



new technologies
for the
new millennium

Our entrepreneurial consulting engineers
design, develop and commercialise new
and innovative global products



International Activities



Innovative New
Product Concepts



Medical Devices

Research

- Identifying, sourcing and structuring information

Concepts

- Including Intellectual Property Development

Analysis

- Computational Fluid Dynamics (CFD), Finite Element Stress Analysis (FEA), Computer Simulation

Prototyping

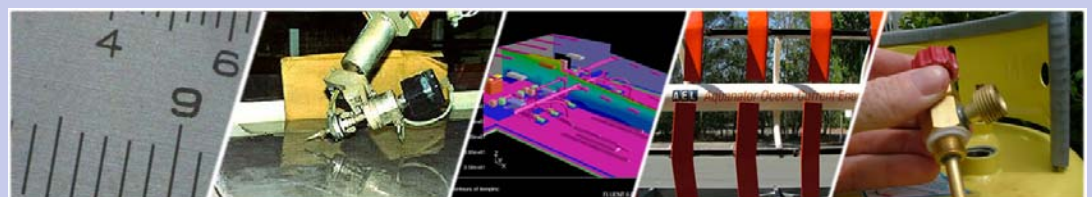
- Complete prototype development from concept to in-service experimental testing

Design

- Advanced machine and product design including 3D modelling (SolidWorks)

Commercialisation

- Comprehensive technical reviews and advice for business planning, marketing and R&D Finance



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Olympic Athlete Foot Force Sensor for Kayaks.

In a field as competitive as an Olympics final, e3k was awarded a certificate of High Commendation in The Institution of Engineers Australia Queensland Division 2001 Excellence Awards, for the design and development of a footpad sensor device.

The training program for Australia's athletes had benefited from a footpad sensor device developed to provide information about the forces applied by athletes to the foot bars in their kayaks.

The eight Foot Pressure Pad Sensors developed by e3k were initially used only by the Queensland Academy of Sport. However, in view of their contribution to advanced training they were later adopted by the Australian Institute of Sport, Canberra

Aircraft Tie Down Device.

e3k was commissioned to design a flush-mounted anchor point (FMAP) at the Brisbane International Airport to be used mainly by Boeing, Airbus and McDonnell Douglas freighter aircraft. The work included innovative concept generation and Finite Element Analysis (FEA) of the device as well as the securing concrete slab. The device was successfully proof tested in situ.



Ocean Current Renewable Energy Generator

e3k was engaged in 2000 to carry out engineering research into the feasibility of using ocean currents to generate electricity. Early concepts were examined using scientific methods including mathematical modelling and computer simulation. Further concept development occurred and a novel concept-validation device was designed and tested in the Clarence River in Northern NSW in December 2003. Further engineering development by e3k equipped the device with Aquafoils using proven hydrofoil theory. In June 2004 the technology was accepted into the Australian Technology Showcase. The technology is now being commercialised by Atlantis Energy Ltd.

Medical Drug Delivery Device.

e3k worked with Vapotronics Ltd between 1993 and 1997 to research and develop the concepts and technology behind a very novel pulmonary drug delivery system which will find application in the asthma and quit-smoking markets. The work involved extensive brainstorming to identify the most viable and cost effective technology suitable for the task. Initial experimental research and development was also conducted together with the management of a broad group of medical consultants to the project. Initial device prototypes were constructed using rapid prototyping stereolithography technology. The technology is now the subject of a worldwide exclusive license to Canon Inc, from Psiron Ltd.

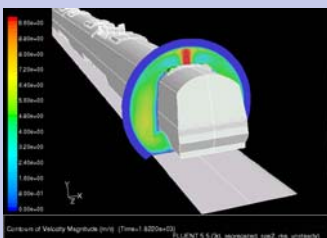


Maxi Muncher Garden Shredder.

Rover Mowers Limited, part of the Australian GWA Group of Companies, engaged e3k in 1990 to design and develop the current 1.8 kW electric garden waste shredder now marketed as the "Maxi Muncher". Sales have surpassed expectations with the product continually being on back-order. The systematic development process consisted of initially bench marking competitive machinery from Germany, the USA, and from within Australia. Logical engineering development was undertaken to provide Rover with a superior product within budget.

Technofast Industries Pty Ltd.

e3k has been engaged periodically over 15 years to provide design input and testing expertise for an innovative hydraulically-actuated fastening device. e3k has provided extensive computerised Finite Element Analysis (FEA) and experimental stress analysis for a new product destined for the Japanese Nuclear Power Industry. Interaction with Japanese engineers in Toshiba plus the provision of drawings and summary reports on the design have followed. Development work continues with this company for European and US Markets. Technofast Industries Pty Ltd received an award for "Commercial Technology of the Year" at the Global Energy Awards in New York, 2004, and were finalists in the Science and Technology Category of the 2005 Premier of Queensland Smart Awards.



Computational Fluid Dynamics (CFD) HVAC Study of a Train Subway.

e3k was engaged in 2001 to undertake a computational fluid dynamics study of a new subway in India. The modelling was used to optimise tunnel ventilation to ensure operational air-conditioning in the event of a train failure mid-tunnel. The simulation included heat transfer to the ground and through tunnel walls. Traditionally this process had been an exercise based on in-house empirical data. Additionally, modelling of a typical platform situation was undertaken to enable optimisation of the station ventilation systems. Heat input from carriage brakes and air-conditioners was incorporated into the simulation.