



Cooling as a Service
Refresh the planet

Case Study



Efficient and Quieter Refrigeration: Energy Partners Transforms Sovereign Foods' processing facility

Leading South African poultry producer Sovereign Foods has selected Energy Partners Cooling-as-a-Service solution for their existing food processing facility in Hartbeespoort. The project is designed to meet the client's growing production needs, optimise energy use, and adhere to local noise regulations.

Partners



Region

Hartbeespoort, South Africa

Sector

Food Processing Industry

Retrofit or new

Retrofit

Project size

5.4 MW

(and potential extra capacity 11.8 MW)

Project investment

USD 4.8M

Technology

3-Stage Pumped Ammonia System

Background

Energy Partners (EP) is a leading provider of CaaS solutions for commercial and industrial applications, and manages the design, installation and operation of projects across Africa. Under CaaS, Energy Partners invests in, owns and maintains refrigeration assets and provides off-balance solutions to customers. It established its service based offering in 2016 and now manages an asset base of more than USD 30 million.

Energy Partners has a strong track record of successful projects and has demonstrated the benefits of CaaS through projects such as [Clover's Queensburgh dairy factory](#), [Dr Oetker's production and distribution facility in Johannesburg](#), and Afrupo's cold rooms.

Sovereign Foods is a leading South African food company which has selected Energy Partners and its CaaS solution to address their need for a new ammonia refrigeration system at its Hartbeespoort facility. Energy Partners has previously worked with Sovereign Foods on a food processing facility in Uitenhage in 2021, a USD 4 million project implementing a new ammonia refrigeration system under CaaS as well as outsourced steam and waste heat recovery.

The Need

Sovereign Foods operates farming and food processing facilities in Hartbeespoort, near Johannesburg, and Gqeberha in the Eastern Cape.

The Hartbeespoort facility currently relies on two separate refrigeration plants to provide cooling but the existing infrastructure is outdated and unable to accommodate increased production demands. Sovereign Foods is looking for efficient and reliable energy solutions for its food processing business, and is able to take additional advantage of Energy Partners expertise in outsourced steam, and waste heat recovery to drive further value.

In addition to cooling capacity and energy needs, Sovereign Foods faces another significant challenge at its Hartbeespoort facility: noise pollution. Nestled in a valley surrounded by agricultural land and eco-tourism establishments, the company must adhere to stringent noise level regulations set by Gauteng authorities. However, the existing plant room designs did not account for noise absorption, exacerbating the noise generated by the screw compressors. Consequently, the facility fails to comply with the prescribed noise pollution regulations.

“An integral part of the success is a highly efficient and reliable energy component. Steam is predominately used in the cooking process and needs to be reliable and of a very high standard. Cooling is the backbone of the process, starting with climate controlled production areas, process chilled water and blast freezing applications, where the product temperatures need to be brought down from +80 °C to -18 °C.”

Pieter van der Smit, Production Manager, Sovereign Foods Ltd



The Solution

Recognising Energy Partners expertise in the field, Sovereign Foods secured a CaaS deal for the expansion of its refrigeration plant in Hartbeespoort. A brand new system introduces cutting-edge technology to meet Sovereign Foods' growing production needs while optimising energy consumption and addressing noise pollution concerns. It has been designed to allow for the future expansion of production, both in cooling capacity and placement on the site. EP also calculated the system baseline savings on energy consumption of 20 percent using their digital twin technology. Delivering energy savings is especially important given limitations to electricity supply to the site, which affect the feasibility of expansion.

At the heart of the innovative solution is a three-stage ammonia system, using both screw and reciprocating compressors, evaporative condensers, and water-based oil cooling for the screw compressors. This advanced configuration ensures optimal performance and versatility across different cooling requirements within the facility. The refrigeration plant's compressors and condensers are equipped with variable speed drives, allowing for optimal control and energy

management. A sophisticated master control system further enhances efficiency by optimising the entire refrigeration process.

One of the standout features of the new plant is its incorporation of a heat reclaim system from the compressor oil cooling process. This recovered energy is then used to preheat the facility's process hot water tanks, reducing the reliance on conventional boiler systems and lowering fuel consumption.

To address the noise pollution concerns, the refrigeration plant room has been carefully designed with a focus on noise attenuation. Double brick walls, a rock wool ceiling, and purpose-made acoustic doors ensure minimal noise disturbance within and around the facility.

Noise attenuator filters have been integrated into the ventilation system, further reducing noise emissions. Additionally, the condensers have been strategically placed in a ground-level condenser yard enclosed by an acoustic screen, while low noise fans and extensions ensure proper air dispersion over the screens. These measures not only ensure compliance with noise pollution regulations but also contribute to a more pleasant working environment for employees.



"We are happy that Energy Partners is a partner of choice for Sovereign Foods in reliable, innovative and sustainable solutions for growth"

– Samuel Jacobs, Executive Head Business Development EP



“Sovereign’s strategy is to partner with service providers who offer reliable, cost effective and innovative solutions and Energy Partners was able to offer solutions for both steam and refrigeration. The offering of steam and cooling sales (where Sovereign buys units of energy – kg’s of steam and kw’s of refrigeration) reduces our risk profile and enables us to focus on our core business of producing high quality, affordable and very tasty products for our customers.”

- Pieter van der Smit, Production Manager, Sovereign Foods Ltd

The Benefits of CaaS

Under CaaS, Sovereign Foods can meet its expanding production requirements by benefitting from an efficient refrigeration system for no upfront investment.

Energy Partners expertise in providing integrated solutions including refrigeration, steam, and waste-heat recovery, ensures a more effective and efficient approach to the facility’s refrigeration needs whilst optimising energy consumption. Furthermore, Sovereign Foods was able to work with EP on the design and construction of the plant room to comply with local noise pollution regulation.

This project demonstrates the growing potential for integrated solutions in the food processing sector using CaaS, alongside steam and heat recovery.

By prioritising energy-efficient technologies as well as the use of natural refrigerants, both companies strive to establish a model for more responsible growth within the industry.

Contact Information

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