NEW ZEALAND ELECTRICAL INSTITUTE (Incorporated)
CANTERBURY BRANCH
"ELECTROCHAT"
NEWSLETTER - OCTOBER - 2008

Secretary: Colleen Payne **Editor: Starr Moffatt**
Tele: (03) 342-9426 **Tele: (03) 358-4256**

Dear Members,

I thank Vic Galletly for sending me the article entitled "Worlds First Automatic Night Light Switch" which is printed near the end of this newsletter.

THIS MONTHS MEETING (All Welcome)

Time/Date: **Tuesday 14th October 2008 at 7.30pm**

Venue: **Imagitech Theatre Christchurch Polytechnic Institute of Technology, Madras Street . Please see map below.**

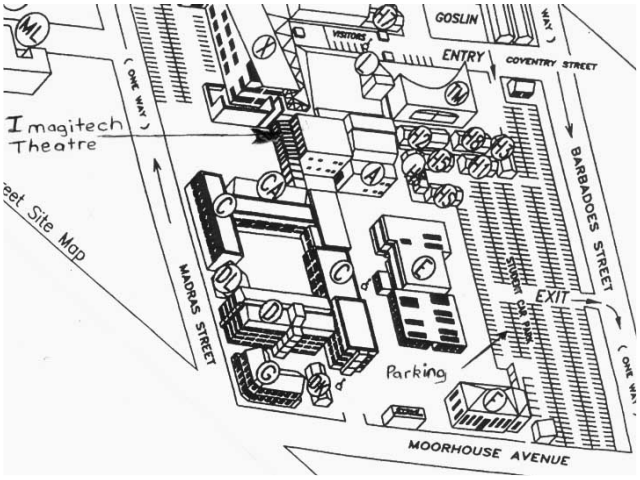
Car park: **Please see map**

Speaker : **Owen Pimm**

Topic: **Alpine Fighters collection, Hawker Hurricane aircraft**.

I thank Owen for the following information about this talk:
Specifically this presentation will be about the
Technical aspects of restoration of vintage aircraft. The presentation will cover:
Identification of the aircraft.
Defining the configuration.
Modification and Engineering design activity.
Certification of data.
Certification of physical aircraft.
And test flight....

Map



SEPTEMBER 2008 BRANCH ACTIVITY

Meeting Report NZEI Canterbury Branch September 2008.

Our 2008 September branch meeting was held at the CPIT where Ian Williamson addressed a small group of our regulars.

Ian is a radio engineer with a long history working in the radio broadcasting industry and he also teaches power electronics at CPIT.

Ian is currently working for Arc Innovations Ltd (ARC) a global leader in the development, deployment, and management of Advanced Meter Infrastructure (AMI) technology and services.

Ian is currently engaged in the rollout of remote power metering in Canterbury following a successful extensive pilot installation in Central Hawkes Bay and is soon to start on a large scale (400,000 customers) installation in Calgary Canada.

With the current Canterbury project some 70,000 new meters have been installed and there are another 30,000 in progress making it the single biggest system installed to date.

Metering has always been a problem for electricity retailers because the meter had to be accessed and read by a meter reader and then the information processed and the bills prepared and delivered. Most companies have moved to two monthly readings and give estimated accounts every second month which has saved costs but has produced endless complaints.

All of this plus the real opportunity to improve customer service and reduce costs has prompted the move to Smart Meters. An added incentive is that many of the existing meters are past their calibration certificate period and the government is pressing for their replacement. The meter readers are all saying “No keys. No dogs. No jobs!

The heart of the new system is new generation electronic meters which exceed the legal accuracy requirements by an order of magnitude or more and with no moving parts this accuracy should be maintained forever.

The next problem is getting the information back to the central office in real time.

A number of different systems have been trialed for remote metering including Powerline Carrier systems and direct radio systems but all have serious limitations. The AMI system has eliminate the problems by being flexible enough to us a variety of communications systems including cell phone and satellite phone systems for remote sites as well as the main suburban mesh radio system.

Within the mesh system each meter is equipped with a small radio transmitter and receiver, these transmit information when requested and relay information from adjacent transmitters when requested. Because of the small distances and Ian’s good work with the aerials particularly at the take out points the transmitters run at amazingly low power, far less than a household cordless phone for instance.

Using the mesh system every node is a potential repeater and with 160 take out points Canterbury is well covered. The system can manage up to 120 hops between any meter and a take out point but the average is 6 to 8 hops with an odd unit needing up to 13.

The aerial at a typical suburban house is simply dropped down inside the wall below the meter box to escape the confines of the metal box although in rare cases where this is not effective a small whip aerial can be added. At the takeout points a bundle of whip aerials are enclosed neatly within a capped fibreglass tube that protrudes above the pole head and this and a small equipment box mounted high on the pole is the only evidence of the metering take out points. Where reticulation is underground the entire unit is housed in a slim-line unit fitted neatly on top of the street light pole above the light. These units draw power from the street lighting circuit and run on batteries during the day.

Stories keep coming in about interference created by the new meters but because of the extremely low power almost none have been traced back to the equipment, although one family had real cause to complain when the meter tinkled on the bedroom clock radio. The cause was easily found and rectified when it was discovered that meters aerial neatly dropped down inside the wall cavity was only millimetres away from the clock radio on the other side of the wall. Another unhappy customer could not be convinced that the meter was not causing his stereo to change channels by its self, believing it was operating on the same channel and interfering with the stereo’s remote control. Strangely the stereo’s remote was an infra red unit!

The current new meters come with a remote disconnect feature which if operated requires resetting by an electrician. Its use is not authorised by Meridian. The latest generation of meters will come with a remote disconnect and reconnect feature but for safety reasons the reconnect will only arm the switch and the customer will then push a button to restore power under direction of their supplier.

Where possible installations are done on a “like for like” basis so consumers should not notice any changes and

can be confident of the accuracy of their power accounts.
There have been a number of installations found to be incorrectly wired and rectifying these has increased revenue. Some are historic mistakes but where confirmed as deliberate interference prosecutions have resulted.
Beware the new meters have advanced anti tamper features and interference will cause the meter to disconnect the power and initiate a service call from the lines company!
Where dual rate meters are replaced there is only a single display showing total units used with no break down between rates. The data is recorded in the meter and your bill will be spot on with its division between rates. If the information is important to your energy management a digital panel is available to show the units used at each rate.
As part of the installation each meter is given a GPS reference which can be used to locate the site and as Ian demonstrated using a members home (with permission) this is accurate enough to locate the actual position of the meter box on the building!
Installing the meters has been a challenge because the work must be done by a registered electrician but a lot of us have little appreciation of the fundamentals of radio transmission at work. Some were also technologically challenged with having to use a PDA and GPS set to programme each new meter installed. Other difficulties were posed when switchboards where opened for the first time in living memory and dangerous situations discovered.
Ian produced a series of photos showing the good, the bad, the ugly and the dangerous, all from remote metering projects.
At the conclusion of the address Ian was congratulated on the personal innovations that he had made as part of this project and also congratulated on being part of one of the few teams in the world that have managed to get a large scale mesh network running reliably. A vote of thanks was carried by acclamation before we all retired to the tutors lounge for a quick refreshments and chat before returning home to ponder what other world leading technical innovations are being developed in back rooms right here in Christchurch.
Thanks again to Starr for organising another successful meeting and CPIT for the use of the venue.
Links.
http://www.arcinnovations.co.nz/index.html ARC home page.
http://www.arcinnovations.co.nz/news/2006-09-19.html Central Hawkes Bay Rollout
http://www.arcinnovations.co.nz/news/2007-06-28.html CanterburyRollout
http://www.arcinnovations.co.nz/news/2007-11-12.html Calgary Canada
http://www.cpit.ac.nz/ Central Institute Technology

If anyone has interesting links or stories to share in our news letter please contact myself teasdale@ihug.co.nz or Starr Moffatt.
I am happy to type up from hand written copy, the computer spell checks and Starr is always on the lookout for something to print!
Malcolm Teasdale

DON WHYTE

It was sad to hear that one of our past members, Don Whyte passed away early in September this year.

LES GOSLIN

Our Branch Vice President Les Goslin has had an extended stay in hospital. Les is now back home and we wish him all the best for a speedy recovery.

DENNIS RICH

Congratulations to Dennis and Lois who are proud grandparents for the first time. At the time of writing this newsletter Dennis and Lois are in the UK with their son, daughter in law and their new grandson ☺.

SAFETY REFRESHER COURSES

Our Branch has no plans to run these courses during the new year

ELECTRICITY (CHINA FREE TRADE AGREEMENT) REGULATIONS 2008

A document dealing with amendments to the Electricity Regulations with respect to the China free trade agreement can be found at:
http://www.legislation.govt.nz/regulation/public/2008/0223/latest/DLM1459401.html
In brief:

The Regulations came into force on 1 October 2008.

Application

(1) Regulations 5 to 8 apply to fittings and electrical appliances that are, or may be, exported from New Zealand in purported compliance with the Conformity Cooperation Agreement.

(2) The Schedule amends the Electricity Regulations 1997 in relation to fittings and electrical appliances that are imported into New Zealand in purported compliance with the Conformity Cooperation Agreement.

The schedule lists the following regulations along with their amendments or additions:
2(1), 69B, 76, 78 (New Regulation), 100 and 102

OLD TIMERS/ANNUAL GENERAL MEETING AND REMITS ACTIVITY

Venue:	Hoon Hay Buffet. 20 Tankerville Rd { Halswell Rd End }
Date:	23rd of November 2008
Time:	The Old Timers activity is a buffet that starts at 6pm, however you may wish to have a drink before the meal at your expense and a chat say at 5pm onwards.
Who may attend:	Anybody who is 50 years of age or older and is/was involved in the Electrical Industry. Partners are also invited of course.
Cost:	$21.00 for people over 60, $25.00 for other adults
AGM/Remits:	This will be held at the same venue after the meal has finished. (Similar to other years).
Who may attend:	Members of the Canterbury Branch of the New Zealand Electrical Institute. PS don't forget to bring along any remits you wish to table for the 2009 National Conference

WORLDS FIRST AUTOMATIC NIGHT LIGHT SWITCH

This was told to Vic Galletly who is now passing it on to us.

The Worlds first automatic "dusk to dawn" lighting control system was invented by a farmer in Nelson around the 1920's. The lights were supplied by a water wheel powered generator. The clever control circuit consisted of a switch that was closed by the weight of the fowls in the hen house, when the last chock settled on the perch at dusk. At dawn when the fowls left the perch the switch reopened due to the reduced weight.
Now that's making use of your natural resources!

THIS MONTH'S THOUGHT:

Funny.... I don't remember being absent minded

I look forward to seeing you at the Imagitech Theatre , CPIT on **Tuesday 14th October at 7.30pm**

Cheers
Starr