



Skope managing director Guy Stewart.

Skope NZ grows off Australia's back

WHILE MANY BUSINESSES in New Zealand are battling the current economic crisis, Christchurch-based refrigeration company Skope Industries is undertaking a major recruitment drive.

At present, Skope employs around 300 staff at its manufacturing plant in Christchurch, which is the largest design and innovation centre of its kind in Australasia.

"Between 30 and 50 additional staff are required in the factory, in order to increase production and meet current order levels," managing director Guy Stewart said.

With around 80 per cent of its commercial refrigeration products being sold to the Australian market, Skope has also benefited from the Australian government's introduction of a tax rebate scheme that encourages companies to purchase capital goods.

"What this means for Skope is that we are now able to offer companies that were previously disadvantaged by the increase in (the) ready-to drink (RTD) tax, which had negatively impacted on their revenue, a range of new products and technology that enables them to increase brand presence and supports the release of new beverage products into the market," he said.

Operating since 1945 and owned by the Stewart family for more than four decades, Skope designs, manufactures and supplies commercial refrigeration and heating products globally.

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"This need to increase our staff levels is due to strategic partnerships we have been building with a growing number of national and international beverage companies," Stewart said. Since taking over the role of managing director seven years ago, Stewart believes the cementing of these partnerships has enabled Skope to build its business and to enter otherwise inaccessible markets.

"For example, one large beverage company that we work with had moved from a local purchasing model to global procurement solutions. At first, this had a negative impact on us, as we were not able to provide products at a global price point. Our solution was to form a strategic manufacturing and

intellectual property relationship with Haier, this allows us to now offer a globally competitive solution using Skope designs."

As well as recruiting new factory staff, Skope is also seeking three experienced engineers to help meet the increase in orders and to support new initiatives within the business.

Alexandra Stewart, Skope's creative director, said the need to increase the design department was also a result of the forming of new strategic relationships.

"In order for us to continue to deliver the most innovative products on the market, we need to understand the future needs of our clients," she said. "We can then work together to create new product lines of commercial refrigeration and heating solutions that meet their future requirements."

The flow-on effect is that the support and service fields, including purchasing, business analysis, maintenance and customer services, will also need to be expanded over the coming months. "Our purchasing team is very busy supporting the increase in production that we are experiencing as a result of these new partnerships," she said.

"Much of the product being ordered is required earlier than the normal lead times from our suppliers, some of whom have their staff working nine day fortnights at present. The wider, positive outcome is that we are now seeing some of our suppliers being able to have their staff return to full working weeks."

Throw away the scales

ENGINEERING RESEARCHERS AT Purdue University in the US have developed a technique that saves energy and servicing costs by indicating when air conditioners are low on refrigerant.

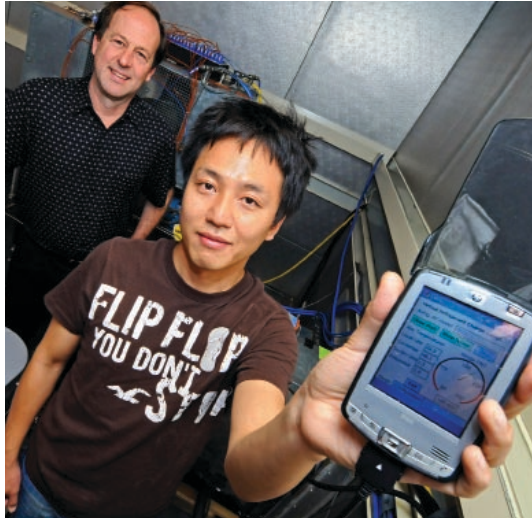
Maintaining the proper charge of refrigerant in a system saves energy because air conditioners low on refrigerant must operate longer to achieve the same degree of cooling as properly charged units.

A low refrigerant charge is a double-edged sword for a system. "Not only does the energy efficiency go down, but you also reduce the lifetime of the unit because it has to work harder, causing parts to wear out faster," lead researcher James Braun, a professor of mechanical engineering at Purdue, said.

"It's also very time consuming and costly to have a technician check the refrigerant and charge it up to specification. To accurately learn how much charge is in the system, you have to remove all of the refrigerant and weigh it, a procedure that requires a vacuum pump and is quite time consuming."

The new alternative works by using sensors to monitor the temperature of refrigerant at inlet and outlet points of both the condenser and the evaporator in an air conditioning unit. The technique is easy to use because the sensors are simply attached to the outside of the tubing.

Braun, along with doctoral student Haorong Li, created a software algorithm that interprets the data to estimate the amount of refrigerant in the system.



Purdue mechanical engineering graduate student Woohyun Kim, at right, and James Braun, professor of mechanical engineering. Photo courtesy Purdue University/Andrew Hancock

The findings, after four years of research, are detailed in a research paper presented last June during a meeting of the American Society of Heating, Refrigerating and Air Conditioning Engineers in the US.

The paper presents a method for obtaining accurate estimates of refrigerant charge level using non-invasive temperature measurements obtained while the system is operating.

The method could be used as part of a permanently installed control or monitoring

system to indicate charge level and/or to automatically detect and diagnose low or high levels of refrigerant charge. It could also be used as a stand-alone tool by technicians to determine existing charge and during the process of adjusting the refrigerant charge.

Researchers tested the system on seven different types of air conditioner running on conventional refrigerants, including R22 and the more environmentally friendly R410A, which is replacing R22 in the latest units.

The research has been funded by the California Energy Commission.

The accuracy of the virtual refrigerant charge sensor was evaluated over a wide range of operating conditions with and without the presence of other faults. The evaluation and demonstration verified that the virtual refrigerant charge level gauge had very good performance in terms of accuracy and robustness and could be easily implemented and installed in terms of both hardware and software.

Another research project at Purdue has involved a more extensive evaluation of the virtual charge sensor. Purdue has applied for a patent on the technique.

Another application is for automotive air conditioning units, which if equipped with the new refrigerant charge system could activate a warning light on a car's dashboard.

Technicians servicing home air conditioners might also simply plug a personal digital assistant into the unit to read the refrigerant charge information, Braun said.

Guilty plea in Tamahere incident

IN THE CONTINUING saga that is the result of the cold store explosion at Tamahere in New Zealand, the refrigeration contractor has recently pleaded guilty to two of the three charges.

A provisional hearing was set down for October 5, into the April 2008 incident, in which one firefighter was killed in an explosion at the Icepak Cold Store after responding to a smoke alarm.

Mobile Refrigeration Specialists pleaded guilty to a breach of Section 15 of the NZ Health and Safety in Employment Act 1992, and to a breach of Regulation 18 of the Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999.

The charges were initially brought by the NZ Department of Labour, which was under pressure to respond to the incident. It will, however, seek the leave of the Court to withdraw a charge against the owner of Mobile

Refrigeration, Warren Cook, for failing to comply with Section 19 of the same Act.

The department was satisfied that, in the circumstances, the charges that the company has pleaded guilty to fairly reflect the responsibility and culpability of those involved. Mobile Refrigeration is a small company owned by Cook and his wife.

Section 15 of the NZ Act states that employers have a duty to people who are not their employees. This includes groups such as customers, contractors or other visitors to the workplace, an employee's family, passers-by and any other person who may be affected by the work activity.

Section 15 also states that it should be read in conjunction with section 19's duty of employees not to cause harm to themselves or others. It was this section that was dropped in the plea agreement, even though Cook is registered as an employee of his company.

Section 18 of the Act places a duty on a principal to a contract to take all practicable steps to ensure that contractors, subcontractors and their employees are not harmed while undertaking any work under the contract.

The effect of section 19 is to create an obligation for employees not to undertake work which is unsafe, or which involves unsafe practices. Where an employee becomes aware of an unsafe work situation or practice, they should make it safe, or if they cannot, inform their supervisor or manager. It was this section of the Act that was dropped from the charges.

The supplier of refrigerant to the coolstore was the Australian hydrocarbon manufacturer Hychill. The company said it was looking forward to these health and safety issues being cleared by the courts so the NZ Coroner can then begin to examine the causes of the explosion and make any further recommendations.

New report details surprising energy trends

WHILE THE ECONOMIC crisis has hit investment by developed economies in clean energy, emerging economy investments are rising.

Some US\$155 billion (AU\$185b) was invested in 2008 in clean energy companies and projects worldwide, not including large hydro, a report from the United Nations Environment Programme (UNEP) states.

This investment is more than a four-fold increase since 2004, according to the Global Trends in Sustainable Energy Investment 2009 report, prepared for UNEP's Sustainable Energy Finance Initiative by global information provider New Energy Finance.

Despite difficult financial market conditions during 2008, investment in clean energy topped 2007's record investments by five per cent due, in large part as a result of China, Brazil and other emerging economies.

NOT JUST HOT AIR

While investment in the US fell by two per cent and in Europe growth was very much muted, the developing economies were the bright points: China became the world's second largest wind market in terms of new capacity and the world's biggest photovoltaic manufacturer; and a rise in geothermal energy may be getting underway in countries from Australia to Japan and Kenya, the report stated.

Other developing economies, such as Brazil, Chile, Peru and the Philippines, have brought in, or are poised to introduce, policies and laws fostering clean energy as part of a green economy.

Wind attracted the highest new investment, although solar made the largest gains, while

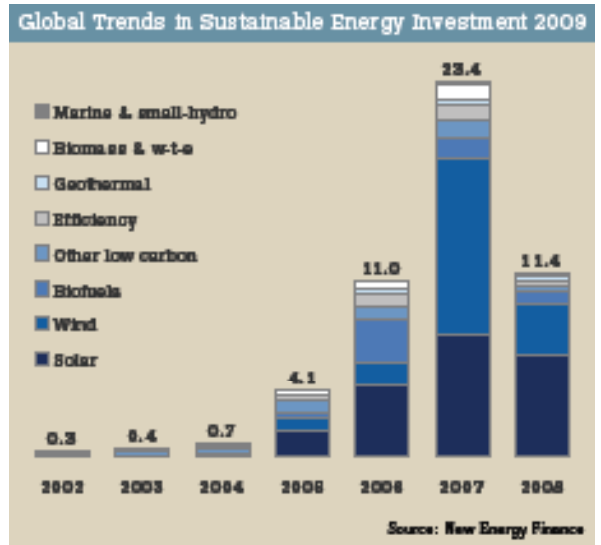
biofuels dropped by nine per cent.

One response to the global economic crisis has been announcements of stimulus packages with specific, multi-billion dollar provisions for renewable energies. UNEP hopes that bigger renewables stimulus packages will be announced at the UN climate convention meeting in Copenhagen in November.

Countries vary significantly in terms of investment and the clarity of their measures. The US and China remain the leaders, each devoting roughly US\$66 billion (A\$78b), but South Korea's package is the 'greenest' with 20 per cent devoted to clean energy. This green stimuli illustrates the political will of an increasing number of governments for securing future growth through greener economic development.

Despite the turmoil in the world's financial markets, transaction value in the global carbon market grew 87 per cent during 2008, reaching a total of US\$120 billion (A\$143b). Following the lead of the EU and Kyoto compliance markets, several countries are now putting in place a system of interlinked carbon markets and working towards a global scheme under the UN Framework Convention on Climate Change (UNFCCC).

It is expected that climate change, economic recovery and energy security will spur far greater investments in coming years.



Yearly chart indicating sector percentages of total spend.

The energy efficiency sector recorded the second highest levels of venture capital and private equity investment after solar, which will help companies develop the next generation of sustainable energy technologies for areas such as the smart grid. Energy efficiency also attracted more than 33 per cent in green stimulus measures.

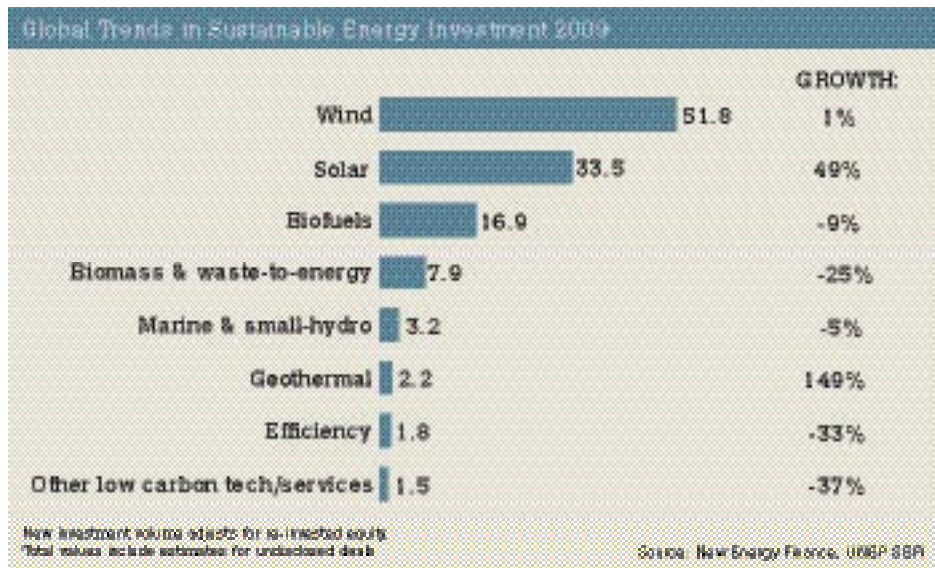
LOCAL PUSH

As for Australia, the federal government has set up a AU\$500 million Renewable Energy Fund to accelerate the roll-out of sustainable energy in the country. \$50m has already been committed to helping geothermal developers meet the high up-front costs of exploration and drilling.

Geothermal is expected to provide about seven per cent of the country's baseload power by 2030. Wind will also benefit from Australia's new push for sustainable energy and is expected to provide most of the 20 per cent renewable energy by 2020 target.

"The new UNEP report confirms what those in the renewable energy industry have known for a while, that the industry is headed one way – up," Simon Roz, climate and energy campaigner for Greenpeace Australia, told CCN.

"This demonstrates two things very clearly. That renewable energy generation is more than capable of meeting our energy needs, blowing apart the myth that we cannot run our economies on renewable energy. Secondly, future global economies will be based on sustainable industries, so those nations and companies that get in early will have a competitive advantage."



Global renewable energy investment and percentage change in spending.