Healey Engineering Pty Ltd

www.understanding**energy**.com.au
Mechanical, Electrical, Energy, Water, Sustainability

Business Profile & Background

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Services Offered

Healey Engineering Pty Ltd offer their services as Consulting Engineer, designer, and advisor, in the areas proposed below. We request listing in your Register of Consultants, and be considered for future projects.

Building Mechanical Services
Energy Efficiency Optimisation
Air conditioning, ventilation, fire prevention and smoke control
Passive and active ventilation thermal comfort systems.
Coolrooms, freezers, commercial refrigeration.
Domestic hot water, compressed gases and other piped services.
Compliance & Standards.

Remote Power Stations & Infrastructure
Diesel, solar, wind, hybrid power stations.
Power transmission & distribution networks
RAPS design, research and optimisation.

Building Energy
Energy management, and BMCS (Building Management and Control Systems).
Energy audits and energy accounting, total energy use estimation.
Passive solar design, natural ventilation, night cooling, and alternative heat and cooling strategies.
Energy efficiency managers.
Sustainable outcomes.

Renewable and Sustainable Energy
Grid-Connect solar power systems.
Remote electric power systems by photovoltaic (PV solar electric) and wind turbine energy.
Passive solar building design, optimisation of thermal mass.
Landfill gas utilisation.
Solar heating and hot water systems.
Heat recovery.

Professional Services Offered

- Concept advice and options at the pre-design stage of a project
- Design, documentation, tendering and inspections of new systems, upgrades and refits.
- Maintenance advice, tendering and inspection.
- Reports on conditions of services, energy efficiency, sustainability, effectiveness, owning and life cycle cost, and asset strategies.
- Energy Audit Reports: buildings and associated sites, and assistance with implementation.
- Sustainability including GW, GHG and OP assessment.

Business Structure

Independent Advice

Healey Engineering are independent advisors and designers. We have no financial interest in products, equipment manufacturers / agents, contracting companies, or other consulting businesses.

Objectives and Design Approach

Our aim is to add our skills and add value to the capabilities that the Client has presently available. We seek optimum, effective and sustainable outcomes for our Client and society.

We inform our Clients of the range of options available. These can include the energy, life cycle, capital costs, and the resulting comfort and effectiveness of the installations. Close liaison and regular feedback are fundamental to a satisfactory outcome

We prefer to work on an agreed fixed fee basis, wherever it is possible to determine the scope of work in advance. This is more effective for our Clients. If a time-basis fee ("hourly charge") is necessary, we can discuss methods of cost control to eliminate any surprises.

We work on projects where a full consulting service is required, and also where we can assist the Client with specific aspects of the design, tendering or inspections. This reduces the Client's overall costs and targets our skills to the areas where we are most effective.

Clients

Since being established in 1991, Healey Engineering has had the privilege to work with many highly valued Clients. Most Clients have involved us with repeat business and new projects, and we have retained the confidence of all we have worked with, in that period.

Our projects and Clients are throughout Australia, particularly in SA, NT, and in WA from Kalumburu, to Warburton, to Albany, and of course throughout the Perth region.

Our Clients include large and small private businesses in manufacturing, food services, industry, hotels, property investment and management. We have conducted projects for numerous local, State, and Federal government bodies, and semi autonomous government bodies.

Design Methods and Facilities

Assessment of energy use requires extensive computation, as well as specialised knowledge. Extensive use is made of computer-aided design and database tools. This involves both commercially available software, as well as a variety of purpose written design tools.

We keep databases of project configurations, energy indices, and cost structures. We also constantly update our weather files database.

We have developed a series of equipment sizing, load profile estimation, energy estimation, capital cost, and maintenance cost software tools.

Remote Power Systems

Renewable Energy & Diesel Power System Projects

Healey Engineering Pty Ltd are designing and have completed numerous projects, including more than 70 individual remote power projects since 1998 to a total value exceeding $31,000,000.

We have undertaken numerous projects that include or upgrade renewable energy components. These include solar photovoltaic, wind turbine and diesel hybrid electric power systems for remote communities, and Mains grid Connect projects. Our projects include the following:

- Since 2007: Solar Hybrid and Solar-Wind Hybrid projects underway for numerous Client
  9 separate sites worth $6 M
- Since 2007: Grid-Connect Solar installations of 100 kW
- 1997 to 2007: Solar Hybrid Power Installations in Western Australia
  18 locations total value $ 4 M
- Solar Hybrid & Solar-Only Power Installations to the Northern Territory locations
  6 independent projects total value $3 M
- New powerstation and major power and automation upgrade projects for RAESP & NAHS:
  More than 10 sites
- Since 2007: Inspections, design reviews, site audits, purchase specifications (small works) and advice to Client regarding numerous power installations

Program Management (between 1997 to 2006) of Remote Power Infrastructure Projects

Healey Engineering Pty Ltd has undertaken the RAESP & NAHS (WA & NT) program management. Remote power maintenance includes more than 100 sites and more than $70 M asset value.

(a) ***ATSIC RAESP WA 2004 to 2006***

Capital works design and technical assistance to the RAESP Program Managers, Parsons Brinckerhoff WA, involving remote power infrastructure projects to all WA remote ATSIC communities.
Program Management and design involving maintenance and new capital investment in remote powerstations for aboriginal communities throughout WA, for DH&W.

(b) ***ATSIC NAHS WA 2000 to 2006***

Capital works design and technical to the current NAHS Program Managers, Parsons Brinckerhoff
Program Management role regarding capital investment in remote power infrastructure for aboriginal communities throughout WA, for ATSIC.

(c) ***ATSIC RAESP WA 1997 to 2004***

Capital works design and technical assistance to the RAESP Program Managers, Arup Group, involving remote power infrastructure projects to all WA remote ATSIC communities.
Program Management and design involving maintenance and new capital investment in remote powerstations for aboriginal communities throughout WA, for ATSIC and AAD.

Sustainable Power Systems
the holistic approach

In all projects we have promoted awareness of the holistic issues, to ensure all designers and installers consider designs from a sustainable approach. The issues include:

The Single-Diesel system

(for all sizes of installations) - Numerous locations rely on one diesel genset operating “24/7” for many months (say in the “wet”), with maybe another set for the remainder of the year. This is energy inefficient, and unsustainable, as these gensets are always oversized and underloaded. The “un-sustainability” is usually hidden. The fuel costs (20% to 55% higher than need be) is paid from a different account than the repairs, and a different account than the purchase of a new machine. Lights and appliances are deliberately left on to “give some load” to the genset. The time in solving problems and oil changes are “free” because the time of valuable people is not recorded (they could be doing other valuable things). Unreliability is never costed, but costs. Time is wasted writing purchase orders for failing equipment, and the boss’s time is wasted. These costs are never fully brought together, so the real cost is never acknowledged.

Load Estimation & Over-sizing

Numerous remote locations in the past, have had grossly oversized power systems. Designers normally size power systems with emphasis on the peak kW delivered, usually referred to as the Maximum Demand (MD). Many do not appreciate that in small and medium communities, the peak loads are very brief, and the minimum loads are dramatically below the peak [they may be 5% of the peak or less] and the minimums are very sustained.

The resulting oversizing has dramatically increased fuel use, and damaged gensets with underloading, all beyond the means of community members to resolve. The genset damage results in grossly unreliable power. The result has been power that is expensive to build, expensive to run, and less reliable than necessary.

Building Services and Building Energy

We have completed various new building projects, refurbishments, renewable energy, and energy management, projects in the Perth area, and throughout Western Australia.

In addition to numerous standard air conditioning and ventilation projects, the variety and quality of projects we have been involved in are only partly illustrated by the following.

Commercial, Institutional, Residential Mechanical Services & Air Conditioning:
A wide range of projects from $10 M to $10K project value.

Geothermal Low Energy Air Conditioning:
The Gravitational Observatory, in Gingin WA, for the Department of Physics, University of Western Australia. Since monitored by UWA Mechanical Engineering to demonstrate effective temperature control.

Solar Power & Geothermal Energy for Commercial & Residential Buildings:
Grid-Connect Solar and Solar-Diesel-Wind Hybrid projects providing solar and wind energy electric power systems to buildings and communities.

Low Energy Comfort & Air Conditioning for Commercial & Residential Buildings:
A number of projects utilising automatic natural ventilation, indirect evaporative cooling, solar air heating, heat recovery, night cooling, optimum economy cycles, and thermal storage, to achieve cooling and heating at very low energy consumption and capital cost.

Energy Management & Energy "Pre-Audits":
Desktop design analysis of energy utilisation for new buildings and facilities during the design and construction phases, numerous projects.

Other Projects:
- Grid-Connected Solar Power for suburban buildings
- Apartments and Commercial Buildings
- Integrated energy-efficient buildings with solar and wind power systems
- Coolrooms, freezers, blast freezers, and commercial refrigeration.
- Office and industrial comfort and ventilation for Alcoa World Alumina
- Computing Centre air conditioning.
- Implementation of digital electronic building management systems (BMCS) for buildings, including:
- Extensive building and services energy audit – Presently in excess of 110 individual projects.
- Advanced Vehicle Emissions and Electronics Facility for the Orbital Engine Company. (offices, workshops, test facilities)
- Energy Efficiency and Management lecturing for Western Power, Curtin University, TAFE, Murdoch University, Greenskills and the Royal Australian Institute of Architects
- Energy industry advice to Local Government and Western Australian State Government, via the Alternative Energy Development Board (AEDB), and it's predecessor, REAC. Project manager and consultant to the Office of Energy.
- Energy Efficiency projects for Western Power: Home Energy Service Program design and implementation in Hopetoun, WA. A project to promote energy efficiency throughout a town.
- Albany Greenhouse Allies program for Western Power Corporation.

Awards

Personal Award

2000: Western Australian Energy Efficiency Awards
Finalist: Energy Achiever Award, awarded to John Healey

Our Clients Awards

Many of Healey Engineering clients have won significant project awards. We congratulate our clients, and all members of their design and construction teams. We are proud of our major contribution to these projects.

This list is not exhaustive, simply representative.

1998 Premiers Award (WA) **-** 'Innovation or Excellence in Contracting of Services"
[also finalist in the "Provision of Services to Regional Western Australia" category]
Aboriginal Affairs Department of WA

1998 Western Australian Energy Efficiency Awards - Commercial Buildings category
City of Melville

1996 Western Australian Energy Efficiency Awards - Commercial Buildings category
Perth Zoo

1994 National Energy Award

Perth's Superdrome (now Challenge Stadium)

1988 Australian Design Award

1993 National Energy Award

Energy Auditing & Energy Management

Healey Engineering are active energy auditors. We have completed the many energy audits and pre-audits, many being federal EEAP or state FEEU audits, and have assisted many Clients with their energy management programs. Energy Audits include:

Complete Energy Audits

(Medical)
Northampton Hospital
Three Springs Hospital
Morawa Hospital
Mullewa Hospital
Yalgoo Clinic
Bennett Brook Hostel for Disability Services WA
(Hospitality Industry)
Observation City Resort Hotel
The Lodge Motel, South Hedland
Hunt St Village Motel, South Hedland
Kings Park Restaurant and Tea Rooms
Fraser's Restaurant, Kings Park
Ascot Racecourse Facilities
Belmont Park Racecourse Facilities
Golden Mile Village, Kalgoorlie
Perth Airport International Terminal, Cafes, Bars, Restaurant
KFC Store, Tuart Hill
Mindarie Keys Hotel
Queens Hotel, Highgate
Hillview Lodge, Tom Price
Supermarket & Shops, Pannawonica
Continental Hotel, Broome
Cable Beach Club, Broome
Union Tavern , City West
Rottnest Island Hotel
Email Belmont Wharehouse & Offices
(Recreational)
Mandurah Aquatic Centre
Leeming Recreation Centre
Recreational Centre, Thornlie
Kalgoorlie Boulder Recreation Centre (design pre-audit)
(Dairies)
Mostert Dairy, Redmond (near Albany)
"Sinkatinnie" Dairy, Redmond (near Albany)
(Educational)
Samson Primary School
Montrose Primary School and Education Support Unit
Bull Creek Primary School
Tuart College, Tuart Hill
Warnbro Community High School
Ballajura Community College
West Morley Primary School & Education Department P2000 Offices
South Hedland Senior High School
Rockingham TAFE College
Katanning Senior High School
Narrogin District High School
Narrogin Agricultural College
(Offices)
Offices, City of Belmont
Offices, City of Rockingham Administration

Offices, (3 sites) for the Environmental Health Directorate WA
Offices, City of Melville Administration
Offices, City of Bayswater Administration
Offices, City of Gosnells Administration
Offices, TAB Office Building, Herdsman
Offices, Lotteries House Office Building
Offices, 169 Hay St, East Perth Office ("6PR Building")
Offices, Frederick St, Albany
Offices, BHP Mining, Port Administration Building, Port Hedland
Offices, GPO Forrest Place, Perth
Offices, Readymix administration, Perth
Offices, 44 Kings Park Road

(Local Govt)

City of Belmont
City of Rockingham Administration
City of Melville Administration
City of Bayswater Administration
City of Gosnells Administration
Town of Northam, Facilities (4 buildings)
Town of Kwinana (9 separate major facilities)
City of Gosnells (6 separate major facilities)
Town of Albany Facilities (5 buildings)

(Various Categories)

Agriculture WA facilities, South Perth, (walk through audit)
Redmont Track maintenance camp, BHP mining
Chapman Way Shopping Arcade - Geraldton
McDougall Park Nursing Home
South Perth Senior Citizens Centre
Manning Senior Citizens Centre
Metro Bus Palmyra Depot and Offices
Orbital Engine Company, Balcatta
- Offices
- Manufacturing
- Testing and Research Facilities

Mt Romance Sandalwood Oil Production Facilities & Offices
Sheen Analytical Laboratories Welshpool
Russell Laboratories, Victoria Park
Quadrascan Graphics Offices and Production

Rottnest Island
- Design of Energy Audit Brief
- Management of Audit Consultants

Audit of Supply Side (powerstation) and Demand Side (Community)

Maldives – Huvafen Fushi Resort – North Male Atoll
Cattle Station Properties in WA – (4 off)
CALM WA Cape Range / Exmouth (2 sites)
CALM WA Rangers Facilities (3 separate sites) at Millstream & Karijini
CALM WA Perup Forest Ecology Centre
CALM WA Doolgunna Station
CALM WA Cervantes / Nambung Interpretive Centre
Oombulgurri Community (on the Forrest River)
Jigalong Community (near Newman)
Punju Community (near Hedland)
Jinparinya Community (near Hedland)

Energy and thermal comfort audit

For CALM WA & DH&W: twenty eight (28) CALM rangers houses in WA

Profile

Edward John Healey

BE. MIE(Aust)
Chartered Professional Engineer (CPEng)
Accredited Solar Energy Designer

Managing Director & Principal Engineer

Qualifications

Bachelor of Engineering, University of Western Australia (BE UWA) 1975
Chartered Professional Engineer (Australia) CP Eng.
Member: Institution of Engineers Australia (MIE Aust) (No 209584).
Member: EESA – The Electric Energy Society of Australia.
Member: MESA – The Maintenance Engineering Society of Australia Inc.
CEC (Clean Energy Council) Accreditation (Registration No F 1452).

Experience

Mechanical & Electrical Engineering Design & Contract Administration

- 36 years active professional involvement in building engineering services.
- 30 years involvement in renewable energy and energy management.
- 19 years engineering business owner manager and principal engineer.

Remote Power Systems
Design, supervision and project management experience with isolated power infrastructure, solar photovoltaic, wind energy, hybrid and RAPS systems.

Building Mechanical Services & Building Management Systems
Broad experience in design and supervision of building services projects, in Western Australia, in every type of facility Office, Hotels, Laboratories, Retail, Schools, Universities, Correctional.

Sustainable Energy Use
Specialist in Building Energy and Building Services Energy. Experienced energy auditor and energy manager. Accredited Energy auditor with the (now discontinued) Federal Government EEAP scheme. Several award-winning energy efficiency projects. Design and installation experience in solar thermal energy systems.

Solar & Renewable Energy Designer
CEC (Clean Energy Council) registration Full Accreditation to design photovoltaic power systems (Registration No F 1452). Extensive design and installation experience in solar electric and solar thermal energy systems.

Remote Power Infrastructure Program Management

- ATSIC/ATSIS, NAHS WA & NT (1999 to 2006)
- ATSIC/ATSIS, RAESP WA (1998 to 2006)

Working with NAHS CSPM in each State and the RAESP CSPM in WA, John Healey has helped ATSIS and the CSPM's to deliver reliable and sustainable power to residents in scores of remote communities throughout WA. This has been achieved by setting consistent standards for needs analysis, design procedures, and installation practices. Constant overview of work by designers, installers, and service crews was required. Regular review of technical standards and environmental issues, Technical Forums, recommended standards, has resulted in sustainable practices to be the norm, and automatically on-going.

Remote Power Design & Contract Administration
As a Design and Contract Administration Engineer for the NAHS WA & NT, RAESP WA, and other remote power Clients, more than $10M of new power systems and upgrades have been delivered. Consequently John Healey is up to date with the design and maintenance requirements of isolated power systems. This has enabled knowledge of the optimum systems resulting consistent standards delivered.

Accreditation & Membership

M.I.E. Aust
Member of the Institution of Engineers Australia

MESA
The Maintenance Engineering Society of Australia Inc

EESA
The Electric Energy Society of Australia

AIRAH
Australian Institute of Refrigeration and Heating

BCSE
Australian Business Council for Sustainable Energy
Full Accreditation to Design Photovoltaic Power Systems – Registration No F 1452

Previous Memberships:

- Renewable Energy Advisory Council, (REAC) 1993, 1994
- Alternative Energy Development Board, (AEDB) 1995,1996,1997, 1998, 1999, 2000.
- Building Science Forum (President 1996, 1997, 1998, 1999, 2000)
- Solar Energy Industries Association of W.A. (Past President)
- Solar Housing Interest Group
- Standards Association of Australia assessment panels:
- Design Mark Assessment Panel
- Australian Design Award Assessment Panel

Personal Energy Award

2000 WA Energy Efficiency Awards, Finalist, Energy Achiever Award

Project Design and Energy Awards

Some of the awards won by our Clients on projects we have been heavily involved with are:

1998 Premiers Award for Public Sector Management
Aboriginal Affairs Department (AAD) WA, RAESP Program.

1998 Western Australian Energy Efficiency Awards, Commercial Buildings category
Leeming Recreation Centre

1996 Western Australian Energy Efficiency Awards, Commercial Buildings category
Perth Zoo, Operations Buildings, Western Australia

1994 National Energy Award
Challenge Stadium [Perth's Superdrome], Claremont, Western Australia

1993 National Energy Award
Solar Design Centre Building, Western Australia

1988 Australian Design Award
Solar Design Centre Building