

Cold Spell

Refrigeration trends & developments in 2023

In-store refrigeration is crucial for preserving the quality and safety of perishable items while providing customers with a wide range of fresh products and reducing food waste. It is an integral component of a positive shopping experience and essential to a supermarket or wholesaler's business success. Encompassing everything from display units, temperature control, data collection and management, to maintenance, lighting, and close the case technology, it's one of the costliest investments a store will have to make. Topping the list is energy efficiency and sustainability, and now more than ever, it's a conversation that retailers, store and category managers, and solution suppliers need to be having.

Naturally, with the energy crisis (is it fair to call it a national energy disaster yet?) battering South Africa, energy efficiency, reducing usage, and alternative or uninterrupted power supplies are a critical talking point. The need to reduce carbon emissions and evolve more sustainable, environmentally friendly commercial refrigeration solutions continues to grow more urgent. Adopting new technologies, along with engaging the relevant industry experts, is vital for this transformation.



Image courtesy of Dana Devolk, Unsplash

Refrigeration monitoring

Better system performance, reduced downtime, and improved decision-making regarding maintenance and energy management.

An international hot topic, refrigeration monitoring is imperative. With applications ranging from maintaining your cold chain to ensuring the safety, quality, and shelf-life of your refrigerated and frozen produce, effectively monitoring your refrigeration units has never been easier.

Regular monitoring is essential for ensuring the proper functioning of in-store refrigeration systems, to check for leaks, monitor temperature levels and for the early detection of malfunctions. While in the long run this is an investment that will save you money, it can be a somewhat costly undertaking if you decide to go fully wireless, with top quality tech and all the bells and whistles.

That said, the insights and preventative maintenance benefits you get from in-depth data collection and analytics can be invaluable. Understanding your energy usage, and spotting irregularities before they



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become major problems, makes good business sense, particularly in the age of load shedding and an unstable power supply.

In terms of maintaining a safe and effective cold chain, an end-to-end monitoring system can be implemented in production facilities, refrigerated vehicles, storage facilities and in-store refrigeration units. Thanks to recent advancements in both software and hardware, these systems are compact and highly agile, able to be configured to a store's specific needs. By making use of the GSM/cell phone network to transmit readings to a centralised cloud-based reporting system, this solution is reliable, effective, and easy-to-use. Real-time temperature and humidity monitoring optimises your cold chain, and mobile dashboards make monitoring easy. With the right data analytics in place, the information received can be an asset to your risk management strategy as well as your electricity bill.

Image courtesy of C. Toro, Pexels



“Effectively monitoring your cold chain is imperative, as load shedding and unscheduled power outages can result in food spoilage, contamination, and food safety concerns. With real time monitoring and alerts, retailers and wholesalers are able to prevent serious stock loss and food contamination.”



Image courtesy of <https://www.multilayertrading.com/>

Refrigeration, the cold chain and load shedding

When it comes to refrigeration, supermarkets, hypers and wholesalers are having a tough time of it. Soaring energy costs, the shocking state of the national power grid, and supply chain constraints are competing with a growing demand for sustainability and accountability. There's also a legal and moral obligation to reduce carbon emissions, use less energy and cut down on costs. It's good to know that energy efficient solutions are top of mind for most manufacturers.

Christopher Visser, CEO of Multilayer Trading, has first-hand knowledge of the impact of load shedding on commercial refrigeration. He says, "The recent challenges of load shedding have put the refrigeration industry under a spotlight, prompting a focused discussion on energy-efficient equipment. It's become clear that the financial returns from investing in such equipment are considerable, especially when you compare



Image courtesy of <https://procoolmfg.com/>

Glass refrigerator door manufacture

the expenses of running inefficient systems on generators and alternative power sources."

He goes on to add, "Practical solutions to combat the effects of load shedding and reduce operational costs are closer than we might think. Simple changes like adding doors to refrigeration units can be of benefit, but including doors in the initial design drives maximum efficiency and potentially reduces energy demand by 50–70%."

Visser takes a refreshingly optimistic approach, and his optimism helps stave off the sense of doom



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RFG renewable power pilot site – energypartners

that tends to take hold when one considers the state of the South African power grid.

He says, “The adoption of highly efficient technology, like self-contained island freezers with glass lids, eliminates the need for defrost and glass heaters, making a significant dent in retailers’ operational costs.”

Locally based manufacturer of self-contained commercial fridges and freezers Staycold International, understands the challenges facing the refrigeration industry in South Africa.

Primarily servicing the beverage and hospitality industries, one of their biggest concerns now is buffering the cost of manufacturing during load shedding.

“While quality products tend to cost more, and with the additional costs incurred while manufacturing during load shedding, Staycold still needs to produce units that are affordable.”

MD Lena Le Roux says, “To manufacture a quality product, we need quality materials. The problem is getting good quality materials, on time, and at an affordable price.”

“Staycold works off solar as far as possible to combat load shedding, making use of flexible production hours, and working around the associated issues of cost and carbon footprint, but it isn’t easy, or cheap.”

The impact on their employees is not insignificant. Neither is the physical impact of load shedding on refrigeration units, as Le Roux explains. She says, “A beverage cooler that can sustain optimal temperatures during load shedding, and also withstand the associated power dips and surges requires a digital controller that protects the unit.”



Image courtesy of Luca Nardone, Pexels

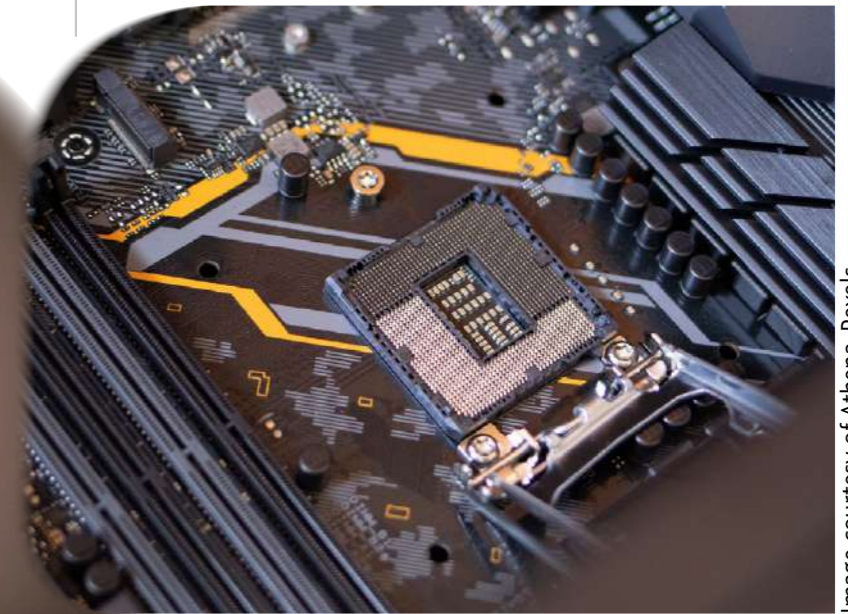


Image courtesy of Athena, Pexels

The controllers are part of most generic refrigeration models, but they have their limits, and we are seeing massive spikes. I think you could reasonably expect about 80% protection, but that’s not always going to be sufficient.”

*Staycold is not just
a manufacturer of
beverage coolers*

Our range of high-performance display freezers are setting high standards across South Africa and further afield

*Built locally in our ISO 9001:2015 approved manufacturing facility in Parys, Free State,
our display freezers offer retailers and frozen food distributors a reliable, powerful
and condition appropriate product that perfectly displays their products.*



The following features are standard in all our display freezers:

- Heated, Low-E glass doors for a crystal-clear view of the product even in high humidity environments.
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- High efficiency fan motors for less heat introduced to the cabinet and better energy consumption.
- Excellent display area to floor footprint ratio, no more large cumbersome chest freezers.
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*Don't take our word for it, here is a quote from Paul, the creator of Paul's Homemade Ice Cream
who use our freezers to display their delicious ice cream:*

"We have trialed and tested Staycold freezers for our ice cream and are proud supporters of their top quality products!"



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Trust the Experience

Staycold International's ISO Quality Standard Renewal

Staycold International has just been reissued with their ISO 9001:2015 quality management system accreditation. ISO 9001 compliance documents their business's ability to comply with high international quality standards and assists with identifying practices that align with the goal of minimizing quality related issues. For Staycold, adherence to this standard gives them and their customers confidence that the self-contained commercial fridges and freezers they manufacture, are built to the highest of quality standards.

The ISO certification is adjudicated and issued independently by QAS International with Staycold receiving their renewed certificate in April 2023. QAS International is one of the several internationally recognized bodies who conduct audits on requesting companies on a yearly basis for best practices in several different fields. ISO 9001:2015 is the quality management system (QMS) standard that Staycold have implemented at their head office and manufacturing facility in Parys, Free State.

Staycold voluntarily choose this system and certification of their business to ensure the quality of the units they manufacture for the beverage, retail and hospitality industries. This also helps to ensure they have a continuous product and quality improvement mindset assisted by the processing of the ISO manual that the system requires. The certification is also important for Staycold's clients as it gives them the confidence that the units they are procuring or considering, are manufactured in a facility that complies with international standards.

Lena le Roux, MD of Staycold International was pleased to receive this certificate and commented: "This is one of the steps we take to ensure that we manufacture and supply a quality product. It's important for us that quality remains at our core and is one of our pioneering principles we have become known for. So this ISO quality standard renewal is key for us so our customers can trust the experience."

For more information on Staycold ...

Contact them on 056 819 8097 or visit their website on www.staycold.co.za or LinkedIn page on <https://www.linkedin.com/company/staycold-international-pty-ltd/>
About Staycold International



STAYCOLD is a leading South African manufacturer of self-contained commercial fridges and freezers primarily for the beverage and hospitality industries. From its factory in Parys, the coolers are shipped world-wide, meeting the stringent business and quality requirements of many countries.



Image: Daniah Abdullah, Pexels



Solar power – is it really the answer?

South Africans are looking to solar as an alternative power source like never before. And despite the prohibitive costs, for those who can afford it, it's certainly a viable option for keeping a store operational during power outages.

With rent-to-buy options becoming increasingly popular, more businesses are able to consider the solar option. But it's not all plain sailing. For retailers in large complexes or shopping malls, finding the roof space, and getting their systems wired in, can be more as much of a headache as load shedding.

For those who can implement solar solutions, finding an installer who understands both the solar solution and the retailer's specific power needs can be a challenge. Refrigeration, for example, comprises several different entities working within a system – each of these has different power needs. These all need to be taken into consideration when tying an existing refrigeration system into a new solar installation.

For Multilayer Trading's Visser, solar is certainly a viable option. He says, "Solar energy systems present another promising solution, although they do come with their unique set of complexities. Initial capital costs can be substantial, thus demanding careful consideration of the return on investment."

Cooling as a Service, Renewable Power and Outsourced Steam_energypartners.co.za



"Nevertheless, persistent advancements in technology are enhancing the efficiency of both solar systems and refrigeration units, making them increasingly viable investments."

Staycold makes use of solar power in their manufacturing process, and Le Roux believes that while experts do expect costs to come down as demand increases and supply matches pace, this will only happen in the future.

"Retailers need to look to their survival now." For those that do choose the solar route, she warns, simply slotting your existing systems into a solar supply is not an option.

"Each of the commodities in a refrigeration system work in isolation," explains Le Roux. "Their applications and power needs are different, and this must be accommodated at the design stage. It is imperative that installations and hook ups are implemented by an expert."

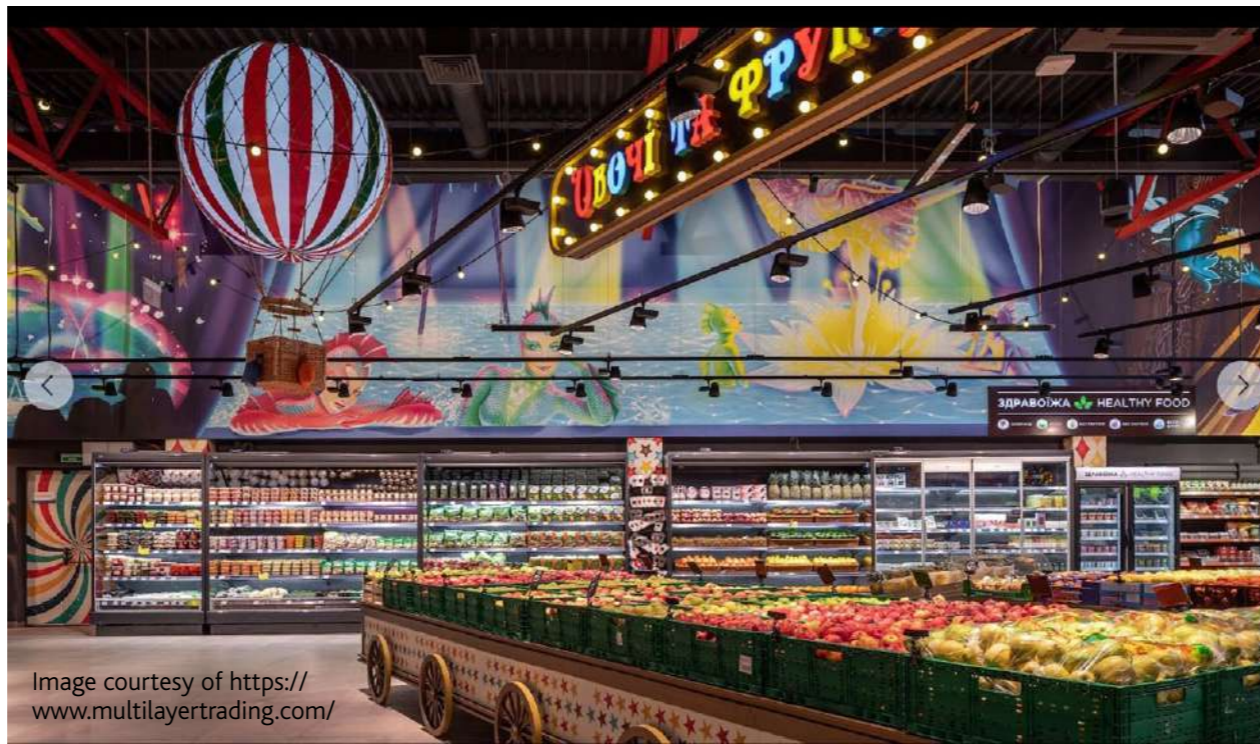


Image courtesy of <https://www.multilayertrading.com/>



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She adds, “We need more innovation in this area. We need innovative solar solutions for refrigeration, and we need clever tech solutions that can support these solar solutions. We also need our European supply chain to come up with affordable and practical solar solutions, but this is obviously a much less pressing concern for them than it is for us at this time.”

Visser advises that while there is ongoing research into alternative power sources in South Africa, it’s crucial that the industry first takes a hard look at the efficiency of the equipment already in place. “Properly executed, this could pave the way for greater sustainable use of alternative energy sources, possibly reducing the originally anticipated energy requirements by 50-70%. This approach promises a more energy-efficient future for the refrigeration sector, ultimately substantially lowering costs and promoting a model that is more sustainable.”

Supply chain challenges

Much like the rest of the tech world, ongoing effects of an extended lockdown in China along with a protracted war in the Ukraine has and continues to have a damaging effect on the cost, quality, and availability of electrical parts and tech hardware. For anyone using digital controllers, chips, or any of the chemicals used in the production of technological parts and hardware, this effect has been significant and noticeable.

Le Roux says, “The war in Ukraine is affecting the supply of certain chemicals and raw materials that are absolutely critical to the manufacturing process, and the ongoing effect of the extended lockdown in China also affected the supply of certain technical parts.”

“Not everyone has experienced the same challenges, or to the same extent, however. In many cases the impact is determined by the specific supply chains used by different manufacturers and producers. In some instances, alternative raw material and component suppliers are stepping up to take advantage of the situation.”

The jury is out on whether this impacts quality, and it remains to be seen if these supply issues will be resolved or remain an obstacle.



Images courtesy of
<https://www.petitforestier.com/>



Sustainable, energy efficient retail refrigeration

The refrigeration industry is well aware of the impact their products have on the environment. Consumer awareness, legislation and sustainability pressures have ensured that any modern unit worth its salt is, energy efficient and able to make use of eco-friendly coolants. Many of them also come with eco-modes designed to conserve energy. So what else sets them apart? "Quality," says Le Roux, "and longevity."

“ It’s not enough for refrigeration systems to meet the bare minimum in terms of energy efficiency requirements anymore. They need robust defence against the unstable power grid, they need a sustainable lifespan, and they have to be optimally energy efficient. ”

Visser agrees, adding, "The pace of technological improvements in the past decade has been nothing short of astounding, leading to exponential increases in system energy efficiencies."

Daniel De Beer, Regional Manager for Sub Saharan Africa at Emerson Commercial & Residential Solutions, is an expert on energy efficiency. He acknowledges the place that technology such as smart controllers and the Internet of Things (IoT) has in energy-efficient refrigeration solutions, but he cautions against investing in this tech without also investing in the skills, knowledge, and expertise needed for it to be integrated successfully.

That said, he is a firm proponent of preventative maintenance. Sometimes the simplest changes

Image courtesy of www.solcab.co.za/



Image courtesy of www.insulatedstructures.co.za/

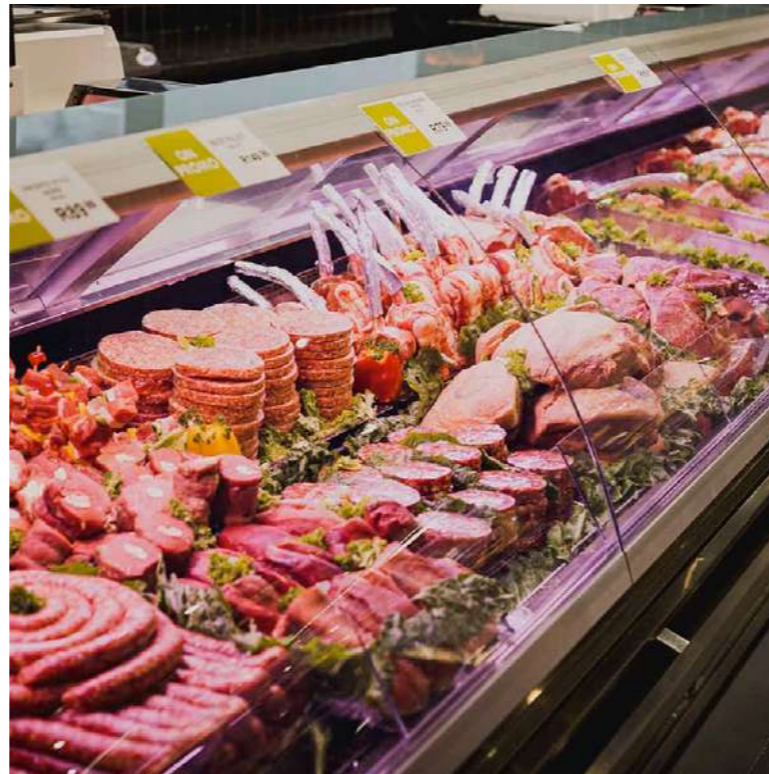


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and minor tweaks can lead to considerable reductions in operational costs over time. By Emerson's calculations, retailers are using 70% of their energy consumption for refrigeration alone. Roughly 50% of that usage can be attributed to compressors, so a savings of 20% on your electricity consumption is significant.

Although incorporating many of these new, energy-efficient solutions and products in the design phase is the most effective approach, there are also many retrofit solutions – such as close the case technology – that can be implemented easily and somewhat cost-effectively into existing systems.

It remains clear that thanks to the advancements and developments in technology, processes, refrigerants, components, and more, running an energy efficient refrigeration system is certainly possible. In addition, being environmentally conscious and sustainable is no longer a costly exercise with little notable benefit – the cost savings in reduced energy consumption alone make this the obvious strategy for your store.

Image courtesy of www.insulatedstructures.co.za/



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Are you respecting your refrigeration during load shedding?

The impact of load shedding and power outages can be mitigated with consideration and having contingency plans in place ...

- Tests show that refrigeration units can only maintain their internal temperature for two hours during load shedding – and this is with no accidental opening of the doors.
- Temperatures inside the unit can rise from 4°C to 8°C after two hours of load shedding, which can lead to food contamination.

- Be sure to manage and enforce your in-store processes for food safety, product integrity, legal and regulatory compliance, to minimise your financial losses, and to retain consumer trust, confidence and loyalty.
- Remember not to put added strain on an already strained situation.
 - Don't load shelves and fridges during load shedding.
 - Educate employees and shoppers against leaving doors open for longer than absolutely necessary.

Image courtesy of
<https://www.timeslive.co.za/>



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- Manual Push/Pull

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Pharmaceutical Hygienic Pallet



1200mm x 1000mm x
150mm

Aluminium Pallet



1200mm x 1000mm x
150mm



Insulated Structures
Efficiency At Work

Effective solutions to reduce the cost of in-store refrigeration

Polyurethane Injected Panels

- Standard panels: Outer and inner skin of frost white Chromodek, also available in black finish.
- Polyurethane injected panels for superior insulation and adhesion.
- High-impact PVC interlock profiles on all edges provides totally sealed insulation and a perfect vapour barrier.
- Tongue and Groove panel options available.
- Easily erected.
- Optional skin finish in Stainless Steel – Grades AISI 304 AIS 403.

Cold & Freezer Rooms



Floors – Fabricated and Concrete

Fabricated Floors

- The inside floor finish is 1.5mm Aluminium tread plate glued and screwed to a marine ply base.
- Galvanised plate options available in lieu of the Aluminium Chequer Plate finish.

Concrete Floor

- Concrete floors are used for flush or step-up entry and in permanent structures. Usually a recess of 150–170mm is used to accommodate the foam slab insulation and the concrete screed.



Meat Rails

- Hot Dipped Galvanised system.
- Support structure integrated into insulated panels.
- Optional free-standing continuous galvanised system with bends and switch gear.

Aluminium Chequer Plate

- Installed as an option to protect panels from scratches and light impact damage.
- 1.5mm and 2.0mm thick options.
- Standard height 1 250mm AFFL.





Insulated Structures
Efficiency At Work



Up to 40%
Energy Saving



New or Retrofit
Existing cases

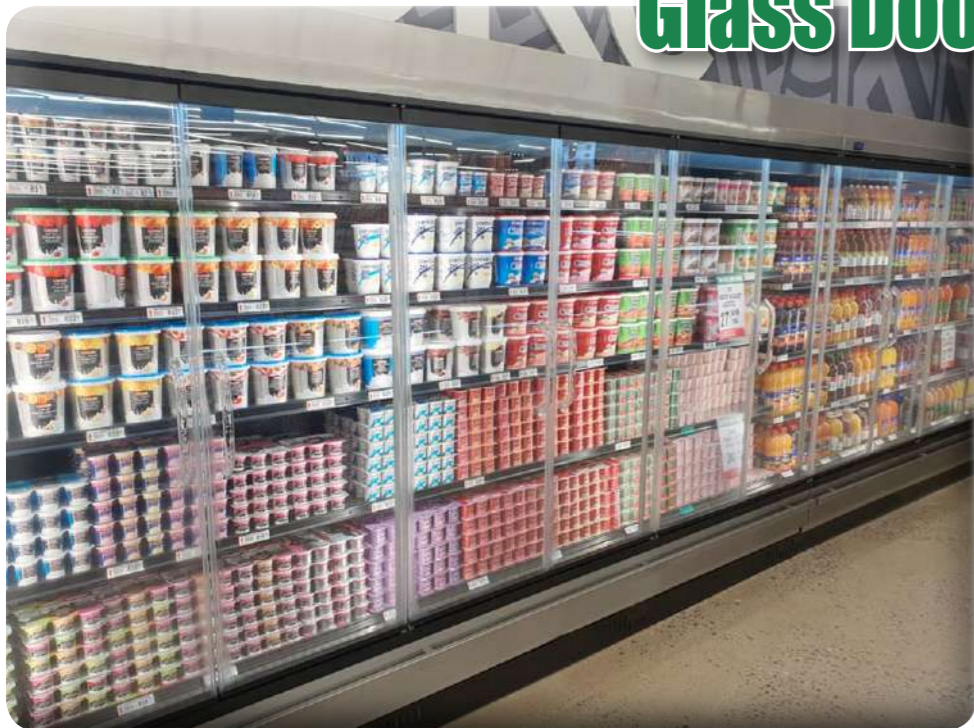


Environment
Respect

Benefits of Airshield Glass Doors

- Reduce Energy consumption.
- Extend Product shelf life.
- Double Glazed Argon filled void for better insulation.
- Optimal Product temperature.
- Glass doors have an option of Mullion lights. Quoted separate.
- Handles included.
- Up to 40% energy saving.
- Solution for new cabinets or retrofitted on existing cabinets.
- Doors are spring loaded.
- Less cold air spillage – warmer aisles.

Airshield Glass Doors



Ways to save

With energy cost rising and food retailers looking to improve the shopping experience environment for customers, Insulated Structures has developed an effective solution to reduce the cost of in-store refrigeration while enhancing the customer experience.

Insulated Structures doors are easy to retrofit on in-store cabinets to reduce the energy required to keep chilled foods at the correct temperature.

Meanwhile, customers are able to clearly see and access the products on offer. Reduced energy requirements means smaller refrigeration plant selection for new stores. These savings will off-set the initial cost of the doors. Up to 40% reduction in refrigeration requirement has been achieved.



Standard Airshield Glass Doors with a Black Frame.
Heated Hybrid also available in this design.
Heated Hybrid Glass Doors are fitted with a heater to reduce condensation on the doors in Coastal areas.
Heated Hybrid is fitted with soft closers.

Premium Airshield Glass Doors.
Frameless Door with Argon Gas filled for better insulation.



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The internet of things – why it belongs in commercial refrigeration



Images courtesy of <https://www.optconnect.com/>

That means refrigeration units work at full capacity when necessary and enter a lower power consumption state when less cooling is required. This increases efficiency, reduces costs, and leads to longer equipment life.”

According to American-based managed connectivity specialists OptConnect, the Internet of Things (IoT) offers many benefits to the retail refrigeration sector, including ...

“Real-Time Monitoring. Integrated IoT sensors allow users to monitor conditions such as internal and external temperature, humidity and power usage. It also enables managers to remotely assess conditions and manage their system from their phone or computer 24/7. Users can set alerts for when the system reaches certain power or temperature thresholds and receive immediate notifications on their mobile device.

“Maintenance and Diagnostics. IoT technology provides insights that allow managers to schedule maintenance on their units and foresee issues before there is a problem. It also provides technicians with the capability to diagnose equipment remotely and pinpoint the problem precisely. The result is less onsite service calls reduced maintenance and repair costs and less downtime.

“Increased Efficiency. The IoT network is able to use data from sensors to analyse real-world conditions and make adjustments in real-time.



Reliability is crucial in this sector, and small problems can become costly breakdowns quickly. This is why engaging industry experts to implement and even manage your refrigeration monitoring and control systems should be given serious consideration. Smart controllers, connected monitors, and cloud-based data management and analytics are no longer the stuff of futuristic stores and new designs – they should be part of every retailer and wholesaler’s refrigeration protection and defence. **SR**



Ann Baker-Keulemans writes on topics related to business, lifestyle, technology, and health, with extensive knowledge on the SA retail and wholesale landscape. Contact annbk@wilkinsross.co.za | www.wilkinsrossglobal.com



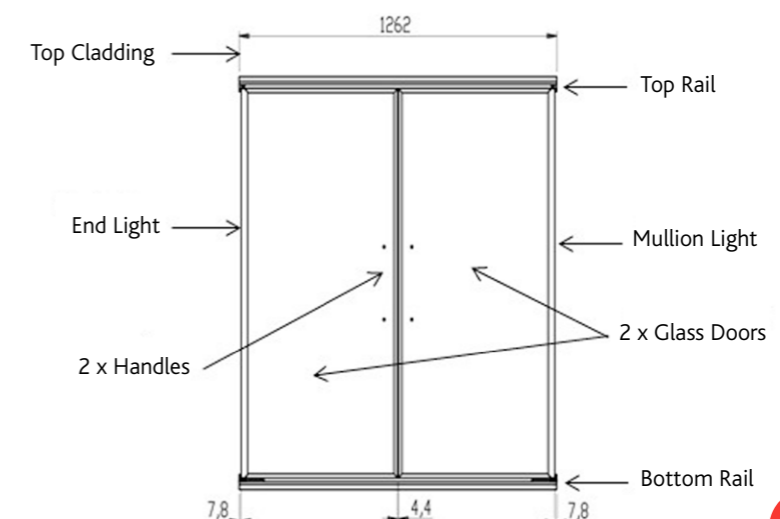
Close The Case

Designed as a retrofit solution for existing Supermarket display cases, the Glacier Air Shield Glass Doors offer up to a 40% energy saving in an ever-increasing energy cost environment as well as improved cabinet temperatures and product benefits.



Features and Benefits

- Reduced energy consumption.
- Extended product shelf life.
- Double glazed Argon Gas filled void for superior insulation.
- Optimal product temperatures.
- Spring loaded glass doors.
- Solutions for new cabinets or retrofitted on existing cabinets.
- Less cold air spillage – warmer aisles.
- Optional Mullion LED lights and door hold-open brackets.
- Heated option on our Standard Airshield Doors to suit coastal conditions.
- Integrated (full length) handle option.



Infinity / Infinity Integrate Glass Doors

The new Infinity Glass Door is designed with edge-to-edge glass and screen print border. This door offers increased visibility and a more modernised look and feel. Glacier has also launched their new Integrated Glass Door which incorporates a full length profiled handle.

Low Temp Eco Leaf (Energy Saving) Doors Aluminium Frames:

- Heated Door and Architrave
- Natural 15 micron anodized or black textured powder coating (Coating to SABS standards).

Glass

- Safety toughened 4mm glass inside and outside standard on all doors. (Toughened to SABS standards).
- All Glass Doors are Argon Gas filled for superior insulation.
- Low temperature doors are fitted with a heated front glass and a clear rear glass, both safety toughened.

Normal Temp Doors Aluminium Frames:

- Door and heated Architrave
- Natural 15 micron anodized or black textured powder coating (Coating to SABS standards)
- There is a thermal break on the inside of the door frame.
- All architraves are fitted with anti-sweat heaters.

Glass

- Safety toughened 4mm glass inside and outside standard on all doors. (Toughened to SABS standards)
- All Glass Doors are Argon Gas filled for superior insulation.
- Normal temperature doors are fitted with Low emission front glass and a clear rear glass, both safety toughened.

Lights (LED)

Energy Saving LED 22W, 6000K, LED Light fitted on the inside of the architrave in a closed polycarbonate light diffuser.

Lights (LED)

Energy Saving LED 22W, 6000K, LED Light fitted on the inside of the architrave in a closed polycarbonate light diffuser.

