



POWER
ENGINEERING EXCELLENCE
TRUST

Annual Report 2010



Chairmans Statement

Power Engineering Excellence Trust 2010

In 2010, the Power Engineering Excellence Trust (PEET) and the Electric Power Engineering Centre (EPEC) delivered on a number of key achievements and activities relating to promoting power engineering as a field of excellence.

The Electric Power Engineering Centre (EPEC) at the University of Canterbury has over the past 8 years established itself as New Zealand's centre of excellence in power engineering learning and is now internationally regarded as a leading power research facility and a very successful example of an industry/academic partnership model.

The core deliverables of PEET and EPECentre are:

- High quality, skilled graduates in power engineering
- A successful engineering research and innovation centre supporting undergraduates, post graduate research and the research needs of the industry
- Knowledge transfer between academia and industry at local and international level focused on power engineering excellence, learning opportunities and industry best practice

PEET is the interface between EPEC and industry and in 2010 we provided 30 scholarships to undergraduate and post graduate power engineers, supported a number of industry-led research opportunities, and promoted power engineering education and careers amongst undergraduate engineers and in New Zealand schools.

EPEC is the conduit for -

- New Zealand students to learn about engineering in the power industry and the great industry career opportunities;
- enabling academic/student engagement with industry companies; and
- undertaking industry research to meet the engineering challenges in the electricity supply sector.

In 2010 there were 35 industry partners and their ongoing support is essential to PEET/EPEC meeting our industry's future infrastructural engineering requirements and ensuring New Zealand continues to have a sustainable world class power engineering programme and research centre.

During 2010, PEET funded the building of a permanent home for EPEC within the University campus. The Centre was officially opened by the Minister of Science and Technology, Hon Dr Wayne Mapp on 30 September. As part of the opening, EPEC students and staff hosted a Research and Development Expo showcasing their work in electric vehicles, renewable energy technologies, LED lighting, Joule heating, power transformers and power quality. They also created an unofficial world record attempt live demo "longest man-made High Voltage plasma path" also known as man-made lightning, which attracted national media attention and strong interest among school students across the country.

The new Centre now provides a physical focal point for students interested in engineering within the electricity supply sector, along with dedicated facilities for EPEC staff, our research staff, and our post graduate scholarship students. Already we are seeing the benefits, with the new Centre hosting more student visits and meetings involving a wide range of engineering disciplines interested in learning more about the industry and the Centre's work. The EPEC research portfolio continues to grow and provide excellent research opportunities for students and staff and relevant and timely research outcomes to industry. Two examples - the Power Quality Study and LED Lighting Project - have had significant industry input. The Power Quality Study is expected to be completed in late 2011. If you are in Christchurch please take the opportunity to visit this new University/industry facility and learn more about EPEC and the research work it is involved in.

Another key development in 2010 was a review of the EPEC/University of Canterbury governance model that resulted in the Centre becoming an independent entity within the College of Engineering. While retaining close links with the Department of Electrical and Computer Engineering, this change enables EPEC to consider future multi-discipline research opportunities. As a result of this Professor Jan Evans-Freeman, Pro-Vice-Chancellor (Engineering) has joined the Board of EPEC.

This year will most likely be remembered for the Canterbury earthquake event of 4 September. This event reminded us all that we live in a country shaped by tectonic movement and that as engineers we play a critical role in ensuring the safety and resilience of our infrastructure and buildings.

The University is back up and operating but the damage to buildings and impact upon staff and students is significant. The Centre and Electrical Engineering laboratories are operational again and I am heartened by the continuing passion and commitment of staff and students to the Centre and its work. What is less certain is the impact of the earthquakes upon student numbers at the University of Canterbury. For PEET and EPEC significant challenges may be ahead.

As an industry over the last 8 years we have built a world class student and research facility and I believe we must continue our commitment to supporting PEET/EPEC to maintain and grow New Zealand's future power engineers and our centre of research excellence. By industry continuing to support PEET/EPEC we give the Centre every opportunity to sustain itself in this difficult time and to create capability to grow in the future.

For 2011 PEET will remain focused on supporting and increasing student numbers. There will be learning and research opportunities arising out the analysis of the Canterbury earthquakes and the rebuilding of a modern smart and sustainable Christchurch City. EPEC is well positioned to play a key role in this and in the research and dissemination of information on the specific electrical and associated engineering learnings.

I would like to thank the industry partners for their support and funding of the Trust and pay tribute to the dedicated and committed EPECentre staff.

I would also like to acknowledge and thank the College of Engineering, the Department of Electrical and Computer Engineering and the University of Canterbury for their support.

I encourage the industry to continue to invest in PEET/EPEC – this is a unique and highly successful partnership delivering professional engineering capability for New Zealand's electricity sector.

Peter Berry

Chair, Power Engineering Excellence Trust / Electric Power Engineering Centre

The Trustees for 2010 were – **Peter Berry** (Chair & professional engineering representative), **Garth Dibley** (generation), **Professor Pat Bodger** (academia), **Gavan Jackson** (contracting), **Richard Aitken** (consulting), **Bob Simpson** (transmission) and **Tas Scott** (distribution); Executive Assistant to the Trust was Sean McCreedy; the Trust met four times during the year and did not receive any remuneration in our capacity as Trustees.

2010 Highlights

Facilitating Quality Education in Power Engineering

Scholarships:

- A total of 10 undergraduate scholarships were awarded in 2010 to students that showed excellence in Power Engineering,
- 11 Postgraduate scholarships, 6 of which were for Masters and 5 PhD. Eight of these scholarships were funded directly through PEET.

Practical work and graduate placement in the power industry:

- Continuing to provide industry with suitable students for practical work placement.
- Providing recruitment support to industry and students

Power Engineering student field trips:

- North and South Island field trips continue to be a huge success for students, with over 60 student engineers visiting sites across New Zealand. These field trips are a key strategy in developing engineers for the industry and in students identifying the areas of interest and employment.

Visiting Lecturers:

- Industry relevant lectures to enhance power engineering education on areas such as “Power Systems Protection” by Kathryn Ward (BECA) and Marc Palmer (Schweitzer Engineering Laboratories). Our thanks to those people and their organisations support.

Highlighting Future Power Engineering Opportunities

New Zealand Wide School Challenge:

- The EPEC 4th Energise Your Future Challenge “Renewable Power for the Ultimate Holiday Bach” was promoted to secondary schools and captivated the interest of bright youngsters for a career in Power Engineering. 20 teams registered however unfortunately a number of Canterbury schools pulled out due to the September earthquake. The Successful teams for 2010 were Shirley Boys High School and Nelson College.

Encouraging the Next Generation:

- Reaching into the schools to promote engineering careers, such as support and sponsorship for NZ school participation in the International Young Physicists’ Tournament (IYPT).
- Running Kids Fest Sparks and Arcs event at the University for 7-10 year old children, as well as some younger siblings, with a keen interest in science and technology.

Showcasing Innovation and the Industry:

- The annual R&D expo was once again a success and was combined with the official opening of the EPEC office by Hon Dr Wayne Mapp (Minister of Research, Science and Technology). The event attracted around 500 participants coming from students and industry members, and gained media coverage, including footage of the 34m vertical “man-made lightning” plasma demonstration.

Electric Power Research and Development

Power Quality research project:

- This 3 year project to research “Power Quality in Future Electrical Networks” with Foundation for Research Science and Technology (FRST) and co-sponsorship from the Electricity Engineers’ Association (EEA) is progressing well. The research will lead to significant new developments and findings for the benefit of industry over the coming years.
- LED lighting systems research project has been awarded funding by FRST, pre seed accelerator funding to develop the LED lighting technology.
- Research Engineers have also been engaged directly by industry to undertake specific research assignments.

Financials

POWER ENGINEERING EXCELLENCE TRUST FINANCIAL STATEMENTS

For the period ending 31 December 2010

Statement of Accounting Policies

Reporting entity

The Power Engineering Excellence Trust is a charitable trust established in 2002. The Objects of the trust are:

- encourage a greater number of students to study power engineering, thus increasing the quantity and quality of power engineers in New Zealand.
- maintain, enhance and sustain research into, and the study of, power engineering.
- create closer, stronger and synergistic relationships between students of power engineering and the power industry.
- provide for and foster power engineering innovation as a product of education.
- provide better awareness of the existence and benefits of the Department's power engineering courses to the power industry.

General accounting policies

The financial statements have been prepared in accordance with the Financial Reporting Standards and Statements of Standard Accounting Practice issued by the Institute of Chartered Accountants of New Zealand.

The Power Engineering Excellence Trust applies differential reporting in the preparation of these financial statements.

Full advantage has been taken of all differential reporting exemptions.

The general policies adopted in the preparation of these financial statements are the measurement and reporting of financial performance and position on an historical cost basis.

Particular accounting policies

The following are the particular accounting policies which have a material effect on the measurement of financial performance and the financial position:-

Investments

All investments are stated at market value. Foreign investments have been translated to New Zealand currency at the ruling rates of exchange at balance date.

Financial instruments

Income and expenditure relating to all financial instruments are recognised in the Statement of Financial Performance. All financial instruments are recognised in the Statement of Financial Position.

Goods and services tax

All amounts are stated net of the Goods and Services Tax.

Taxation

The Trust is exempt from the payment of income tax as it is a not-for-profit organisation. Accordingly there is no provision for income tax.

Changes in accounting policies

Prior to 2004 investment income was calculated on the monthly balance, of the fund, at the Official Cash Rate. As of January 2004 investment income is calculated as per the Statement of Investment Objectives, which is approved by University Council.

This provides for a 4.5% operating return and two further distributions to equity, which maintain the purchasing power and also allow for future market fluctuations.

There have been no other changes in accounting policies.

Statement of Financial Performance

<i>For the year ending 31 December 2010</i>	Note	<i>(Unaudited)</i> 31-Dec-10	31-Dec-09
Income			
Sundry Income	1	204,749	222,139
Investment Income / (Loss)	2	26,962	25,026
Total Income		<u>231,711</u>	<u>247,165</u>
Expenditure			
Scholarships	3	80,000	70,000
EPECentre Management		60,000	72,000
Power Engineering Education Support	4	-	12,000
Field Trips		15,000	20,000
Visiting Lecturers		-	6,000
EPECentre Renovation Construction Costs: 1 st Tranche		-	58,000
Sundry	5	47,800	31,000
Total Expenditure		<u>202,800</u>	<u>269,000</u>
Net Surplus / (Deficit)		<u>28,911</u>	<u>(21,835)</u>

Statement of Movements in Equity

<i>For the year ending 31 December 2010</i>		31-Dec-10	31-Dec-09
Balance as at 1 January		598,181	579,574
Net Surplus / (Deficit) for period		28,911	(21,835)
Other Distributions	6	21,635	40,442
Total Recognised Income & Expenditure		<u>50,546</u>	<u>18,607</u>
Balance as at 31 December		<u>648,727</u>	<u>598,181</u>

Statement of Financial Position

<i>As at 31 December 2010</i>	Note	31-Dec-10	31-Dec-09
Current Liabilities			
Sundry Creditors		-	-
Total Current Liabilities		<u>-</u>	<u>-</u>
Non-Current Assets			
Investments	7	648,727	598,181
Total Non-Current Assets		<u>648,727</u>	<u>598,181</u>
Total Net Assets		<u>648,727</u>	<u>598,181</u>
Represented By:			
Trust Funds	8	648,727	598,181
Total Trust Funds		<u>648,727</u>	<u>598,181</u>

Notes to the Financial Statements

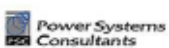
<i>For the period ending 31 December 2010</i>		31-Dec-10	31-Dec-09
1 Sundry Income			
Industry Funding		204,749	222,139
		<u>204,749</u>	<u>222,139</u>
2 Investment Income			
Investment Income / (Loss)		26,962	25,026
		<u>26,962</u>	<u>25,026</u>
Investment Gain / (loss) for 2010 and 2009 was calculated at 4.5% On the average equity balance as per the Statement of Investment Policy Objectives, which is approved by University Council.			
3 Scholarships			
Postgraduate		30,000	20,000
Undergraduate		50,000	50,000
		<u>80,000</u>	<u>70,000</u>
4 Power Engineering Education Support			
Other		0	12,000
		<u>0</u>	<u>12,000</u>
5 Sundry Expenditure			
EPECentre Administration Support		19,800	6,000
EPEC Energise your future		23,000	25,000
EPECentre Operational Support		5,000	0
		<u>47,800</u>	<u>31,000</u>
6 Other Distributions			
CPI Adjustment To Base Capital		21,635	11,123
Revenue Reserve		0	29,319
		<u>21,635</u>	<u>40,442</u>
The Base Capital adjustment is to maintain the purchasing power of the fund, spending this effectively reduces the capital of the fund. The Revenue Reserve is to be used as and when necessary, during years of low or negative investment returns, to support the flow of distributions without recourse to reducing the capital of the fund. Note that there were insufficient investment returns to make a distribution to the Revenue Reserve in 2010.			
7 Investments			
As at 31 December 2010 the amount of \$ 648,727 (2009: \$ 598,181) is invested through the University Trust Fund. Investment of these funds is overseen by investment advisers, Eriksen & Associates. This is in a manner that is in accordance with the Statement of Investment Policy and Objectives.			
8 Trust Funds			
Balance at beginning of period		598,181	579,574
Net Operating (deficit) for period		28,911	(21,835)
Other Distributions		21,635	40,442
		<u>648,727</u>	<u>598,181</u>
Balance at end of period		<u>648,727</u>	<u>598,181</u>

Members

Premium Members



Members



POWER
ENGINEERING EXCELLENCE
TRUST

Power Engineering Excellence Trust
C/- EPECentre
University of Canterbury
PB 4800
Christchurch, NZ

T +64 3 364 2987 x45687
E peet@epecentre.ac.nz

www.epecentre.ac.nz

“Promoting and supporting
the education of power engineers
and the study of power engineering
as a field of excellence
in New Zealand”