

ANNUAL REPORT
2008



BUILDING A SUSTAINABLE NEW ZEALAND

HERA
Innovation in Metals



HERA is the Research Association for the New Zealand metals engineering industry. Established in 1979 under the Heavy Engineering Research Levy Act of 1978 as a member-based, not-for-profit Research Association, HERA today serves over 650 industry members as their leading resource support centre.



ABOUT THE COVER:

This year's Annual Report theme is "Building a Sustainable New Zealand", reflecting the establishment of the Metals Industry Sustainability Strategy with the aim of not only improving our industry members' contribution to becoming sustainability-centred businesses, but also focusing our industry on business opportunities around a world willing to embrace more sustainable technologies.

HERA MISSION STATEMENT

To provide a platform for the NZ Metals Engineering Industry to explore new technologies and growth by accelerating innovation and strengthening combined opportunities through technical and marketing research, careers education, information technology, and product R&D.

This mission is to be realised by pursuing the following three main goals:

- To accelerate innovation in the Metals Engineering Industry
- To widen HERA's range of services and improve its cost-to-benefit ratio
- To position the New Zealand Metals Engineering Industry as a responsible leader in the sustainability of our environment

HERA Executive for the year 2007/2008

Name	Company	Representing
Mr D Moore (Chairman)	Grayson Engineering Ltd	Ordinary & Associate Members
Mr P Hutton (Deputy Chairman)	Fitzroy Engineering Ltd	Ordinary & Associate Members
Mr S Fuller	New Zealand Steel Ltd	Vice President – Marketing and Sales, New Zealand Steel Ltd
Mr D J Fraser	Acme Engineering Ltd	Ordinary & Associate Members
Mr. J Frear	OneSteel NZ Ltd	Co-opted representing steel suppliers
Mr I Murray	Robt Stone Ltd / Haden & Custance Ltd	Ordinary & Associate Members
Mr N Davies (Past Chairman)	Hydraulink Fluid Connectors Ltd	Heavy Engineering Educational & Research Foundation
Mr P Herbert	Special Components	Manufacturing & Exporters
Mr E Kroll	Stevenson Structural Engineers	Ordinary & Associate Members and Steel Construction New Zealand Inc
Prof T Neitzert	Auckland University of Technology	Ordinary & Associate Members
Mr T Watkins	Auckland Steel Ltd	Ordinary & Associate Members
Mr T Duff	Southern Cross Engineering	Ordinary & Associate Members

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HERA Executive as at 30 June 2008

From left:

- Peter Herbert**
- Noel Davies**
- Tim Watkins**
- Peter Hutton**
- Wolfgang Scholz**
- David Moore**
- Duncan Fraser**
- Evan Kroll**
- John Frear**

Insets, from left:

- Scott Fuller**
- Thomas Neitzert**
- Terry Duff**
- Ian Murray**

Welcome to this Annual Review of HERA related activities.

2007/2008 HERA Year Summary:

- New record of heavy steel consumption indicating very high level of industry activity.
- Heavy engineering industry development activity refocused with new manager.
- Structural Division successfully manages key staff changes.
- HERA divisions achieve as planned with reports in divisional sections.
- Composite Structural Assembly Research Group makes good progress and files patent application.
- HERA Sustainability Strategy started and "Building Sustainability" theme of 2008 Metals Industry Conference.
- HERA achieves registration as a NZQA accredited Private Training Establishment.
- Satisfactory financial performance with slight surplus.
- Metals Industry cross-sector co-operation continues to build despite set-back with the establishment of the Metals Institute of New Zealand due to lack of government support of the industry request to broaden the compulsory material levy funding base (see next page).
- Review of HERA research focus with view of leading industry to increase R&D effort and to capitalising on R&D tax credit scheme.

Industry Activities

As the statistics for heavy sections and plate (above 4.75 mm) show, the heavy steel based industry had record usage to report. Heavy steel plate, sections and RHS went up by 21% in usage as compared to the last year and leading to a new record of close to 170,000 tons. However, due to the announced significant steel price increase towards the end of the financial year, there might have been an element of forward ordering overstating the real consumption. Members also reported that should they have had access to more skilled labour even further increases in production would have been the outcome. While much of the work was local there has been an excellent member feedback during the year as to the export activities of the industry. As shown in the Heavy Steel Import Value Index graph the value of landed steel has gone up during the year to June by about 20%. The steel price challenge is expected to continue for the next year and, combined with the predicted reduction in economic activity, will force the industry to put a competitive offering on the market.

HERA Research and Industry Development Activities

The main new activity for HERA was the establishment of the **Heavy Engineering Industry Development** role. Manager Bill Lovell used the first year to refine the strategic plan for this role and connect to the HERA membership, industry clients and the wider business network. Membership feedback was excellent and the focus on understanding what the heavy engineering industry can do and what

its particular strength is provided a good starting point. Main research activities were in the renewable energy area and particularly the exploration of geothermal energy opportunities. Routine work included the provision of statistical industry data and the tariff concession monitoring scheme.

The **Structural Division** made good progress in its different structural steel research projects. In particular, its Bridge Development Group activity is showing excellent results with an increasing number of steel composite bridges being specified because of cost effectiveness and sustainability reasons. The main challenge was to replace HERA's Senior Structural Engineer Dr Charles Clifton. After more than 22 years of tireless service to New Zealand's structural steel industry, researching and introducing dependable seismic and fire resistant structural steel systems and making probably the most significant single person contribution to the growth of structural steel in New Zealand, Charles took up a professorship in structural steel and composite research at the University of Auckland. There he will continue to progress structural steel research and passing his knowledge on to the next generation of engineers.

It speaks for the international recognition of the work done by Charles and his team, that HERA was able to attract his replacement, Dr. Stephen Hicks, who was formerly the Senior Manager of Building Engineering at the Steel Construction Institute (SCI) in the UK. With his experience from the world's leading steel construction research centre and a country where structural steel enjoys a market share of around 80%, we are sure to advance our industry further.

The **NZ Welding Centre** progressed

well in its research programmes and put considerable effort in preparing new welding-related training material supporting local training providers and delivering its own International Institute of Welding (IIW) qualification schemes. However, following some initial success in qualifying course participants for the IIW International Welding Specialist, enrolment for the course was disappointingly low and maybe reflecting the unwillingness of companies to release staff for longer periods for training in a busy time.

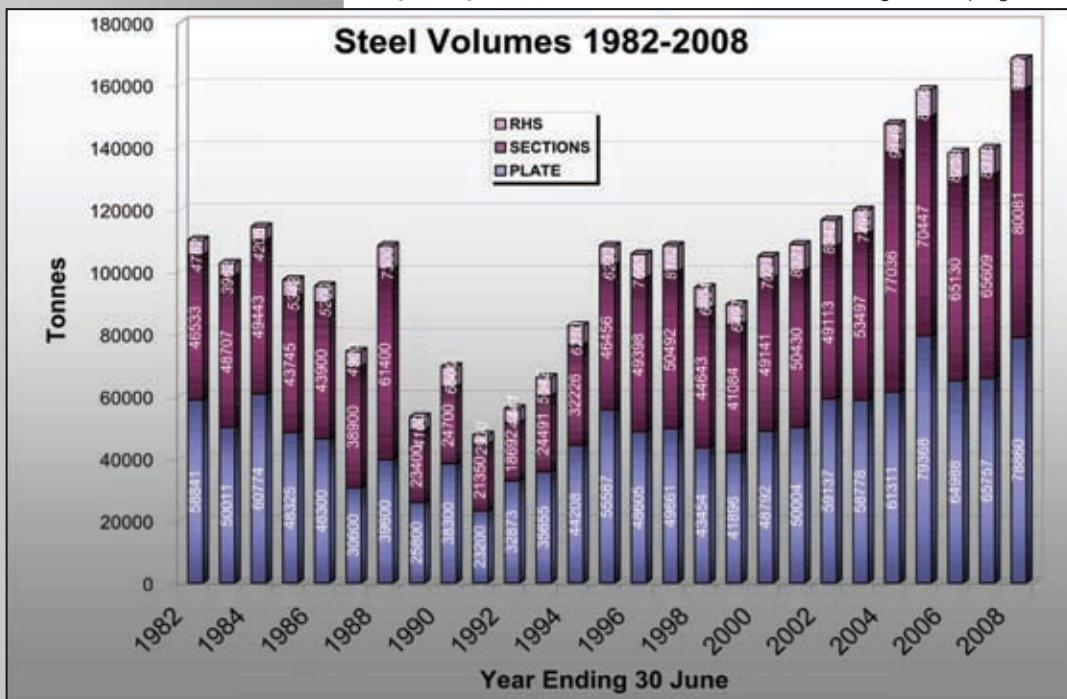
The **Inspection & Quality Control Centre** used the interaction with its newly established industry advisory panel to establish a clear strategic direction for the Centre. Particularly pleasing was the good level of industry advice, consultation and training activity. It is particularly noted that the NZ inspection industry recognises the need for HERA to fill a very important training function as the skill set required for this training is not available in the public system.

The joint government/industry funded **Composite Structural Assembly (CSA)** research project, a joint 6 year initiative between research providers HERA, the University of Auckland, AUT University and 5 industry member companies, made excellent progress in developing new steel based structural systems mainly for the building sector, filed its first patent applications and advanced plans for a test building to be built before the end of the calendar year.

The **HERA Sustainability Strategy** had its first year of actions with the appointment of strategy steward Richard Green, a research project into sustainable steel construction matters conducted and different submissions made. Sustainability will become a dominant research activity for HERA and thanks to industry support particularly from local steel producer New Zealand Steel we hope to be able to progress our industry's contribution towards building a sustainable metals industry. Therefore it is not surprising that the theme of the 2008 Metals Industry Conference in Auckland is "Building Sustainability".

HERA Achieves PTE Status

HERA and industry sector partners fill a very important gap in providing specialist training not available in the public system. While some training is provided by our engineers and researchers outside the scope of the New Zealand Qualification Framework, some training in welding and inspection is covered by the NZQA framework and the aim is to give course attendees the option to register their qualification on the NZQA framework. Therefore HERA's administrative efforts to become a NZQA accredited



Private Training Establishment were successful with accreditation confirmed in September 08.

Acceptable Financial Performance

In line with the adopted principle to re-invest previous years' surplus, the 07/08 budget was for a deficit in the order of \$40k. Thanks to the better than expected levy income, HERA managed a small surplus of about \$7k, which will be reinvested in next year's activity. However, overall HERA had to constrain its activity level due to increasing operational cost, mainly salaries, as base income from the levy had not increased since 1989 and maintaining activity levels was only possible due to increased steel volumes leading to increased levy income. The HERA Executive is very concerned about the activity constraints and the potential effect any decline in steel consumption may have and, especially following the collapse of the MINZ proposal (see next item), has started discussions with MoRST for the lifting of the HERA levy and will consult with the membership and wider industry in due course.

HERA R&D Activity Review

Our industry is offered an excellent opportunity for R&D driven business development by taking advantage of the R&D Tax Credit Scheme introduced this year by the Government. HERA itself has started with an in-depth investigation of its own R&D activities in partnership with tax advisor KPMG. HERA believes that in the day to day contact with the membership providing advice on product development issues, we are able to assist our members in getting to grips with this opportunity and engage in joint research activities. To do so, it has also registered as an IRD Listed Research Provider.

Outlook

For the metals industry itself, the outlook is for a tight business year in some areas such as construction, other areas such as petrochemical and energy will continue their high level of activity and will benefit from a relaxing in the tight labour market. The steel price development will continue to be a challenge but it is

expected that the cost will plateau albeit at a considerably higher level as compared to last year. As a research organisation, we have identified the steel cost increase as an opportunity to drive for more cost effective solutions, for instance, through increased use of higher grade steel, design detailing and more productive fabrication. The sustainability material challenge definitely is on and provided scientific whole of life assessment approaches such as LCA are chosen, the metallic materials our industry relies on are sustainable alternatives. It is up to us to take on this challenge by providing designs for "cradle-to-cradle" use of the materials, picking up sustainable fabrication practices and promoting the use of metals in solutions where due to technical performance, secondary and much more significant savings such as in energy cost can be made.

Thanks to Individuals and Teams

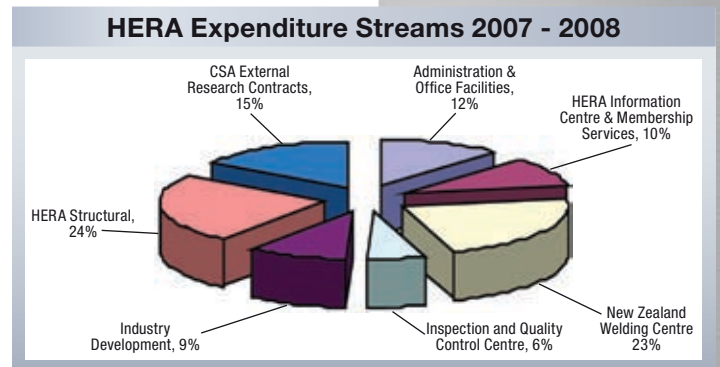
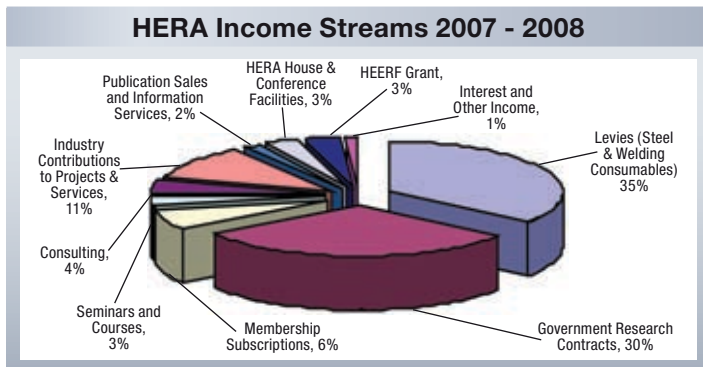
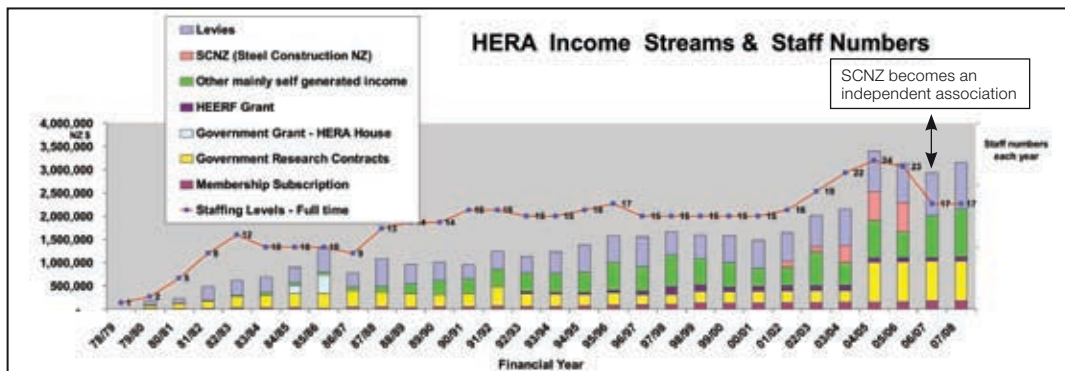
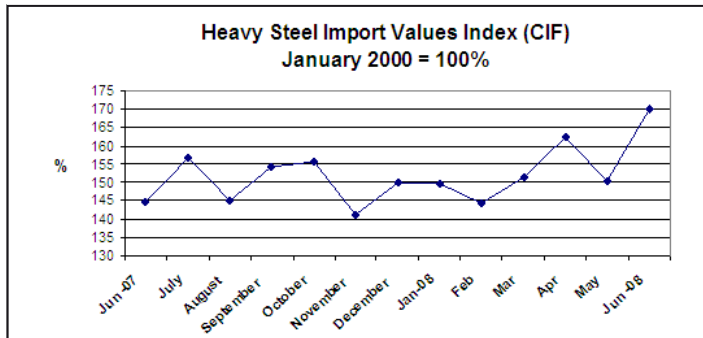
Lastly but most importantly we acknowledge all those involved in running and contributing to our industry-owned and governed organisation. An extensive list of industry volunteers support and advise HERA on the different panels, committees and the Executive in preparing proposals, guidelines, reviewing the daily work and governing the organisation. As industry feedback indicates this team based HERA approach works very well and we would like to thank all those contributing for their generous support. Our special thanks is due to the dedicated and professional staff at HERA who make our association what it is today.



David Moore
David Moore
Chairman



Wolfgang Scholz
Wolfgang Scholz
Director





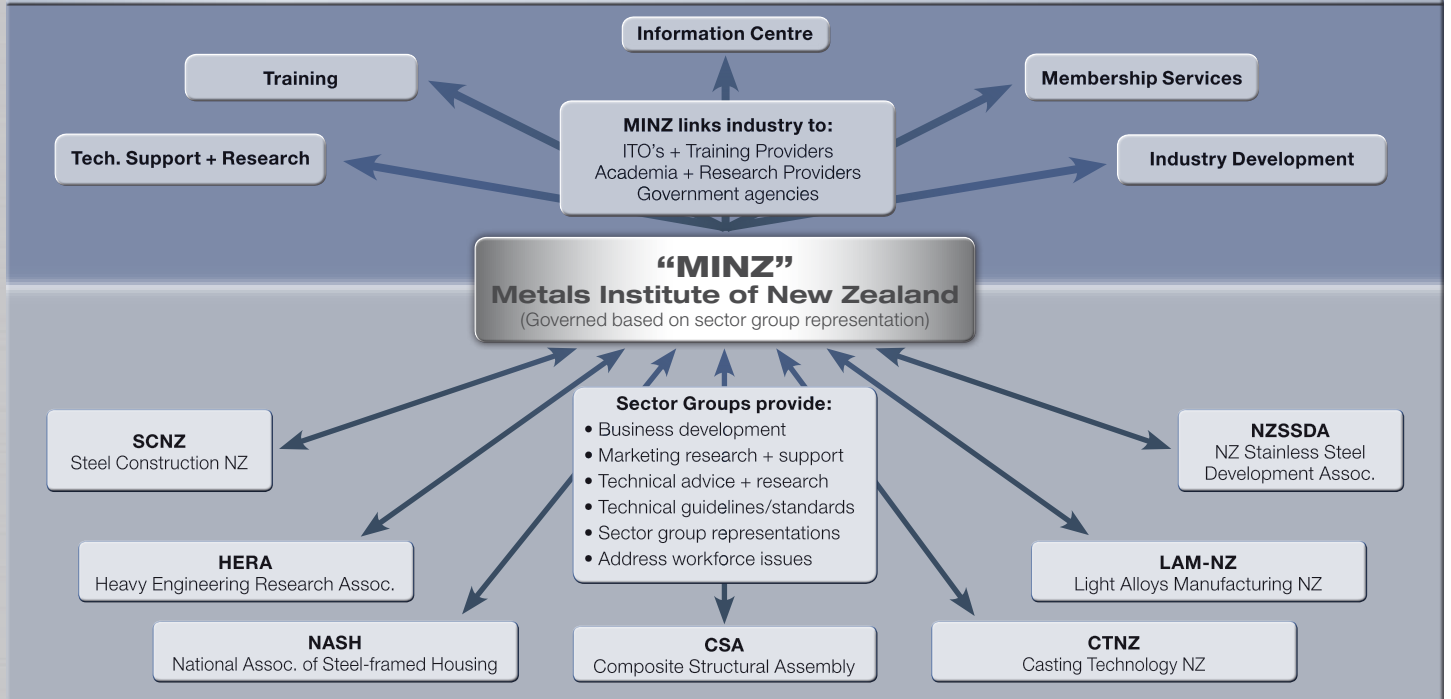
Metals Institute of New Zealand Proposal Set Back

As reported in the previous years, HERA and industry partners have been working towards the formation of a sector overarching Metals Institute of New Zealand (MINZ) to achieve industry transformational objectives based on a combination of R&D and industry development actions. A high level of agreement has been achieved amongst the metals industry members and the industry has asked the Ministry of Research Science and Technology (MoRST) to support this development via the introduction of additional

compulsory material levy schedules for the different sector groups using an amendment to the Heavy Engineering Research Levy Act as the vehicle. However, despite a very promising start and the initial expectation of having the asked-for changes implemented this year, the government advisors informed us that the proposal for introduction of additional levies did not have their support. Considering that this initiative started in 2002, and that the metals industry asked with well reasoned arguments for the government support to establish and collect additional industry imposed and funded material levies similar to the commodities levies regularly

used in the primary sector, HERA and partners are extremely disappointed with this outcome. However, with little hope for an immediate change in the government position, HERA and the industry sector partners will move on and explore creating the proposed sector overarching Metals Institute concept via other means. As a result of the MINZ negotiations, co-operation and understanding of the different sector groups of the metals industry has increased and this is evident again in the joint organisation of the 4th Metals Industry Conference in the Sky City Convention Centre in Auckland.

MINZ - Services



INDUSTRY DEVELOPMENT ACTIVITIES

Base Activities

In line with the HERA Strategic Plan, the objectives of these activities are to grow the NZ metals industry sector. In addition to tariff

concession application monitoring, matching member's capabilities with enquiries, this year's focus was on strategic planning aspects of business development for the heavy engineering industry and

the development work performed by Norm Stannard (MQS Ltd). The launch of the National Projects Office (NPO) in July provides a new impetus for New Zealand engineering to compete globally. HERA



Pipes, vessels and cooling towers fabricated by various HERA members for Mighty River Power's geothermal plant in Kawerau



Pipe spooling for Kawerau geothermal power plant by HERA member Page & McCrae

Industry Group NPO involvement has resulted in representation on the Governance Board and on the Project Assessment Board. Sustaining close links with New Zealand Trade & Enterprise (NZ T & E) and the Industry Capability Network (ICN) continues to bring new business benefits to HERA members.

In the training activity area in order to improve productivity, lean manufacturing principles have been identified as a main topic to focus our industry managers on. In conjunction with Productivity Solutions Ltd a series of one day seminars on 'Lean Manufacturing' principles has started and will continue for the rest of this year.

The Directory of Heavy Engineering Companies and Suppliers to the Industry (HERA report R5-33) is a key document in communicating our member's capabilities to their clients. An update of this document is underway based on a research project determining what is essential information for successful marketing of our members' offering.

Heavy Engineering Business Opportunities

With the recent commitment by the Government to a renewable energy strategy all forms of renewable energy have been considered for further evaluation by HERA in view of the sustainability of the work content offering.

Wind - the NZ designed Wind Flow turbine is now more widely accepted as a competitive generator and the large NZ content is a major benefit to the industry. There have also been enquiries for tower manufacture from some of the newer entrants into this energy market. HERA attended the NZ Wind Energy Association Conference in February to meet with some of these companies and to promote HERA members.

Geothermal - The geothermal capability report R5-35 was presented to the November 2007 NZ Geothermal

Association Conference and HERA held a follow-up members' workshop in March 2008 resulting in HERA Report R5-36 showing that co-operatively members have in-depth capacity. One example, HERA member Page Macrae, has proven this during 2007/8 in being the major contractor for the Kawerau 90 MW Mighty River geothermal plant. At least a further two plants in the range of 250MW are in the late planning stage.

Hydro - The possibility of up to eight environmentally sensitive new hydro developments mainly in the South Island present opportunities for the group of members working for this sector of the energy supply industry.

Wave & Tidal - Crest Energy's Resource Consent application for a 200 unit tidal generation farm on the Kaipara harbour has been supported by HERA and contact has been maintained with the owners to ensure they are aware of related HERA members' manufacturing and service capabilities.

Biogas developments - Woody biomass as a renewable energy source remains a key development area. The economic and reliable means to clean the producer gas to a satisfactory condition for reciprocating engines remains a key international research area. Various HERA initiated ideas are being worked upon with the active support of electricity distributor WEL and a HERA member company. Other business opportunities researched were:

Transport - With the recent acquisition of the rail network by the Government there is a call for rolling stock, locomotives and bridge renewals. HERA is in discussion with Kiwi-Rail to promote and examine the feasibility of local manufacture for these items.

Defence - The Australian Air Warfare Destroyer (AWD) programme was brought to NZ in the form of a roadshow held in Auckland and Christchurch. A similar opportunity

to engage in the Landing Helicopter Dock (LHD) ship project being built by BAE Systems, Australia formerly 'Tenix' has been delayed. Both of these projects are based around the design and/or the hull being built in Spain by 'Navantia Shipbuilders'. HERA - working in conjunction with ICN - is working to involve NZ companies in both of these multi million dollar projects.

HERA Wood Strategy

The HERA Wood Strategy steering group has defined waste management as a current key topic. The passing of the NZ Waste Minimisation Act brings a spur for the creation of good governance and new business for both the wood and the metals sectors. A HERA created linkage with a large USA-based forest owner, wood processing and engineering company has revealed a transport niche that is being cooperatively worked upon by a group of HERA Transport Engineering members.

Manufacturing Engineering Growth

Manufacturing Engineering has consistently grown over the last decade with many companies investing in new equipment and expanded premises. A large number of these companies are also investing in research and development of new products to enable them to increase their market share. An increasing number are looking at the export market to support their investment. The HERA Industry Development Group is maintaining its industry and market overview to put forward new business opportunities including advice on identified capability gaps.



Bill Lovell
Industry Development
Manager



Norm Stannard (MQS Ltd)
Consultant



Inshore patrol vessel for NZ Navy by HERA member Tenix in Whangarei



Super finishing a journal by HERA member Allied Industrial Engineering in Kawerau



Dr Stephen Hicks
Structural Systems
Manager from July 2008



Raed El Sarraf
Structural Engineer



Dr. Charles Clifton
Senior Structural Engineer
until Feb 2008

Structural Division Annual Report 2008

The R&D programme of HERA's Structural Division is determined in conjunction with its Steel Research Panel. In this year's annual review a more strategic approach to its structural research programme was adopted with key objectives being the development of Standards and guidelines in the following areas: response to natural hazards, such as fire and earthquake, sustainability, durability and the development of business opportunities through product improvements such as in composite construction or growth in the steel composite bridge market.

The main challenge to the Division was to find a replacement for Senior Structural Engineer Dr Charles Clifton who moved on to the University of Auckland as Associate Professor for Steel and Composite Structures. HERA believes that with the appointment of Dr Stephen Hicks, who came to HERA from the Steel Construction Institute in the UK, an excellent replacement has been found adding new experience to the range of structural steel expertise in New Zealand.

Fire Engineering Design Development

The most significant activities in Fire Engineering was developing comprehensive new material for the Third Edition of the Fire Engineering Design Guide; this new material consisted of information on post flashover fire, structural fire severity, the behaviour of steel structures in fire and design for fire. The publication includes descriptions of the principal fire engineering design procedures for steel buildings and sources of design guidance.

Charles Clifton made an evening presentation at the UK Institution of Structural Engineers in April 2008 on Fire Engineering Design in New Zealand. The presentation was entitled "Design of Multi-Storey Steel Structures for Dependable Response in Fully Developed Fires: Current New Zealand Practice" and attracted a UK-wide audience. A paper was also presented at the 2008 Structures in Fire Conference.

Completed HERA Reports

HERA Report R4-142 covers eccentric cleats in compression and columns in moment-resisting connections. These are two important types of connection design, the first of which replaces a currently unconservative design procedure, while the second provides necessary guidance for designers of moment resisting connections to SCNZ's Steel Connect.

HERA Report R4-141 is the first revision of a computer program for the assessment of composite floor systems for occupant-induced vibrations. Dr Yadav Khwaounjoo, who was responsible for developing the first edition, produced this new version. The program covers a wider range of floor systems than was previously available and includes user feedback and comments from the first edition.

HERA Report R4-140 covers the work undertaken by Nandor Mago and Charles Clifton on modelling of floor systems to determine the adequacy of the slab participation factor produced for Amendment No 2 of NZS 3404.

Codes and Standards

Amendment No 2 to NZS 3404 was published in late 2007 and is a significant improvement to the Standard. Charles Clifton was Chairman of the Committee that produced the amendment. The Committee will be commencing work on a full revision of the Standard in 2008.

Seismic-Resisting Developments

Charles Clifton is revising the procedures for Moment Resisting Frames and will be teaching this at the University of Auckland in 2008. It is intended that this material will form the basis of the future update to HERA Report R4-76.

The semi-rigid Flange Bolted Joint and Sliding Hinge Joint continue to be used and are now incorporated within over \$1 billion worth of New Zealand buildings.

Steel Bridge Development Group (BDG)

The hard work that the BDG has been doing since 2004 has started to bear fruit in 2008. Following a series of 1-day seminars on the benefits of network arch bridges, which were presented by visiting Norwegian professor Dr Per Tveit, the lessons learned have been implemented in a number of high profile projects in New Zealand. The most successful of these projects are the Okura Bridge Realignment bridges, which comprise a multi-span 90 m ladder deck bridge and a curved multi-span 96 m ladder deck bridge with the main girders curved in plane instead of the commonly used straight girders.



Meridian Building on the Wellington Waterfront is one of the first structural steel office buildings to be given a Five Star rating by the Green Building Council of New Zealand



3D visualisation of the East Taupo arterial bypass - New Zealand's first network arch bridge designed by HERA member, Holmes Consulting

Raed El Sarraf presented two papers at the 7th International Steel Bridge Conference in Guimarães, Portugal. The papers were entitled "Short Span Steel Bridges: An Economic Study" and "New Zealand Steelwork Durability Design"; both papers were well-received and they generated discussion on the actual life cycle cost of a bridge. The findings of the trip, which included a visit to a number of UK designers and a steel bridge fabricator, have provided the BDG with new insights on the issues that will need to be studied in the coming year.

Composite Structural Assemblies Project

Broadly, the CSA Project is aimed at developing new products, specifically a wall and a floor and their second generation iterations. Products are expected to use combined property strengths of a range of materials and components to provide offsite and modular techniques for a more efficient construction industry and promote export opportunities for partner companies.

The Project has been running for 4 years and the outcomes are expected to include manufacturing and costing techniques for an innovative suite of products, including wall, floor and roof variations and connections for use in modular and offsite construction. One of the fundamental design concepts developed has a NZ Patent pending and a New Zealand Registered Design application.

Key decisions have been made to move the focus from theoretical research towards testing in the field, encouraging early adopters and establishing vehicles for commercialisation and Sector establishment.

A key sector yet to have a strong presence in NZ is the Offsite and Modern Methods of Construction (MMC) sector. As this sector can be seen as closely related to the aims of this project, time is being spent in making connections to international and local markets to identify the trends. A NZ project has been instigated with Unitec where 50 students will analyse the state of the NZ Market to assist in determining opportunities for CSA products.

Finite Element Analysis in Applied Research and Consulting

Finite Element Analysis (FEA) has continued to form an integral part of HERA's structural research and consulting activities. A wide range of consulting activities have been undertaken over the last year, which have consisted of strength and serviceability assessment of structures that are beyond the normal everyday design activities of structural engineers. For example, working closely with Holmes Fire & Safety, the structural response of the long-span steel-concrete composite office floor to the Britomart East Building 1 & 2 was assessed for a range of fire severities. From this assessment it was demonstrated that 75% of the passive fire protection could be eliminated from the floor beams, which led to significant savings to the client.

A paper on the Britomart East Building was presented by Nandor Mago at the 2008 ABAQUS Users' Conference in Rhode Island, USA. The conference was an excellent opportunity to meet and discuss FEA with fellow users and to obtain information on the latest developments in

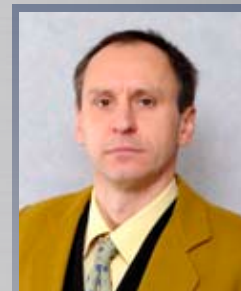
virtual simulation which can be utilised for the benefit of the metal based industry in New Zealand.

HERA Sustainability Strategy

This was the first year of activities covered under the newly developed HERA Sustainability Strategy. The objective of the strategy is to address sustainability issues and become a leader in sustainable development. CSA Technical Manager Richard Green, who holds amongst other qualifications an MSc in Environmental Science & Engineering and UK Diplomas in Life Cycle Assessment and Environmental Impact & Risk Assessment, has started implementing the strategy. He was instrumental in putting together the HERA Submission to the NZ Green Building Council for Green Star NZ Office Design V2 Rating Tool and supervising a graduate engineer research project aimed at providing information on sustainable steel construction and on making this information accessible via a web-based database .

Outlook

In responding to the industry's needs that have been identified through the Structural Research Strategy, the main activities for the next 12 months will be increasing the research activities in composite construction and supporting producers through seminars and product development activities. In addition, Codes and Standards work will increase through the revision of the Steel Structures Standard NZS 3404. Finally, as well as bringing the CSA project to the commercialisation stage, a new design guide on steel-concrete composite bridges will be produced to support this emerging sector.



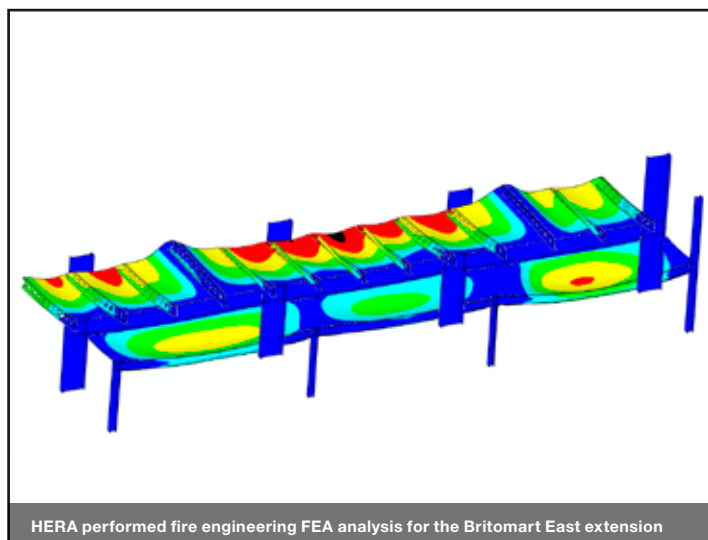
Nandor Mago
FEA Specialist



Rosemary Scofield
CSA Business Development Manager



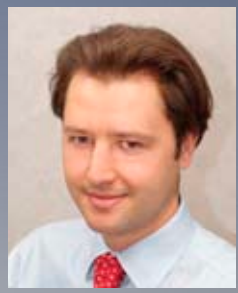
Richard Green
CSA Technical Research Manager



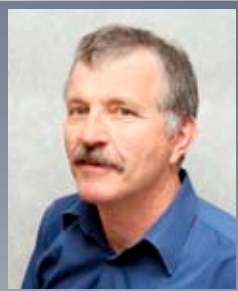
HERA performed fire engineering FEA analysis for the Britomart East extension



Fabrication work for the Barry Curtis Bridge in Ormiston, South Auckland at HERA member Grayson Engineering's new facilities



Dr Michail Karpenko
NZWC Manager



Alan McClintock
Senior Welding Engineer

Industry Welding Activities increased

New Zealand's welding industry performed well in the year reported on. This is reflected in the figures for imported welding consumables which showed consistent growth in line with steel consumption figures. Welding and joining of metals is a key technology for the NZ metals industry and the unique support role of the New Zealand Welding Centre (NZWC) has been in continuous high demand.

Training courses and seminars

In September/November 2007 the NZWC conducted a seminar series on quality requirements in welding fabrication which was attended by more than 270 people. The President of the International Institute of Welding (IIW) and Executive Director of the Welding Technology Institute of Australia Chris Smallbone together with the NZWC staff covered the topics "ISO 3834 Quality requirements for welding" and "Improving Technology Innovation and Skills in Welding to Become More Competitive" in Auckland, New Plymouth and Christchurch. The seminar response indicates that the AS/NZS ISO 3834 approach is becoming increasingly accepted by NZ fabricators. Also offered was a one-day seminar on the widely used AS/NZS structural welding standards providing a comprehensive overview on the requirements to be met in quality welded fabrication.

Recent developments in low nickel stainless steels (ferritic and manganese bearing austenitic grades) indicated that they may provide cost effective alternatives to the traditional austenitic and duplex grades for specific applications.

The topic was researched in detail by the NZWC and in cooperation with NZSSDA a seminar up-dating current developments in the stainless steel market including fabrication and welding trends was held. Over 140 people attended the seminars held in Auckland, Christchurch, Hamilton and Palmerston North.

Welding Training Modules, Web Based Training Resource

The welding training modules continue to be widely used by training providers as either hard copy or CD versions. To explore future development possibilities of the training modules, a innovative and novel web-based training and assessment resource HERA-STAR (Self Training Application Resource) has been developed. The content provides an introduction to welding and safe welding practice. The resource has been made available to a number of organisations for appraisal. The Welding Centre is active on Competenz's Fabrication Sector Advisory Group which is now working on updating the qualifications in the Fabrication qualifications. The Welding Centre continues to contribute to ACC Metal Manufacturing Safer Industry Programme.

Research Activities

The NZWC continues its involvement with the industry supported Composite Structural Assemblies (CSA) project managed at HERA. Activities include welding, mechanical joining and forming research. Within the scope of the project a semi-automatic joining system for the CSA Pilot Plant has been developed. The joining system will connect large galvanised profiles during the panel assembly stage, using resistance spot

welding. Ongoing research includes optimisation of the joining system through trials and experiments with full scale prototype panels. Linear clinching technology is also being investigated to develop joining systems designed for large scale production of panels including painted sheets. These tools will be incorporated inline and allow the processing of much higher volumes. With focus on next year's research programme, the NZWC scoped a proposal for improving weld fatigue design using advanced FEA modelling tools in a joint venture project with industry.

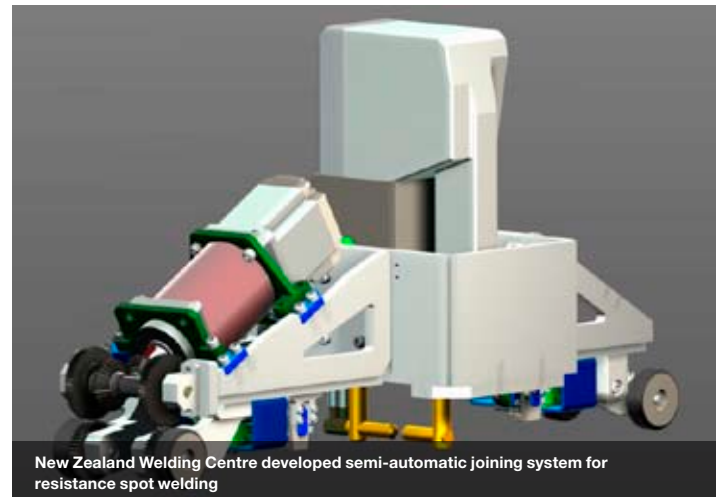
A study on the Air Carbon Arc gouging process has been started. The aim of the project is to develop competence in the area of gouging technology and thus provide the New Zealand industry with the ability to select the best suited gouging technique, while considering the quality and performance requirements and the economic aspects of the process. In cooperation with NZSSDA, NZWC has developed a new research project proposal covering all relevant welding aspects of alternative stainless steel grades, including manganese bearing grades, and their corrosion performance in welded conditions which started in the next year.

Technical Advice, Consultancy, Industry projects

The Welding Centre continued to provide free welding advice and technical support as part of its service to HERA member companies. Several larger consulting projects have been performed highlighting issues around distortions of welded structures, welding procedure development, fatigue design, and weld failure investigations.



A large amount of welding work goes into wind turbine construction



New Zealand Welding Centre developed semi-automatic joining system for resistance spot welding

Conferences, Papers, Publications

In order to keep industry up-to-date with technology, the NZWC continues publishing welding related articles in the Engineering News and HERA News every month. A case study paper on "Durability Studies of Sheet Metal" covering corrosion research performed by HERA was given to an Australasian Corrosion Association seminar in October.

Welding Standard Development

The Welding Centre represents New Zealand welding fabricators on the joint Australian/NZ Welding Standards Committee. This year the Centre provided input into the review of the standards AS/NZS 1554 part 1, 4 and 5.

International Contacts and Collaborations

Over the past three years the NZWC has developed advanced training materials for the qualification of International Welding Specialist (IWS) to IIW standard. Earlier this year, a license agreement between HERA and WTIA was signed for the use of materials in by WTIA's OZWELD School of Welding Technology for IIW training. NZ Welding Centre Manager Michail Karpenko attended the 60th Annual Assembly of the International Institute of Welding in Dubrovnik, Croatia and the associated welding conference on the 1st – 8th July 2007. He participated actively in a number of working commissions and in some key IIW meetings. After the conference Michail visited TWI

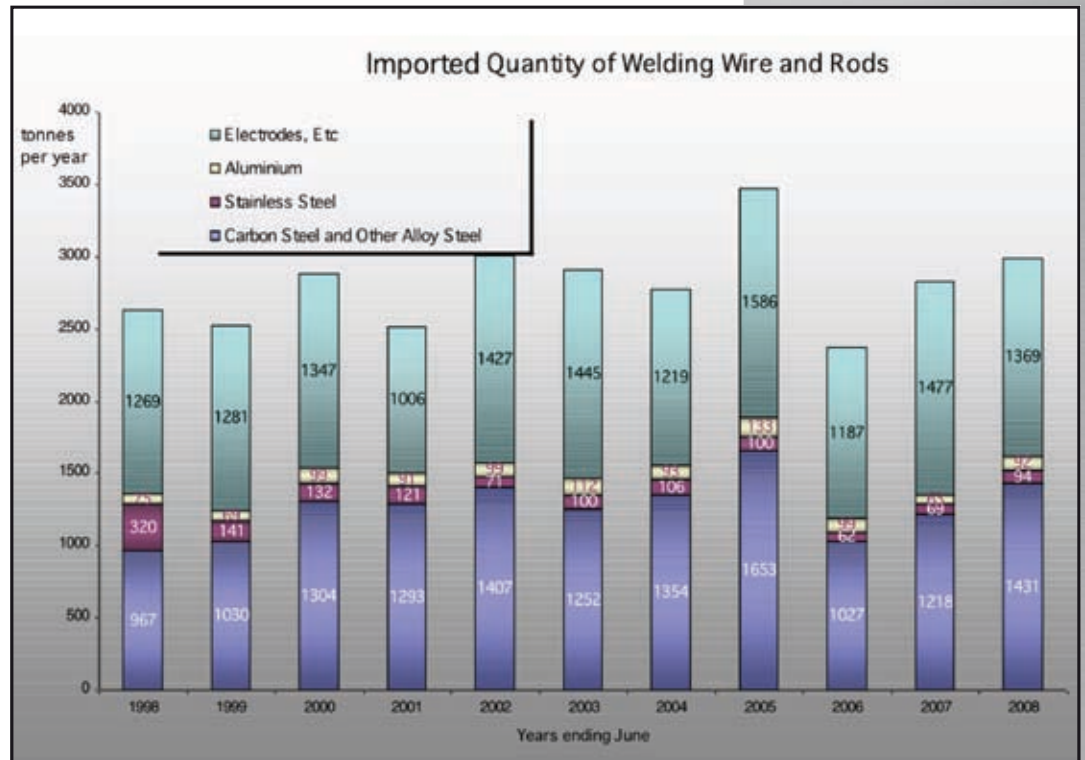
in Cambridge, Cranfield University, Institute De Soudure in Villepinte and Paton Welding Institute in Kiev. The opportunity was used to extend international contacts with experts in the field of welding technology to benefit from their expertise. Michail also participated at the WTIA Qualification and Certification Board (Q&C) meeting, the WTIA AGM and Manufacturing Technology Week which was held in Sydney in May 2008.



David Wrightson
Materials Engineer



Welds - what you see is not what you get - lack of fusion in a fillet weld



Web-based training using HERA-STAR training system



Reactor and riser vessel under construction at HERA member Fitzroy Engineering in Taranaki



Holger Heinzl
Mechanical Engineer

Sheet Metal Engineering Activities

As reported in the previous year in support of a well established New Zealand sheet metal engineering industry HERA with research partner AUT University and industry partners established the InForming Group and AUT the Metal Forming Centre. In November 2007, the InForming group held an inaugural Research Road Map meeting with the aim to scope and discuss research needs of the New Zealand sheet metal based industry. Key industry and research provider representatives analysed the current industry position and developed a draft sheet metal engineering research roadmap, which following further industry analyses and input is intended to be published as a HERA report. The meeting also identified the need for a better understanding of the industry and HERA is currently seeking an expert in the field to help establishing an industry capability register.

Composite Structural Assemblies Project

As part of the CSA research project and in co-operation with AUT's Metal Forming Centre, investigations into manufacturing options for the formed sheet metal part of the composite panels were performed. Furthermore the group was involved in the development and design of advanced joining equipment for sheet metal components which included advanced modelling with the assistance of HERA's FEA Analyst. The use of coil-coated material for pressing operations has good potential to increase part quality while at the same time reducing manufacturing costs. As part of the research into this topic by Holger Heinzl, the deep-drawability of pre-painted sheet metal has been established using a purpose-built research tool.

Industry projects

A key industry project funded by NZ Steel has been closely linked to Fisher and Paykel's production of whiteware equipment in Dunedin. Due to the decision to relocate the production overseas, the project which investigated promising imported material substitution routes had to be discontinued and re-focused on other research needs.

Networking

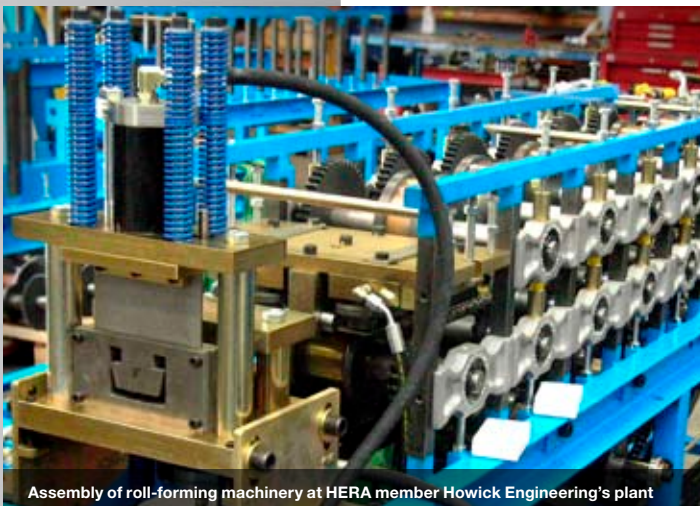
HERA staff member and PhD student Holger Heinzl and Prof Thomas Neitzert from AUT University visited Deakin University in Victoria, Australia, where Prof. Peter Hodgson has established first-class facilities with strong links to the local industry, including automotive. Prof Neitzert has also visited a number of universities throughout Europe over the last year and has established contacts to leading research institutes. It is hoped that from these contacts, a visiting expert to assist in advising industry and progressing the NZ Sheet Metal Research Road Map can be found.



Material characterisation for metal forming operations



Gridded samples for forming limit diagram experiment



Assembly of roll-forming machinery at HERA member Howick Engineering's plant



Universal hydraulic press at the Centre for Metal Forming at AUT University

The role of the Inspection and Quality Control Centre (I&QC Centre) is to support engineering businesses in meeting their inspection and quality control requirements through technical advice, consultation and training.

I&QC Centre Training Courses Well Attended

Training support of engineering business has been met through planning programmes for the HERA Training Centre and providing specialised training that falls under the scope of the I&QC Centre. Attendance at I&QC Centre training courses and seminars was excellent with over 140 attendees registered during the financial year. Budgets set for training courses were met. HERA's application to become an NZQA approved training provider was forwarded to the NZQA and registration granted in September 08. The following domains were applied for:

- Welding to NZQA level 6
- Engineering fabrication to NZQA level 5
- Mechanical engineering inspection to NZQA level 6

Inspection and Welding Advice

Support, in a consultative capacity, has been offered in fabrication, welding problems, quality control, inspection, non-destructive testing and preparing inspection and quality control procedures. This support included preparing inspection procedures for an aircraft company and assisting a fabrication company to meet

ASME U Stamp requirements for the fabrication of pressure vessels.

Quality Requirements for Welding

I&QC Centre staff are highly qualified and experienced particularly in welding, inspection and non-destructive testing methods. To assist industry to meet its welding quality requirements the I&QC Centre this year started to prepare engineering businesses involved with welding by offering advice on AS/NZS 3834 Quality Requirements for Fusion Welding of Metallic Materials. Adopting AS/NZS 3834 improves engineering businesses ability to sell their welded products in both domestic and overseas markets. Fulfillment with AS/NZS 3834 provides a "one-stop shop" to achieve global recognition of the fabricator's capability. AS/NZS 3834 has EN and BS status and is widely used in Europe and recognized worldwide.

I&QC Panel

Along with several resolutions around the strategic plan of the Centre, the I&QC Centre Panel approved the development of a Welding and Inspection Handbook. The work on the Handbook will commence in the coming year.

Qualification and Information

The I&QC Centre supported the New Zealand Welding Centre in its planned IIW qualification programme and training courses. The I&QC Centre worked closely with the Welding Technology

Institute of Australia (WTIA) in preparing training material for the IIW Welding Inspector qualification. The I&QC Centre also provides a monthly column in HERA News informing on quality control and inspection technology updates and industry issues. It has also prepared several information sheets on inspection and welding.

Standards Development

The I&QC Centre represents the interests of the metals industry in welding, quality control and inspection disciplines in joint committees with Standards Australia and Standards New Zealand. The I&QC Centre Manager is the Chairman of the ME 001 – 15 Pressure Equipment – Welding and brazing qualification Committee and is a member of ME 001 Pressure Equipment, WD 003 Welding of Structures and MT 007 NDT of Metals and Structures.

Outlook

The I&QC Centre business plan will continue to be implemented in setting directions for sound long-term support for the inspection and fabrication industry. In the coming year the focus will be on addressing the demand for skilled persons and welding quality requirements. The promotion of AS/NZS 3834 will continue to assist industry in meeting any future requirements in trading with the rest of the world with regards to welding quality systems. Further development of an inspection industry capability register will continue.



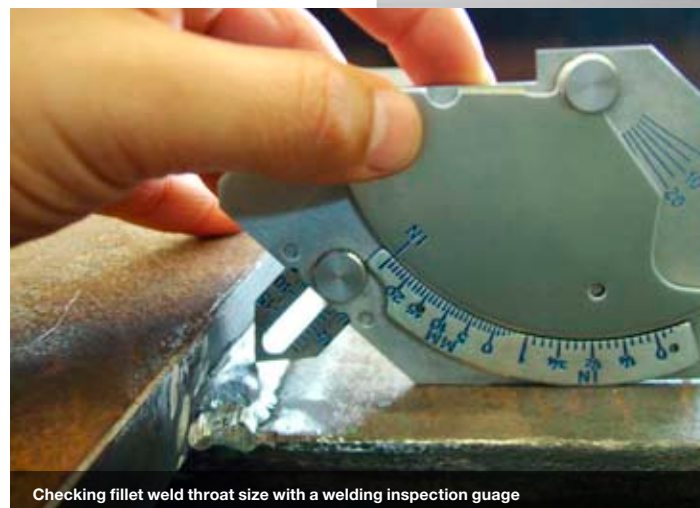
Peter Hayward
Inspection and
Quality Control Manager



Inspection seminars held all year round at HERA House



Cracks in heat-affected zone of a weld



Checking fillet weld throat size with a welding inspection gauge



Brian Low
Information Centre
Manager



Raewyn Porter
Receptionist



HERA Membership is increasing steadily

HERA membership has increased for the 7th consecutive year to around 667 members.

This demonstrates the continued industry interest in HERA's services.

4th NZ Metals Industry Conference Auckland

The HERA Information Centre team, in conjunction with the multi partner Conference Committee, is responsible for the organisation of the biennial Metals Industry Conference and considerable efforts have gone into its preparation.

The 4th Metals Industry Conference will be held in the Auckland SkyCity Convention Centre, from the 29th to 31st October 2008. The theme of the Conference is Building Sustainability and is aimed at focusing the industry on sustainability issues, strategies to respond to it and initiatives

to contribute building a more sustainable New Zealand and world. The Conference will focus on not only material sustainability but also on the more crucial business and practices aspects. Sector-overarching topics on not only metals industry environmental issues such as energy use, carbon emission, energy rating systems, health and safety, but also business opportunities for our industry as a result of national and international developments such as in renewable energy and sustainable construction.

Conference partners include Steel Construction NZ (SCNZ), NZ Stainless Steel Development Association (NZSSDA), National Association of Steel Framed Housing (NASH), Light Alloys Manufacturing (LAM-NZ), NZ Non-Destructive Testing Association (NZ-NDTA) and New Zealand Trade and Enterprise (NZTE) which organises a Lean Manufacturing Tour. Strong sponsorship support of our material supply chain has been registered

ensuring an excellent technical and social programme conducive to the all essential networking amongst industry members. The highlight of the Conference will be the New Zealand Metals Industry Awards Gala Dinner in the Auckland Museum where we celebrate individuals and teams who move our industry forward.



Steltech steel beams by HERA member NZ Steel



View out of the Events Centre at the Auckland War Memorial and Museum



Aluminium sculpture by HERA member Ullrich Aluminium

Library

The HERA Library contains a wide collection of books, standards, CDs and videos on all subjects related to heavy engineering, reflecting the projects undertaken by the various departments within HERA. The subjects covered include welding, structural engineering, architecture, non-destructive testing, corrosion protection, finite element analysis, metallurgy and the use of steel and stainless steel in architecture and construction. The library also subscribes to a number of New Zealand and overseas journals on these subjects, and articles from these journals can be copied on request.

Newly-acquired material is advertised in HERA News, the Association's monthly newsletter, and topical issues are highlighted and promoted to the members.

In addition to our own material, the Information Centre houses the collection of the Australasian Corrosion Association of New Zealand (ACANZ), a set of books and papers on aspects of corrosion and protection, which is also available to HERA members.

The HERA Library also provides an excellent and well used service to search and borrow material from around the world. Most of these services are free to members, although a cost recovery charge is made for interlibrary loans or documents that must be sourced outside HERA, and particularly extensive literature searches are charged for by the hour.

HERA is a member of LIANZA, the New Zealand librarians' association, and the librarian regularly attends the annual LIANZA conference to investigate new suppliers and keep up to date with changes in library technology.

Publications

The HERA Information Centre provides a focal point for members wishing to purchase books and standards from New Zealand and overseas. The contacts we have built up over the years with overseas organisations enable us to provide our members with access to a wide variety of resources. Close contacts with the Australian Steel Institute (ASI), the Welding Technology Institute of Australia (WTIA) and UK's TWI reflect HERA's involvement in Structural Steel and Welding. HERA's own reports provide both members and non-members with valuable information regarding welding, structural steel, corrosion, coatings and business opportunities.

HERA Reports published this year:

R4-141 Report and User Manual for NZFI_Vib2

- First revision of HERA Report R4-112 (Report and User Manual for NZFI_Vib1)
- includes floor vibration Software NZFI_Vib2
- This floor vibration software has been developed to cover the design of floors for satisfactory response under walking excitation.

R4-142 Eccentric cleats in Compression and Columns in Moment-Resisting connections

- Presents design guidance on two different types of connections
- The first type is the eccentric cleat in compression which is used in a range of braced frame applications, connecting the braces into the supporting frames
- The second type is the moment-resisting beam to column connection used in conventional rigid moment frames.

R5-35 Geothermal Capability Register

- Provides information on heavy engineering companies either working in the geothermal industry or having the capacity to do so.
- Company details are displayed in an easy to read table
- Extensive company profiles are also included.

R5-36 New Zealand Heavy Engineering Business Opportunities for Geothermal Energy

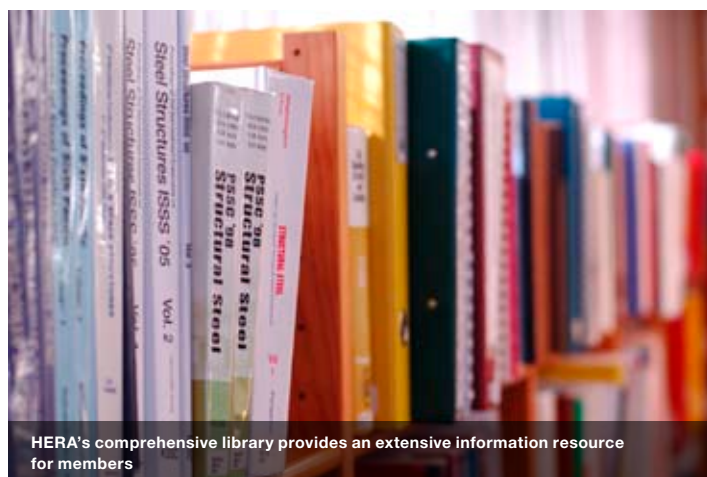
- A summary of a HERA Workshop on Geothermal Power Opportunities
- Includes papers and PowerPoint Presentations given at the Workshop
- Details Workshop discussion, conclusions and recommendations from the Workshop.



Pauline Hayward
Publications Officer



Sally Geard
Librarian



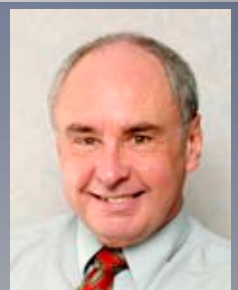
HERA's comprehensive library provides an extensive information resource for members



Steel beams produced by Steltech Structural



Barry Meijering
NZSSDA Chairman



Carl Davies
NASH General Manager



HERA provided secretariat services to NZSSDA, NASH and Accounting/Treasurer Function to the Certification Board for Inspection Personnel (CBIP) and Light Alloys Manufacturing (LAMNZ).

New Zealand Stainless Steel Development Association (NZSSDA)

The following report is from NZSSDA Chairman Barry Meijering:

2008 has continued to be another busy year for the NZSSDA in terms of activities. Over the last year the NZSSDA ran, in conjunction with HERA, seminars on 'The Trends and Developments in Stainless Steel- Lower cost Stainless Steels – An opportunity or a threat'.

The timing of the seminars was perfect in light of the very rapid increase in the price of nickel. Fabricators, Design Engineers and Architects were looking at alternative grades of Stainless Steel for a number of reasons. The NZSSDA felt it very important that our members were informed of the market situation with the new grades available and armed with the relevant information. The information provided at the seminars covered all the important areas required before specifications can be made. All aspects of fabrication, corrosion possibilities and welding/ joining and which need to be assessed before a material choice can be made were covered. The seminars were held in Auckland, Wellington and Christchurch. Special thanks to the speakers Les Boulton, Michail Karpenko, Rian Holdstock and Alan McClintock.

A second group of seminars was run in May titled 'Stainless Steel in the Water and Wine Industry' covering guidelines for achieving top performance. These are always very informative seminars and were held at wineries in Blenheim

and Napier and at HERA House in Auckland. Also thanks to the speakers in this series of seminars Les Boulton and Patrick Whitmore.

Another area that the NZSSDA has been concentrating on in 2008 is AS 1528.1, a specification for stainless steel tubes for the food industry. With the industry wanting to adopt this standard it was felt that the NZSSDA should play an active role in the evolution of this standard and to ensure that the standards requirements can be met by New Zealand's industry. The NZSSDA has approached Standards New Zealand to begin proceedings for a joint AS/NZS 1528 standard and New Zealand is now represented on the joint FT-027 committee.

One of the areas of focus this year was on the implementation of the strategy and business plan of a future focused association as one of the partners in the Metals Institute of New Zealand. This will remain one of the focal points in the coming year also.

National Association of Steel-framed Housing (NASH)

The year saw NASH continue to establish itself as the representative body for the steel framing industry in NZ. Progress was made on a number of initiatives, namely:

Collaboration with the Building Construction Industry Training Organisation (BCITO) resulted in the design of training systems, development of unit standards and training modules for the sector. Further involvement with the BCITO will see NASH participate in a 2 day National Advisory Group planning session to advise on future needs of the industry.

Promotional activity has centred around NASH presence at major promotional events including the Master Builders and Building Officials conferences, Future Proof Building Roadshows in

partnership with New Zealand Steel and presentations to Territorial Authorities.

Technical development has continued in areas such as bracing tests, building wraps, claddings and fasteners. NASH 3405, a non specific design and construction guide, was reviewed. An application was drafted to the Department of Building and Housing (DBH) for the development of a NASH Industry standard which is based on the Australian version. NASH in conjunction with Winstone Wallboards completed a series of brace tests that will allow steel framed structures to be braced using a Gib Ezybrace software system similar to timber. The calculation program is downloadable from the Winstone site.

NASH NZ continues to work closely with NASH Australia and the Steel Framing Alliance in the United States and much of its work could not be achieved without the cooperation of local industry and its international partners. NASH remains heavily supported by New Zealand Steel and much would not have been achieved without their support. A growing membership and other funding proposals will assist NASH in the future to become self funding.

In support of New Zealand's light steel framing industry and to support a sustainable local material supply, key NASH member New Zealand Steel developed the Axxis steel for framing brand which is to be supported by a trade and consumer advertising programme to promote the use of steel framing for residential building.

Interest in steel framing from residential home builders has significantly increased over the last 12 months on the back of the CMS roadshows, the television launch of "Zog" steel framed homes from Golden Homes and a range of initiatives undertaken by NASH members and New Zealand Steel. In addition, Carl Davies was appointed General Manager of NASH in March this year and is looking forward to helping to build the profile of NASH and the framing industry.



Stainless steel staircase in Price Waterhouse building in Auckland CBD



Cold formed steel frames delivered via NASH member FRAMECAD Solutions' end-to-end design and build process

STATEMENT OF FINANCIAL PERFORMANCE FOR YEAR ENDED 30 JUNE 2008

	Note	2008 \$	2007 \$
REVENUE			
Levies (Steel & Welding Consumables)		995,359	918,750
Backdated Welding Levies	10	4,822	-
Government Research Contracts (GRC)		857,733	857,733
GRC-Deferred Income	10	44,332	62,882
Consultancy and Industry Projects	10	244,863	134,947
Services to SCNZ		18,576	11,084
Member Subscriptions		176,867	171,481
Interest		48,150	44,048
Other Income		55,545	27,730
Publications		46,559	40,329
Welding Modules		52,111	54,015
Rent		66,051	61,948
Metals Conference		-	156,363
PSSC Conference		-	202,044
Seminars & Courses		93,163	93,495
HEERF		89,435	78,766
Transfer from Backdated Welding Levy	10	28,000	10,104
TOTAL REVENUE		2,821,566	2,925,759
EXPENDITURE			
Staff Expenses		1,304,004	1,140,138
Member Services		142,709	124,345
Office & Other Expenses		157,289	157,855
Seminar Expenses		24,102	27,054
Consulting Expenses		22,133	2,889
Metals Conference		-	126,654
PSSC Conference		-	185,508
External Research		772,452	736,725
HERA House Expenses	3	79,582	74,885
Rent Expenses		206,860	206,860
Depreciation Expenses		104,953	96,606
TOTAL EXPENDITURE		2,814,084	2,879,519
NET (DEFICIT) SURPLUS FOR THE YEAR		7,482	46,240
Equity Funds at Beginning of Year		453,559	407,319
EQUITY FUNDS FOR END OF YEAR		461,041	453,559

BALANCE SHEET AS AT 30 JUNE 2007

	Note	2008 \$	2007 \$
REPRESENTED BY			
ASSETS			
Current Assets			
Cash at Bank	2	125,321	209,725
Term Deposits	3	572,904	599,891
Accounts Receivable	4	311,092	135,781
Inventory		8,675	11,126
Other Prepayments	5	93,324	116,771
TOTAL CURRENT ASSETS		1,111,316	1,073,294
Non Current Assets			
Fixed Assets	6	333,850	260,950
TOTAL NON CURRENT ASSETS		333,850	260,950
TOTAL ASSETS		1,445,166	1,334,244
EQUITY & LIABILITIES			
Accumulated Funds			
Accumulated Funds	7	461,041	453,559
TOTAL Equity		461,041	453,559
Current Liabilities			
GST Payable		27,796	12,289
Accounts Payable		143,425	139,770
Holiday Pay Provision		18,186	26,118
Income in Advance	10	794,718	702,508
TOTAL CURRENT LIABILITIES		984,125	880,685
TOTAL EQUITY & LIABILITIES		1,445,166	1,334,244



Kam Subramani
Accounts Officer

AUDIT REPORT

To the Members of New Zealand Heavy Engineering Research Association Inc and the Trustees of Heavy Engineering Education and Research Foundation

We have audited the summary financial report of New Zealand Heavy Engineering Research Association Inc and Heavy Engineering Education and Research Foundation for the year ended 30 June 2008.

Responsibilities of Board of Trustees and Auditor

The Trustees are responsible for the preparation of a summary financial report in accordance with generally accepted accounting practice in New Zealand. It is our responsibility to express to you an independent opinion on the summary financial report presented by the Trustees.

Basis of Opinion

Our audit was conducted in accordance with New Zealand Auditing Standards and involved carrying out procedures to ensure the summary financial report is consistent with the full annual report on which it is based. We also evaluated the overall adequacy of the presentation of information in the summary annual report against the requirements of FRS-39: Summary Financial Reports.

Other than in our capacity as auditor we have no relationship with or interests in the New Zealand Heavy Engineering Research Association and Heavy Engineering Education and Research Foundation.

Unqualified Opinion

In our opinion, the information reported in the summary annual report on pages 2 to 8 complies with FRS-39: Summary Financial Reports and is consistent with the full annual report from which it is derived and upon which we expressed the unqualified audit opinion referred to above.

We completed our work for the purposes of this report on 16 September 2008.

CST Nexia Audit

Chartered Accountants
Manukau City

Please note: the following is not necessarily in numerical order.

1. Statement of Accounting Policies

(a) General Accounting Policies

HERA is an Incorporated Society and these financial statements have been prepared in accordance with the Incorporated Societies Act 1908.

The Heavy Engineering Research Association (HERA) follows Generally Accepted Accounting Practice (GAAP) recognised as appropriate for the measurement and reporting of earnings and financial position on historical cost basis. Accrual accounting is used to match expenses and revenues. Reliance is placed on the fact that HERA is a going concern.

(b) Particular Accounting Policies

The particular accounting policies, which materially affect the measurement of financial performance and the financial position, are:

The Association is exempt from income taxation and therefore there is no income tax liability.

Fixed assets are valued at cost less depreciation. Depreciation has been calculated on all fixed assets using the straight-line method at rates varying between 10% - 40% based on cost.

Books held as inventory are valued at the lower of cost or net realisable value on a FIFO basis after due allowance for damaged or obsolete books.

HERA is a qualifying entity under the New Zealand Society of Accountants Differential Reporting Framework.

The Association qualifies under the size criteria. The Association has not taken advantage of the differential exemptions available to it in respect of FRS 19 – Accounting for GST. Except for this, the association has taken advantage of all other exemptions available to it under the differential reporting framework.

(c) Changes in Accounting Policies

There have been no changes in accounting policies. Accounting policies have been applied on a basis consistent with previous years.

2. Cash at Bank

	2008	2007
Current Account	43,185	47,364
CSA Current Account	82,136	162,361
	125,321	209,725

3. Investment

	2008	2007
Call Account	174,240	8,815
Term Deposit – National Bank (CSA)	279,276	262,142
Term Deposit – BNZ	119,388	328,934
	572,904	599,891

4. Accounts Receivable

	2008	2007
Trade Receivable	311,092	151,102
Provision for Doubtful Debt	–	(15,321)
	311,092	135,781

5. Other Receivables & Prepayments

	2008	2007
Accrued Income	82,182	82,528
Loan	–	24,743
Prepayment Expenses	11,142	9,500
	93,324	116,771

6. Fixed Assets

2008	COST	ACCUM. DEPRECIATION	NET BOOK VALUE
Metallurgy Equipment	12,430	12,430	–
Office Furniture	20,306	15,097	5,209
Fixtures & Fittings	82,955	57,263	25,692
HERA House Refurbishment	147,053	21,157	125,896
Motor Vehicles	151,789	76,679	75,110
Office Equipment	197,030	121,930	75,100
Training Equipment	84,759	57,917	26,842
	696,322	362,473	333,850

2007	COST	ACCUM. DEPRECIATION	NET BOOK VALUE
Metallurgy Equipment	12,430	12,430	–
Office Furniture	21,086	16,515	4,571
Fixtures & Fittings	82,955	45,839	37,116
HERA House Refurbishment	69,015	10,353	58,662
Motor Vehicles	123,225	78,331	44,894
Office Equipment	271,905	192,163	79,742
Training Equipment	81,834	45,869	35,965
	662,450	401,500	260,950

7. Accumulated Funds

	2008	2007
Opening Accumulated Fund	453,559	407,319
Net Surplus	7,482	46,240
	461,041	453,559

8. Operating Lease Commitment

	2008	2007
Current	11,436	11,436
Non Current	5,718	17,154
Total payable for the lease contract	17,154	28,590

9. Related Party

Heavy Engineering Educational and Research Foundation (HEERF) is a related party to the Association. It is related by the administrative and management expertise the Association provides to the Foundation, in the form of grants provided to the association for the research projects it undertakes. It is also the Association's landlord, owing HERA House.

10. Income in Advance Backdated Welding Levies

The Association has been advised in June 2005 by NZ Customs Service that the new levy rate set in March 2003 of 5 cents per kg of welding consumables has not been applied for imported welding consumable. Therefore only the old rate of 2 cents per kg was collected.

As advised by the NZ Customs service, the total backdated consumables levy amount owed to HERA was \$214,399. In 05/06 year \$176,812 was received, in the year \$31,193 has been received and in the year 07/08 an additional \$4,822 has been received. The remaining amount of \$1,572 is written off as the importer went into receivership. HERA has agreed with the welding supply companies that the backdated

welding levy will be exclusively for welding industry purpose and only following consultation with the NZ Welding Centre panel and welding supply industry. \$28,000 (2007:\$10,104) has been used in the financial year for dedicated welding projects. Therefore the unspent balance of \$169,901(2007:\$197,901) backdated welding levy has been treated as income received in advance.

Industry Project

Majority of Revenue in Advance represent income in advance from various agencies, which funds the Association for research and services. The funding received for programmes (projects) that were completed during the year is recognised as revenue in that year.

The part of the funding that relates to incomplete parts of projects at that year-end is deferred to the next period. There for the unspent balance of \$231,050 (2007:\$67,704) industry projects has been treated as income in advance this is stated under "income in advance" in the Statement of Financial position.

Composite Structural Assemblies

The project concerned with funding from FRST is the Composite Structural Assembly (CSA) project which started late due to staff resource constraints. FRST pays an equal amount every year over the total period, while expenditure varies due to changing projects tasks, resulting in large portion of funding being deferred to next year based on percentage of project complete. Therefore the unspent balance of \$392,272 (2007:\$436,604) has been treated as income in advance.

Other

The balance of income in advance totalling \$1,495 represents membership for 08/09 paid by members in 07/08 financial year (2007:\$299)

11. BNZ Bank Account

The Association has a Visa credit card facility with BNZ. The limit on all cards is \$33,000. (2007:\$21,000)

12. Audit Fees

Audit fees have been included in office and other expenses to the value of \$5,000 (2007:\$5,000). There was no other remuneration paid to the Auditors.

13. Capital and Other Commitments

As at 30 June 2008 there were no outstanding capital commitments. (2007: \$nil)

14. Contingent Liabilities

As at 30 June 2008 there were no outstanding contingent liabilities. (2007: \$nil)

STATEMENT OF FINANCIAL PERFORMANCE FOR YEAR ENDED 30 JUNE 2008

In line with its objectives, the Foundation funded a number of projects related to the metals engineering industry, including student support for research projects.

Balance Sheet as at 30 June 2008

Note	2008 \$	2007 \$
ACCUMULATED FUNDS		
Equity funds at start of year	1,763,574	1,656,577
Net surplus for the year	132,596	106,997
Equity funds at end of year	1,896,170	1,763,574
REPRESENTED BY		
Current Assets		
Bank	80,605	64,099
Call Account	76,149	72,896
Short Term Deposit	427,356	298,424
Account Receivable	-	200
Endowment Fund	429	-
Accrued Income	3,514	4,480
Bequest	25,000	-
	613,053	440,099
Total Fixed Assets	4 1,320,068	1,342,250
TOTAL ASSETS	1,933,121	1,782,349
Current Liabilities		
Accounts Payable	10,350	17,094
Received In Advance	25,000	-
GST Payable	1,601	1,681
TOTAL LIABILITIES	36,951	18,775
NET ASSETS	1,896,170	1,763,574

1. Statement of Accounting Policies

(a) General Accounting Policies

Heavy Engineering Educational and Research Foundation (the Foundation) is a charitable trust established under the Charitable Trusts Act 1957. These financial statements have been prepared in accordance with the Act.

The Foundation follows Generally Accepted Accounting Practice (GAAP) recognised as appropriate for the measurement and reporting of earnings and financial position on historical cost basis. Accrual accounting is used to match expenses and revenues.

(b) Particular Accounting Policies

The particular accounting policies, which materially affect the measurement of financial performance and the financial position, are:

Income Tax

The Foundation has a charitable status from the Inland Revenue Department, hence is exempt from income tax.

4. Fixed Assets

	COST \$	ACCUM. DEPRECIATION	BOOK VALUE \$
Land	244,603	-	244,603
Land Development	24,489		24,489
Capital Work in Progress	12,848		12,848
Building Upgrade	151,019	58,490	107,631
Air Condition Unit	157,300	38,346	128,392
Building	1,049,090	222,446	837,135
	1,639,349	319,282	1,320,068

Fixed Assets

Fixed assets have been shown at cost less depreciation. Buildings are depreciated using the straight-line method at 1% of the cost price, Air Conditioning Unit at 6% and Roof & Cladding at 10%.

Differential Reporting

The Foundation is a qualifying entity under the New Zealand Society of Accountants Differential Reporting Framework.

The entity qualifies under the size criteria, and because it is not publicly accountable. The Foundation has not taken advantage of the differential reporting exemptions available to it in respect of FRS-19: Accounting for Goods and Services Tax.

(c) Changes in Accounting Policies

There have been no changes in accounting policies. Accounting policies have been applied on a basis consistent with previous years.

2. Capital Commitments & Contingent Liabilities

There are no capital commitments or contingent liabilities as at 30 June 2008. (2007: \$Nil)

Income & Expenditure for year ended 30 June 08

	2008 \$	2007 \$
INCOME		
Rent	206,860	206,860
Interest	32,320	22,127
Endowment Fund	300	200
Scholarship Refund	22,828	-
Total Income	262,308	29,187
EXPENDITURE		
Blding Maintenance	1,800	5,317
Blding Managmt Fee	6,000	6,000
Trust Administration	10,000	10,000
Grants to HERA/SCNZ	75,659	64,608
Bank Charges	22	34
Audit Fees	1,200	1,200
	94,681	87,159
Depreciation	35,031	35,031
Total Expenditure	129,712	122,190
NET SURPLUS (Deficit)	132,596	106,997

There were no capital commitments as at 30 June 2008. (2007: \$ Nil)

3. Related Parties

The Foundation is related to New Zealand Heavy Engineering Research Association (HERA). Members of the Foundation are also a member of HERA. HERA is the tenant of the land and building owned by the Foundation and pays rent. The Foundation pays fees to HERA for the management and administration of the building.



Noel Davies

Noel Davies
HEERF Chairman

The Heavy Engineering Educational & Research Foundation (HEERF) is a Charitable Trust established by HERA to promote the study of and understanding of the use of ferrous and non-ferrous metals in the engineering industry. HEERF receives income from the property "HERA House" which HERA settled on the Trust and an endowment fund created in 2005/06 receiving donations from those interested in supporting the HEERF objectives.

Following last years' acknowledgement of the immense contribution made by the late Keith Smith, the Inaugural Chairman of both HERA and HEERF, we wish this year to advise that Keith made a significant bequest to the Foundation. The interest income from this bequest is to be used for a biennial prize to be given to a person who made a significant contribution to the NZ metals industry. The trustees, in co-operation with HERA, intend to hand out the inaugural prize at the upcoming 4th Metals Industry Conference in October.

In 2007/2008 the Foundation has again contributed significantly to HERA's research and industry development efforts through the support of engineering students, visiting experts and promoting careers in metal fabrication and engineering.

In context with the widely discussed Metals Institute of NZ concept the trustees have engaged Strachan Group Architects to provide a bulk and location analysis of the HERA House property and following this, a HERA House development study. The intention is to start the first part of the HERA house development, focusing on the atrium and ground floor office refurbishment in the coming financial year.

An exciting research and visiting scholar programme has already been outlined to the Trustees for the 2008/2009 year and we are looking forward to ongoing top class research supporting the future of our New Zealand metals engineering industry.

Noel Davies
Chairman

Affiliate Members

C J Wallis Pty Ltd
 EDL Fasteners Limited
 Fletcher Easysteel
 Steel & Tube Holdings Ltd

TBS Farnsworth Ltd
 Vulcan Steel Ltd
 Welding Technology Inst of Australia

Associate Members

A & S Engineering Ltd
 ABB Power Ltd
 Accurate Engineering Limited
 Advanced Training Academy
 Aimecs Ltd
 Airwork (NZ) Ltd
 All Steel Services Ltd
 Alloy Yachts International Limited
 ALRO Truck Smash Repairs
 Alstom Northern Wagons
 ANDAR-ADM Group Ltd
 APV New Zealand Ltd
 ATCO Controls Ltd
 ATI Engineering Ltd
 Awesome Awnings Ltd
 Axiam Engineering Limited
 Bailey Engineering Ltd
 Baker Cranes Ltd
 Bay of Plenty Polytechnic
 Bedford Engineering Ltd
 Best Bars Ltd
 Bill Baillie Engineering Ltd
 Bitumen Equipment Ltd
 Bradken Dunedin
 Bridgeway Steel Ltd
 Brightwater Engineers Ltd
 C J Saunders Engineering Ltd
 Calder Stewart Steel
 Cambridge Welding Service (1953) Ltd
 Cameron Bros Engineering Co Ltd
 Campbell Tube Products Ltd
 Canco
 Canco Engineering Ltd
 CCL Barber Ltd
 Century Resources Ltd
 CFM Engineering Ltd
 Clough Agriculture Ltd
 Consolidated Engineering Company Ltd
 Contract Connections Ltd
 Contra-Shear Separation Technologies Ltd
 Courtney Engineering
 Croucher & Crowder Engineering Co Ltd
 Culham Engineering Co
 D A Ireland (1990) Ltd
 D R Howells Engineering Co Ltd
 Dan Cosgrove Ltd
 Dave Smith Structural Steel
 Dawn Group Ltd
 Domett Trailers
 DSK Engineering Ltd
 Eastbridge Ltd
 Eastern Institute of Technology
 Ede Engineering
 Engineering Contractors Ltd
 Enterprize Steel
 Eric Paton Ltd
 Etech Industries NZ Ltd
 Fairbrother Industries Ltd
 Fairfax Industries Ltd
 Farmex Hawkes Bay Ltd
 Fisher & Paykel Production Machinery Ltd
 Flotech Limited

Fruehauf Trailers
 Fuelquip Services Ltd
 G T Liddell Contracting Ltd
 Gamman Industrial Componentry Ltd
 General Engineering North Shore
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 Howick Engineering Ltd
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 Jay Cee Welding Ltd
 Jetweld Engineering
 Keith M J Adams
 Kernohan Engineering Ltd
 Kopu Engineering Ltd
 Lakeland Steel Products Ltd
 Leighs Construction Ltd
 Leonard Products Ltd
 Longhare Engineering Ltd
 Mace Engineering Ltd
 Machine Part Welding Ltd
 McCarthy Engineering Ltd
 McEwan Engineering
 Mecal Ltd
 Metso Minerals (Matamata) Ltd
 Michael Harris (NZ) Ltd
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 Millers Mechanical (NZ) Ltd
 Mobridge Ltd
 Modern Transport Engineers Ltd
 Mooloo Stockcrates Ltd
 Morgan O'Shea Engineering
 Morrow Equipment Co (NZ)
 Moutas Engineering Ltd
 MSC Engineering
 Mulcahy Engineering Ltd
 Mullan and Noy Ltd
 Murray Landon
 Nalder & Biddle Group Ltd
 Napier Engineering & Contracting Ltd
 NDA Group
 Necklen Engineering Ltd
 Nelson Reliance Eng Co Ltd
 Nelson Stud Welding Ltd
 Nepean Engineering Ltd
 Niemac Industrial Ltd
 NZMP Kauri
 Otahuhu Engineering Ltd
 OTENZ Group
 Pacific Timber Engineering Ltd
 Parr & Co Limited
 Patchell Industries Ltd
 Piako Transport Engineering

Pilcher Engineering Ltd
 Pipework Specialties Ltd
 Progressive Hydraulics
 Pyramid Engineering
 R & R Contractors Limited
 Reel Stainless
 Refrigeration Engineering Co Ltd
 Renold New Zealand Ltd
 Rex Barnes Engineering
 Roadmaster Trailers Ltd
 Rocktec Ltd
 Royal New Zealand Air Force
 SAFE Engineering
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 Sensation Yachts Ltd
 Service Engineers Ltd
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 Southern Cross Engineering Limited
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 Specialist Energy Engineering
 Developments
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 Stainless Engineering Co Ltd
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 Steel Structures Ltd
 Steelbro NZ Ltd
 Stevensons Structural Engineers Ltd
 Stewart & Cavalier Ltd
 Street Marine Ltd
 Stud Welding New Zealand Ltd
 Tasman Engineering Company
 The 4711 Training Centre
 Tidd Ross Todd Ltd
 Titan Cranes
 Transfleet Equipment Ltd
 Trimtech New Zealand Ltd
 Truweld Engineering Kerikeri Ltd
 Twig Industries
 Ullrich Aluminium Co
 Verissimo Engineering Ltd
 Wade Engineering Ltd
 Wainuiomata Training Centre
 Waratah NZ Limited
 Warner & Mould Construction Ltd
 Webbs Industrial Group
 Webforge NZ
 Weld IT Ltd
 Weld Fabrication Engineering Ltd
 Weld Tests Hawkes Bay
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 Wilson Bros Engineering Ltd
 Wilson Precast Construction Ltd
 Wyma Engineering NZ Ltd
 Zealsteel Ltd



The spryes of the Barry Curtis bridge in Ormiston, South Auckland

Ordinary Consultants

Abacus Engineering Ltd	EMPA Group Consultants Limited	Novare Design Ltd
ABB Kinleith	Engineered Cold Systems Ltd	OCEL Consultants NZ Ltd
Abuild Consulting Engineers	Engineering Design Consultants Limited	O'Loughlin Taylor Spence Ltd
AC Consulting Group Ltd	ETS Engineers Ltd	Opus International Consultants Ltd
Airey Consultants Ltd	Fairclough and King Consultants Ltd	Paul Gellatly Consulting Engineer
Alan Reay Consultants Ltd	Fletcher Construction - Engineering	PB Power
Allan Estcourt Ltd	Flo-Dry Engineering Ltd	Peter Walker Consultants Ltd
Antro Enterprises Limited	Forbes Consultants	Peters and Cheung Ltd
Apex Consultants	Fraser Thomas Limited	PFP Systems (NZ) Ltd
Arnold & Johnstone Ltd	Frederick R Smith	Plant & Platform Consultants Ltd
Babbage Consultants Ltd	Fulghum Limited	Plumb Ltd
Base Consulting Engineers Ltd	Garry Newton Ltd	Pointload Ltd
Beca Carter Holings & Ferner Ltd	Geoff Kell Consulting Ltd	Port of Tauranga Limited
Belcher Industries Ltd	GHD Ltd	Powell Fenwick Consultants Ltd
BHC Consulting	Grant D Crook	PR Consultants
Bill Cassidy & Associates	Hadley & Robinson Ltd	Protocol Services Ltd
Bloxam Burnett & Olliver Ltd	Hanlon & Partners Ltd	Q Designz Limited
Blueprint Consulting Limited	Harding Consulting Engineers Ltd	R B Knowles & Associates Ltd
Brian Carter Consulting Engineer Ltd	Harrison Grierson Consultants Limited	R D Sullivan
Brian Jones Engineering Ltd	Hawthorn Geddes Architects & Engineers Ltd	R J Nelligan & Associates Ltd
Brian Wilson Consulting Engineer	Hill Design Engineering Ltd	R W & V Roberts Consultancy
Brown & Thomson	HLK Jacob Limited	Radley Consultants Ltd
Bruce Wallace Partners Ltd	Holmes Fire & Safety	Randall & Associates
BSK Consulting Engineers Ltd	Hugh Barnes Consultants Ltd	Redco NZ Ltd
Buchanan & Fletcher Ltd	Independent Technology Ltd	Richardson Stevens Consultants (1996) Ltd
Bucher-Alimentech Ltd	JAWA Structures Ltd	Robin Frengley Consulting Engineer
Buller George Turkington Ltd	JNG Engineers Ltd	Romulus Consulting Group Ltd
Bycroft Petherick Ltd	John Snook Ltd	RPH Consulting Limited
C L C Consulting Group Ltd	Jones Gray Partners Ltd	Ruamoko Solutions Ltd
Cameron Crabtree Partnership	Joyce Consultants Ltd	Sawrey Consulting Engineers Ltd
Cameron Gibson & Wells Ltd	Kerry Dalzell & Associates Limited	Sigma Consultants Ltd
CDT Consultants Limited	Kerslake & Partners	Silvester Clark Consulting Engineers
Chambers Consultants Ltd	Kevin O'Connor & Associates Ltd	Sinclair Knight Merz Ltd
Chapman Oulsnam Speirs Limited	Knibb Gormezano & Partners	Spencer Holmes Ltd
Chapman Sanders Consultants	Knowles Consulting	Stephen R Mitchell Consulting
Charles Consulting	Kordia Ltd	Stiffe Hooker Ltd
Chester Consultants Ltd	Lapish Enterprises	Stiles & Hooker Ltd
CHP Wellington Ltd	Lewis & Barrow Ltd	Structex Limited
Chris W Howell & Associates Ltd	Lewis & Williamson	Structure Smith Ltd
City Solutions	Lewis Bradford & Associates Ltd	Thorburn Consultants NZ Ltd
Civil Engineering Tokoroa	LHT Design	Thorne Dwyer Structures
Clearwater Construction	Linear Design	Tonkin & Taylor Ltd
Clendon Burns & Park Ltd	M A Corkery & Associates Ltd	Tony Tay Group
Compusoft Engineering	Macdonald Barnett Partners Ltd	Transfield Worley Ltd
Connell Wagner Ltd	Manktelow Consulting Engineers Ltd	Transport Design & Certification
Dainty Alderton & Associates	Marino Consultants & Associates	Transport Technology Ltd
Davidson Partners Ltd	Markplan Consulting Ltd	Transtech Dynamics Ltd
Davis Ogilvie & Partners Ltd	Martin Meyers Structural Engineer	TSE Group Ltd
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Derek Booth Consultancy Ltd	Maunsell Ltd	TSV Consultants Ltd
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Dodd Civil Consultants	Milward Finlay Lobb Ltd	Waitakere City Council
Don Thomson Consulting Engineers	Mitchell Vranjes Consulting Engineers	Walker Group Ltd
Duffill Watts & King Ltd	Mobil Oil New Zealand Limited	Weber Consulting
Dunning Moore & Associates	MSC Consulting Group Ltd	Wellman Associates Ltd
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East Coast Steelwork Ltd	Nagel Consultants Ltd	
Emc_	Nancekivell Cairn Ltd	

Ordinary Other

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Intergrated Maintenance Group Limited	Trustpower Ltd
Mainzeal Property & Construction Ltd	



Windflow Technology's Windflow 500 is a New Zealand development with over 85% local manufactured content

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 Dispatch and Garlick Ltd
 Donovan Group NZ Ltd
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 Energyworks Ltd
 Equipment Engineering Ltd
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 Pakuranga Engineering Ltd
 Papakura Engineering Co Ltd
 Patton Engineering Ltd
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 UCOL
 Unitec Applied Technology Institute
 University of Auckland
 Victoria University of Wellington
 W J Cadzow & Associates
 WELTEC
 WINTEC
 WITT
 X-Ray Laboratories Ltd



The Kawerau Geothermal power station is an excellent example of NZ's geothermal engineering expertise

HERA Staff

Administration

Director	Dr Wolfgang Scholz	Dipl-Ing, PhD, EWE
Accounts Officer	Kam Subramani	B.Com

HERA Information Centre (HIC)

Manager	Brian Low	BA, PSNZ
Publications Officer	Pauline Hayward	
Librarian	Sally Geard	BA, BSc, Dip-ILS (Level 5)
Receptionist	Raewyn Porter	

Heavy Engineering Industry Development

Manager	Bill Lovell	
Management & Quality Services Ltd (under contract)	Norm Stannard	C.Eng, MIMech, DMS, FIPENZ

Inspection & Quality Control Centre (I & QC Centre)

Manager	Peter Hayward	CWE, IIW IWT, IIW IWI(C), Professional NDT Level 3, MINDT
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Structural Division

Manager (from July 2008)	Dr Stephen Hicks	BEng (Hons), PhD (Cantab)
Manager/Senior Structural Engineer (till Feb 2008)	Dr Charles Clifton	BE (Hons), ME, PhD, FIPENZ, FNZSEE
Finite Element Analyst	Nandor Mago	BE, ME, MIPENZ, CPEng, NAFEMS Registered Analyst (Advanced)
Structural Engineer	Raed El Sarraf	BE (Civil), MEng Studies ME Civil (Hons), GIPENZ
CSA Business Development Manager	Rosemary Scofield	BArch, MArch, NZIA (Academic), Dip SmBusMgmt, Reg Arch
CSA Technical Manager	Richard Green	MSc, BSc, Dip. Env. Impact & Risk Assessment, Dip. LCA & Sustainability

New Zealand Welding Centre

Manager	Dr Michail Karpenko	Dipl-Ing, PhD, IWE
Senior Welding Engineer	Alan McClintock	IIW IWT, IWI, CWI
Welding Engineer (till March 2008)	Rian Holdstock	BA Maths & Env. Science (Hon), MSc Pipeline, MSc Welding
Materials Engineer	David Wrightson	BE (Hons), GIPENZ

Metal Forming

Post-graduate Research Student	Holger Heinzel	Dipl-Ing (ME)
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Standing, from left:

Alan McClintock, Raewyn Porter, Pauline Hayward, Nandor Mago, Raed El Sarraf, Holger Heinzel, Sally Geard, Kam Subramani, Dave Wrightson, Rosemary Scofield, Rudy Megevand, Richard Green

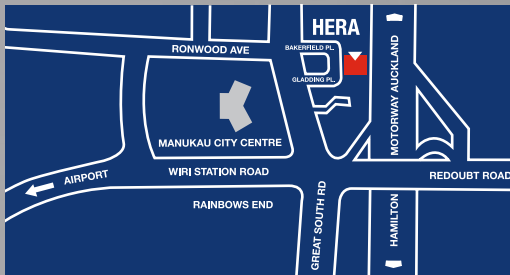
Sitting, from left:

Brian Low, Peter Hayward, Wolfgang Scholz, Stephen Hicks, Michail Karpenko, Bill Lovell

HERA

Innovation in Metals

METAL = THE WORLD'S
MOST RECYCLED
MATERIAL



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