. The program is broken up into five areas of testing. Aggregate, Soils, Concrete, Bitumen and Site Based testing (i.e. Benkelman beam) CETANZ will be collaborating with NZ Roading for the Bitumen component as they have a program in place already. Volunteer Labs will be sort along

with an independent third party to analyse the results.

IANZ have stated their intention to encourage participation from all accredited laboratories.

At this stage participation in the first round of testing will be free of charge to members ONLY

courtesy of Stevenson Group Ltd. Later rounds will need to have shipping, analysis and reporting costs covered. Keep any eye out for the next newsletter to read more.

Merry Christmas and best wishes from the Technical Group.



# PaveSpec Ltd

## Repeated Load Triaxial Testing

*On road testing in the laboratory*

[www.rltt.co.nz](http://www.rltt.co.nz)

## Conference 2008



# CONFERENCE 2008

“The Road Ahead”

24<sup>th</sup>, 25<sup>th</sup>, 26<sup>th</sup> September 2008  
Langham Hotel, Auckland City

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## Something to ponder...

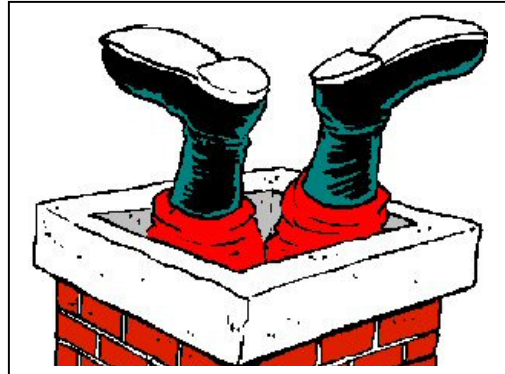
### Santa Claus from an Engineering Perspective

There are approximately two billion children in the world. However, since Santa does not visit children of Muslim, Hindu, Jewish or Buddhist religions, this reduces the workload for Christmas night to 15% of the total, or 378 million (according to the population reference bureau). At an average (census) rate of 3.5 children per household, this comes to 108 million homes, presuming there is at least one good child in each.

Santa has about 31 hours of Christmas to work with, thanks to the different time zones and the rotation of the earth, assuming east to west (which seems logical). This works out to 967.7 visits per second. This is to say that for each Christian household with a good child, Santa has around 1/1000th of a second to park the sleigh, hop out, jump down the chimney, fill the stocking, distribute the remaining presents under the tree, eat whatever snacks have been left for him, get back up the chimney, jump into the sleigh and get on to the next house.

Assuming that each of these 108 million stops is evenly distributed around the earth (which, of course, we know to be false but will accept for the purposes of our calculations), we are now talking about 0.78 miles per household; a total trip of 75.5 million miles, not counting bathroom stops or breaks. This means Santa's sleigh is moving at 650 miles per second or 3,000 times the speed of sound. For purposes of comparison, the fastest man-made vehicle, the Ulysses space probe, moves at a poky 27.4 miles per second, and a conventional reindeer can run (at best) 15 miles per hour.

The payload of the sleigh adds another interesting element. Assuming each child gets nothing more than a medium sized LEGO set (two pounds), the sleigh is carrying over 500 thousand tons, not counting Santa himself. On land, a conventional reindeer can pull no more than 300 pounds. Even granting that the "flying" reindeer can pull 10 times the normal amount, the job can't be done with eight or even nine of them, Santa would need 360,000 of them. This increases the payload, not counting the weight of the sleigh, another 54,000 tons, or roughly seven times the weight of the Queen Elizabeth (the ship, not the monarch). A mass of nearly 600,000 tons travelling at 650 miles per second creates enormous air resistance - this would heat up the reindeer in the same fashion as a spacecraft re-entering the earth's atmosphere. The lead pair of reindeer would adsorb 14.3 quintillion joules of energy per second each. In short, they would burst into flames almost instantaneously, exposing the reindeer behind them and creating deafening sonic booms in their wake. The entire reindeer team would be vaporized within 4.26 thousandths of a second, or right about the time Santa reached the fifth house on his trip. Not that it matters, however, since Santa, as a result of accelerating from a dead stop to 650 miles/second in .001 seconds, would be subjected to acceleration forces of 17,000 g's. A 250-pound Santa (which seems ludicrously slim considering all the high-calorie snacks he must have consumed over the years) would be pinned to the back of the sleigh by 4,315,015 pounds of force, instantly crushing his bones and organs and reducing him to a quivering blob of pink goo. Therefore, if Santa did exist, he's dead now.





John  
Morris

Scientific



### Fritsch Pulverisette 1 Jaw Crusher

Jaw Crusher -the "work-horse" for pre-crushing materials.

Fritsch's Jaw Crusher is the perfect tool wherever large pieces of brittle samples have to be prepared for analysis. The Pulverisette 1 crushes brittle samples with a maximum size of 95 mm down to 1-15 mm depending on the choice of gap setting which is used.

The method of operation is simple. The sample is crushed in an enclosed chamber under high pressure between one fixed and a second cam-driven crushing jaw. The crushed material leaves the machine through the gap between the jaws which can be adjusted from outside.

Further particle size reduction can be achieved by combining the Jaw Crusher and the Grinding Mill in one system. In a relatively short processing time this mill combination can reduce material to a fineness of 0.1 mm.

The Jaw Crusher has a high power 2.2 kW motor that is overload protected. The drive system is designed to handle even the hardest materials.

To prevent contamination of the sample by the grinding tool Fritsch Pulverisette 1 offers five different materials for crushing jaws and support walls.

For more information on the Pulverisette 1 and other Fritsch products please contact John Morris Scientific on 0800 651 700 or email [sales@jms.co.nz](mailto:sales@jms.co.nz)

### REMEMBER THIS AT CHRISTMAS TIME....

*According to the Alaska Department of Fish and Game, while both male and female reindeer grow antlers in the summer each year, male reindeer drop their antlers at the beginning of winter, usually late November to mid-December. Female reindeer retain their antlers till after they give birth in the spring.*

*Therefore, according to EVERY historical rendition depicting Santa's reindeer, EVERY single one of them, from Rudolph to Blitzen, had to be a girl.*

*We should've known -- ONLY women would be able to drag a fat-ass man in a red velvet suit all around the world in one night and not get lost.*

## CETANZ representing our industry

### **CETANZ Asked to Represent Laboratories at Council Forum**

With the phenomenal growth in residential and commercial subdivisions has come a demand to develop marginal land and a whole host of stability issues which require careful investigations and construction testing. If it is not done correctly, there are potential liability issues in the future for the developers, engineers and council.

Gisborne District Council's Senior Soil Conservator, Peter Fantham, decided to get all affected parties (planners, engineers, contractors and developers) together in a forum to discuss the problems and come up with a way forward. One issue on the agenda was selection of test methodology and how these could be used to mitigate the risk.

Peter saw our new CETANZ website and contacted the Technical Issues Working Group to see if we were interested in attending and representing civil engineering testing.

My role was to represent CETANZ view on the different field tests, their advantages and disadvantages and to support the local testing company, Opus Laboratory, managed by Peter Carlyle. Peter Carlyle has been with Opus for many years and has a wealth of experience in testing especially in the Gisborne region.

The main outcome of the forum and site visit was a good appreciation by all the participants of the Geotechnical risks in the region,

especially associated with marginal materials and seismic activity.

I suggested that the testing needs to be performed by IANZ accredited laboratories, because they have experienced people who are well trained in testing and can identify material issues. Also IANZ laboratories are independent and their results are not influenced by the engineers or contractors.

At the end of the day the planners, engineers, contractors and developers understood that more testing is required on marginal land in order to reduce their potential future liability - which translates to more testing opportunities for Opus Gisborne Laboratory.

Written by Steven Anderson



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