

The way forward

Energy management

By Ann
Baker-Keulemans

It has become achingly clear that the South African national power grid is no longer fit for purpose. Despite a record number of loadshedding-free days, disruptions have marred the energy landscape. With no real long-term solution in sight, the country's reliance on expensive coal reserves and emergency measures means that it is past time for retailers and wholesalers to take charge of their own electricity needs.

As technology rises to meet these challenges and innovative solutions are shaped to drive the industry forward, the good news is that retailers and wholesalers have an array of tools at their disposal for building sustainable and optimised energy management solutions that can help reduce costs, optimise consumption and positively impact business.

Immediate action might be unrealistic, but a timeous response is important given the energy climate. This means that audits, real-time and targeted solutions must be implemented in the not-too-distant future. Time is running out for retailers and wholesalers to address the energy question, and this is true globally, not just in South Africa.



Three brand-new rooftop solar PV (photovoltaic) installations at the Shoprite Group's Canelands distribution centre in KwaZulu-Natal will generate 1 900 000 kWh – equal to the electricity used to power more than 350 households for a year. With an accelerated solar rollout programme, the Shoprite Group has boosted the capacity of its solar PV systems by 36.5% since 2022 – extending to 76 sites and easing pressure on the national electricity grid. <https://www.shopriteholdings.co.za/newsroom/>

Local retail committed to energy sustainability

In its 2024 Sustainability Report, Shoprite Holdings stated that it is expanding installed renewable energy capacity to reduce the Group's carbon footprint. It says, "Shoprite's solar panels now cover an area that is bigger than 27 soccer fields, with the solar photovoltaic (PV) facilities generating enough clean energy to power over 10 000 homes

annually." In terms of value impact (FY2024), the report says renewable energy consumption reached 6.5% of total electricity consumed (FY 2023: 5.5%), which is 26.2% of its 2030 target. Shoprite also has "82 rooftop solar systems across 77 sites, with 73 in South Africa and four in Namibia

Pick n Pay's 2024 Sustainability Report also reports positive developments, saying, "We target a 45% improvement in energy efficiency across

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Pick n Pay's energy programme (322 company-owned stores) by 2030 and 100% conversion to natural refrigeration in Pick n Pay company-owned and Boxer stores by 2040."

The report says the Group has solar installations at three Pick n Pay distribution centres, eight Pick n Pay stores, and 10 Boxer stores and facilities, which represents the majority of the stores and facilities owned in the Group property portfolio. Pick n Pay also invested in solar installations at two new stores and invested in additional solar capacity at its Eastport distribution centre.

In their 2024 Sustainability Report, the SPAR Group's Sustainability Executive Kevin O'Brien noted, "SPAR prioritises actions that comply with increasingly stringent regulations while fostering long-term resilience, stakeholder trust and operational excellence. Our proactive approach is reflected in the double materiality assessment SPAR commissioned in 2024. With crucial input from stakeholders across our value chain, this was a ground-breaking step towards alignment with the EU's new CSRD."

The report states, "Long-term efficiency improvements across our territories include installation of energy-saving equipment in stores and warehouses (including innovative refrigeration and lighting solutions to renewable energy) by our business partners engaging with preferred suppliers in the development and implementation of these solutions."

SPAR's distribution centres have solar PV installations, which help reduce the reliance on grid

Eskom conflicts of interest

More than 10% of Eskom's more than 40 000 employees have not filled out forms disclosing their interests.



Daily Maverick illustrative image
Sources: Cooling towers of the Eskom's Matla coal-fired power station in Mpumalanga. (Photo: Waldo Swiegers/Bloomberg via Getty Images) | South African Bank notes. (Photo: Adobe Stock)

On 12 March 2025, the Special Investigating Unit (SIU) revealed the extent to which alleged corruption and maladministration also run deep into the utility's rank-and-file employees. According to the SIU, 5,464 Eskom employees failed to declare conflicts of interest, as per company policy, and 334 employees had direct business interests in Eskom suppliers and contractors, and R180-million in illicit payments were traced from fraudulent vendors directly to Eskom employees. Ethan van Diemen | www.dailymaverick.co.za/article/2025-03-12

electricity and the costs associated with diesel-powered generators.

The Woolworths Good Business Journey Report 2024 says that the business aims to source 100% of their energy from renewable sources by 2030.

The report says the "resistance of electricity supplying authorities (Eskom/municipalities) in enabling large-scale renewable energy systems connection" remains a challenge to this goal, as do the "far-reaching impacts of loadshedding, from increased operating costs to numerous breakdowns, and implications for renewable energy projects viability."

The report goes on to say, "We have prioritised retrofitting energy-efficient equipment to old facilities when the opportunity arises. We ensure that using energy-efficient equipment is standard for new facilities. The benefits include improved energy productivity, reduced maintenance costs, and other energy-efficiency savings.

The energy journey is not without obstacles often faced by local retailers and wholesalers. The report says, "Solar PV installations in stores where we are tenants depend on landlords' willingness for us to install our own solar PV systems and/or share their installations

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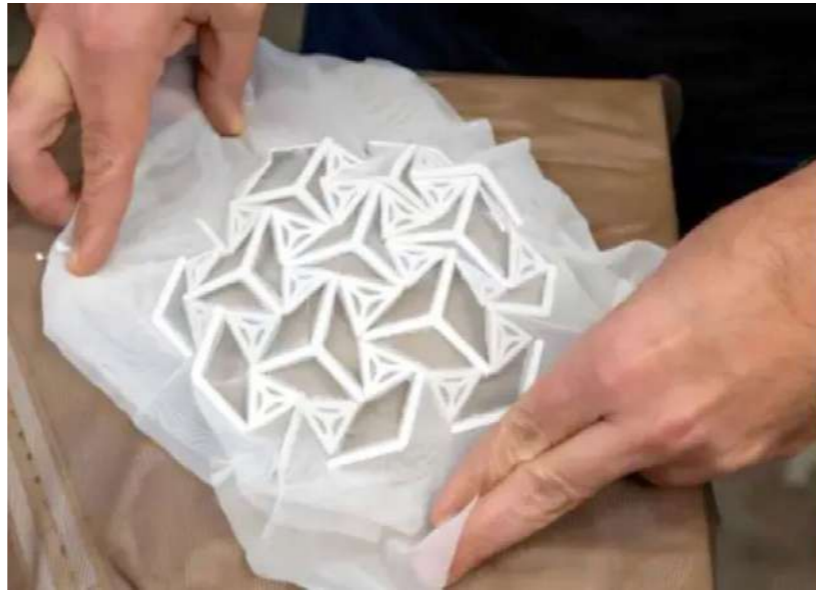
International trends: Irish retailer achieves real-time savings

The beauty of recent developments in technology means that real-time solutions mean real-time savings. Spacewell Energy (formerly Dexma), a Belgium-based company specialising in building management, knows a thing or two about energy consumption and how to manage it. Retail and wholesale spaces are significant consumers of energy, and with the costs and legislation associated with this consumption, energy management has become imperative.

In a case study for Spacewell featuring Woodie's, an Irish DIY store, Loana Papilloud (2023, www.dexma.com) writes, "The retail sector makes a significant contribution to energy consumption due to its vast network of shops, distribution centres and operational facilities. With rising energy costs and increased environmental awareness, retailers are under pressure to minimise their carbon footprint while maximising operational efficiency." She adds, "In the retail sector, the search for energy savings is of considerable importance, not only because of its impact on financial savings but also because it is part of responsible environmental practices."

With 35 branches across Ireland, Woodie's aimed to reduce energy costs as well as their impact on the environment. To achieve this, they partnered with Energy & Technical Services (ETS), a European energy management and building technology consultancy.

According to the case study, "ETS follows a data-driven approach that uses real-time energy con-



Unlike traditional inflexible solar panels, researchers at Cornell University are developing HelioSkin, a lightweight, flexible solar fabric that can be woven around intricate forms to improve sunlight absorption. This innovative solar technology is inspired by nature's resilience and the photosynthetic advantage seen in plants that track the sun. The project addresses a critical environmental issue: 40 percent of the United States' total greenhouse gas emissions come from buildings. The aesthetically appealing solar skin can wrap around complex structures, preserving architectural beauty while improving light absorption.

The project combines computational design, digital fabrication, and 3D printing to create customised filters and photovoltaic panel assemblies. The research incorporates knowledge of cellular morphogenesis, which describes how plant cells develop to bend toward the sun, and heliotropism, which describes how sunflowers track sunlight. <https://interestingengineering.com/>

sumption data to generate sustained energy and CO₂ savings." In addition, the retailer employed the Spacewell Energy platform to monitor its energy consumption in all 35 branches and the head office on a half-hourly basis, which provided a concise, detailed and accurate measurement of peak energy consumption, lowest energy consumption and areas of excess or inefficiency.

Papilloud says, "Energy-reducing measures can be defined on this basis. Automated notifications inform users regarding excessive energy consumption and help identify patterns of behaviour. This

creates outstanding opportunities to save energy on an ongoing basis and substantially increase sustainability."

Energy audits and a comprehensive measurement and analysis process enabled targeted interventions to reduce waste and inefficiency. Added to this, smart technologies enabled real-time monitoring of energy usage, while smart sensors, connected lighting and HVAC systems helped optimise energy consumption. "

At the heart of Woodie's success is a commitment to continuous monitoring and adaptation. Real-time data has enabled the company to monitor the impact of the strategies implemented and make the necessary adjustments to further improve energy efficiency," Papilloud states.



Training the next generation of energy savvy engineers

Boise State University's Industrial Assessment Center (IAC) are running a programme to train engineers to become energy savvy. In-depth evaluations of a facility are conducted by a team from the engineering faculty, together with upper-division and graduate students from a participating university. After a remote survey of the plant, the team conducts a one or two-day site visit to take engineering measurements. They then perform a detailed process analysis to generate specific recommendations with estimates of costs, performance, and payback times. www.boisestate.edu/

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Energy management systems

The sustainability team at Energy Partners, which invests in, builds and operates energy assets, including solar, energy and steam, describes energy efficiency as a two-part exercise, focused primarily on reducing consumption and optimising energy supply. But as Mila Vicquery, General Manager at Energy Partners Sustainability, adds ...



Mila Vicquery

“You cannot manage what you do not measure. Knowing where to focus your attention to achieve the greatest results will allow wholesalers and retailers to ‘move the needle’.”

“Certain projects and activities do not need capital expenditure, however, insight, action and tracking performance can lead to results with a significant impact. This will allow wholesalers and retailers to address further projects within their strategy that have a return on investment, leading to a future reduction in costs and perpetual savings.”

Vicquery explains, “The key to effective energy management is not just collecting data, but also taking action based on insights. The Internet of Things (IoT) and Artificial Intelligence (AI) enable businesses to track, analyse, and automate energy efficiency measures for maximum cost savings and sustainability impact.” Energy Partners utilises a range of technologies to achieve accurate, real-time measurements, and subsequently manages



Schoonbee Estate, who are at the forefront of table grape and citrus exports, required a holistic solution to their cooling needs. EP Refrigeration installed more than 5.5 MWR of refrigeration capacity and introduced a state-of-the-art custom software solution. This now allows them to focus on what they do best – the production of high-quality fruit. <https://energypartners.co.za/>

energy consumption as efficiently and effectively as possible. “This includes real-time energy monitoring and insights, automated heating, ventilation and air conditioning and refrigeration (HVAC&R) optimisation, as well as AI-driven controls to optimise temperature setpoints dynamically, which reduces unnecessary cooling or heating. IoT sensors adjust airflow and climate settings based on occupancy and demand, while predictive maintenance prevents breakdowns and reduces energy wastage. A smart lighting and demand response is also effective as automated lighting controls adjust brightness based on foot traffic, daylight availability, or occupancy.

And it doesn’t stop there. “AI can integrate with

energy tariffs to shift usage to lower-cost periods and reduce demand charges. Clear energy baselines and targets encourage store staff to adopt energy-efficient practices, and we have adopted power apps for store managers to ensure that behaviour in the store reduces energy waste and promotes environmental and cost-sensitive practices.” Vicquery adds, “We also recommend energy-saving strategies for different times of the day, and remote energy management platforms allow for centralised multi-site monitoring and control.”

Adopting an effective and comprehensive energy monitoring and management system is vital for optimising energy consumption while reducing waste and improving sustainability.

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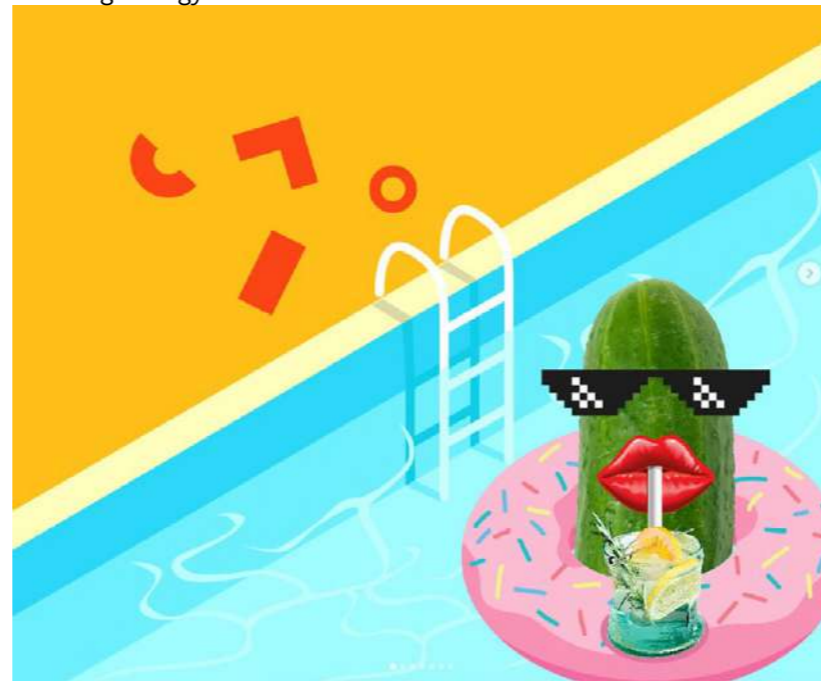
Reducing and optimising energy consumption

HVAC&R. According to Vicquery, the primary energy consumers in retail stores and warehouses are HVAC&R (Heating, Ventilation, Air Conditioning & Refrigeration) and lighting, all of which are essential for maintaining operational and product integrity. “A key consideration in reducing consumption is to review new, more energy-efficient technology, but these need to be assessed for return on investment (ROI), and must consider store design, retrofit needs and operational impact. Technology plays a critical role in reducing consumption, for example, switching lighting from T8/T5 fluorescents to LED technology, and bringing in solutions on the HVAC&R side such as centralised plants, optimal operational conditions and operational efficiencies. Store design and climate considerations also play an important role, where tailoring store design and layouts to environmental conditions can enhance efficiency.”

Solar and battery energy. When it comes to optimising energy supply, alternative energy sources are key. Over time, alternative sources such as solar and battery energy storage systems can reduce costs and allay the impact of tariff hikes.

Wheeled energy. Wheeled energy is produced by independent power producers (IPPs) and transported to users through existing Eskom infrastructure offering cost-effective renewable power to those with rooftop space constraints. This solution also reduces Scope 2 emissions (indirect greenhouse

www.originenergy.com.au/



Retail stores incur costs for keeping cool through electricity for HVAC systems and refrigeration, which can account for a significant portion of their energy bills. Optimising these systems and implementing energy-saving strategies can help reduce costs. However, they should take advantage of the summer season to promote products that resonate with the heat. Highlight items like summer apparel, cooling fans, portable air conditioners and hydration products in prominent displays and marketing campaigns.

gas emissions from the purchase of energy) and reliance on the national grid.

Holistic ESG strategy. In terms of sustainability, a holistic ESG strategy plays a crucial long-term role, extending well beyond just energy efficiency. Organisations, especially listed companies, must integrate tax incentives, carbon credits and emissions reporting into their energy and sustainability planning to maximise ROI and compliance benefits. Some key ESG considerations for energy strategy include tax incentives and rebates, carbon credits and offsets, emission reporting and compliance and target setting and ESG ratings. Incorporating these can help businesses achieve additional savings, ensure regulatory compliance and create long-term value for both shareholders and the environment.



Taking action for environmental care. It has long been believed that to go green, we need to switch from physical means, such as using paper which requires cutting down trees, to digital where you can access everything with a simple tap on your laptop or phone. This is true, but only to an extent. The world has gone almost too digital, and its impact imperceptible.

Debunking digital myths. Advances in digital technology have driven everyone around the world to consume data, and data's 'invisible' form makes it difficult for users to grasp its impact on the physical world. Every media we consume, be it e-books, music, images, films, videos, or software, ends up as data, which, when no longer used, are collected and stored. They become digital waste and take up an insane amount of energy. Take mobile applications, for example. Downloading apps takes a lot of energy, but according to mobile intelligence firm Quettra, 77% of users delete free apps within the first three days after the download. Energy is constantly used but quickly becomes waste in the same manner. The over-consumption of data is a large part of your carbon footprint. Image & caption: <https://medium.com/>

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Visit Staycold International at FRIGAIR from 4-6 June.



Futureproof your energy use

Anticipating, preparing and adapting to the future energy supply challenges and a changing energy landscape requires agile thinking. It also means that retailers and wholesalers would benefit from partnering with industry experts who have the knowledge and technologies to assist with this.

With rising energy costs, loadshedding, and stricter sustainability regulations, retailers and wholesalers must adopt innovative energy management strategies to remain competitive, aligning with emerging trends that focus on efficiency, automation and resilience.



<https://blogs.idc.com/2019/05/08/3-key-points>

Local retail committed to energy sustainability

Multiple hardware trends and solutions can be implemented to achieve energy reduction,” says Vicquery. “These can range from harnessing free natural lighting solutions and store design (shielding inside from outside extremities and fluctuations that increase energy usage) to central efficient plant solutions and harvesting natural environmental sources.”

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Energy-efficient equipment and smart grid integration, demand response and tariff optimisation, sustainability-driven consumer expectations and regulations as equally important solutions to implement for future stability and sustainability. **SR**

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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

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