Manufacturing in Auckland

AN INVITATION TO INVEST IN THE HIGH-VALUE MANUFACTURING SECTOR

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World class Performers

LANZA TECH TECHNOLOGY TURNS INDUSTRIAL WASTE INTO LOW CARBON FUELS AND CHEMICALS WAS NAMED IN THE 2012 GLOBAL CLEANTECH TOP 100.
Specialised manufacturers are the unsung heroes of the New Zealand economy and its export growth. They are a talented, determined group designing and creating innovative, value added products, and many of them are based in Auckland.

They are renowned for producing quality – finely engineered products, equipment and intellectual property that attract international attention. They scour the world building relationships and creating markets of their own. A potential investor can open new doors and provide further market access, particularly distribution networks.

High-Value Manufacturing, including using advanced materials, also provides a platform of skills, knowledge and goods for other industry sectors. The manufacturers support food and beverage processing (equipment and packaging), health technology, agriculture and horticulture, marine, aviation, electrical and electronics, transport, and construction industries.

The precision engineering in Auckland has crafted a range of professional and scientific equipment; smart whiteware and other domestic appliances; pumps and compressors; machine tools and parts; lifting, material handling and other specialised machinery; and heating, cooling and ventilation systems. A piece of machinery can contain hundreds of parts, many of them individually designed and manufactured.

Advanced materials are tailored to specific applications, and mainly involve plastics, coatings, polymers, composites, ceramics, metal alloys, processed wood materials such as medium density fibre (MDF), and more recently nanofibre.

Newly-launched government agency, Callaghan Innovation, is dedicated to unlocking innovation potential and driving commercial and exporting success through increasing capabilities, experience and skills in high-tech companies.
Wide variety of products

Auckland has a relatively large specialised manufacturing sector, with more than 2500 machinery and equipment companies employing more than 23,000 people. A feature of the sector is that the manufacturers can adapt to customised and flexible short-run production cycles, providing total solutions for clients.

High-Value Manufacturing (including marine) contributed $2.6 billion of value added growth in 2011, representing 5.4 per cent of Auckland’s total gross domestic product (GDP). A third of the local industry is taken up with food and beverage processing.

Some examples of niche products are: presses, crushers for wine and beverage; machinery to sort, screen and wash mineral products; horticultural harvesting, cleaning and grading machinery; tools for forging, die-stamping and bending metals; machinery for dishwashing and bottle washing and filling; weighing and milking machines, and machines to clean, iron and impregnate textiles.

Auckland has innovative electrical engineering businesses which compete in markets ranging from data loggers, diallers to traffic lighting systems, fire alarm reporting system and fuel system electronics.

These businesses create a competitive advantage by combining power electronic and electrical engineering capabilities with wireless and mobile radio, inductive power, telemetry and motor control.

Marine is the fastest growing manufacturing-based industry in New Zealand, and Auckland is the centre of the action, with annual sales of more than $1.2 billion – two thirds of the national marine revenue. Sales in the Auckland industry are estimated to reach $1.8 billion by 2020, and national exports are expected to double, from $650 million in 2012 to $1.3 billion by 2020.

Aviation services is an emerging sector made up of capable and entrepreneurial companies. The industry is implementing new applied technologies including titanium at very competitive costs. It has developed a first-world capability in many facets of aerospace – 14 aviation design and 22 manufacturing companies are certified by the New Zealand Civil Aviation Authority. A half of the companies are based in Auckland.

The capabilities include modification of the world’s most sophisticated aircraft, complete design and build of small military and general aircraft, component manufacturing in metal and composite materials, and air traffic control and navigation systems.

High-Value Manufacturing (including marine) contribution to Auckland’s total GDP in 2011.

The Auckland High-Value Manufacturing sector contributed $2.6 billion in revenue in 2011. The target, under the economic development strategy, is to double revenue within 10 years.

5.4% $2.6 billion
Leading innovators

Auckland is home to many of New Zealand’s leading technology firms which are world class designers and manufacturers. They include:

- **Howick Ltd** which specialises in roll forming machines for steel frame construction.
- **Glidepath** which has installed baggage and cargo handling systems into airports around the world. It has completed more than 550 projects in 60 countries, and has fully integrated manufacturing facilities in Auckland and Dallas in the United States.
- **Rakon**, a global leader in advanced crystal and oscillator technology for the design and manufacture of frequency control solutions.

Key opportunities

Worldwide demand for agricultural technologies, including machinery, is growing and has strong export potential. As the amount of land available for producing food is decreasing around the world, farmers and growers are turning to technology and machinery to help increase the efficiency of farming and horticulture.

There is an increasing market demand for lighter, stronger and more sustainable materials, and alloy powders can come into their own. Advanced materials usually outperform conventional materials with their superior properties such as toughness, hardness, durability and elasticity.

The development of advanced materials has lead to the design of completely new products from warships to medical devices and computers. Some advanced materials are already well known, such as polymers, metal alloys, ceramics, semiconductors, composites and biomaterials. But there are more impressive product groups like carbon nano materials, activated carbon, titanium and others. These materials will be developed to suit industrial needs.

Other areas of new materials research include spintronics, amphiphilic (water soluble) materials, superconductors and advanced engineering polymers. The focus of advanced materials applications will be in high value markets like aerospace, defence and healthcare.

Research and development is taking place in many of these fields in Auckland, and the local firms, with experienced and skilled staff, are quite capable of turning the ideas into reality, first producing prototypes.

Auckland is well supported by education and research institutions, such as The University of Auckland, Massey University at Albany, and The Auckland University of Technology.
Case study:  
**Buckley – a magnet for new business**

When the global financial meltdown hit Buckley Systems in 2009 the quick-thinking management saw the event as an opportunity and challenge, rather than as a disaster.

“We didn’t expect the lean period to be so long – the demand for semiconductor equipment dropped off and we had to look around the marketplace,” said Steve Howe, Buckley’s chief financial officer.

Auckland-based Buckley, established in 1986, had nailed the global electromagnet manufacturing scene. Its precision magnets went into ion beam implant machines that produce 90 per cent of the world’s silicon chips.

Technology giants Intel, Samsung, LG and Motorola wanted ion implanters to maintain a consistent performance so their machines worked exactly the same in all locations.

It put Buckley in a strong, competitive position for its magnets which guide the beam through the critical stages of making the computer chip.

By 2009 manufacturers built up a stockpile of chips and the global market for semiconductor equipment fell from $US 40 billion ($NZ 48b) to $US 16 billion ($NZ 19b).

“Demand for solid magnets is very cyclical and can be risky,” said Mr Howe. “It’s specialised alright and it’s not for the faint hearted. The semiconductor market has come back quite well, but to grow the business we had to de-risk it. The diversification strategy is working.”

Buckley, employing more than 300 people and having annual turnover in excess of $70 million, cushioned itself from any future downturns by developing a bold diversification plan.

It moved into manufacturing laminated electromagnets for charged particle beamlines or accelerators, and is developing opportunities in the medical field through proton (radiation) therapy.

Its solid magnets are also used in the more traditional photon radiation machines for treating cancer, and they go into the machinery that implants the glass or screens onto 3D televisions, iPads, iPhones and Android devices. Buckley made its biggest magnet for the display market, weighing in at 35 tonnes.

Buckley is completing advanced engineering work with solar panels using its electromagnets. And it makes quality vacuum chambers using its own friction welding technology that melts the aluminium and bonds it together to make it look like one block.

Soon after the 2009 downturn, Buckley landed a contract with the Taiwanese government to produce electromagnets for a particle accelerator complex servicing a series of laboratories. The accelerator provides a ring of light, 80,000 times the brightness of the sun.

The innovative Auckland company has also secured a similar particle accelerator project for the United States Department of Energy which is putting in new laboratories at its Long Island Brookhaven research and development facility.

Buckley produces 700 magnets of different sizes for these projects.

Buckley sees big opportunities in the medical field. It has signed a $3 million contract with Toshiba, and is also talking with other Japanese multi-nationals Hitachi and Mitsubishi about producing laminated electromagnets for the equipment that greatly accelerates proton particles for cancer treatment.

The protons go through the skin and directly hit the target, being the tumour, whereas the photon therapy affects a wider area of (good and bad) cells. The proton therapy involves 42 days of intense treatment to kill the tumour – but it is expensive.

Buckley is working with the multi-nationals to reduce the cost. Buckley received $4 million worth of government research and development (R&D) funding and is committed to spending $17 million of
its own money over three years. Mr Howe said the multi-nationals were planning to build new treatment clinics using the proton therapy. "There is a demand and we are right on the cusp of the technology."

He believed that about 25 new clinics will be built in United States, Asia and Europe over the next five years, and the first proton therapy contract with Hitachi will likely come through in 2014. His company is already providing Hitachi with laminated electromagnets for a new facility in the United States.

Buckley has become the biggest specialised electromagnetic manufacturer in the world, and its founder, Kiwi engineer Bill Buckley, was named the Ernst and Young New Zealand Entrepreneur of the Year in 2011, and a Companion of the New Zealand Order of Merit in 2013.

All its sales are exports with the United States and Japan dominating Buckley’s markets. It has a sales office in Boston, the home of semiconductors, and its manufacturing operations in the Auckland suburb of Mt Wellington are spread over four buildings and 20,000 sq m of space.

Buckley’s skilled tradespeople are paid well above salary awards as part of a staff retention plan. The company sub-contracts work to 11 machine shops in Auckland, creating further employment.

Exporting power

Callaghan Innovation is accelerating commercialisation of innovation in New Zealand, and has operations in Auckland, Wellington and Christchurch. It is a one-stop shop for support that enables businesses to invest more in research, science, engineering, technology and design so they can become more successful in the global market.

The agency manages a $115 million a year portfolio of government funding and grants to support business innovation and capability building. It represents one of the government’s key priorities to help high-tech firms become more competitive and to build a stronger, more competitive economy, particularly in the manufacturing and services sector. This sector presently accounts for nearly 30 per cent of New Zealand’s gross domestic product (GDP).

Callaghan Innovation connects high-tech companies with scientists, researchers, engineers, technologists, designers, as well as experts in innovation and business, finance and intellectual property management.

The agency is focusing on industries with high growth potential such as food and beverage manufacturing, agri-tech, digital and health technologies, therapeutics, high-value wood products, and mechanical engineering.

Callaghan Innovation funds up to 50 per cent of research and development projects, and is supported by another government agency, New Zealand Trade and Enterprise (NZTE), which has 36 offices around the world and helps improve market access, as well as identify export opportunities.

Callaghan and NZTE together provide a robust ecosystem, from developing an idea, commercialising and exporting, and local manufacturers are well looked after.
In-house development

Many Auckland manufacturers have become centres of excellence through in-house research and development. On most occasions, they are developing existing niche products, making them user friendly and robust. But they will also produce customised, state-of-the-art new products. The machinery and products are all about quality – proven by increasing sales to businesses worldwide.

Buckley Systems, for instance, is committed to spending $17 million over three years to develop laminated electromagnets, particularly for the medical sector. That commitment has been matched by government funding of $4 million. The research and development takes the company into the world of low temperature superconductors.

Technopak has received a technology development grant over three years to enhance its range of powder handling and packing machinery. New Zealand Trade and Enterprise (NZTE) is also helping Technopak set up sales and distribution networks in South America, China and Europe.

Swapping exporting stories

A specialised High-Value Manufacturing cluster is being formed, with the support and encouragement of Auckland Tourism, Events and Economic Development (ATEED).

A likeminded group of 33 companies has been identified, and the network will work together on accelerating business growth. The companies have combined turnover of $750 million, and 75 per cent of the revenue comes from exporting.

The cluster will increase the profile of high-value manufacturers and make them more competitive on the international stages, thus increasing exports.

The increased profile will also help the businesses obtain government support and funding for growing their sales overseas.

The overall aim is to double turnover of the businesses in the network within five years and to increase direct employment by 25 per cent. This growth will flow through to the Auckland precision engineering and machine shops which supply the high-value manufacturers.

Research and Science facilities in Auckland (presence: 2011)

- The University of Auckland
  auckland.ac.nz

- Plastics Centre of Excellence
  pcoe.org.nz

- Centre for Advanced Composite Materials
  cacm.auckland.ac.nz

- AUT University
  aut.ac.nz

- Materials Accelerator at University of Auckland, AUT University, IRL, GNS Science and others
  materialsaccelerator.co.nz

- e center at Massey University, Albany Campus
  ecentre.org.nz

- Callaghan Innovation
  irl.cri.nz

- Heavy Engineering Research Association (HERA)
  hera.co.nz

- Plastics New Zealand
  plastics.org.nz

- Titanium Industry Development Association (TiDA)
  tida.co.nz

Source: Entity websites; annual reports; Coriolis
Plenty of research

Auckland’s universities and research facilities are completing a wide range of research and development in the specialised manufacturing and advanced materials sector.

<table>
<thead>
<tr>
<th>Year founded</th>
<th>Number of staff</th>
<th>Annual budget</th>
<th>Examples</th>
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| 1883         | 4,725          | $889m (2010) | • Faculty of Engineering including automation and robotics, sensing and measurement techniques, and engineering science.  
• Energy and Fuels Research Unit.  
• Yacht Research Unit.  
• Provides industry specific research, graduate and industry training.  
• Develops advanced polymeric materials and leading-edge technologies in plastics manufacturing. |
| 1883         | 4,725          | $889m (2010) | • Provides fundamental, applied and industrial focussed research on synthetic and bio-based composite materials and manufacturing processes. |
| 1895 / 2000  | 1,916          | $287m (2010) | • Centre for Advanced Manufacturing Technology (industrial processes).  
• Centre for Computer and Embedded Engineering.  
• Unit for Advanced Engineering Research. |
| 1926         | 2,829          | $425m (2010) | Research and development programme, working with companies to develop high-value export products incorporating multiple materials, such as plastics, metals, composites, ceramics, conducting polymers, bio-materials and coatings.  
Innovative start-up companies can access expert advice from on-site experts and mentors from the local region.  
• New Zealand Welding Centre.  
• Structural Systems division, providing research and development in steel and composite construction.  
Working with New Zealand Trade and Enterprise and Aquaculture industry to find a plastics solution for farming fin fish and mussels.  
Develops New Zealand’s titanium industry by designing and making world-class products using powder metallurgy. The Applied Powder Metallurgy Centre is a one-stop shop for design, prototyping, small scale manufacturing and physical properties testing. TiDA works with companies throughout New Zealand. |
Case study:  
**Spinning their way to exporting success**

Kiwis have long been known for their inventiveness. Auckland-based Revolution Fibres, the supreme winner at the 2012 New Zealand Innovators awards, has made big strides in one of the world’s newest manufacturing frontiers – nanotechnology.

Revolution Fibres, established in Henderson three years ago, built its own industrial-scale electrospinning machine – the only one of its kind in the Southern Hemisphere.

The machine can produce a 100 metre roll of nanofibre in 15 minutes, and the company’s polymer-based product is presently used in household air filters, fishing rods and skincare patches.

Revolution Fibres’ ground-breaking product is now being tested by companies, both in New Zealand and overseas, for many different applications, mainly in composite materials to make them lighter and stronger.

The nanofibre – 500 to 1000 times thinner than a strand of human hair – has a wide range of uses, from enhancing components in cars and aircraft, sports equipment and masts and booms on yachts, to improving medical, filtration and acoustic products.

“We plugged the gap between research and commercial reality by backing our ability to take the technology we saw in the laboratory to an industrial scale,” said Iain Hosie, technical director of Revolution Fibres.

“The potential is huge. A lot of people want to use nanofibre but they don’t have the expertise or machinery, and we have a head start in the production of commercial nanofibre.”

The global nanofibre industry is expected to grow to $US2.2 billion ($NZ2.7b) by 2020, from $80 million ($98m) in 2009.

Revolution Fibres, founded by Mr Hosie and his business partner Simon Feasey, first started producing nanofibre for HRV’s next generation air filters. The HRV home ventilation company sells its systems in New Zealand and Australia.

The polymer solutions are electrically spun, up to 100,000 volts, in a controlled environment and the molecules are stretched into coils of nanofibre, which is impregnated with manuka extract to create an anti-bacterial web.

Nanotechnology, like any new technology, raises issues about toxicity and environmental impact of nanomaterials. But Revolution Fibres
overcomes this hurdle with continuous fibres, and it uses natural materials wherever possible.

The nanofibre layer is fused with the substrate, or polyester filter media imported from Sweden, and is pleated and shaped for the HRV Seta Filter. Revolution Fibres also created a biodegradable air filter for HRV using a chemical-free layer sitting on the outlet of the ventilation system that captures fine dust, allergens and bacteria before they enter the home.

Mr Hosie said the efficiency of the air filter has been improved by up to 15 per cent through using the nanofibre web. "People have cared more about the efficiency of the fan and saving power rather than caring about the quality of the air, and this has created a point of difference for HRV," he said.

In May 2012 Revolution Fibres launched Xantulayr nanofibre which reinforces composite materials such as carbon fibre. The nanofibre is used by Rotorua-based Kilwell Sports for their fishing rods.

"It’s improved the rods’ strength 100 per cent while increasing the weight by 1 per cent," said Mr Hosie. "You can’t use any more carbon fibre in applications like these because it makes the product too heavy or thick."

One of Revolution Fibres’ biopolymers comes from marine collagen, a by-product of hoki fish. The company has also electrically spun cellulose and other biopolymers extracted from trees.

The collagen biopolymer, spun into nanofibre and containing organic, antibacterial fruit and berry extracts, is being used in anti-aging skincare patches. The patches are applied to wet skin and act as a moisturiser and whitener, as well as improving skin elasticity.

The patches are being trialled by natural health products exporter, Comvita New Zealand which will target the South East Asian markets.

Mr Hosie said the advantages of nanofibre are that it has a high surface area, an impressive strength to weight ratio, and delivers functional additives such as antibacterial extracts.

"We plugged the gap between research and commercial reality by backing our ability to take the technology we saw in the laboratory to an industrial scale."

Iain Hosie, technical director of Revolution Fibres.
Case study:  
Fine machinery for making the finest chocolate

Specialised Auckland manufacturer Production Techniques Limited (PTL) figured there was one way to grow its business – it had to have a stronger presence in the lucrative United States market.

Director Nick Halliday, who incidentally is married to an American, moved to Milwaukee, Wisconsin, and is building close relationships with key clients to expand his family’s business.

Started by his engineering father Jim Halliday in 1988, PTL makes customised, state-of-the-art chocolate and food bar machinery. All the design and production is completed in Auckland, and its main competitors are based in Germany.

PTL’s business is typically made up of 90 per cent exporting, and it is targeting the main food and confectionary producers in North America, including multinationals like Kellogg’s, Mars and PepsiCo.

“We build machinery that is unique, and interest in what we are doing is at an all-time high,” said Nick Halliday. “We have (installed) equipment with most of the major producers and we are now trying to get more volume through them.

“As well as selling full processing lines, we can retrofit certain pieces of equipment into production systems, and this opens the door for us,” said Nick. “Once we are in and prove ourselves, then the volume will flow. We are getting good quality inquiries and sales grew more than 30 per cent in 2012.”

PTL listens to clients’ feedback and tailors its design to suit their needs. “We don’t tell them what they want; we work with them to find a solution. Our clients see our approach refreshing. We focus on keeping the machinery simple while adding features and value.”

Nick said many North American companies are adding production facilities in Mexico to save costs and this has opened up opportunities for PTL. “The confectionary business is huge and it’s an exciting industry to be involved in. We are just scratching the surface.”

PTL has just appointed an agent in Mexico and it also has distribution agreements in Japan, Brazil and Malaysia.
The only manufacturer of its type in the Southern Hemisphere, PTL designs and builds a large range of chocolate-making machinery that involves melting, depositing, moulding and cooling. The machinery is operator friendly and easy to clean.

PTL also manufactures production lines for granola, muesli, nut, protein and candy bars – at present bar machinery makes up 50 per cent of that business. PTL builds the forming, cutting, enrobing and cooling equipment, and teams up with other companies to complete the cooking and packing functions.

PTL’s latest enrobing equipment can fully coat, bottom-coat or decorate different products, and focuses on thorough cleaning and fast changeover times. The Auckland manufacturer has also gained an edge with its unique cleaning systems, featuring hygienic design and allergen washdowns.

“The North American market has an increased focus around sanitation and companies are under pressure to comply with regulatory standards. Our machinery is designed around these hygienic standards,” said Nick.

PTL has developed equipment that will process the end product without harbouring bacteria and other allergens. Components such as carriages, pumps, seals and filters can be removed without tools and cleaned.

"In some cases we have reduced cleaning times by half compared with other industry suppliers, and saving hours of production time does mean money,” said Nick.

"Our equipment is high quality and we will never compete on volume or mass production. Our higher investment is justified because clients are going to get a payback in the longer term – by reducing time for cleaning and changeover, as well as waste reduction,” he said.

PTL designs and assembles all its machinery at its Auckland East Tamaki plant and sends its own teams to install and commission the equipment in chocolate-making and food bar factories here and overseas.

Nick said specialised manufacturing plays a big part in New Zealand’s economy. "New Zealand has a long history in food/dairy processing and these skills can be transferred across multiple industries, meaning we have a very skilled workforce and understanding of equipment design.

"New Zealand is seen as an innovative country, and this is something we can use to our advantage,” he said.
Kiwi flair and ingenuity shines brightly in the aviation manufacturing sector.

Composite Helicopters International, based on Auckland’s North Shore, has utilised its design and engineering skills to produce the world’s first all carbon-Kevlar composite frameless helicopter fuselage. The carbon fibre technology is similar to that used in America’s Cup boats and Boeing’s new 787 Dreamliner.

The KC518 Adventourer helicopter is future proofed for safety, reliability, strength and rigidity. It has a low drag profile, is lightweight, is easy to build at a low cost, has aesthetic appeal, and has a cruise speed of 135 knots.

Composite Helicopter president Peter Maloney said KC518 has been designed and manufactured with full FAA certification in mind and customers are effectively getting a five to six seat world class civilian helicopter at kitset prices.

The smooth-looking helicopter has a dual engine cooler installation with electric fan, dual instrument panel, fully articulated main rotor system, Rolls Royce 250 series engine, spring and yield undercarriage, composite four-blade tail rotor system, and a fuel tank with total capacity of 507 litres, allowing for flying up to 6.2 hours.

Falcomposite, based at the Ardmore Airfield in South Auckland, is also involved with advanced composites design and manufacturing, producing the LN27RG-Furio two-seater plane.

RPM International Tool and Die provides precision machining for the aviation industry, and Winston and Gordon Davies specialises in the highest quality manufactured components, tooling and test equipment.

Air New Zealand Engineering Services and Academy is a leader in the maintenance, repair and overhaul of aircraft, and has customers in New Zealand, Australia, Asia, North and South America and Europe. The business provides technical design solutions for wide and narrow-body aircraft in the civil and defence markets, and supplies composite and high-strength metal parts.

"Composite Helicopters International has produced the world’s first all carbon-Kevlar composite frameless helicopter fuselage."
Enhancing the country’s farming reputation

New Zealand is a world leader in agricultural and horticultural innovation and technology. The innovation has been driven by the country’s international reputation as a leading agriculture and food producer that together with the forestry sector accounts for 64 per cent of New Zealand’s merchandise export earnings.

The farming and horticulture industries are constantly innovating to maintain efficiency and profitability, even though they are further from markets than any other major producer. Agri-technology companies range from animal health genetics, fencing equipment and machinery to research and consultancy.

Auckland specialised manufacturers are supplying the domestic and international markets. **Compac Sorting Equipment**, winner of the 2012 New Zealand Hi-Tech awards, has developed and made smart fruit and vegetable handling solutions and machinery for packhouses in New Zealand and around the world. Compac uses a unique carrier system, advanced software electronics and precise measurement systems to sort produce by weight, size, colour, shape, density, blemish or defects, and internal characteristics/taste.

As a market leader, Compac’s software and technology is continually under development and improvement to meet and exceed customer requirements. It has teams of highly-skilled engineers who have an attention to details and provide quality workmanship.

**Tru-Test Group** manufactures and supplies nearly four out of every five livestock weight scales and milk meters sold in the world today. Tru-Test is also a leader in fencing systems, both electric and traditional, and has recently added dairy automation systems to its portfolio of leading edge products.

**JMP Engineering**, founded in 1972, provides robotic palletising, stretch wrapping and conveying equipment, all designed and built at its facilities in Auckland, Australia, Northern Ireland and the United States. JMP has installed and serviced fully-integrated machinery and conveying systems in New Zealand, Australia, the United States, Indonesia, China, Fiji, Malaysia, South America and the Middle East in a variety of industries.
Case study: Packing powder with precision

Dairy products have long been the mainstay of New Zealand’s export earnings, and the industry is constantly innovating to maintain its international edge.

A privately-owned Auckland company, Technopak, is playing its part in adding value to the dairy industry.

Technopak, which has been operating for 12 years, is a world leader in designing, manufacturing, installing and commissioning customised packing lines that hygienically and accurately fill 25kg bags with milk powder and infant formula.

The state-of-the-art machines pack up to 15 tonnes or 600 bags of milk powder in an hour, and the bags are weighed twice on the packing line to ensure accurate amounts.

Technopak also makes complete powder handling and conveying systems for the nutrition and pharmaceutical industries, and it is the only company in the world producing modular, future proof dry powder packaging lines. Customers can increase the capacity of their line any time by adding extra modules at lower cost.

High value powders need careful handling and Technopak maintains high sanitary standards. It has developed hygienic sampling equipment, and tamper evident sealing technology for the bags to prevent contamination or counterfeiting of critical ingredients and materials.

The bags are designed to withstand long distance travel – they have two to three layers of paper, with a glue top and a plastic inner liner that is heat sealed. The hermetically sealed bags are protected by a hologram, providing the highest level of security for the brand and the product.

The anti-counterfeit and anti-tampering sealing technology, called asuraseal was developed in New Zealand. “We became the first country to export hygienic powders,” said Henri Hermans, director of design and projects at Technopak.

Recently, asuraseal was selected as one of 15 participants from around the world to pitch its unique product at the University of Cambridge’s Open Innovation Forum in England. The Auckland firm presented to multi-nationals such as Unilever, Glaxo Smith Kline, Mars, Heinz, Tate & Lyle and General Mills.

Technopak, which owns asuraseal, has installed bag-filling machinery into nine new dairy factories in New Zealand over the past seven years, and its main export market is United States. It has also sold into China, Malaysia, India and Australia, and is eyeing the South American and European markets including Ireland.

Technopak is aiming to expand into the pharmaceutical industry, with its packing machinery handling multiple powders that require the highest hygienic standards and precision weighing. The powders can range from bicarbonate of soda and dried protein to pharmaceutical-grade salt.

“We have recently done a lot of development ... improving the functionality and efficiency of the systems, making the footprint smaller, and reducing the costs to combat the high New Zealand dollar,” said Mr Hermans.

“We can’t do anything about the dollar unless we move offshore, but that’s never going to happen. We are spreading ourselves around the world to get more orders.”

Mr Hermans sees big opportunities in Europe. The EU is abolishing the milk quota system in 2015 and new milk powder plants will be built over the next three to four years – as many as 15, he believes.

He established Technopak with Shane Reckin, the director of research and development who first worked at Sachet Packaging in Auckland. There was a demand for bulk packaging milk powder, rather than in sachets, and Mr Reckin became the first employee of Sapac Developments which pioneered the development for the hygienic bulk packaging of high value powders.
He was joined by Mr Hermans, and Sapac developed machinery capable of delivering large quantities of hygienically packaged milk powder. They started Technopak after Sapac was bought by German technology company, GEA Group.

Technopak now employs 35 people and focuses its skills on “everything after the spray dryer that produces the milk powder” in the processing plant. The machinery transports the powder, loads and positions the empty bags, fills and weighs the bags, removes the air (de-aerating), heat seals and folds the bags closed, weighs again, checks for metal detection, stacks the bags onto pallets, and finally stretch wraps them ready for transport or storage.

A fully-equipped bag filling and handling machine is about 16 metres long, 4.5m high and 4m wide, and just squeezes into a 40 foot container. The machine has 14 control boxes for the electronics and pneumatics, and they all talk to each other.

It takes six months to build the complete packing line, and Technopak uses about 200 local suppliers including fabrication and machine shops in Auckland, Hamilton and New Plymouth. A fully installed machine sells for $2 million, and Technopak wants to produce 10 a year.

“They key thing is reliability, as well as quality finish,” said Mr Hermans. “We just can’t have the machines breaking down.”

"We have recently done a lot of development ... improving the functionality and efficiency of the systems."

Henri Hermans, director of design and projects at Technopak.
Auckland is the hub of the New Zealand marine industry and has attracted an international reputation for high precision boatbuilding and innovation.

Auckland’s varied and accessible coastline, with large sheltered gulfs and harbours, makes it an attractive location for marine companies. The Waitemata Harbour, with immediate deep water access, has numerous existing infrastructure facilities, and there are new plans at Hobsonville and Wynyard Quarter/Westhaven Marina, which is the fifth largest in the world.

The local industry uses the latest technology and design in marine architecture, sail making, spars, composites, electronics and software, as well as boatbuilding. The industry has shown its ability to operate at the leading edge by using advanced materials and developing engineering solutions.

A watershed moment was New Zealand’s entry into the America’s Cup in 1987 and the change from hulls constructed in alloy to fibreglass, a technological revolution led by Auckland structural engineering and composites company, High Modulus, now owned by Swiss multi-national, Gurit.

The Auckland marine industry continues to be intimately involved with the prestigious America’s Cup. Emirates Team New Zealand, a 100-strong group of designers, engineers, boatbuilders, onshore support people and sailing crew.
Creating a world class precinct

Auckland is promoting a $70 million marine precinct at Hobsonville in West Auckland, called Yard 37 that will showcase the industry’s innovation, construction and management skills. The precinct will attract boatbuilders, refit service providers and other marine services.

Some of the world’s best superyachts, up to 90 metres in length, will be built on the 20 hectare Hobsonville site. The precinct has deep water access, making way for a 1600 tonne slipway. The slipway and precinct will be connected by a 23 metre wide launch road capable of handling a 600 tonne travel lift.

Auckland’s refit facilities are set to increase, and twice as many superyachts will be able to call in for repairs and maintenance, creating extra jobs and an economic boost not just for the marine industry but also local tourism. At present, about 700 superyachts and their crews visit Auckland in a year.

The new refit facility at Wynyard Quarter on Auckland’s downtown waterfront will increase superyacht capacity from 12 to 35 boats in a year. The Hobsonville precinct has capacity for 80,000 sq m of shed space, from new build to refit products used around the world for commercial fishing, marine survey, salvage, marine police and customs activities, as well as onboard superyachts and other leisure craft.

Enterprising apprentices

Auckland employs 6000 of the 8000 skilled people working in the New Zealand marine industry, and Auckland has the largest share of the 450 apprentices. The New Zealand Marine Industry Training Organisation, based in Auckland, runs an internationally recognised apprenticeship scheme, with up to four years training. At the end of 2012, 106 apprentices graduated and another 200 apprentices were signed on.

Contesting for the 2013 America’s Cup challenge, embodied the skills, capability and experience of the local industry. The design team was involved with composite structures, aerodynamic optimisation, hydrodynamic engineering, mechanical systems, naval architecture and composite engineering, and instruments and sensors analysis, among other work.

Core Builders Composites, now owned by American billionaire Larry Ellison’s Oracle Racing, moved from the United States to Warkworth, north of Auckland city, to utilise the local boatbuilding and engineering skills. Core Builders has New Zealand’s largest precision milling machine called The Poseidon and has produced the tooling for key components of Oracle Racing’s AC72 in the 2013 America’s Cup.

Southern Spars is an industry pioneer in the design, construction, installation and servicing of carbon fibre masts, booms and rigging for high performance racing and cruising yachts, including superyachts. Maxwell Marine competes internationally with its New Zealand-made winches.

Doyle Sails made the world’s biggest sail, a 2,227 sq m gennaker - big enough to cover more than a dozen houses - for the 58m superyacht Kokomo, built by Alloy Yachts in West Auckland. The Alloy Yachts-built Vertigo, 67.2m in length, was awarded the Prix du Design at the 2012 Monaco Yacht Show, which celebrates impressive design, workmanship, engineering and technological achievement.

Electronic Navigation manufactures a range of multi-beam sonar products used around the world for commercial fishing, marine survey, salvage, marine police and customs activities, as well as onboard superyachts and other leisure craft.

Sealegs has developed technology that transforms an all-terrain vehicle into an oceangoing speed boat at the push of a button.

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Case study: Creating bigger waves in marine electronics

For more than 20 years Auckland-based BEP Marine built its reputation on supplying boatbuilders, both here and overseas, with custom-designed electrical products. Lately, it has specialised even further and become a major international player.

BEP Marine entered a new development phase after being bought by American multi-national, Actuant Corporation. The innovative Auckland manufacturer joined Actuant Electrical’s global marine and mobile division, and became one of three marine distribution and research and development centres around the world.

Chris Wilkins, one of the three original directors, stayed on as technology and research and development leader.

The Auckland centre of excellence concentrates on battery management, systems monitoring and digital switching. Amsterdam handles power electronics and engineering, and Menomonee Falls, Wisconsin (headquarters for Actuant) is focused on shore power.

“We want to own the power vein of boats – and BEP had the digital switching technology,” said Robert Miller, New Zealand Site Leader for Actuant Electrical Global Marine and Mobile.

BEP Marine is making a strong contribution. It has developed a full digital system and integrated it with a marine navigation electronics package – a world first. The CZone technology replaces complicated, cumbersome wiring and traditional switch and fuse panels with easily-installed electronic boxes. The intuitive system is monitored by one display panel, saving space onboard.

“Integration between systems is important,” said Mr Miller. “Traditionally, you had to turn the charger and inverter on and off from its own controller. Our engineering team created a bridge between our power electronics and CZone which allowed everything to be controlled from one screen.”

BEP Marine has also introduced a new Pro Installer range of busbars, fuse-holders and battery switches which are clustered in a modular system and designed for fast, flexible installation in tight spaces.

“BEP has a talented group of engineers who understand applications,” said Mr Miller. “New Zealand with its harsh marine environment is the perfect place to test the products. They can be thrashed and if they survive, they can be taken anywhere in the world.

“We use tin-plated copper instead of brass for corrosion resistance and conductivity, and plastic that withstands ultraviolet light or high temperatures and meets voltage ratings.

“The products are not over-engineered. They are practical and built robustly to last longer. They just need to be waterproofed and be able to switch things on and off. The New Zealand engineers get this and build products from a consumer’s standpoint,” Mr Miller said.

Since arriving in New Zealand from the United States, Mr Miller has re-positioned the business for growth, introduced efficient business systems and pushed for continued development.
“We are focusing on being a lean, mean product development team. Digital switching is one of our key platforms, and we have the backing of a distribution network (through Actuant) to leverage the business on a global scale,” he said.

BEP Marine is now providing full marine electrical solutions from drawings to products, and it is working with major boatbuilders such as Oyster in Britain and Riviera in Australia.

It has provided electrical gear for the Volvo Ocean Race yachts and Oracle America’s Cup boat. The Camper ETNZ boat, which had the CZone digital switching system onboard, along with Mastervolt Li-Ion batteries, completed more than 62,000km of racing around the globe in grueling conditions and finished second overall.

During the global financial crisis, BEP Marine’s staff fell 20 per cent but has been rebuilt to 55 permanents. "We are in a position to grow," said Mr Miller. "The big thing was to consolidate and globalise the business and reinforce the focus on developing key, new products.

"We increased management to make sure product development targets are met and the correct products are developed, and we took on a marketing expert to ensure delivery. We are now working on gaining market share and building our capability and capacity by increasing our staff," he said.
QUALITY LIVING

A great place to live

Auckland has a present population of 1.5 million and is expected to grow a further one million by 2040. Backed by a 30-Year Plan, Auckland is preparing for this next phase of expansion.

The biggest city in New Zealand, Auckland provides a high quality of life at a low cost compared with overseas cities.

Source: Statistics New Zealand (regional populations estimates); Coriolis analysis
COMPETITIVENESS

Easy to do business

New Zealand, and Auckland, has been rated in the world’s top three for ease of doing business. American business magazine, Forbes, ranked New Zealand the best country to do business because of its transparent and stable business climate that fosters entrepreneurship.

The 2012 World Bank Group survey placed New Zealand third overall, behind Singapore and Hong Kong. Starting a business, and protecting investors was ranked first, dealing with construction permits second, getting electricity and registering property third, and arranging credit fourth. The survey was conducted amongst 183 countries.

Business costs are competitive. Prime office lease rates are more than a third cheaper than Sydney, and industrial rates sit around a favourable $100* per sq m. Industrial land values range between $350 and $450 a sq m.

Generally, salaries in New Zealand are 20 to 30 per cent lower than Australia, and there is no Payroll Tax. The drive for increased exports and innovation is creating demand for skilled labour.

LATEST LEASING RATES
(NZ$ per sq m/annum; 2012)

Prime industrial rent:

<table>
<thead>
<tr>
<th>Location</th>
<th>Rent (NZ$)</th>
</tr>
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<tbody>
<tr>
<td>CHENNAI</td>
<td>$68</td>
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<tr>
<td>BEIJING</td>
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Prime (CBD) office rent:

<table>
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<th>Rent (NZ$)</th>
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<tbody>
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<tr>
<td>TOKYO</td>
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</tr>
</tbody>
</table>

*All monetary values are quoted in NZ dollars.

New Zealand ranking on select index sub-components:

1st: Starting a business
1st: Protecting investors
2nd: Registering property
4th: Getting credit
6th: Dealing with construction permits

Source: World Bank Group Survey

Source: CBRE “Auckland industrial and commercial Property Market Overview” June 2012
Auckland’s place in the sun

The Mercer Quality of Living 2012 Survey ranked Auckland first in the Asia Pacific region and third in the world behind Vienna and Zurich. Mercer said the top ranking cities are in politically stable countries with good international relations and relatively sustainable economic growth.

**MATRIX: COST OF LIVING VS QUALITY OF LIVING (AUCKLAND VS PEERS)**
(Force rank; 2010 or 2011)

Key investment points

- **New Zealand has a simple and competitive taxation system.** There is no capital gains, no gift, stamp and estate duties, 100 per cent foreign ownership is permitted, and there are no restrictions on inflow and outflow of capital (including profits and dividends).

- **New Zealand has Double Tax Agreements** with 37 trading partners, removing double taxation on the same income in different countries.

- All companies, whether resident or non-resident, are **taxed at a rate of 28 per cent.**

- **A company is resident in New Zealand** if it is incorporated here, has a head office or a centre of management here, and its directors exercise control of the company here whether or not the director’s decision making is confined to New Zealand.

- **There is a value-added Goods and Services Tax (GST) of 15 per cent,** and a supplier of final goods and services must register for GST if income exceeds $60,000.

- You pay **Resident Withholding Tax (RWT)** on interest earned from bank term deposits and investments.

- **Investors wanting to gain residence in New Zealand need to meet criteria within two categories:**
  - Investor Plus for minimum investment of $NZ10 million and Investor for minimum investment of $1.5 million.
  - Investors must have the approval of the Overseas Investment Office (OIO) to buy or take a shareholding in sensitive land, a business worth more than $100 million or a fishing quota.

- Under the **Securities Markets Act 1988,** if an investor directly or indirectly purchases 5 per cent or more shares in a listed company, then the investor must file a substantial security holder notice with the company concerned and with the New Zealand Stock Exchange.

- **You can go online to start a company,** first reserving its name and then completing the incorporation applications and returning the signed consent forms.

Source: Business.govt.nz/companies
The Auckland region is the centre of New Zealand’s transport and logistics network, involving air, rail, trucking and shipping.

Auckland International Airport is the second busiest in Australasia, handling 93 per cent of air cargo imports and 70 per cent of New Zealand’s exports. Thirty per cent of rail traffic is involved with moving imported and exported freight, and 33 per cent of the country’s trucking and logistics companies are based in Auckland.

Two ports, Ports of Auckland and Port of Tauranga through its inland facility at Onehunga, handle the bulk of the country’s containerised and bulk cargo movements. Auckland is well positioned to service the growing markets of Asia.
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**Kiwi Rail**
- 4,000km of rail network
- 30% of rail traffic is import and exports
- Auckland-Tauranga is the country’s busiest rail link
- 18 container transfer sites across New Zealand

**Port of Tauranga**
- Major commercial port
- Dry port/rail link to Tauranga
- 1,330 commercial vessels/yr
- Sea cargo imports worth $15b annually
- Sea cargo exports worth $5.5b annually
- Total trade more than 17 million tonnes

**Centre of trucking and logistics (T&L) industry**
- 33% of all freight T&L companies
- 29% of all road transport companies
- 45% of members of National Road Carriers (industry body)

New Zealand’s air cargo **imports** handled at New Zealand’s Auckland Airport:

93%

Sea cargo **exports** handled at Ports of Auckland:

50%

Source: Statistics New Zealand “Overseas Cargo Statistics”; CBRE March 2012; National Road Carriers 2010; various company websites; Coriolis analysis
Auckland Tourism, Events and Economic Development (ATEED), an Auckland Council organisation, is committed to building long term business relationships and developing a co-ordinated, sustainable, competitive advantage for the local economy.

Whether your company wants to expand or relocate to Auckland, or you want to invest directly into projects, ATEED will make sure you have all the assistance you need. Our investment specialists will put you in touch with the right contacts and agencies, and ensure you have the support to succeed in Auckland.

ATEED is located on Level 8, 139 Quay Street, Auckland, New Zealand, and you can contact:

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