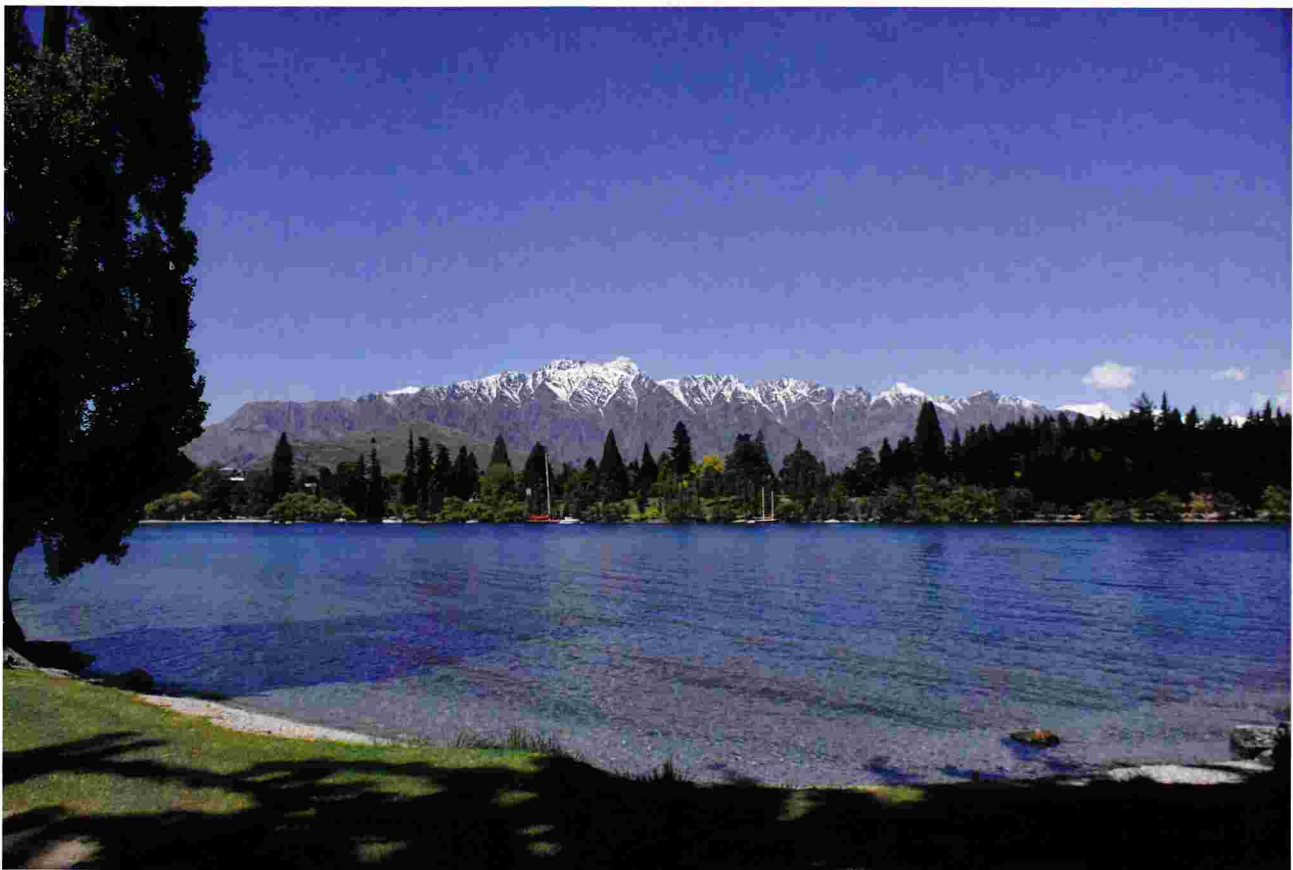


THE HEALTH ENGINEER



New Zealand Institute
of
Healthcare Engineering

THE HEALTH ENGINEER

The Journal of the Institute of Healthcare Engineering

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PRESIDENT'S ANNUAL REPORT 2012

This year has seen a quiet year for the Institute with few meetings, few events and fortunately few major disasters. Your executive team have toiled away on issues which have been unresolved for some time, primarily those related to Inland Revenue taxes and preparation for application for Charity Status. Hence the need for rule changes to our constitution.

The executive team have also investigated personal liability insurance cover for the advice they give as executive members representing the Institute. Following the events of Christchurch, for engineers, I am sure you will agree this is prudent.



Last year's conference in Wellington proved to be a great success thanks to Max, Richard and their teams' hard work and of course the support of loyal trade participants. Now it is Queenstown's turn and the well known southern hospitality should provide for a sensational conference. While I have been actively involved in the conference organising team for this event (including our 76th AGM) it has been a very small group that have brought all the planning to fruition. A special note of thanks must be extended to Greg Taigel who as well as being the Conference Programme Convenor has also been our IT guru ensuring the conference has had maximum exposure on our NZIHE website.

Conferences have been a regular annual event for many years and have allowed the Institute to build up considerable funds. These funds need to be put to good use. The executive team have regularly invited members to submit training/travel plans as grant applications. Several individuals have taken up these opportunities and the reports of their activities will be available at this year's conference. However we need more, many more! To this end the executive will be attempting to make applications easier in the coming year. We would encourage each of you to consider opportunities for further training funded partly by the Institute or encourage young members of your staff to apply for training grants.

Several years ago, I was fortunate to attend the IHEA conference in Perth, Western Australia. While I was there the IHEA executive was rolling out a strategic planning programme to find out what their members needs were, what the members felt the institute did well and what it did poorly. The responses from members not surprisingly identified education as a key initiative.

I would like in this coming year to roll out a similar strategic plan for our Institute so as members you can inform your executive on what you would like from your Institute. This will require your support and feedback!

One negative issue I need to raise is the lack of contributions from our members to our magazine and also the lack of nominations for the ANZEX exchange and Engineer of the Year Awards. As a nation and as engineers we are very shy of the limelight and the achievements we make. As an Institute we need to know about these achievements: the project you just commissioned, the new boiler saving hundreds of dollars in energy costs, the mastering of software in a new patient monitor and your advances in asset management and job tracking.

LET US KNOW, STAND UP AND TELL YOUR STORY.

Our website has been one of our success stories this year, congratulations again to Greg Taigel for his efforts. As members, if you haven't already navigated the site please do so. Dust off your member's password and check out the home and member sections. With the revamped website the plan is to provide forums, educational features and for the site to be a key communication tool.

Posting of information on the website about the conference has already enhanced our profile and made it easier for the general public and trades to see what we are about. Please support the website and produce articles and pictures to put online.

Looking forward, the New Year should bring the AS/NZS3551 for the biomedics and hopefully an educational roadshow can be held covering all the relevant healthcare electrical standards. We hope as an Institute we may help facilitate this happening.

Thank you all for your support and I wish you all a happy festive season.

Regards , Douglas Moller

MASTER OF TECHNOLOGY – ENERGY MANAGEMENT

Most of you are aware that the Institute is providing part support for my Master of Technology Degree at Massey Universities Centre for Energy Studies. My study is focused primarily on Energy Management and Renewable Energy. I now have one paper and a Research Report to complete to finish the degree which will be in the latter part of next year. So far my studies have covered a range of topics including pure energy management, greenhouse and climate science, development management and more recent topics in renewable energy systems. I have commenced work on my research project which will be working with the Government of Niue to determine the effectiveness of a number of utility scale renewable energy projects either implemented or about to be implemented in the near future and provide a pathway forward to optimise the renewable energy effectiveness and minimise fuel use of the Diesel powered power station that serves the country. The work will involve modelling the countries power supply system using a moderately high level modelling tool and applying a sensitivity analysis to a range of input and output parameters such as fuel cost changes and demand changes driven by tourism development and local depopulation. I am expecting to find that the savings from the



renewable energy systems will not meet the promises made and that a number of different technologies will be required to improve the effectiveness of the renewable energy systems. Like many projects, it appears that the renewable energy systems implemented were installed as a standalone project and did not consider the power system as a complete network resulting in many unexpected outcomes but you will need to wait till my presentation at the 2013 conference to find out what I come up with.

Warren Crawley
Electrical Engineer and Energy Manager
Central Alliance

THE NZIHE, NORTH ISLAND, LOWER & CENTRAL, REGIONAL MEETING

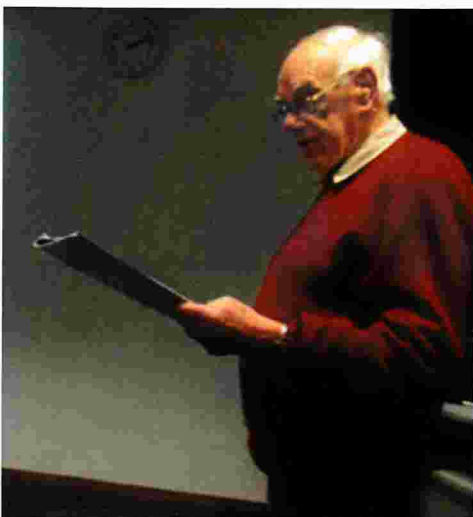
The meeting was held at Palmerston North Hospital on Friday 17th August 2012. Warren Crawley from Mid Central and Gavin Carey-Smith from Hawkes Bay DHB who organised the event opened the meeting by outlining the days programme.

The first presentation was Liam Greer (Mid Central DHB) who talked about Asset Management and the progress his team had made at Mid Central Hospital over the last year. Particular attention was drawn to the way the new system was implemented using the software BIEMS. Liam's talk was inspiring to all those attending and a number of questions were fielded during the question time.

Next up was Alan Palmer, Geologist from Massey University. Alan held the audience captive the whole time during his talk. His talk included key areas around Manawatu that posed high risk for new development and how geologists come to the conclusion about different areas and soil qualities. In particular Alan showed how different areas within NZ ranked in relation to risk from volcano ash, climate changes, sea levels and earthquake fault lines. The group also got to learn new names such as 'Folds' and 'Colluviums'.

After lunch, kindly supplied by Spotless Services, Gavin Carey-Smith lead a short meeting on the importance of maintaining a yearly Regional Meeting and there was a consensus by all to keep the meeting going each year if possible.

Max Christenson from Hutt Valley gave a thrilling talk on the new development in Hutt Valley including the new Theatre which replaced the clip on theatre. His talk went through the project from start to finish and to cap it off the group got to watch one of Max's still camera motion pictures. Max also kicked off a discussion on electrical safety testing in body and cardiac protected area. This sparked conversation between the DHBs as to how the new regulations should be interpreted and managed.



After Max we had the privilege of Jim Logan going over the history of the Hospital Engineers Association. This was most interesting and when Jim brought up the old photos it was fascinating to see how things had changed over the years.

Photo left -

Jim sharing details of the first meetings held by the Hospital Engineers Association

Trent Fairey from Hawkes Bay Hospital was last for the day. Trent outlined a number of projects happening at Hawkes Bay Hospital. These included a new maintenance department built from an old coal bunker, the upgrade and seismic strengthening of the boiler house and new pipe bridges that were at risk seismically. Trent's talk was relevant to all those attending especially as it covered

how critical seismic strengthening is to our hospitals.

Overall the day was very interesting and enjoyable. It is hoped by all those that attended that this can continue and that others can join. Although the day consisted of a number of presentations, the main highlight was the ability to catch up with other like minded engineers and managers.

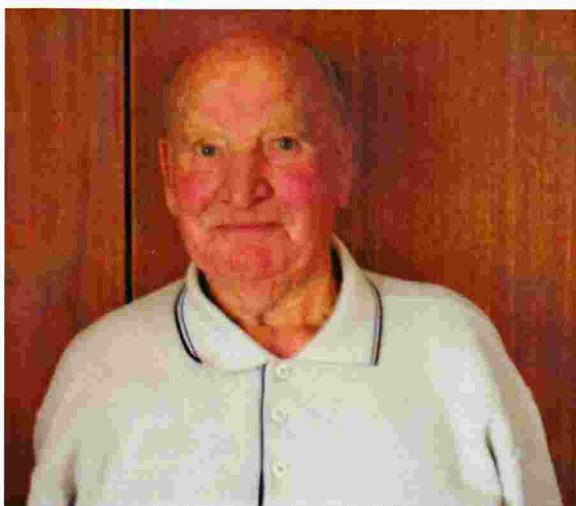


The 2012 Regional Meeting Group Photo.....

Top from left to right: Grant Hood (WDHB), Bob Inpijn(MDHB), Steve Hicks(MDHB), Ray Wallace(HVDHB), Warren Crawley (MDHB), Jeff Small (MDHB), Richard Whitehead (C&C DHB), Steve Cobb (HVDHB), Paul McCartney (HBDHB), Liam Greer (MDHB), Trent Fairey (HBDHB)

Bottom from left to right: Glen Blomfeild (MDHB), Max Christensen (HVDHB), Gavin Carey-Smith (HBDHB), Jim Logan (Retired).

MR. JAMES JOHN STEVENSON (PETER), LIFE MEMBER



Peter passed away peacefully at Palmerston North Hospital on Thursday 8th November 2012

Peter was Chief Engineer at Palmerston North Area Health Board, as it was then known for quite a few years. Prior to that appointment he was Chief Engineer at Thames Hospital.

He is an old Nelson man who served his apprenticeship with the Anchor Company then going to sea with them as marine engineer before coming ashore and joining the hospital service.

He was married to Linda and they had three children, Dale, Warren and Grant.

Peter was a very keen gardener all his life and produced some wonderful vegetables.

He was a keen supporter and Life Member of the New Zealand Institute of Healthcare Engineering and served on the Executive from 1969 through to 1974.

THE 76TH CONFERENCE OF THE NEW ZEALAND INSTITUTE OF HEALTHCARE ENGINEERING

“STEAM TO NANOTECHNOLOGY”

The Conference Overview - Jim Logan

The first speaker was Russell Glendining who sixty years associated with steam engines on both the railways and shipping. He spoke about his life and activities mainly with steam. He was followed by a change in the programme with Max Christensen talking about the Hutt Hospital upgrade with the finishing of the new operating theatres. He also had some images showing the removal of the temporary theatres onto trucks and their eventual new home in Hawkes Bay.

We were then herded out onto the flat roof for the Group Photo, much to the amusement of some neighbours.

After morning tea Dr. Henk Roodt gave a talk on system design, analysis, business modelling, design support and simulation. He showed how several system solutions can be drawn together to solve some of the real world problems. Seth Veale, the following speaker, spoke about software development and the changing face of software design.

Roy Aitken, Australian ANZEX delegate, had the dreaded after lunch slot. He is a Fellow of the Institute of Hospital Engineering Australia and has recently retired from his position in Perth, Western Australia. He spoke about document control.

Craig Waterhouse, a dental surgeon, has been involved with the organisation Marine Reach, taking dental treatment to the remoter corners of the Pacific Islands on the ship Pacific Link. He gave an engrossing talk about the volunteer trips; “making the best of what you have.”

We were still on the water with Australian Kevin Moon speaking about his recent experience with flooded hospitals, the effects of floods on buildings and long term infection control.

After afternoon tea we had – “Houston we have a problem” with Bill MacDougall and Lyn wondering about the US space programme. Did we ever land on the moon? Very amusing, ably helped by Lyn and we all received a small bottle of single malt rocket fuel. Cheers Bill!

After we all landed (safely) it was AGM time followed later in the evening by the Trades Exhibition and supper, great social networking then finishing off the evening with the business card draw.

Friday morning started with Facilities and Clinical Engineering splitting into separate sessions. The morning speakers for facilities were reported by Life Member Bob Duncan (see the next page.)

After lunch we were all combined again starting with Graham Bugler who spoke about project management, who is in charge; the organisation’s management practices and principles. He used the Southern DHB’s recent oral health reinvestment project as a case study.

He was followed by Carole Heatly who is Southern DHB’s CEO with a background as a registered nurse. She has held senior director and CEO positions in London for the past 15 years while previously being employed as a clinical nurse in A&E in Glasgow, Scotland which is where she is from. She has the difficult job of merging the two Southern Health Boards, namely Southland and Otago into the Southern DHB. She came across as a very forthright lady who will not accept any nonsense from anybody and should handle her difficult job well.

Gavin Carey-Smith gave a run down on his visit to Tasmania for the Australian Conference and subsequent visits to Melbourne hospitals.

The final speaker was Hans Raetz, who is a busy GP at Queenstown Medical Centre, talked about his frustration with Southern DHB, the Ministry of Health and health insurers as he attempted to provide extended medical care for the Wakatipu area by involving other organisations in a partnership to fund and build extensions to the medical centre. So far unsuccessfully.

President Doug Moller closed the conference with a few well chosen words and reminded everyone to board the TSS Earnslaw for cocktails at 5.45pm. We cruised to Walter Peak station whilst enjoying drinks and nibbles.

On our return we were instructed to assemble outside the hotel before being piped in with a bagpiper leading the way. Then early in the dinner came the piper again leading a procession to present a haggis to the assemblage a-la-Robert Burns:

Fair fa your honest sonsie face
Great chieftain o' the pudden race!

It was a highly entertaining evening and a fitting end to a great conference in wonderful Queenstown.

Facilities Session Friday 9th November - Bob Duncan

Our first speaker was Henry Bigglaar representing our Premier Sponsor Spirax Sarco, a Company that has remained in the forefront of steam engineering over the past century.

Steam was the major motive force of the industrial revolution from the mid-19th Century to the early 20th Century, as it was a very good way of storing and using energy. Henry reminded us of the properties of steam in saturated and superheated states and its varying temperatures depending on pressures and why it was such a stable heat source. We were also reminded of the problems with pressure when mixed with incondensable gases.

A very green energy source, as long as it is designed and trapped correctly, the latest control systems, which can generate power from heat allowing wireless transmission of data, are still using the same principles of the properties of steam, but have come into the computer age. One of the major problems with steam is the loss of energy in pipelines Henry showed some of the work being carried out on vacuum sealed pipe lagging, which reduces heat loss dramatically.

A very worthwhile talk with the large number of hospitals still relying on steam as their main distribution of heat energy.

Our second speaker of the day was Scott Noyes of Schnieder who spoke to us on Energy Management. Scott maintains that there is still about 30% of the energy used in hospitals could be saved which he equated to approximately \$12million per annum. To achieve savings, noting that the lower branches of energy savings tree had been harvested, 4 major aspects of energy management must be introduced:

1. Must have buy in from Senior Management
2. Must have a Team to be responsible
3. Must have Robust Documentation Scheme
4. Must have a Budget

The other must have is an Energy policy that fits the organisation.

Our third speaker of the day was Kim Bruton, Chief Engineer- Northeast Health, Wangaratta, Victoria who spoke on the Air Conditioning of a Central Sterile Department. To start with a plan was produced showing all areas of a CSD and the relationships of air pressure to each area ensuring the air flow will travel from clean to dirty areas and the standards which these areas are supposed to be built to. This was followed by some photos of relatively new CSDs which were not built correctly in most cases with no physical barrier between clean and dirty, also no barriers between sterile goods storage areas and set up rooms. The Air Conditioning should remain constant with temperatures between 22C to 24C and humidity between 30 to 60% Rh, if conditions are not constant sterile packages can degrade and cause deterioration of some plastics, rubber and cellulous materials. Change conditions can be attributed to

Energy savings when Air Conditioning is shut down over night instead of winding back.

The conclusion reached that CSD require good HVAC, rooms pressure tested annually and prompt maintenance adhering to HBN 13(UK).

The next presentation from the team at Southern DHB explained how 2 Major Projects requiring 12 smaller projects was undertaken at Dunedin and Wakari Hospitals including the main switchboard upgrade and replacing the existing generators. The projects run by the Capital and Operations team at Southern DHB, these teams are intertwined and from this are able to achieve good outcomes.

Andy Symes started with one of the two main projects, the rehousing of the Acute Mental Health facility at Dunedin Hospital to the Wakari site. Time restraints did not allow discussion on the new Neonatal Intensive Care Unit and a Paediatric Ward. The reason to move the Acute Metal Health Unit was that it had outgrown it's accommodation at Dunedin Hospital due to the physical constraints of the campus built on one block in the centre of Dunedin City. Wakari Hospital, which had been "mothballed", had the buildings and grounds to house the Unit in the old Oncology building, which was structurally sound and financially achieved a more cost effective solution than a green fields site.

The success of the project was due to good communication with the clients, the use of marking out areas with masking tape to show size, (not everyone can read drawings,) and use of 3D CAD to show clinicians what the team was going to achieve. This they did, presenting the clients with a functional building which came within an achievable budget in an agreed timeframe.

Geoff Padman, Electrical Team Leader, briefly ran over the history of the existing Neilson switchboard which could no longer be maintained and a run down on the existing stand by generation and exhaust problems. These problems were to be resolved by replacing the main switch board and bringing in 4 containerised 1MVA generators and running their exhaust pipes to the roof of the main block.

Gary Clarkson, Health and Safety Construction Manager expanded on the challenges of the Project, from the shutting down of the main entry to the Emergency Department, heavy lifting equipment on site, helicopter flight paths and disruption to city streets.

The keys to the project were:

1. Signing off critical paths.
2. Communication with all areas effected both within and outside the Hospital.
3. Monitor what's going on.
4. Making sure that everyone knew what they were supposed to be doing and not assuming anything.

With only 7 days allotted for the final change over, there was little time for any process not going to plan, this was achieved with the minimum of problems, the new switchboard and generators are in place and working with the ability to generate when the local power company wants them on line.

The final speaker of the Facilities session was Mike Williams of Emerson Network Power, he gave a very informative talk on testing of stand by generation and how to achieve the standards AS/NZ 3009 and AS/NZ 3010, which must be adhered to under Part 2 of AS/NZ 3000.

With standby generation required to be load tested every month, many hospitals have had difficulty in achieving this due to medical staff not wishing to risk patient safety.

Mike explained how the ASCO switch gear worked by enabling the stand by generation to be run up and the switch would synchronize the generator and mains allowing the generator to take over and run with mains power as backup. Any fault causing the generator to stop producing power would enable the mains power to take over seamlessly.

A number of hospitals have been using load banks to carry out full load testing, this is expensive on a continuing monthly basis and it was expected that the ASCO switch would have a payback of some 18 months.

Mike had worked with a number of hospitals in the U.K. and the Assistant Director of Estates, Rob Speight, had come out with recommendation for using these switches.
A very good paper to end a very interesting morning session.

Reflections from the Clinical Engineering perspective - Nigel Cross

Congratulations to all involved in organising and presenting the conference. We need to also acknowledge the sponsors for their generous contributions. It was fantastic to see so many delegates, partners and exhibitors participating outside a normal centre. Even the weather played its part for the duration, as evidenced by a stunning background to the group photo.

After Doug's welcoming opening remarks we were treated to a history of 'Steam' by Russell Glendenning dating back to the Roman Times where the health benefits of steam were utilised. It would have been great to hear more about 'The Kingston Flyer'.

The next session was Max Christensen presenting on the upgrade to Hutt Valley Hospital, between 2010 and 2012 involving significant work to the emergency and theatre departments. The temporary solutions employed have parallels to what is and will happen in Christchurch over the next few years. Dr Menk Roodt then delivered a fascinating paper on the design frameworks for the analysis of complex systems. This paper helped explain some of the processes that we all do and use without realising and sometimes not completing the process to its fullest potential.

Stuart Allan of the Otago Polytechnic introduced a paper for discussion during the conference and in the Clinical Engineering stream, relating to the future of training requirements and qualifications pertaining to our vocation.

Post lunch (which exceeded the wishes of some food critics). Roy Aiken spoke on the topic Digital Document Control in the future, as it related to building design on The Sir Charles Gairdner complex. Roy related his experiences using 'BEIMS' and 'WEBFM' hoping to leave a strategic legacy for the future of engineers.

Next on the podium was Craig Waterhouse who shared his inspirational experiences delivering dental care to the Pacific Islands. We can all relate to his plumbing issues even as we travel around New Zealand.

From this point on in the programme the twin pronged invasion connected our first Australian presenter Kevin Moon, he gave us an insight into the short and long term damage when your hospital becomes flooded, which unfortunately will become more prevalent in the future. We are now all aware of how dangerous mould is and just drying out a building with more resistant materials. The second invasion manifested itself in the form of Bill and Lyn MacDougall. Bill dressed as a space cadet and delivered his conspiracy theory in respect of the moon landings. The jury's still out Bill!

With 29 exhibitors for Trade Night there was some healthy engagement in both the Facilities and Clinical Engineering booths and again the food was excellent and enjoyed by all.

DAY TWO

This is where the two streams split. The first Clinical Engineering speaker was Jacqueline Preou a team leader from Waikato, she informed us of her successful study grants from the Institute and her subsequent MBA thesis on E-Health. This is very much the way of the future, but will take some significant mindset changes within the health sector to reap the benefits fully.

Stuart Allan then returned to lead a forum on discussing what type of person we require for the industry and what training and subsequent qualifications they require. This topic produced some healthy debate and responses from the floor.

Post morning tea, Dr Jeremy Nicoll presented two topics, the first in Diagnostic Radiology in relation

to x-ray testing and the differences between film and digital imaging. His second topic related the events of the Fukushima Nuclear Power Plant disaster. The presentation was delivered in a fascinating manner explaining the physics of a nuclear plant and the subsequent aftermath.

Our final speaker in the Clinical Engineering stream was Michael Anderson who gave us an insight of nanotechnology, super magnets where nano particles are studied and the possibilities for the health industry.

The final combined session connected with Graham Bugler asking the question "Are you a project manager"? Starting with the fundamental questions such as 'is this a project, or is it business as usual?' Graham pointed out some sound principles on which to work and also some of the pitfalls.

Following Graham was Carole Heatly, the recently appointed CEO of the Southern District Health Board, who shared some of her insights and strategies into merging our two most Southern Health Boards. She explored the virtues of getting out there and meeting and listening to her colleagues, developing trust and clear communication, understanding cultural differences, this all lead to developing the 'Southern Way'.

Following afternoon tea, Gavin Carey-Smith reported on his trip to Hobart conference as the ANZEX delegate. His report detailed the very complex redevelopment of the Hobart hospital, a visit to the new Royal Children's Hospital and a site visit to the new Victoria Cancer Centre, with some animations of what the new build will look like. He also shared some of the workings and detail of the private public partnerships.

The final presenter Dr Hans Raetz spoke of private public partnerships, particularly in the Queenstown area, and over the last 20 years the outcomes have not suited a PPP relationship. There still seems a long way to go to progress if PPP is the answer for this area with its growing population.

Doug then closed the conference and acknowledged everyone's input.

The trip up the Lake Wakatipu on the TSS Earnslaw will remain in everyone's memory for a long time; our Australian visitors were most impressed and particularly enjoyed being part of the group being piped back into the Hotel. This was followed by an outstanding meal.

I must mention the partners programme, looking at it in detail, Luge riding and visits to Cheese shops. Why could I not go? My wife came back both days having really enjoying both the events and company.

Well done to all the delegates who came from far and wide.

See you all at Lincoln 2013

Partners Programme - Denise van Aalst

Twenty-one keen ladies met to participate in the conference photo Thursday morning then were led off by 'Steam Engineers' Tric and Denise to vans for the scenic drive to Arrowtown. This became a little more scenic when a road block was encountered so we all got to see a little more of the country between Queenstown and Arrowtown than planned. Despite arriving a little late at the Lakes District Museum we were warmly welcomed by the museum director Dave who gave us a whistle-stop tour of the fascinating displays within the museum. He then led us outside and on a walk around the central village of Arrowtown, describing some of the history, both ancient and more recent, of the buildings, surroundings and local identities. Dave was a fascinating guide who made the tour very interesting, even for non history buffs. The tour ended with a lesson on gold panning in the rather cold river which gave everybody a chance to find their own gold to take home. At least 50-60 cents worth each! Audrey Harris

was the first to strike gold and was awarded a version of her own gold pan for her efforts at the formal dinner on Friday night.

Lunch was very pleasant in the sun at Mondo café and then there was time for a little shopping in the historic main street. Meeting up again we all piled into the vans to head to Gibbston Valley Cheesery. Views of the Kawarau bungee jump were seen en route but surprisingly no-one seemed to want to stop the vans for a jump themselves! Numerous cheeses were sampled and a few were bought for later enjoyment. One van then headed back to catch the last conference presentation for the day while the other van headed up to a scenic lookout on the Crown Range Road before heading back to the hotel. Friday saw a road trip around Kelvin Heights before heading to the Gondola. Everyone managed to get on board and up Bobs Peak. Fabulous views of Queenstown were enjoyed and then some bartering went on as those who decided not to chance the Luge handed over their tickets to those who were keen for a couple of rides. This was a lot of fun with both slow and fast lanes to try out. Kaylene Clarke was deemed the fastest dare devil by those who remained as onlookers rather than participants and she took home a gold cup and wine glasses for her efforts, on Friday night at the annual dinner. The restaurant at the top of the gondola offered a beautiful buffet lunch enjoyed with even more stunning views over Queenstown and the surrounding mountains.

After returning to ground level the Steam Engineers delivered some partners back to the hotel or into Queenstown while others took the chance to get to Frankton to check out the shopping in that suburb before everybody gathered back at the Steamship Earnslaw for the pre annual dinner cocktail cruise.



Sue Ward on the luge



Some more intrepid luge riders



Panning for gold, hoping for a fortune!



Lunch time at Arrowtown

2012 CONFERENCE THE PHOTOS



Conference venue – Rydges Hotel, Queenstown.



Australian ANZEX delegate Roy Aitken and wife Carol-Ann.



Russell Glendining, our opening speaker



Australian Kevin Moon in full voice. All about floods.



An ode to a haggis a la Robbie Burns, Leon, Monica and Roy Aitken with imported assistants



Bill MacDougall, in spaceman outfit. Well did we land on the moon?



Henry Biggelaar from Spirax-Scarco the Premier Sponsor of the Conference



Carole Heatly talking about the problems of merging District Health Boards



The crew at long time sponsor Schneider



The Institute Executive



Garry Busowsky with a thirst quencher