

COLDFACTS

MAY/JUN 2024 NEWSLETTER



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COST-EFFECTIVE REFRIGERATION WORKSHOP

A five day teaching workshop to upgrade your refrigeration and heat pump knowledge

WHERE

The Centre for Postharvest and Refrigeration Research at Massey University, Palmerston North

WHEN

September 2nd to 6th 2024 (Monday to Friday)

This is the 30th offering of this workshop which continues to be demanded by the food and refrigeration industries. Over the five days we'll discuss the technical, commercial and environmental aspects of refrigeration and heat pumping. We hope that this course will be of interest to you or your staff and we welcome your attendance.

This is the workshop for you if you are part of the following industries:

- Businesses using industrial refrigeration equipment
- Refrigeration system designers and contractors
- Suppliers of industrial and large commercial refrigeration equipment
- Energy suppliers, consultants and researchers

We'll cover both the design and operation of refrigeration systems and refrigerated applications, as well as heat pumping for process heating, and how environmental policy, legislation and regulations impact the refrigeration and food industries.

An optional fifth day is offered this year, where the focus will be using calculation methods provided via spreadsheets.

Presenters

Professor Don Cleland and Dr Richard Love will be presenting at the workshop.

They both have extensive experience in refrigeration, heat pumping, design, food processing and preservation, energy management and energy efficiency.



For more information visit: <https://events.massey.ac.nz/cost-effective-refrigeration/>

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Deploying AI for Health & Safety

Without a PhD in computer science, asks Bede Cammock-Elliott, how does a health and safety professional make sense of AI's potential?

Artificial intelligence is the topic de jour. With the advent of ChatGPT, chatbots and other AI technologies, it can be challenging to decipher the difference between fact and fiction. How do you achieve the promised benefits while avoiding the ethical and other challenges?

An AI deployment is no different from any other technology deployment, where success is achieved through 10% technology and 90% change leadership. Don't assume that AI is something you can just deploy and watch as benefits magically occur – AI might be crazy cool, but it's just a technology like any other.

Having sounded that note of caution, the use of AI in H&S is not all hype. It is already in use in the domain of machine learning called computer vision. This is enabled by things called neural networks. Before your eyes glaze over, all you need to know is that neural networks enable computers to learn, then recognise objects to high degrees of accuracy. In other words, teaching computers to 'see' objects and work out how they relate to each other.

THE 24/7 AUDITOR

One of the challenges faced by H&S professionals is this: how do you know if your H&S regime works as you hope? We spend time, money and energy on identifying critical risks and ensuring controls are in place. Many of these controls require an element of behavioural compliance. CCTV cameras commonly record events, but how to find events of concern without spending hours going through the footage?

An AI computer vision system – ideal for logistics and manufacturing – is like having a 24/7 auditor monitoring for unsafe practices or potential accidents and injuries. It can play a role in monitoring critical risk controls and employee behaviour, as well as providing opportunities for hazard identification, work design improvements, worker coaching, and real-time assurance relating to critical risks.

An AI system can automatically tell you if there is a gap between work as imagined versus work as done. Further, an AI system can gather performance data automatically to help you understand how your change management efforts are tracking. This data can be displayed live in smoko rooms or on the wall of the warehouse.

CARROT, NOT STICK

So, what could possibly go wrong? Like anything good, an AI computer vision system can run amok if not implemented wisely. Despite it being tempting to do so, AI-derived insights should never be used as a stick. Weaponised in such a way, AI systems would be profoundly corrosive of workplace trust.



The use case should not be used to track events where a reasonable expectation of privacy exists.

First, you need to ensure that AI tech is the right solution to the problem. Sometimes higher order controls are more effective.

If you are going to use insights derived from AI, they need to be logical and make sense. There needs to be an obvious reason why the system 'triggered'. AI is not 100% perfect; for example, it might be that it mistook a hi-viz vest lying over a box as a person. You need to be able to explain what is happening if you wish to rely on it, particularly if a disciplinary process is required.

PRIVACY AND BIAS

Computer vision relies on video data to function, and the data collected has significant privacy implications. It is important to ensure that the privacy of the people and/or the organisation is protected. Our solution – seeo – does not use facial recognition, for example, so we only know about the type of objects in a scene. Further, the use case should not be used to track events where a reasonable expectation of privacy exists, for example, monitoring the length of smoko breaks taken by workers.

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Deploying AI for Health & Safety Continued

AI can be biased if it is trained on biased or incomplete data. The output is only as good as the quality of the data the network is trained on. Bias can generate false positives (i.e. events that are not real) but more importantly false negatives (i.e. real events the AI misses altogether).

To resolve bias, it is best if a computer vision system is trained with your own data: your people, your environment, your vehicles, as well as the fact that you might have a blue floor sweeper driving around at three in the morning.

REAL-TIME LIMITATIONS

It's useful to acknowledge that neural networks only left the laboratory in 2012. AI can struggle with scenarios where, for example, the camera's view of people is partly obstructed by boxes or freight – it might mislabel them or miss them altogether. It is for this reason that we have real caution around using AI as a real-time warning system.

Ideally, AI should be used to play a part in building H&S cultures, work design practices and work environments that preclude people from being hurt. Creating reliance on a real-time AI system to warn or alert to danger is fraught with risk; once reliance is established, if it fails (and it can), disaster can strike.

What if the camera is out of focus or dirty and doesn't detect properly, while people have learned to rely on it to warn them of impending danger? Real discernment needs to be applied.

SHIFTING THE DIAL

In my experience, most workers are genuinely unaware of how they are putting themselves at risk, and most leaders are unaware how the design of work is creating risk. AI computer vision solutions are already shifting the dial in 'safety work', providing insights into how work-as-done creates risk and exposing near-hit events for everyone to learn from.

Bede Cammock-Elliott is the founder of seeo.ai

KEY POINTS (PUT IN A BOX)

- An AI deployment is 90% a change management process.
- Computer vision can reveal the difference between work as imagined and work as done.
- Privacy and bias are important issues to be resolved before implementation.

First published in **Safeguard** magazine, New Zealand's leading publication on the management of workplace health and safety: <https://safeguard.co.nz/>



Four Ways Small Businesses Can Avoid Scams

Across any sector, small businesses can be susceptible to scams that can jeopardise their financial stability and take a toll on staff and owners alike. We spoke to a motel operator who shared her scam experience and tips on how others can avoid them.

Reference: Bank of New Zealand (BNZ)

For more, [click here](#)

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Supporting NZCSA Members with Impactful Renewable Energy Procurement



Growing use of New Zealand Energy Certificates means businesses are reducing reportable emissions, while accelerating decarbonisation of the energy industry.

Recent years have seen an uplift in businesses tapping into the use of New Zealand Energy Certificates (NZ-ECs) to reduce their reportable emissions and support renewable energy generation.

BraveTrace is leading the charge on renewable energy certification here in New Zealand, with an established system that enables businesses to claim the energy they use is matched with verified renewable generation (such as wind, hydro and solar).

This means businesses can report Scope 2 electricity emissions as zero under leading international standards (GHG Protocol Scope 2 Guidance, ISO 14064-1:2018). NZ-ECs are recognised and accepted by global partners such as RE100, BCorp, CDP and SBTi.

BraveTrace's new CEO Shaun Goldsbury notes that a recent surge in the number of certificates transacted highlights the growth in popularity of certification.

"We now have our users redeeming renewable certificates matching around 5% of New Zealand's total electricity generated. These companies can then report zero carbon emissions from their electricity."

Not only is choosing to purchase certified renewable energy the best way to support its generation, certifying energy can also provide additional benefits to businesses that include:

- Reducing exposure to climate related risk;
- Meeting value-chain expectations and shifting consumer preferences;
- Reducing carbon market risk.

The BraveTrace system currently enables trade in energy certificates for electricity and gas, with work underway to expand into other energy and transport markets.

With over 300 active BraveTrace users, the impact of NZ-ECs is growing significantly. To learn more about how it all works and the benefits of certification through BraveTrace, visit the link below or www.bravetrace.co.nz

Reference: BraveTrace.

For more, [click here](#)

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Navigating the Refrigerant Maze

Are you confused by all of the new refrigerants, regulations related to refrigerant use and service technician licensing? If so, read on...

INTRODUCTION

Commercial and industrial scale refrigeration systems such as those servicing cold storage warehouses normally have a design life of 15 years or more. Many of these systems are still operating more than 30 years after they were installed. Increased environmental concerns, particularly ozone depletion starting in the 1980's and, more recently, climate change have significantly affected the availability and cost of refrigerants.

This has led to a plethora of new refrigerants entering the market as chemical companies compete for market share. Many of these new refrigerants have quite different performance and safety characteristics compared with the refrigerants that they are replacing. Further, there is now a greater emphasis on work place safety which potentially impacts on refrigerant use.

Therefore, choice of refrigerant is a decision that can have long term implications for the sustainability of refrigerated facilities in terms of cost of operation, safety and their environmental impact. This article attempts to help owners of large scale refrigerated facilities in New Zealand to navigate the maze of information related to both, refrigerant choice for new facilities, and options for replacement of refrigerants in existing facilities.

BACKGROUND

Ozone Depletion

Prior to the internationally ratified Montreal Protocol and, in New Zealand, the Ozone Layer Protection Act (OLPA) of 1989 only four refrigerants were commonly used for commercial and industrial refrigeration systems – CFC-12 (for chilled food temperatures), HCFC-22, CFC-502 and R717 (ammonia). Under the OLPA there was a phase-out of CFC refrigerants by 1996 (ultimately brought forward from the original phase-out date of 2000 due to availability of cost effective alternatives) and of HCFC refrigerants by 2015 as shown in Figure 1.



The mechanism was a quota-based restriction on importation of bulk refrigerant for use in new installations or to service existing facilities. Existing facilities did not have to change refrigerants unless they could not access stocks for servicing. Stockpiles of some refrigerant meant that many facilities continued to use their original refrigerant until they reached the end of their economic life and were replaced by completely new systems using different refrigerants.

While some use of HCFC-22 did persist a bit longer (there are still some coldstores using HCFC-22), by 2000 most CFCs and HCFCs were replaced by HFC refrigerants that were not ozone depleting. Usually HFC-134a replaced CFC-12, HFC-404A and HFC-407C replaced HCFC-22 and HFC-404A or HFC-507 replaced HFC-502. Most HFCs are non-toxic and non-flammable (A1 refrigerants).

Use of ammonia (R-717) as a refrigerant continued at similar or slightly increased levels as before the OLPA but after 2000 there was a revival in use of other natural refrigerants (NRs) such as CO₂ (R-744), initially mainly in the supermarket sector in New Zealand. Hydrocarbons (HCs), such as propane (R-290) and isobutane (R-600a), started to be used in small scale systems but the Tamahere disaster in 2008 rightly slowed consideration of use of HCs in larger scale systems due to their flammability (A3 refrigerants).

Don J. Cleland, Massey University, 13 May 2024

For more, [click here](#).

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Proactive Cold Storage Fire Safety

Cold storage + reactive fire protection + fire = loss of stored goods

CURRENT FIRE SAFETY SYSTEMS

For many years, the ability to save the contents of a cold store from the effects of fire has been stymied by the quantity of smoke generated by a fire. If a fire occurs in a cold store, with or without sprinklers, there will be a volume of smoke in the cold store which will be distributed throughout, either by thermal difference, or sprinkler discharge entrainment, or by the evaporator fans. It is smoke that causes the majority of fire damage, not combustion of the stored goods. The racking system and the internal surfaces of the cold store can be reinstated post fire, but generally the stored goods cannot.

Building codes generally safeguard people from an unacceptable risk of injury or illness caused by fire, protect neighbouring property from damage caused by fire, and facilitate fire fighting and rescue operations. None of these objectives primarily address protection of the owner's property, and none of these objectives remotely consider the fire safety of goods stored on the premises. Historically, fire safety for cold storage facilities (including chillers, cool stores and cold stores) has applied one of three options:

- Do nothing. This reduces to installing a manual call point system to facilitate evacuation.
- Install an automatic fire alarm system – thermal detection, smoke detection, gas (CO) detection or IR/UV detection.
- Install a fire protection system – normally a dry pipe sprinkler system.

None of these options address smoke contamination of the stored product, and a sprinkler system actually causes smoke to be actively dispersed throughout the cold store. See Appendix 1 for the background to this statement.

ALTERNATIVE FIRE PREVENTION SYSTEMS

All of the above fire safety systems are reactive, in that a fire must exist for the fire safety system to activate.

Note that reactive fire safety systems' maintenance contracts generally include a clause "Following our servicing, the installation was left in good working order, but subsequent to the service person leaving site the servicing company has no responsibility for the functionality of the installation".

An ideal fire prevention system will prohibit a fire from occurring, can be continuously monitored as to functionality, will allow normal occupation of the facility, and will be capable of being installed and serviced in NZ. Such systems exist in NZ (1) in the form of oxygen reduction fire prevention installations.

OXYGEN REDUCTION FIRE PREVENTION

An oxygen reduction fire prevention system (ORS) continuously ensures a reduced oxygen level, with the following characteristics:

- Sustained combustion cannot occur.
- Oxygen level is sufficient for occupation by healthy personnel.
- Monitoring of the oxygen content ensures that the required oxygen reduction level is maintained (24/7).
- System failure does not cause an immediate loss of the oxygen reduction environment.
- Reduced oxygen levels may reduce the rate of oxidation of organic products.

Note that pyrolysis can occur (e.g. from electrical joints) with aspirating smoke detection being required to ensure early detection. Combustion will not occur, as cable pyrolysis is plastic based, which has a higher limiting oxygen concentration than Cellulose.

The international standard for hypoxic fire prevention is ISO 20338:2019 Oxygen reduction systems for fire prevention – Design, installation, planning and maintenance. ISO 20338 is directly based upon EN 16750:2017 Fixed fire fighting systems – Oxygen reduction systems – Design, installation, planning and maintenance.

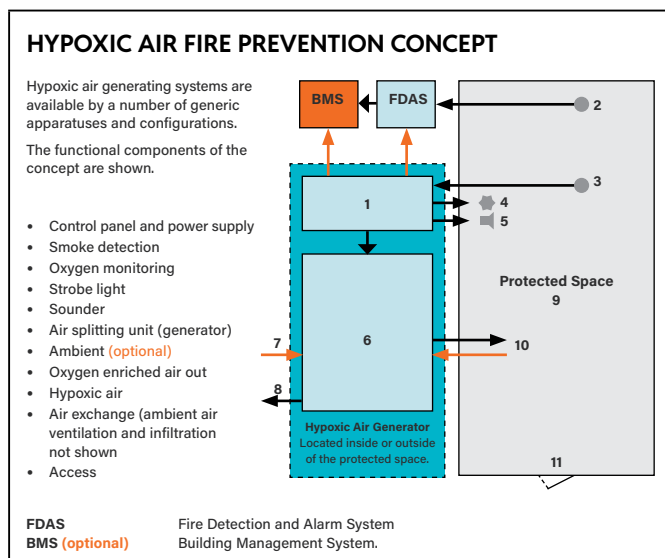
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Proactive Cold Storage Fire Safety Continued

European based suppliers of oxygen reduction fire prevention systems normally use EN 16750:2017 + A1:2020, being a more comprehensive document than ISO 20338. The following schematic supplies an overview of a typical ORS installation.



APPLICATION

An oxygen reduction fire prevention system design follows the following steps:

- Determine stored products, including packaging, pallet wrapping and pallet types.
- Determine limiting oxygen concentration (LOC) for each of the above, using Annex A of ISO 20338.
- Select the lowest LOC from above.
- Determine maximum infiltration rate for the cold store – pallet movements per hour, air locks, door dimensions, pressure relief vents, temperature differentials, plus pressure test post construction. Note that ORS systems are generally not suitable for ambient storage in NZ, due to the very high infiltration rates.
- Determine reduced oxygen generating plant capacity.
- Select reduced oxygen generating plant type – membrane, PSA, VPSA.
- Determine pull down time to design oxygen level.

Note that the ORS plant capacity is selected on infiltration rates, with no reference to storage height, aisle widths or flue widths in the racks. If a cold store is doubled in height, with the same pallet movements and air lock details, then there will be no increase in the ORS plant size. This makes ORS ideal for automatic storage and retrieval systems.

LIFE SAFETY

Worksafe NZ considers that oxygen levels < 19.5% present a life safety risk, comparable to being in a confined space. This limitation is at odds with normal life safety requirements as per the table.

See table on page xx, end of article

Physiologically, humans cannot tell the difference between an artificially reduced oxygen level (per m³) at sea level, and a reduced oxygen level (per m³) due to altitude change. There are minimal health constraints on the general public in regard to flying, with aircraft operating at a cabin altitude equivalent to an oxygen percentage of 15.6% at sea level.

Presentations have been made to Worksafe NZ in compliance with the Health and Safety at Work Act to agree that, using specific health guidelines, staff can occupy oxygen reduced spaces with between 13% to 15% oxygen. This allows for normal packaging, stretch wrapping and pallets to be below their LOC, whilst healthy staff occupy the spaces. Note that DGUV (2) section G 28 "Working in oxygen reduced atmospheres" specifically addresses the health requirements of staff working in low oxygen atmospheres.

COST CONSIDERATIONS (3)

A recent costing effort that utilised actual pricing for a facility of 14,000m², showed that the cost of an oxygen reduction system is approximately 60% of the cost of a traditional sprinkler type fire protection system. Further, as the volume of the facility is increased, the cost savings of an oxygen reduction system increases.

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Proactive Cold Storage Fire Safety Continued

A comparison of the potential business loss costs due to fire for a traditional sprinkler system vs an oxygen reduction system shows that the potential business loss costs are avoided with an oxygen reduction system due the fact that fire ignition is not possible in a low oxygen atmosphere.

Operational energy savings also can be realised with an oxygen reduction system because the increased integrity of the building envelope nearly eliminates infiltration and there is a reduction of heat loads and electric loads in "dark" warehouse operation. While there are limited long term historical records, from an operational standpoint the costs to operate are proven to be slightly lower than that of a traditional double interlock pre-action sprinkler system. A combination of these savings increases the viability of oxygen reduction systems as a cost effective fire protection solution for the cold storage industry.

MISCELLANEOUS

There are numerous items that need to be considered in regard to implementing an ORS installation, such as retention of the ORS environment, permeability testing, increased resilience, venting determination, control, monitoring and safety systems, plus detailed commissioning procedures.

Detailed liaison with stakeholders is required, to ensure that they understand the benefits and constraints of an ORS installation. Equivalence of an ORS installation to a single supply sprinkler installation (to access the trade offs within the NZ building code) can be undertaken.

A commissioning schedule covering all ORS related elements including interfaces ensures the functionality of the installation, plus the detailed Compliance Schedule information, covering all items peculiar to the ORS fire prevention system, for incorporation into the site wide Compliance Schedule, are part of the design process.

BENEFITS

- No possibility of ignition.
- No activation system.
- No false activations.
- No resetting of system.
- No ice filled pipes.
- No actuators.
- No need to evacuate.
- No toxic problems.

BENEFITS CONTINUED

- No damaged pipes or sprinklers.
 - No disruption of operations.
 - No residual or collateral damage.
 - No cylinder leakage or testing.
 - No environmental problems.
 - No maintenance in protected space.
 - No false alarms.
 - No refilling.
- Also:
- Permanent prevention.
 - Functionality continuously monitored.
 - Healthy staff occupation.
 - Effective for hours after total power failure.
 - Inherently simple, therefore high reliability.
 - Applicable to a variety of occupancies.
 - Can accommodate large room leakage.

REFERENCES:

1. Coolpak Coolstores Ltd, Rolleston, Canterbury.
2. Deutsche Gesetzliche Unfallversicherung Spitzenverband "Guidelines for Occupational Medical Examinations"
3. Controlled Environment Building Association.
4. Coldstore Engineering in NZ: Engineering NZ.

The following parties are acknowledged in regard to the preparation of this paper:

- Coolpak Coolstores Ltd.
- Controlled Environment Building Association.

Paper prepared by Paul Clements of Clements Consultants Ltd.

APPENDIX 1: CURRENT FIRE SAFETY OPTIONS

Considering the options in greater detail:

Manual call points:

Allows evacuation to occur, and may automatically connect to Fire and Emergency NZ (FENZ). No impact upon fire growth rate, with subsequent smoke contamination and fire damage to the stored goods, racking system and the facility. Expected FENZ arrival time will be 10 to 20 minutes subsequent to alarm receipt.

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Proactive Cold Storage Fire Safety Continued

Note that FENZ will apply their risk management protocols prior to entering any racked storage area, particularly when faced with dense smoke. Impact of the fire will normally be total loss of the stored goods through smoke contamination, and probable total loss of the cold store.

Automatic fire alarm:

Allows evacuation to occur, and will automatically connect to Fire and Emergency NZ (FENZ). No impact upon fire growth rate, with subsequent smoke contamination and fire damage to the stored goods, racking system and the facility.

Expected FENZ arrival time will be 5 to 15 minutes subsequent to alarm receipt. Note that FENZ will apply their risk management protocols prior to entering any racked storage area, particularly when faced with dense smoke. Impact of the fire will normally be total loss of the stored goods through smoke contamination, and probable total loss of the cold store.

Sprinkler protection:

Allows evacuation to occur, and will automatically connect to Fire and Emergency NZ (FENZ). Once water discharge commences, will impact upon the fire growth rate, but subsequent smoke contamination and fire damage will occur to the stored goods, racking system and the facility. Expected FENZ arrival time will be 5 to 15 minutes subsequent to alarm receipt. Note that FENZ will apply their risk management protocols prior to entering any racked storage area, particularly when faced with dense

smoke, but their conservative approach will be mollified by the presence of the sprinkler system.

Sprinklers need a fire to exist prior to their activation, and it is not uncommon for the fire to grow to 5MW prior to activation. The sprinkler discharge will encourage smoke distribution throughout the facility, and will normally entrain and drive the smoke plume down to floor level. Note that cold storage sprinklers have finite limitations on areas per valve set (< 1000m² per valve set), and finite limitations on the use of ceiling only distribution (~ 16m height) prior to in rack sprinklers being required. Impact of the fire will normally be total loss of the stored goods through smoke contamination, and partial degradation of the cold store through smoke contamination and possibly some panel damage.

Note: The value of the stored goods in a cold store is > 8 times the value of the facility.⁽⁴⁾

Regardless as to what type of fire safety system is installed (call points, automatic detection or sprinklers), the stored goods in the cold store room on fire will be lost through smoke contamination. It is difficult to imagine any MPI inspector agreeing that smoke contaminated product can be shipped. As a consequence, the sole impact of sprinklers is to minimise the damage to the facility, but will have minimal impact upon the loss of the stored goods.

A	B	C	D	E	F
3000	70.10	14.65	14.50	Southern Alps 14 peaks > 3100 / General aviation maximum cabin altitude 3050 / La Paz 3000 / Ruapehu 2800 / Quito 2800	
2500	74.66	15.60	15.40	Bogota 2600 / Egmont 2500 / FAA maximum cabin altitude 2440 / Addis Abba 2440 / Aspen Colorado 2400	
			15.9 – 16.0		Plastics
			15.0 – 17.0		Cellulose (excl. paper)
1000	89.83	18.77	18.50	Desert Road 1000 / Ohakune 800 / Waiouru 800	
500	95.46	19.95	19.70	Worksafe NZ maximum altitude 600	
0	101.32	21.17	20.95		

A	Altitude ASL (m)
B	Absolute Atmospheric Pressure (kPa)
C	Absolute Oxygen Partial Pressure (kPa)
D	% Oxygen per m ³ Compared to 0m ASL (all at 200C)
E	Locations and Altitudes (m)
F	Ignition Threshold

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Have a 'Hmmm' Before Winter Sport Kicks Off

Kiwis love their weekend sport, but to make sure you're not one of the thousands who miss out due to an injury, follow some handy hints from ACC and stay injury free this season.

If you're a player, coach or anyone involved in winter sport, ACC is urging you to 'Have a hmmm' before you get stuck in. ACC supports people to recover from around 140,000 injuries each year from playing rugby, rugby league, netball, and football. Injuries not only mean less winter sport fun, but can also impact your family, friends, workmates and employer.

With 90% of injuries being preventable, it makes sense to follow some simple steps that will help you continue doing what you love:

1. Gradually increase training intensity and contact training.
2. Spend time working on core strength and balance.
3. Practice sport specific movements you will need to use in a game.
4. Use the ACC SportSmart warmup before training and games.
5. Take enough time to rest and recover.

For more handy hints, check out these videos with specific tips for rugby, rugby league, netball and football. @ACCNewZealand #HaveAHmmm

Reference: ACC New Zealand.



New Zealand Food Safety Has Recently Published a Food Notice

Food Notice: Requirements for Registered Importers and Imported Food for Sale

This notice, issued on 17 April 2024, will come into force on 1 August 2024, and have an 18 month transition period, ending on 31 January 2026.

The revised Notice:

1. Changes the imported food category of frozen berries from Increased Regulatory Interest (IRI) food to High Regulatory Interest (HRI) food.
2. Changes the scope of the frozen berry category, with clearance required only for ready-to-eat frozen berries and specified frozen berry products. Frozen berries intended for further processing will not require food safety clearance.
3. Lists the berries that are included under these rules and clarifies the products that are excluded.
4. Introduces a new food safety clearance pathway for frozen berries, by providing evidence of third party certificates of overseas manufacturers certified to a GFSI-recognised standard.
5. Allows food safety clearance of canned bovine meat products from the EU or UK with evidence of an EU or UK identification mark.

If you have any questions, please direct them to: Import.Systems@mpi.govt.nz

Food Regulation
New Zealand Food Safety
Ministry for Primary Industries

Reference: Ministry for Primary Industries (MPI).

For proposed changes to the import requirements for frozen berries, [click here](#).

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Automating Demand Management with Smart Technology

KIA ORA

During last week's cold snap we saw how the efforts of New Zealanders all over the country to save energy during a period of peak demand paid off.

Transpower reported that demand was reduced by around 260MW from what had been forecast. This is comparable to the typical electricity use of Hamilton City. By reducing unnecessary electricity use or shifting time of use, pressure on the grid was eased and potential power cuts avoided.

There's a lot happening across government and the energy sector to ensure New Zealanders have access to clean, efficient, affordable energy, while reducing our reliance on fossil fuels and accelerating the adoption of renewables.

On the supply side, new generation continues to be built. But there's also plenty happening on the demand side to ensure we empower energy users when it comes to affordability and control over their energy use, while helping to reduce the risk of over investing in costly new generation and transmission.

Demand flexibility is set to be a game changer – by connecting smart technology to the grid, demand peaks can be smoothed without impacting user experience. Our modelling shows widespread use of smart EV chargers alone could save the country \$4 billion by 2050.

To help New Zealanders understand the potential of demand flexibility – or a 'smart grid' – we have recently published an overview on our website covering the basics and how it contributes to a sustainable energy system.

See more on this below, as well as findings from our latest consumer research into EV smart chargers.

This week we have also published the latest report in our ongoing Regional Energy Transition Accelerator (RETA) programme, for the Bay of Plenty. Unlike other regions of New Zealand where emissions are dominated by agricultural emissions, the majority of the region's emissions (52%) come from energy use – including both transport energy and stationary energy. The region has an abundance of geothermal and biomass resources that could be tapped to progress decarbonisation.

Finally, if you missed our Market Update webinar at the start of the month, you can find a link to the recording below.

In our Market Update on 1 May, we discussed EECA's strategy refresh, insights from the yet-to-be-published RETA South Island report, our new Manufacturing Decarbonisation Pathway and our latest research and insights on residential electrification.

Reference: [Energy Efficiency & Conservation Authority \(EECA\)](#)

For more, [click here](#)



Eco-pulse: Green Shoots Pruned

BNZ Chief Economist Mike Jones shares his latest thoughts, as concerns about the economy and business confidence are an ongoing challenge for firms.

Reference: [BNZ](#)

For more, [click here](#)

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EECA Market Update and Quarterly Webinars

The Market Update series aims to enhance understanding and utilisation of our expertise, products, and support.

Included are webinars that target industrial businesses and professionals interested in energy, carbon, and sustainability, offering insights to facilitate action. Each quarter, attendees receive updates on EECA's products and programmes, co-funding, tools, research, and insights to aid energy efficiency and low-emissions projects.

Government and industry can work together to accelerate our move away from fossil fuels. And great climate gains can be achieved through new and innovative technology that also benefits your business in other ways – improving efficiencies and reducing costs over time.

Reference: Energy Efficiency & Conservation Authority (EECA)

For more, [click here](#)

Bay of Plenty RETA Report

The newly released Regional Energy Transition Accelerator (RETA) report for the Bay of Plenty shows the main opportunities in Bay of Plenty will be energy efficiency or demand-reduction-related projects as the region reduces its reliance on fossil fuels in the manufacturing sector. These opportunities will complement the viable renewable energy source options of biomass, electrification, and geothermal within the region.

Geothermal energy – largely unique to the Bay of Plenty – has emerged as a key option in emissions reduction for this region and could mitigate the need for extensive electrical infrastructure upgrades. The report recommends additional investigation to help overcome some of the barriers to entry, like site proximity, consenting requirements and cost to drill.

Reference: Energy Efficiency & Conservation Authority (EECA)

For more, [click here](#)



Smart EV Charger Research

We are working alongside the electricity and charging sectors to encourage greater uptake of smart EV chargers. Our latest consumer research seeks to understand what EV owners, and people considering buying an EV, understand about smart chargers. It covers motivations, barriers, and the EV buyer journey, and will help us to understand where and how to influence smart charger uptake.

Reference: Energy Efficiency & Conservation Authority (EECA)

For more, [click here](#)

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Demand Flexibility – A Smarter Grid

As our electricity demand grows and we transition toward greater use of renewable energy sources, demand management is becoming increasingly important.

A 'smart grid' has the potential to automatically optimise electricity consumption and generation across households, businesses and industry, leading to a more efficient and affordable energy system for all.

Reference: Energy Efficiency & Conservation Authority (EECA)

For more, [click here](#)



Spotlight on Energy Projects

OceanaGold has welcomed New Zealand's first electric hydraulic shovel – with an anticipated annual carbon emissions reduction of 3,600 tCO₂e.

The switch to an electric-powered shovel not only ensures a greener footprint but also aligns with the focus on efficiency, anticipating long term savings with lower energy and carbon costs.



Whakatane Mill came back from the brink of closure in 2021, to build a bright new future with a focus on energy efficiency and decarbonisation.

The business invested in new technology that has reduced emissions and water waste, and today is the biggest employer in the region and a significant contributor to the local economy.

For more, [click here](#)



McCain Foods cut its emissions at its Timaru plant by 90% in just 4 years.

The company's experience demonstrates how reducing energy demand and adopting new technologies can lead to significant energy and cost savings.

For more, [click here](#)

Reference: Energy Efficiency & Conservation Authority (EECA)



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Insights from Ambitious Leaders on Business Growth

Entrepreneurial powerhouse, Carmen Vicelich, Founder and Global CEO of Valocity, shares how she built three successful data companies from the ground up. Joined by Brandon Jackson, General Manager of Growth Sectors at BNZ, Carmen and Brandon discuss how ambitious New Zealand businesses can grow through the use of technology and data.

Reference: BNZ

View video, [click here](#)



Radioshuttle - Built to Last

Radioshuttle™ has been operating in New Zealand since 1994 with many of these sites still operating today. A testament to the reliability and longevity of Radioshuttle™.

The latest model RS6.0 Radioshuttle™ is the result of 30 years of evolution and continuous improvement, the next level in set and forget technology.

Radioshuttle™ is moving 116,000 pallets every hour of every day, all around the world. In New Zealand we have an expanding footprint of new and existing clients converting cold stores from block stacking to Radioshuttle™.

Contact APC today to see how we can convert your space into business.

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NZ Cold Storage Annual Conference

Theme: Cold Logistics Excellence: Optimising Efficiency, Performance and Sustainability



**11th to 13th
AUG 2024**

**At the Millennium
Hotel, Queenstown**

Programme Overview

Sunday 11 August 2024

1pm – 5pm: Optional Activities*
5.30pm – 8pm: Welcome Function & Networking

Monday 12 August 2024 – Conference Day 1

From 8am: Registrations open and arrival tea and coffee
4pm – 5pm: AGM
6.30pm – 7pm: Pre-Conference Dinner
From 7pm: Conference Dinner
9am – 4pm: Conference Sessions

Tuesday 13 August 2024 – Conference Day 2

From 8.30am: Registrations open and arrival tea and coffee
9am – 3pm: Conference Sessions
3pm – 3.15pm: Trade show prize draws
3.15pm: Conference Close

*Optional Pre Conference Activities: Beer Tasting / Golf / Wine Tour

[REGISTER ONLINE HERE](#)