



IRANZ Connections.

Independent Research Organisations and New Zealand's Base of Science and Innovation

The last three years has seen strong acknowledgement from Government of the value to New Zealand of investment in science and innovation. As Science Minister over this period, Wayne Mapp is to be congratulated, as is the Prime Minister's Chief Science Advisor Professor Sir Peter Gluckman, and the Prime Minister himself.

Various strategies to strengthen New Zealand's culture of innovation were presented across the political spectrum pre-election.

In this environment, one item in National's 2008 pre-election science manifesto that hadn't been delivered and could have been easily missed was the undertaking that:

National will investigate how independent research institutes that do significant contract work through government funding might receive a similar type of funding to the secure funding for CRIs.

IRANZ comprises a group of independent research organisations with strong industry and community linkages. We have not needed government ownership or direction to go effectively about the business of providing research-based solutions to a range of sectors across the economy. The opportunity that has been provided to our organisations by the competitive funding system of the last two decades is that of equal access to government science investment in high quality research. We have used this investment to build capability across sectors as diverse as transport, energy, building, metals, aquaculture and environmental research. Our continued existence in this system proves the quality and value of our research.

It is now pleasing to see, the announcement by the Ministry of Science and Innovation of *Capability in Independent*

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Research Organisations funding. This is an important step to ensuring the more robust "base of science and innovation" for the New Zealand economy promised by the National Party pre-election - built not only on government ownership, but also on record of performance and end user connections in areas of national strategic importance.

Gillian Wratt
CHAIR IRANZ

Precision agriculture collaboration for Lincoln Ventures

Lincoln Ventures and Massey University's Centre for Precision Agriculture have signed a memorandum of understanding that will see them collaborate in precision agriculture research and education.

Peter Barrowclough, Chief Executive of Lincoln Ventures, says the partnership will increase the research capabilities of both organisations in an important and developing area.

Lincoln Ventures and Massey each have their own strengths in the area of precision agriculture, and Mr Barrowclough says it

made sense to pool that expertise and resource to better enable the technology development, uptake and learning outcomes which are critical to providing the efficient farming systems of tomorrow.

"Collaboration is the key," says Massey University's Professor Ian Yule. "Irrigation is one area where the collaboration has potential to generate great results. Massey has done a lot of work in soil mapping and variable rate irrigation. Lincoln Ventures has expertise in sensors for soil moisture and radio networks to transfer information around the farm. New Zealand needs efficient farming systems so we need to work to make sure that happens."

As well as research, the agreement also addresses joint and collaborative education and professional development.

www.lvl.co.nz



MASSEY'S PROFESSOR IAN YULE AND PETER BARROWCLOUGH, CEO OF LINCOLN VENTURES LIMITED SIGN THE MEMORANDUM OF UNDERSTANDING

Prestigious UNESCO award for Cawthron Institute scientist

One of just 15 UNESCO - L'Oréal International Fellowships for Young Women in the Life Sciences offered to outstanding young female scientists from around the globe, has been won by Cawthron Institute scientist, Dr Zoë Hilton. This is only the third time the award has been won by a New Zealander. Both previous awardees were also Cawthron scientists: Dr Allison Haywood and Dr Jenny Smith.

The award is part of an international programme designed to facilitate international exchanges for research projects in some of the world's best laboratories. The fellowships are awarded to 'young women who demonstrate outstanding intellectual promise and personal qualities, for research projects that demonstrate innovation, creativity and relevance, and which are likely to contribute to enhancing knowledge in the life sciences'.

Dr Hilton will use the award to further her study into the captive breeding of *Ostrea edulis* and *Ostrea chilensis* - the European and New Zealand flat oyster (the Bluff oyster). She will spend six months at Spain's Institute for Food and Agriculture Research and Technology (IRTA).

IRTA Director, Dr Dolores Furones, who visited Cawthron earlier this year, says they are very much looking forward to having Zoë working with them. "Both Cawthron and IRTA have many areas of common interest, not only related to shellfish aquaculture, but also with shellfish pathology and food safety, and I can see benefit for both of us from the sharing of knowledge through the sharing of staff."

www.cawthron.org.nz



Carbon Capture and Storage: a key technology

CRL Energy's Dr Trevor Matheson was the New Zealand delegate at the recent 20th anniversary meeting of the International Energy Agency's (IEA) Greenhouse Gas Research and Development Programme in London. The IEA programme investigates, promotes, and disseminates information on technical solutions for the mitigation of greenhouse gas emissions.

This year's conference focused on carbon capture and storage (CCS). "CCS is seen as a key technology if the world is to control and reduce carbon dioxide emissions" says Dr Matheson. "Over the last 20 years, the programme has grown from 12 to 46 members; country members are currently 19 and industry sponsors have increased from 2 to 26. This last statistic reflects the high level of importance given to CCS by the oil and gas industry, the coal industry, and the power sector and the benefits they see in dialogue on the topic with governments and research organisations."

New Zealand's Coal Association has taken the lead in setting up the New Zealand Carbon Capture and Storage Partnership, which is comprised of interested industry and government representatives. The partnership has recently released a technical report entitled "CCS in New Zealand: Can carbon capture and storage deliver value for New Zealand as we head towards a low carbon future?" The report concluded that carbon capture and storage technologies could work safely and effectively in New Zealand.

Copies of the report are available from www.coalassociation.org/publications.htm

www.crl.co.nz



European Integrated Fire Engineering and Response COST Action

HERA Manager Dr Stephen Hicks has been invited to represent New Zealand on the 4-year European Cooperation in Science and Technology (COST) Action 'Integrated Fire Engineering and Response'.

Through the generous support of the Royal Society of New Zealand, Dr Hicks attended the Action's Management Committee meeting in Crete and presented a paper, co-authored with Martin Feeney (Holmes Fire) and Associate Professor Charles Clifton (University of Auckland), on the Britomart East office building in Auckland. For this particular project HERA's Slab Panel Method (SPM) software, supplemented with advanced finite element analyses, was

used to minimise the amount of applied fire protection that was required on the long-span secondary beams. From these studies it was shown that approximately 80% of the secondary beams did not require passive fire protection, which resulted in savings of approximately \$300,000 to the project.

The main objective of this COST Action is to encourage interdisciplinary exchange of information around performance-based fire safety design methods and research into standards for fire design. HERA's participation on this Action will provide access to the latest international information, which will be used to contribute to the development of the new fire part to NZS3404, together with the update to the HERA SPM software.

www.hera.org.nz



PROFESSOR IAN BURGESS (SHEFFIELD UNIVERSITY), DR STEPHEN HICKS (HERA) AND DR FLORIAN BLOCK (FEDRA BURO HAPPOLD)

Slowing down for safer roads

Transport Engineering Research New Zealand (TERNZ) has been investigating what will get motorists to slow down in high-risk road environments. Recent studies have focused on reducing the speed of traffic bypassing school buses, and at rural intersections.

On rural roads, intersection crashes account for the next highest number of crashes after run-off road and head on crashes. TERNZ has been investigating the safety outcomes of rural intersection active warning systems. These systems are signs that activate to warn the driver of a potential conflict when the risk exists and show nothing otherwise.

Dr Hamish Mackie, Senior Scientist at TERNZ, reports that improved safety outcomes at high-risk rural intersections can be achieved with an active warning system. "Having variable speed limits in high speed road environments appear to be most effective in terms of speed reduction, with speed reductions of up to 17 kilometres per hour being reported. Giving drivers a reason why slowing is important may also be a significant factor in achieving the speed reductions" says Dr Mackie. In addition, the research shows that vehicle-activated signs tend to be perceived positively by motorists.

In TERNZ's research into reducing traffic speed past school buses, four variations of a 20 kilometre per hour speed sign including flashing beacons and the presence of the standard 'School' sign were investigated.

Director of TERNZ, Dr Peter Baas says in terms of speed reduction, the best performing sign on the rear of the bus was the smaller and more highly placed sign, with illuminated LED roundel, flashing beacons, and

accompanying 'School' sign. "Stakeholders also preferred this sign in the perceptions survey. On the front of the bus, the larger sign was slightly more effective than the smaller one but may be difficult to fit on many buses because of its size." Commissioned by the Road Safety Trust, the research is being considered by the relevant government agencies.

www.ternz.co.nz



Building for the wind

Opus Central Laboratories is at the forefront of research into the effect of wind on buildings and the development of wind design of structures.

Opus, in collaboration with NIWA and GNS, is quantifying how wind flow changes over complex topography, and how this can then be used to improve building design. Neil Jamieson, Opus Aerodynamics Research Leader, says "we are using a detailed topographic model of hills near Wellington, and measuring how the wind flow is influenced by a range of factors. This information will eventually be fed into the Buildings Loading Standard AS/NZS1170".

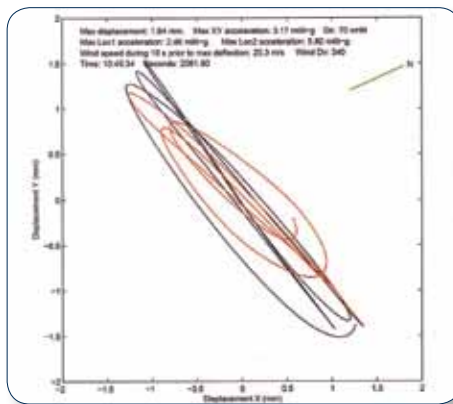
Another project with the University of Auckland's School of Engineering is investigating the full-scale movement of real buildings in the wind. Opus is measuring the responses of scale models of these buildings for comparison with the full-scale measurements. Neil Jamieson says "the results from this research are now improving our ability to accurately model the movement of tall buildings in typical wind speeds. This will improve design techniques to minimise the wind induced motion of structures".

The research has yielded the additional

benefits of new methods to generate accurate topographic models at a cost comparable to architectural building models, long term remote logging of building motion, and simultaneous pressure measurement allowing wind loading distributions on structures to be investigated. These methods can be used to quantify wind flows at exposed building and wind farm sites, and provide wind load time histories for advanced design of structures through computer simulations.

Opus Central Laboratories acknowledges funding from the Ministry of Science and Innovation for the topographic research and funding from BRANZ for the building motion research.

www.opus.co.nz



DATA SAMPLE OF WIND INDUCED BUILDING MOTION



TOPOGRAPHIC MODEL IN THE WIND TUNNEL

Powder Processing, Consolidation and Metallurgy of Titanium Conference

One of the most significant conferences for titanium powder research and product development was recently held in Brisbane. The Titanium Industry Development Association Inc (TiDA) was proud to be a key sponsor and co-organiser of this significant event.

The three day conference included over 85 abstracts from 14 countries, with more than 40% of the abstracts being received from outside New Zealand and Australia. Warwick Downing, TiDA Chief Executive, was invited to join as a conference co-chair, and commented that "the extremely high calibre of presenters provided the platform for significant discussions on leading international titanium advancements."

The conference attracted attendees from over 15 countries, with all areas of titanium research and development being presented and considered. The conference has been applauded for promoting the significant areas of growth in the advancement of titanium powder research, and providing collaboration opportunities.

www.tida.co.nz

Who we are:

IRANZ is an association of independent research organisations. Its members undertake scientific research, development or technology transfer. Members include Aqualinc Research Ltd, BRANZ, Cawthron Institute, CRL Energy Ltd, Heavy Engineering Research Association (HERA), Leather & Shoe Research Association (LASRA), Lincoln Ventures Ltd, Opus Central Laboratories, Titanium Industry Development Association (TiDA) and Transport Engineering Research NZ Ltd (TERNZ).

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