

## CADMETHODS SOFTWARE MAKES ROOF QUOTES SIMPLE

Auckland engineer, Jeff Bilkey, and his company, CadMethods, have developed a new roofing design and quoting software programme unique to the New Zealand industry.

'Exact Roofing' takes time and effort out of manually compiling roofing quotes. The clever algorithms used for cutting geometrical shapes ensure accuracy when estimating the quantity of materials required, which also results in more accurate cost estimates.

The company applied for research and development funding through Technology New Zealand and Jeff Bilkey says the support it received provided confidence to push ahead with the project.

"Conceptually, it is very simple but it involves some very sophisticated mathematics and we had to research complex algorithms to get the cutting correct. We've now been able to develop a whole library of geometric shapes," says Mr Bilkey.

CadMethods is now working with a major roofing company to adapt the Exact Roofing programme for use in international markets including the United Kingdom, Slovenia, Dubai and Japan, and using its



extended capability to begin work on another programme involving the design of trusses, and matching them to roofing plans. 

[www.cadmethods.com](http://www.cadmethods.com)

## CLIMATE WINS INVESTMENT FOR WORLD LEADING TECHNOLOGY

Multi-million dollar, world-first research being carried out by New Zealand company, Climate Coatings Ltd, could revolutionise the way wood products and natural timbers are used in the Australasian building industry.

Climate has received investment funding of \$1 million from Technology New Zealand to perfect a process of powder coating wood to transform it into highly prized export products.

The company will match the public investment dollar-for-dollar in its quest to perfect a technique for colour coating wood which will be used for interior and exterior building and joinery products such as pre-finished cladding and decking.

Climate Chief Executive, Guy Wills, says the company has recruited additional scientists to work on the two-year project and has a global network of researchers involved.

The Technology New Zealand investment is part of its Technology for Business Growth (TBG) programme. Climate stands to add significant value to New Zealand's burgeoning supply of timber and take the technology global through partnerships and licensing.

Technology New Zealand Investment Manager, Fraser Smith, describes the project as being highly innovative, with significant technical challenges and fitting with Technology New Zealand's mandate of investing in high return, high technical risk R&D.

"It gives New Zealand an opportunity to add value to its timber assets by generating significantly higher margins," he says. 

[www.climate.chh.com](http://www.climate.chh.com)


## CREATIVE WORKSHOPS

Adapting inventive problem solving techniques to fit design principles and management in the 21st Century is the focus of two workshops being held in Wellington and Auckland in August.

Based on TRIZ, a technique for creative problem solving developed in the 1950s, the workshops will be presented by Karen Gadd and Henry Strickland of Oxford Creativity (UK), who are being brought to New Zealand by the Association of Consulting Engineers (ACENZ). Technology New Zealand has provided funding for the workshops which are also supported by New Zealand Trade and Enterprise and the Institute of Professional Engineers (IPENZ).

TRIZ is a series of creativity triggers which help people see their problem from many angles, fully understand the problem and work out possible solutions. It can be applied to both technical problems and commercial and business issues.

The day-long workshops will be held in Wellington on 12 August and Auckland on 17 August and will cover innovation, understanding and solving problems, uncovering and solving contradictions and system development and predicting future technologies.

Oxford Creativity, which was founded by Karen Gadd, has a wealth of experience both in engineering and business management and an extensive client base which includes Esso, British Aerospace and Rolls Royce. 

To register, visit the ACENZ website ([www.acenz.org.nz](http://www.acenz.org.nz)) or phone Caroline Strachan on (04) 472 1202.

# TECHNOLOGY REPORTS

## New Zealand

No. 26 July 2004

## WINNING TECHNOLOGY TIPPED TO SAVE MILLIONS FOR HOSPITALS

A Christchurch scientist, who has developed world-leading technology that will allow the exact amount of sedative drugs to be given to critically ill patients in hospital intensive care units, has been named the inaugural MacDiarmid Young Scientist of the Year.

Andrew Rudge, who is completing his PhD in Mechanical Engineering at the University of Canterbury's Centre for Bioengineering, was presented with his award by Nobel Prize winning scientist, Professor Alan MacDiarmid, at a gala dinner recently held in Auckland.

The MacDiarmid Awards are organised by the Foundation for Research, Science and Technology, sponsored by Fisher and Paykel Appliances, and are designed to recognise New Zealand's top young scientists and researchers.

The technology devised by Andrew Rudge, in collaboration with Christchurch hospital, consists of a computer programme that monitors and analyses the degree of distress being experienced by critically ill patients.

It then interprets the data and transfers it to a device that automatically administers the exact amount of sedatives required to keep the patient comfortable.

BELOW: The 2004 MacDiarmid Young Scientist of the Year, Andrew Rudge, with his winning poster. 




Dr Geoff Shaw, an Intensive Care Unit (ICU) specialist at Christchurch Hospital, says determining the right amount of sedatives for critically ill patients is one of the biggest problems facing clinicians working in intensive care.

"There is a tendency to give more rather than less to alleviate suffering but this is not good for the patient and also makes it difficult for doctors to carry out further treatment for whatever illness the patient is suffering from."

He says the solution that Andrew Rudge has developed will enable hospitals to treat patients more efficiently and reduce their stay in hospital, as well as saving on drug costs which account for about 10% of Christchurch Hospital's ICU's budget.

"In New Zealand alone, the savings made by using Andrew's system could fund another stand alone intensive care unit. This invention is a wonderful example of the benefits of collaboration, with medical science, engineering and mathematics combining to produce an outstanding outcome," Dr Shaw says.

Winning the MacDiarmid Young Scientist of the Year Award entitles Andrew Rudge to a trip to Washington DC, sponsored by Auckland University, Auckland Uniservices and the American Association for the Advancement of Science (AAS), to meet leading science communicators and to spend time with the Voice of America radio network. He also receives the inaugural gold MacDiarmid medal. 

MacDiarmid Awards runner-up on Page 3.

## INSIDE THIS ISSUE

Resene paint technology

Investment audits continue

Creative problem solving workshops



## TECHNOLOGY NEW ZEALAND NEWS

Congratulations to the winners of this year's prestigious MacDiarmid Young Scientists of the Year Awards. At Technology New Zealand we are acutely aware of the need to train new, young science leaders to ensure the science and technology sector reaches its full growth potential. The MacDiarmid Awards are part of our strategy to recognise achievement and excellence among New Zealand's emerging scientists, researchers and technologists and we are delighted to be supported in this endeavour by Nobel Prize winning scientist Professor Alan MacDiarmid.

Technology New Zealand investment in scientific research by students has grown significantly in the past few years. In the year to 30 June 2003 more than \$6.5 million was invested in Technology for Industry (TIF) Fellowships which allow students and experienced researchers to complete R&D projects in private companies, up from just under \$5 million in 2002. In total well over \$14 million was invested in schemes run by the Foundation for Research, Science and Technology to support research by individuals in universities and research institutes around the country in the 2002/2003 year.

As well as allowing research projects to be carried out, TIFs are an important stepping stone for companies, providing a link to universities and the opportunity to create useful relationships. TIFs often kick start higher level research with many smaller companies ultimately developing stronger R&D strategies around the work a TIF student has completed. As a result, the business grows its technology capability and may become eligible for further support from Technology New Zealand.

### TECHNOLOGY NEW ZEALAND CONFERENCE

Technology New Zealand will be holding its first ever national conference in Auckland in late July, bringing together our agents, consultants, business managers from Crown Research Institutes and universities, as well as New Zealand Trade and Enterprise staff, for two days of team building and information sharing. These people are crucial to our business because they play an active role in introducing businesses and projects that may benefit from Technology New Zealand investment. The two-day conference is an opportunity to strengthen our network of consultants, agents and business mentors, remove barriers businesses face when undertaking technology-based projects and get feedback on Technology New Zealand's services and strategies and how these can be improved. Our goals are to ensure that Technology New Zealand's services are accessible to companies throughout New Zealand and to target projects that have the best potential to create significant export-led growth. We look forward to sharing the conference outcomes with our clients.

### AUDIT UPDATE

To date 30 companies that have received Technology New Zealand investments have been audited by a new unit established within the Foundation for Research, Science & Technology to assess contractual financial compliance and reporting.

We have come across a number of instances where companies are not fulfilling their contractual obligations by, for example, inaccurate or inconsistent progress reporting, making claims for estimated amounts rather than actual costs and keeping insufficient records to show that the Technology New Zealand money was spent on the project.

The Audit Unit is being expanded and a greater percentage of Technology New Zealand companies will be assessed as a result.

Suki Siriwardena, Manager, Technology New Zealand

## RESENE POISED TO SUPPLY KIWI TECHNOLOGY TO THE WORLD

Resene Paints is poised to become a world leader in paint technology using intellectual property being developed in an ambitious two year project to produce a key raw material in New Zealand.

Technology New Zealand has invested \$270,000 in the Resene R&D through its Technology for Business Growth (TBG) programme. The project, which began earlier this year, will discover how to synthetically manufacture a high-value raw ingredient that improves the application properties of paint.

Resene currently uses an imported raw ingredient – being kept under wraps from competitors – to produce its high quality interior, low sheen, enamel range of paints. The ingredient was custom-designed by Resene for use in paint production. Resene has been buying it off the shelf from overseas suppliers who use a patented process to produce mono-sized particles. The supplier is locked into its extremely expensive process, resulting in Resene having to pay prices which limit its use to the more expensive, top-of-the-range, paint lines.

Nick Nightingale, General Manager of Resene, says the research project is a first and a pointer to Resene's future.

"We are importing this raw material to help produce paints which provide a durable, cleanable surface. However, we believe that the market would be significantly broader if the product could be made in a more efficient manner. Making it ourselves will mean we can afford to apply the technology to a wider product range and lift the bar on paint quality.

"It also has tremendous potential as an export product to high value markets looking for improved performance paint lines. We hope to license and sell the product further down the track."

Although Resene has 10 scientists working in its R&D team, making it one of the biggest R&D units in a private company in New Zealand, this is the first time the company has sought funding from Technology New Zealand.

Lins Kerr, Technology New Zealand Investment Manager, says Resene is one of New Zealand's 'star companies' and Technology New Zealand is delighted to have established a partnership with it.

"Resene produces some of the highest quality paints in the world and this project will establish it as a global leader in paint technology as well as a supplier of premium finished products.

"It's great to see Resene thinking bigger and bringing in smart skills from overseas to help with the project. We will be working with them on other projects to encourage even greater technical stretch," says Mr Kerr.

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

## FOUNDATION RECOGNISES OUTSTANDING YOUNG SCIENTISTS

The runner-up of the inaugural MacDiarmid Young Scientists of the Year Awards is Nicola Turner. Her research, being carried out at Lincoln University in association with the Institute of Environmental Science and Research (ESR), is developing test methods to be used on food products, particularly shellfish, to identify accumulated harmful chemicals called xenoestrogens, known to cause health problems in humans and wildlife. In partnership with Ngai Tahu Development Corporation, she is establishing whether these chemicals pose a risk to humans eating shellfish. Nicola Turner's award gives her a trip to Australia to attend a science communication event and the inaugural runner-up MacDiarmid medal.

A panel of judges selected the winners in this year's new-look MacDiarmid Awards from over 100 entries. The awards replace the FiRST Scholarship Awards and are based on a poster competition

that emphasises the need for clear communication as well as research and science excellence.

The awards demonstrate the strong role research and science play in innovation in New Zealand and are designed to highlight that new blood and constant innovation are needed to keep the science and technology sector vital and contemporary and ensure New Zealand is connected globally.

The Foundation congratulates all this year's MacDiarmid Awards winners.

See the full list of winners at:

[www.frst.govt.nz/students/firstawards.cfm](http://www.frst.govt.nz/students/firstawards.cfm)



ABOVE: Runner-up Nicola Turner with John Bongard, Managing Director Fisher & Paykel Appliances (left), and Professor Alan MacDiarmid.



ABOVE: The 2004 winners.

### NEW WEBSITE GOES LIVE

Technology New Zealand's website has been revamped to make it easier to find the information you're looking for. While remaining user friendly, the site provides an appropriate amount of information, relative to the size of investment being considered. The aim is to make sure any newcomer can navigate their way around the site, using simple steps to link into relevant contact points. For example, if you're not already registered for GST the site will direct you to the right assistance. The relaunch is in response to feedback from clients and Technology New Zealand's awareness that those who come to the site want to use their time effectively.

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

## WIN FOR SCIENCE BROADCASTER

New Zealand will be represented at one of the world's leading science events by National Radio's high profile science programme producer and presenter, Veronika Meduna.

Veronika, who fronts the half-hour weekly science programme Eureka, is the recipient of this year's scholarship for a New Zealand research, science and technology journalist to attend Britain's biggest science festival in September.

The British Association's (BA) Science festival attracts 400 of the world's best scientists and science communicators. The scholarship is offered jointly by the Foundation for Research, Science and Technology and the British Council New Zealand. Veronika's prize also allows her to spend time with top UK science writers and commentators at either the BBC or The Guardian newspaper.

The journalism scholarship was established to encourage people to write and/or broadcast more success stories about research, science and technology in New Zealand.